Appendix E

Evidence tables

Substance misusers

Q1a. What aspects of service organisation and delivery are effective at improving access to antenatal services for women misusing substances?

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
Miles J, et al. Methadone-exposed newborn infants: outcome after alterations to a service for mothers and infants. Child: care, health and development 2006 33(2): 206-212.[56]	Before and after retrospective cohort study EL = 2-	To describe the neonatal outcome in methadone-exposed infants and the results of follow-up before (1991-1994) and after (1997-2001) antenatal care was modified and altered the clinical management of these infants.	Country: UK All live births to women on methadone treatment at St. Mary's Hospital Central Manchester. 78 infants born in 1991-1994 98 infants born in 1997-2001.	In 1991-1994 antenatal care received by drug users followed normal routine at St. Mary's Hospital clinics with no additional support in the community. It comprised attending antenatal clinics after receiving an appointment by post. In 1997-2001 after the Drug Liaison Midwife (DLM) was appointed, all know pregnant drug users were notified to the DLM. Referrals in both	Data were collected for gestation at booking; re-admission to hospital for NAS or other conditions and follow-up for regular health checks of weight, length, and head circumference and routine assessments for congenital abnormalities and for growth and development impairment in the first 18-24 months.	In 1997-2001 the booking visit took place in the first trimester of pregnancy in 84 of 97 women (86.6%). In 1991-1994 data was available for 63 women, 37 (58.7%) had booked in the first trimester of pregnancy. 60% of women prescribed methadone in both study periods were polydrug users, while the remaining 40% used methadone only. In 1997-2001, the infants had less pharmacological intervention and spent less time in hospital with fewer admissions to the NMU, where they stayed for a shorter period compared with 1991-	Historical controls, difference in practice regarding admission to NMU. Different amounts of methadone taken. Funding: not reported

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				periods came from the Manchester Drug Service, general practitioners, midwives and doctors from antenatal clinics at local hospitals, Manchester Action on Street Health, Drug Advice and Support in Hulme, Social services, or the probation service, and some were self-referrals. At the first visit to an antenatal clinic, a consultant obstetrician or a senior registrar saw the woman and when possible the DLM would be there. The subsequent antenatal appointments were offered monthly. If a woman missed a clinic appointment, the DLM would carry out a home visit. At monthly meetings the DLM informed a consultant neonatologist		1994. In 1997-2001, the women had a higher dose of methadone, and there were more preterm births and more breastfed infants, while fewer infants had jaundice or convulsions compared with 1991-1994. The reasons for increased pre-term births were not clear as they would not be explained by a significant increase in pre-eclampsia, antenatal infections or caesarean sections between the two study groups.	

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				about forthcoming deliveries and any other relevant information. The DLM provided specialist advice regarding methadone treatment, care of the newborn and the advantages of breastfeeding. Neonatal care: In 1991-1994, all methadone-exposed infants were admitted to the neonatal medical unit (NMU). In 1997-2001, neonatal management was modified and in-service training in looking after these infants was offered to medical, midwifery and nursing staff by the DLM. Infants were usually admitted to a maternity ward, being transferred to the NMU on clinic grounds if they developed neonatal abstinence			

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				syndrome (NAS) that required treatment, or required specialist care because of preterm birth or low birthweight.			
Corse et al. Enhancing provider effectiveness in treating pregnant women with addictions. 1995. Journal of Substance Abuse Treatment 12[1], 3-12United States.[57]	Descriptive study. Participant observation and interview based. EL =3	To describe changes in caregiver attitude and behaviours toward substance-using pregnant women observed during the process of implementing an innovative model of enhanced antenatal care.	Country: USA, Philadelphia The study took place in an antenatal clinic staffed by nurse-midwives in a dense suburb serving a population largely covered by Medical Assistance. Data were gathered by the researcher through participant observation of the staff during staff training sessions and meetings on a continuous basis over an 18 month period. In addition interview were conducted with each of nurse-midwives (n=7) 9 month into CSAP demonstration project. Interviews were tape recorded, then were transcribed and analysed using the method of	Innovative model to prevent and treat substance abuse among pregnant women (CSAP project). A model of care was developed to enable these providers in prevention and early intervention for substance abuse among women of childbearing age. In this model nurse-midwife work closely with each woman and with on-site counsellors to provide comprehensive and integrated care addressing medical, addiction and psychological needs. The process of implementing of		Identified reoccurring themes : Training and Education Shifts in attitude: Education about the nature of addiction had a positive impact on staff behaviour and attitudes Increased knowledge of addiction: Education training and experience also resulted in a reduction of staff anxiety that clearly affected their behaviour. Structural change: Structural changes in the antenatal clinic also had a significant impact on nurse-midwives attitudes. First major instructional changes were the decision by the nurse-midwife practice to keep substance abusing women in their care (formerly were categorised as high risk and the care were handed	Very small sample size

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			constant comparison.	the model took place in large part at group meetings that included the entire staff of nurse midwives and psychological counsellors. Training were given to staff on the effect of various substances of abuse on the women and her developing fetus, the nature of addiction, and interviewing skill to obtain information about substance use from women attending antenatal clinic.		over to the physicians). These changes were resulted in two other institutional changes. 1. The institution of the care co-ordinated model, which increased continuity of the care. 2. Lengthen the appointment time and increased the frequency of the standard antenatal visit. 3. The third major structural change in the clinic was the addition of the on-site services to address addiction and other life issues. The nurse midwives had counsellor in the same physical space and within the same administrative system to see women in need of the treatment. This means the nurse midwives receive feedback from women's acceptance of the referral and has the opportunity for collaboration with the counsellor while continuing to play significant role in treatment. Two years after the programme was initiated the proportion of the women self reporting of	

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						drug misused to the nurse-midwife was increased from 24.4% to 70.8%.	
Burns et al. Methadone in pregnancy: treatment retention and neonatal outcomes. 2007. Addiction 102[2], 264-270[58]	Retrospective survey study EL=3	To examine the association between retention in methadone treatment during pregnancy and key neonatal outcome	Country: Australia The study used probabilistic record linage of the client database from New South Wales pharmaceutical Drugs of Addiction System (PHDAS) with midwives Data Collection (MDC) and Inpatient Statistics Collection (ISC) from 1992-2002.	There were 2993 births to women recorded as being on methadone at delivery from 1992 to 2002. Maternal and neonatal outcomes were compared for 3 groups of women: Group 1: The 'early entry' group. A group who entered continuous treatment at least one year prior to birth. n=1213 Group 2: 'Late entry' group. A group who entered continuous treatment in the 6 months prior to birth (with any pervious programme ending at least 1 year prior to birth). n=306 Group 3: The 'previous treatment' group. A group whose last treatment	First antenatal visit > 20 weeks. Neonatal outcome: Small for gestational age. Admission to neonatal intensive care and special care nursery. Gestational age < 37 weeks.	Late entrants were younger and less likely to have previous pregnancy of >20 weeks (p<0.001). Late entrants smoked more heavily; 62% vs. 55% in 'early entry' group and 55% in 'previous treatment' group. No significant difference between three groups in their ethnicity. Late entrants were most likely to first access antenatal services later in their pregnancy (p<0.001) First antenatal visit >20 weeks: Late entry (n=139, 51.9%) Early entry (n= 368, 34.4%) Previous treatment (n=221, 31.5%) Admission to NICU and SCN: Neonates born to mothers in the previous treatment group had the	As noted by the author lack of reliable information on methadone dosage or treatment policy was a major limitation to the study. Study funded by HERON (Health Evaluation and Research Outcome Network), a collaborating programme auspiced by the Institute for Health Research with the University of Sydney.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
				programme prior to birth ended at least one year prior to the birth. n=711		lowest admission rate to special care nursery (SCN) and neonatal intensive care unit (NICU) (p<0.001). Admitted to NICU and SCN: Late entry (n=19, 12.0%) Early entry (n= 63, 11.3%) Previous treatment (n=27, 4.9%) Birthweight: Women in the previous treatment group had the lowest number of low birth weight neonate (p<0.001). Late entry (n=306) median birth weight = 2823g. Early entry (n 1213) median birth weight = 2940g. Previous treatment (n=711) median birth weight = 3094g.. Gestational age <37weeks : Late entry n=75 (28.0%) Early entry n=196 (18.3%) Previous treatment n=99 (14.1%)	

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Neonatal abstinence syndrome: Late entry n=55 (20.5%) Early entry n=251 (23.4%) Previous treatment n=28 (4.0%)	
Armstrong et al. Perinatal substance abuse intervention in obstetric clinics decreases adverse neonatal outcomes. 2003. Journal of Perinatology 23[1], 3-9[59]	Retrospective cohort study EL= 2-	To evaluate the relationship between maternal substance abuse interventions during pregnancy, as provide by a large, community clinic-based programme, and subsequent neonatal outcome.	Country: USA 6774 women members of Kaiser Permanente medical care, Northern California Region, were screened for substance abuse from July 1995 to June 1998. Four groups were compared: Group 1: 'screened assessed and treated' (SAT), n=782 consisted of women who were screened and assessed by Early Start Programme and diagnosed as chemically dependent or substance-abusing by Early Start specialist and had at least one follow-up Early Start appointment. Group 2: 'screened	An obstetrics clinic-based antenatal substance abuse intervention programme known as Early Start. The programme provided women with screening and early identification of substance misuse problems, early intervention, ongoing counselling and case management by a licensed clinical therapist with expertise in substance misuse - the Early Start specialist.	Neonatal outcomes: Assisted ventilation Birth weight <2500 grams Gestational age <37 weeks NICU admission	The SAT and SA groups were similar on all maternal demographic variables (age, marital status, ethnicity, education and annual income) and there were no significant difference between two groups (p>0.02). The S group were similar to the SAT and SA groups in term of marital status, education and income but they were less likely to be younger than 19 years old and more likely to be black. Contact with antenatal services: The percentage of women who began antenatal care late, was significantly higher in all three substance abusing groups compared to the control (overall comparison p<0.001). The rate of late antenatal	Funding: not reported

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			and assessed'(SA) (n=348), consisted of women assessed and diagnosed as chemically dependent or substance-abusing by an Early Start Specialist but who, for a variety of reasons, did not have any subsequent early Start follow-up appointments. Group 3: 'screened only' (S) (n=262), consisted of pregnant women who were identified as substance abusers based on screening but, for a variety of reasons, were never assessed or treated by the Early Start programme. Women in group 3 had a positive universal toxicology screening test with either a positive screening questionnaire (n=108) or negative screening questionnaire (n=154). Group 4: 'control' (C) (n=5382), was			booking for the SAT women was significantly lower than the rate for the SA group (p=0.003). The SAT group had significantly higher median amount of antenatal care than SA, S and control groups (p<0.0001). Neonatal outcomes: The SAT group had lower rates than the SA group and S group for assisted ventilation, low birth weight and preterm delivery. NICU admission: All three substance-misusing groups had higher rates than the control group.	

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			composed of women with no evidence of substance abuse during pregnancy, defined as negative screening questionnaire and negative toxicology test.				

Q1b. What aspects of service organisation and delivery act as barriers to take up of antenatal services to women misusing substances?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Hall JL and van Teijlingen ER. A qualitative study of an integrated maternity, drugs and social care service for drug-using women. BMC Pregnancy and Childbirth 2006, 6:19[47]	Descriptive study EL = 3	Explores the experiences of women drug users who have received their prenatal care from a specialised multi-agency clinic.	Women, who were pregnant or who had had a baby in the past 3 years, and who were recent or current drug users, and who had had contact with the Aberdeen Clinic. Aberdeen, Scotland. 12 women participated.4 were pregnant at the time. All were aged between 19 and 36. Nearly all had previously been daily IV heroin users and several had also regularly used crack cocaine. All were on methadone prescription at the time of the interview.	Specialised multi-agency clinic.	Women's experiences of antenatal care.	Some aspects of the service were important to all interviewees: Attitude of staff Consistency of staff High level of support Reliable information Integrated care from different services. The women were very sensitive to their situation and needed confidentiality. To many it was impossible to face up to being pregnant because they felt so guilty about their drug use and the effect on the baby, For several this encouraged their drug use because it acted as a release. Aspects of care which were most highly valued were non-judgemental attitude of staff, reassurance and provision of reliable information, consistency of staff and high level of support in terms of frequency of visit and time given to each client.	Interviews with a small number of women. Retrospective. No comparator.
Jessup.M.A Extrinsic	Prospective descriptive	To examine the barriers to	Country: USA	Treatment programmes,	Psychosocial dimension	The major concern of the participants toward	Limitations of study:

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
barriers to substance abuse treatment among pregnant drug dependent women. Journal of Drug Issues Spring 2003, 33(2) , 285-304[200]	study Telephone interview EL=3	substance abuse treatment among pregnant and parenting drug dependent women.	36 pregnant and parenting women enrolled in residential antenatal substance misuse treatment programmes in north California were included in the study. 12 women were pregnant at the time and 24 had given birth to a child with in previous year.	classified residential, as drug free long term (treatment length >30days) and antenatal specific, allowed at least one child, newborn to six years of age, to accompany the mother into treatment. Women were recruited from 15 residential programs located in the community (6 urban, 4 suburban, 1 coastal, 1 rural)	(emotional state of participants). Participants' adoption to the programme care seeking.	disclosure of their drug use in pregnancy was: fear and worry about losing infant custody, arrest, prosecution, and captivity for use of drug during pregnancy (n=28; 78% for all categories of response) Other barriers to care included partner; domestic violence (n=14). Program based barriers identified: limit on the number and age of children who could accompany their mother into treatment (n=7); the state of opiate dependency as opiate dependent women, enrolled in narcotic treatment programs (methadone maintenance), described being viewed by residential programs as "too complex", as a result programme admission was either delayed or denied. (n=5) and the state of pregnancy (n=2). Poverty; homelessness; and imprisonment during pregnancy (n=11) were identified as additional barriers for the	Small size study. Telephone interviewing (time and cost restrictions) Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						participants in seeking antenatal care.	
Raeside,L.. Attitudes of staff towards mothers affected by substance abuse. 2003. British Journal of Nursing 12[5], 302-310[52]	Observational study (sample survey) EL=3	To determine nurses'/midwives' attitudes towards caring for mothers and infants affected by substance abuse and to examine the relationship between knowledge, education, experience and attitudes.	Country: UK A convenience sample of 50 nurses/midwives from a population of approximately 120 nurses/midwives in a 44 bedded regional neonatal unit in Scotland.	A self report questionnaire was utilized to measure nurses'/midwives' knowledge of & attitudes towards mothers affected by substance abuse.	Midwives' and nurses' attitudes towards women with a history of substance misuse. Midwives' and nurses' professional education and training. Descriptive statistics and comparative analysis were used to determine the relationship between variables.	71% (12/17) in the least negative attitude group had undertaken additional education in substance misuse, compared with 52% (11/ 21) of medium and 58% (7/12) of the most negative attitude group. All (12/12) of the most negative attitude group had completed a neonatal course, compared with 59% (10/17) of the most positive attitude group Group with the most negative attitude had the highest number of staff with more than 5 years experience 67% (8/12) as compared with the group with most positive attitude had the highest number 47% (8/17) of participants with less than 2 years of neonatal experience.	The results of the study are not conclusive and seem to suggest an association between neonatal training and length of experience with more negative attitudes towards substance misusing women.
Ramirez-Cacho, W.A. et al. Medical students' attitudes toward pregnant women with substance use	Prospective cohort study. EL=2+	To determine whether medical students' attendance at a clinic designed for pregnant substance misusers would alter their comfort levels and attitudes	Country: USA 104 medical students assigned into control (n=52) and intervention (n=52) groups depending upon the availability of rotations.	All students participated in a confidential survey at the beginning and midpoint of their clerkship by which time the study group had rotated on the	A 24 question survey involving students' comfort levels (8 statements) and attitude toward women with substance use disorder in general	Before clinic experience: No significant differences were identified between the scores of the groups. After the clinic experience:	Funding: Substance Abuse and Mental Health Service Administration (SAMHSA)

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disorders. 2007. American Journal of Obstetrics and Gynecology 196[1], 86-5[61]		towards the needs of this population.		obstetrics services and attended a special antenatal clinic for substance using women. The substance misuse team consisted of maternal-foetal medicine specialist, trained psychiatrist, rehabilitative counsellors, nurses and social workers.	(8 statements) and during pregnancy (8 statements). Responses were scored on a Likert scale with 1 signifying "strongly disagree" and 5 signifying "strongly agree"	A significant increase in the score (max 40) in the comfort level (before 27.9 ± 6.0 ; midpoint 33.0 ± 5.6 difference in scores ,5.1; 95% CI 3.5 to 6.7, p<0.001) Over all attitude of the study group towards women with substance abuse disorder were not affected.	
Logan, T.K. et al. Rural and small-town attitudes about alcohol use during pregnancy: a community and provider sample. 2003. Journal of Rural Health 19[4], 497-505[62]	Observational study (sample survey) EL= 3	To examine rural/small town antenatal service providers' perceptions of barriers to assessment and intervention with pregnant substance abusers.	Country USA Antenatal care providers (nurses, doctors and health educators) from 13 counties (n=138)	N/A	Perceived barriers to help seeking for alcohol use during pregnancy	Lack of available resources/ facilities/ lack of treatment facilities=54.3% Denial/unwillingness to quit or receive help=31.2% Transportation=30.4% Cost/Lack of insurance=18.8% Lack of knowledge of dangers of alcohol=17.4% Lack of support from families and friends=11.6% Social stigma=10.9% Confidentiality=10.1% Lack of assessment by providers=8% Fear of legal action/prosecution/social service= 6.5% Fear of partner/spouse abuse if help is sought=5.8%	Reflects opinions of healthcare providers and does not represent any documented actual barriers they have come across. Not a robust evidence
Haller DL, et al. Factors	Cohort study	To examine whether specific	Pregnant women referred by community	Centre for Perinatal Addiction (CPA)	Demographic information,	Demographic characteristics did not	Self-selecting comparator

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
influencing treatment enrolment by pregnant substance abusers. The American Journal of drug and alcohol abuse, vol.29, no.1 pp117-131, 2003[60]	EL = 2-	psychopathology and addiction severity differentiate pregnant substance abusers who enrol in vs. decline treatment in a model prenatal addictions day treatment program.	agencies/practitioners who were 18 years and older, had a current alcohol or drug use disorder based on DSM criteria. Women who were newly abstinent were also considered eligible for admission due to their high risk for relapse. Of those qualifying for admission, 102 enrolled and 23 declined treatment services but agreed to complete the research. Virginia, USA.	treatment program provided comprehensive services (3 days per week for 5 months) to substance abusing women, their neonates, and other preschool aged children.	medical history, substance use history, psychosocial history, and psychiatric/mental status. The Beck Depression Inventory (BDI) is a self-report questionnaire that measure cognitive, somatic, and neuro-vegatative symptoms of depression. The Symptom Checklist-90-R is a self-administered questionnaire with the following scales: 1.somatization, 2. obsessive compulsive, 3. interpersonal sensitivity, 4. depression, 5. anxiety, 6. hostility, 7. phobias, 8. paranoia, and 9. psychoticism. The Shipley Institute of Living Scale (SILS) a self-	significantly differ between pregnant substance users who accepted vs. declined treatment. The mean age of the participants was 27.15 years (SD 4.49), most were single (93%), African Americans (85%) with an average of 1.58 (SD=1.3) living children. Although 85% were high school graduates, the mean IQ was in the low average range, 96% were currently unemployed, and 82% were in the lower socioeconomic status. The mean gestational age at intake was 25.58 weeks (SD 8.05) There was a trend for women who enrolled in the treatment to reported higher rates of childhood sexual assault/molestation (n=27, 32%), compared with those who declined treatment (n=3, 13%, p=0.07). More women who accepted treatment reported 'crack' cocaine as their primary drug (84%), compared with women who declined treatment	groups

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					administered test that provides an estimate of general intelligence. The Millon Clinical Multiaxial Inventory-II (MCMI-II) is a 164-item self-administered, objective questionnaire that provides information about Axis I and II psychiatric disorders, personality style and functioning.	(56%, p=0.003). Legal problems were particularly common among women who enrolled in the CPA program with 24% being on probation, 5% on parole, and 17% having pending court dates. In contrast only 13% of women who declined treatment had pending court dates, whereas 87% reported no current legal problems. Treatment acceptors had greater psychological distress than refusers (Symptom checklist 90R, 90 item self-administered questionnaire). BDI scores were significantly higher for women who enrolled in treatment, compared to those who declined services. Women who enrolled in treatment had higher mean BR scores on the Drug Dependence scale on the MCMI-II scores compared with women who declined treatment. However, the women who actually met	

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						criteria (BR>74) for presence of an Axis I disorder did not significantly differ for women who accepted vs. declined treatment.	
Tandon,S.D. et al. Formative evaluation of home visitors' role in addressing poor mental health, domestic violence, and substance abuse among low-income pregnant and parenting women. 2005. Maternal and Child Health Journal 9[3], 273-283[63]	Cross-sectional study EL=3	To assess "home visitors" effectiveness in communication about, and responding to, substance abuse and other problems among pregnant and parenting women.	Country: US Sample: 189 out of 245 mothers nominated by home visiting managers who had "best/strongest" relationship with program of all families enrolled, and who had been active in the program for at least 3 months. (in accordance to the Jacobs' five-tired approach to evaluation to assess whether the program has achieved its goal under ideal circumstances). Interviews were conducted in 2002 by 3 trained African American women who had lived in the same neighbourhood. Sample details: All women were African American; 63% had not finished high school; 42% first time mothers;	Home visitors were paraprofessionals with minimum qualification high school or equivalent and nursing students supervised by program managers who are Masters in health or social service-related field plus 3 years of client service experience, or a bachelor degree and 5 years of experience who visited at least every 2 weeks for new families and less frequently as families achieve milestones. Programme content is guided by individualized support plan.	Women's Interviews: Woman scoring positive for service need Service received by woman scoring positive Women receiving service, those referred by home visitors Home visitors communication about client risks Home Visitors Survey: Percentage reporting that they felt adequately trained Percentage reporting that they felt personally effective	Women's Interviews: (Risk Area Substance Abuse) Women scoring positive for service need: 15% (29/189) Relevant/appropriate service received by woman scoring positive 21%(6/21) Women receiving service, those referred by home visitors 17%(1/6) No significant difference in communication frequency for substance use whether women scored positive for this risk or not. Home Visitors Survey: (Risk Area Substance Abuse) N=45 (90% response rate). 43 paraprofessionals; 2 nursing students. Reported being adequately trained:	Funding: The Safe & Sound Initiative of Baltimore, The Johns Hopkins University Institutional Review Board as well as the hospitals were families were recruited and approved for the study.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			32% single with no current partner; 66% either married (7%) or living with current partner (59%). All home visitors from BCFSS funded home visiting programs (n=50) were asked to complete a survey to assess their perception of job related training and effectiveness for each of the 3 risk areas.		Association between training, adequacy and personal effectiveness Need of substance treatment ascertained during interviews using a CAGE or DIS and women were asked to indicate the frequency of communication by home visitors on each risk area including substance use on a 5 point Likert scale (Almost Always, Usually, Half the times, Sometimes, or Almost never).	76% (31/45) Reported feeling personally effective: 89% (40/45) Association between training adequacy and personal effectiveness: Odds Ratio 1.7 p = 0.59 Majority of women reported that they had talked substance abuse and other risk areas at least "sometimes". No difference was found in the frequency with which home visitors talked to mothers about substance abuse, based on whether mother scored positive or negative for the risk of substance abuse (U=2105, Z=-0.80, p=0.43).	
Howell, M.E and Chasnoff, I.J. Perinatal substance abuse treatment Journal of Substance Abuse Treatment 1999	Retrospective descriptive study. Focus groups EL= 3	To identify factors in substance misusing pregnant women's lives that facilitate and obstruct their treatment process and successful program components to address the needs of this high risk	Country: USA 33 focus groups were conducted with pregnant women in substance misuse treatment and their providers, across 5 states. Focus groups included three types of	Secondary analysis of focus group data that had been conducted as a part of larger evaluation funded by the Health Care Financing Administration, and conducted across 5 USA states (Maryland,	Emergent themes: 1. Client characteristics. 2. Inter-organizational linkages. 3. Outreach, screening and identification. 4. Treatment	Main themes identified: 1. The threat of losing custody of their children or imprisonment was reason for many of the women to go to the treatment programme. Women were reluctant to go for antenatal care if they feared being reported to child protection service.	There is lack of consistency between the study's data, its conclusions and stated policy implications Funding: The study was supported by U.S Government

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l17 (1-2):. 139-148[64]		population.	participants; 1. Programme administrator(5 groups, n=25 participants) 2. Programme providers(16 groups, n=147 participants) 3. Pregnant and postnatal women participating in the treatment programs (12 groups, 88 women). Participation in the study was voluntarily and the participants were not statistically representative of the client or provider staff.	Massachusetts, New York, South Carolina, and Washington). The work was undertaken to inform the development and implementation of programs to provide enhanced services and coordinated prenatal and substance misuse care.		2. Linkage problems lead to delay in treatment admission (health care provider did not have full knowledge of the services available throughout the system). 3. Providers faced many logistical and safety issues while trying to conduct "street" outreach among drug misusing women. Media approaches for outreach purposes were not effective because of high levels of denial and literacy incapability in the population. Many providers thought the most effective outreach strategy was through word-of-mouth from a substance misuser, who had succeeded in treatment. 4. Lack of range of treatments made it difficult to match appropriate treatments to women's individual needs. One of the major problems with residential programme was the issue of childcare for women with small children.	(Health Care Financing Administration for the Evaluation of Demonstrations to Improve Access to Care for Pregnant Substance Abusers).
Finny lamb, C.E,	Descriptive	To identify	Country: Australia	Pregnant women	Difficulties	Difficulties preventing	Small sample

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et al. Exploring experience and attitude about health care complaints among pregnant women, mothers and staff at an opioid treatment service. Australian Health Review February 2008, 32(1): 66-75. [65]	study. Semi structured interview and focus group. EL =3	difficulties and barriers that opioid dependent women have in making health care complaints during their pregnancy and early motherhood and also difficulties that staff in the opioid treatment service have in receiving and responding to these complaints.	A total of 13 opioid-dependent women and 10 health staff at opioid treatment service participated in the study. Study setting: Opioid Treatment Service in a hospital setting in New South Wales (Sydney).	who were diagnosed as opioid dependant, were approached by a research officer and invited to participate in the study. All staff members were also invited to participate in the study. A focus group (n=7) with health staff were conducted. Two semi-structured interviews were conducted with 3 staff who could not attend the focus group.	preventing women making complaints. Attitudes of women. Health care staff attitudes to handling complaints.	women making complaints: 1.Practical difficulties in making formal written complains (illiterate), 2. Anticipation of not being or taken seriously. 3. Fear of repercussions including infant removal. Staff attitudes to handling complaints: staff may adopt protective responses in handling complaints; dismissing the complaint or assessing the validity of the complaints on the basis of character, rather assessing the complaint on a situation by situation basis.	size. Low attendance of women in focus group necessitating need for individual and paired interviews. Data from opioid dependent women, gathered mainly by in depth interview. Funding: The study was funded by New South Wales (NSW) Department of Health, Australia.
Phillips D, et al. Factors that influence women's disclosures of substance use during pregnancy: a qualitative study of ten midwives and ten pregnant women. Journal of drug issues 2007[66]	Descriptive study EL = 3	This study examines the factors that influence self-disclosure of substance use by pregnant women from the perspectives of both the midwife and of the pregnant woman.	10 midwives from a general clinic, a booking clinic, a women's alcohol and drug service, and a young women's clinic. And 10 pregnant women aged over 18 years, able to speak English, not deemed aggressive or substance affected on the day, and showed an interest in finding out more about the study. Semi-structured individual	No specific intervention – includes different models of AN care.	Factors that influence self-disclosure of substance use by pregnant women.	Five pregnant women were using illicit drugs (including heroin, marijuana, and amphetamines) and attended the alcohol and drug service for antenatal care. Five were recruited from the young women's clinic and none reported using illicit substances. Six main themes: practice style, assessment of substance use, environment and privacy	Small study, not in the UK.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			interviews. Melbourne, Australia			issues, child custody, health of the baby, and continuity of care. Practice style: non-judgemental approach towards substance use and other lifestyle factors. Midwives felt it was important to portray themselves as supportive and caring rather than confrontational and intimidating. Assessment of substance misuse: All of the midwives agreed that questions about substance use were received better by women if asked later in the interview after a rapport has been established. The midwives advocated for direct questions about drug use in order to get direct and detailed responses. They suggested that there needs to be clear differentiation between types of drugs and even how drugs are used. Some midwives found it difficult to ask about substance use and to	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						differentiate between different types of drugs. Highlighted how important it was not to make assumptions about who might use substances. The environment and privacy: Some midwives spoke about privacy as an issue that influenced disclosure, the setting in which the interview is taking place, if the door is open or there are just curtains. Further complications when partners or family members accompany women. Child Protection Issues: One of the major barriers to pregnant women disclosing their substance use, as reported by midwives, was fear of having their child taken by child protection agencies. Although often notification to child protection was not seen as a negative because they receive the intensive support they need to parent successfully.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Health of the baby: A main theme that emerged as a motivating factor for women to seek health care and disclose substance misuse was the health of their unborn baby. Continuity of care: For the women, continuity of care was viewed as essential and also meant that they did not need to keep retelling their story.	

Q.2 What aspects of service organisation and delivery improve contact with antenatal services throughout pregnancy for women misusing substances?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Goler NC et al. Substance abuse treatment linked with prenatal visits improves perinatal outcomes: a new standard. Journal of perinatology (2008) 28, 597-603[67]	Retrospective cohort study EL = 2-	To provide a comprehensive evaluation of Early Start, an obstetric clinic-based antenatal substance abuse treatment programme, on maternal and neonatal outcomes	Country: USA 49,985 women at Kaiser Permanente Northern California (KPNC) who completed Early Start Prenatal Substance Abuse Screening Questionnaires between Jan 1999 and June 2003. Study eligibility required that the pregnant women had at least one urine toxicology screening test during the pregnancy.	Early Start has 3 components: Placing a licensed substance abuse expert in the Obstetrics and Gynaecology department, whose appointments for assessment and treatment are linked to the women's antenatal care appointments; universally screening all women for drugs and alcohol by questionnaires and by urine toxicology testing; educating all providers and patients about the effects of drugs, alcohol and cigarette use in pregnancy. Group 1, n= 2073, screened, assessed and treated at Early Start (at least 1 follow-up appointment) Group 2, n=1203, screened and assessed, positive for	"Median" amount of antenatal care – defined as number of antenatal visits divided by length of pregnancy (weeks). Maternal outcomes: caesarean delivery, preterm labour and placental abruption. Neonatal outcomes: Intrauterine fetal death, neonatal-assisted ventilation, low birth weight (<2500g), preterm birth (<37 weeks), neonatal intensive care unit admission, infant rehospitalisation with 30 days of discharge.	The mean age in group 1 was 24.9 years and 25.4 years in group 2. Ethnicity % in group 1 was 31.6% white, 26.5% black, 12.3% Hispanic, 4.8% Asian, 21% other. In group 2 was 36.9% white, 20.1% black, 14.3% Hispanic, 5.2% Asian, 19.6% other. The proportion of white and black women was statistically significantly different between group 1 and group 2. 42.8% were married in group 1, and 49.4% in group 2, $p<0.05$. 48% of group1 had ≤high school, compared to 42.5% in group 2, $p<0.05$. 41.9% of group 1 had an annual income <$25,000, compared to 33.8% of group 2, $p<0.05$.	Retrospective study, not randomised. May get better outcomes in the treatment group because women who initially have higher risk may be more acutely aware of the real risks of their substance abuse, possibly due to having already experienced negative consequences. Therefore they might be more motivated to return for care. Women who admit to use might be more motivated to stay clean in pregnancy.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				substance misuse but did not have any subsequent Early Start appointments Group 3, n=156, screened only, positive for drug misuse but not assessed or treated in Early Start Group 4, n=46,553, controls, no evidence of substance abuse There was otherwise no difference in the antenatal care program for the 4 groups.		22.2% of group 1 entered prenatal care late (>13 weeks), 26% of group 2, p<0.05. "Median" amount of antenatal care: In group 1 the median was 0.28 (0.23-0.33), and group 2 was 0.26 (0.21-0.32); group 3 was 0.25 (0.15-0.32); Group was 4 0.26 (0.21-0.31)). Gestational age (<=36 weeks: Group 1: 8.1% vs. Group 2: 9.7%) vs. Group 3 (17.4%), NS. Mean birth weight: Group 1: 3.352kg vs. Group 2: 3.356kg vs. Group 3 3.182kg, NS. No significant differences were observed between Groups 1 and 2 for other maternal and neonatal outcomes reported. <37 weeks' gestation: Group 3 17.4% vs. Group 1 8.1%; p<0.05.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Birth weight <2.500kg: Group 3 12.4% vs. Group 1 6.5%; p<0.05. Placental abruption: Group 1: 0.9%; Group 2: 1.1%; Group 3: 6.5%; Group 1 vs. Group 3 p<0.001. Group 2 vs. Group 3 p<0.05. Group 1 vs. Group 2 NS. Intrauterine fetal death: Group 1: 0.5%; Group 2: 0.8%; Group 3: 7.1%); Group 1 vs. Group 3 p<0.0001. Group 2 vs. Group 3 p<0.0001. Group 1 vs. Group 2 NS. Other neonatal and maternal outcomes were not statistically significantly different. Whilst women in the treatment group showed a marked reduction in substance misuse a similar reduction was seen for women in Group 2 who were assessed but did not receive substance misuse treatment. A	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						reduction was also seen in some areas for Group 3.	
Armstrong et al. Perinatal substance abuse intervention in obstetric clinics decreases adverse neonatal outcomes. 2003. Journal of Perinatology 23[1], 3-9[59]	Retrospective cohort study EL= 2-	To evaluate the relationship between maternal substance abuse interventions during pregnancy, as provide by a large, community clinic-based programme, and subsequent neonatal outcome.	Country: USA 6774 women member of Kaiser Permanente medical care, Northern California Region, were screened for substance abuse from July 1995 to June 1998. Four groups were compared: Group 1: 'screened assessed and treated' (SAT), n=782 consisted of women who were screened and assessed by Early Start Programme and diagnosed as chemically dependent or substance-abusing by Early Start specialist and had at least one follow-up Early Start appointment. Group 2: 'screened	An obstetrics clinic-based antenatal substance abuse intervention programme known as Early Start. The programme provided women with screening and early identification of substance abuse problems, early intervention, ongoing counselling and case management by a licensed clinical therapist with expertise in substance abuse- the Early Start specialist.	Neonatal outcomes: Assisted ventilation Birth weight <2500 grams Gestational age <37 weeks NICU admission	The SAT and SA groups were similar on all maternal demographic variables (age, marital status, ethnicity, education and annual income) and there were no significant difference between two groups (p>0.02). The S group were similar to the SAT and SA groups in term of marital status, education and income but they were less likely to be younger than 19 years old and more likely to be black. The percentage of women who began antenatal care late, were significantly higher in all three substance abusing groups compared to the control group. (p<0.001). The rate for women in the SAT group significantly lower than the rate for the SA group (p=0.003).	Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			and assessed'(SA) (n=348), consisted of women assessed and diagnosed as chemically dependent or substance-abusing by an Early Start Specialist but who, for a variety of reasons, did not have any subsequent early Start follow-up appointments. Group 3: 'screened only' (S)(n=262), consisted of pregnant women who were identified as substance abusers based on screening but, for a variety of reasons, were never assessed or treated by the Early Start programme. Women in group 3 had a positive universal toxicology screening test with either a positive screening questionnaire (n=108) or negative screening questionnaire			Women in the SAT group had significantly higher median amount of antenatal care than SA, S and control groups (p<0.0001). Women in the SAT group had lower rates than the SA group and S group for assisted ventilation, low birth weight and preterm birth. SAT group compared with controls: Assisted ventilation: OR 1.2 (95% CI 0.6 to 2.3), p=0.56. Birthweight < 2500g: OR 1.3 (95% CI 1.0 to 2.1), p=0.05. Gestational age<37 weeks: OR 1.3 (95% CI 0.9 to 1.8), p=0.11. SA group compared with controls: Assisted ventilation: OR 3.1 (95% CI 1.7 to 5.7), p=0.0003. Birthweight < 2500g: OR 2.4 (95% CI 1.6 to 3.7), p=0.0001. Gestational age<37 weeks: OR 1.6 (95% CI	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			(n=154). Group 4: 'control' (C) (n=5382), was composed of women with no evidence of substance abuse during pregnancy, defined as negative screening questionnaire and negative toxicology test.			1.1 to 2.4), p=0.02. S group compared with controls: Assisted ventilation: OR 2.0 (95% CI 0.9 to 4.3), p=0.07. Birthweight < 2500g: OR 2.5 (95% CI 1.6 to 3.9), p=0.0001. Gestational age<37 weeks: OR 1.7 (95% CI 1.2 to 2.8), p=0.006. Babies born to women in all three substance misusing groups had higher rates of admission to NICU than those in the comparison group.	
Carroll et al. Improving treatment outcome in pregnant, methadone-maintained women. Results from a randomized clinical trial. 1995. American Journal on Addictions 4[1], 56-59United States.[68]	Prospective randomised control trial EL=1-	To compare enhanced vs. standard methadone maintenance for pregnant opiate-addicted women.	Country: USA All pregnant women enrolled in the methadone maintenance program of the Division of Substance Abuse at Yale- New Haven hospital between October1990-September 1992 were screened and invited to participate in the study. A total of the 20 women provided	Enhanced methadone maintenance program. The enhance treatment program offered weekly antenatal care by a nurse midwife, weekly relapse- prevention group, positive contingency award for abstinence (women could earn $15 weekly for three consecutive negative urine screens), and provision of	Maternal urine toxicology screen Number of antenatal visit Neonatal outcome: Gestational age Birth weight Length of infant remained in hospital for treatment.	The two groups were comparable for age, employment, marital status, number of previous pregnancies and daily methadone dose. Women in both groups averaged 23 weeks pregnant in the study, provided an average of 45 urine specimens and attended weekly counselling sessions 71% of the time. Mean methadone dose throughout the study	Very small scale study with low statistical Power. Funding: Supported by National Institute on Drug Abuse Grants.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			informed consent were randomly selected. n=6 women were excluded from the study. n=7 women were randomly allocated to the standard treatment group and others n=7 to the enhanced treatment group.	therapeutic child care during treatment visits. Standard treatments were consisted of daily methadone medication, weekly group counselling, and three times weekly toxicology screening.		were 50 mg and averaged 55 mg at delivery. Women in the enhanced program had an average of 15 antenatal visits, whereas women in standard treatment group had an average of 5 visits. Women in the enhanced program tended to have longer gestation times (median: 40 vs.38) and larger babies (median: 3.348 vs.2951 grams). No difference in two groups with respect to percentage of maternal urine toxicology screen positive for cocaine, illicit opiates, or any other drugs.	
Chang et al. Improving Treatment Outcome in Pregnant Opiate-Dependent Women. 1992. Journal of Substance Abuse	Retrospective cohort study EL=2-	To compare outcomes for pregnant opiate-dependent women enhanced methadone maintenance with those for a group receiving treatment as usual.	Country: USA, Boston Outcomes of n=6 pregnant methadone-maintained opiate dependant subjected in enhanced treatment were	Enhanced methadone maintenance program. The enhance treatment program offered weekly on-site antenatal care, weekly relapse-prevention group, positive contingency	Drug use during pregnancy Numbers of antenatal visits Neonatal outcome: Gestational age. Birth weight	The two groups were highly comparable for age, years of education, minority group status, marital status, number of previous pregnancies and children, cigarette use and daily methadone dose. Both groups began methadone treatment	Small sample size. Sample size bias: 32 pregnant opiate-dependant women were invited to participate in

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Treatment 9[4], 327-330[69]			compared to n=6 women received conventional methadone maintenance. The conventional treatment as usual was consisting of daily methadone medication, counselling, and random urine toxicology screening.	award for abstinence (women could earn $15 weekly for three consecutive negative urine screens), and provision of therapeutic child care during treatment visits in addition to treatment as usual. Standard treatments were consisted of daily methadone medication, weekly group counselling, and three times weekly toxicology screening.		average of 10 weeks after conception. Women in enhance treatment program demonstrated lower percentage of urine screens positive for overall illicit substance use (59% vs. 76%), had more antenatal care (8.8 vs. 2.7 visits), longer gestation (38.2 vs. 35.7 weeks), deliver heavier infants (median birth weight 2959 vs. 2344 grams). No comparative statistical analysis reported.	the study, 12 who agreed to participate in the study could have been more motivated for the treatment. Funding: Supported by National Institute on Drug Abuse Grants.
Svikis, D. et al. Drug dependence during pregnancy. Effect of an on-site support group. 1998. Journal of Reproductive Medicine 43[9], 799-805[70]	Retrospective cohort study EL=2-	To examine clinical and economic efficacy of an onsite support group for drug abusing pregnant women.	Country: US 121 pregnant women registered for antenatal care before 28th week, in an inner city academic hospital obstetric clinic during a 16 month period from 1989 to 1990. All women screened positive for alcohol and/or drug use based on clinicians' interview or	Self reporting women or women with the positive urine toxicology for illicit drugs were referred for further evaluation by a substance abuse counsellor. The evaluation included CAGE screening questions and the Addiction Severity Index (ASI). Women in need of substance misuse treatment were referred to a once a	Women were categorized as: 1. Attenders (n=54) who attended at least two or more support group meetings. 2. Non-attenders (n=67) who attended none or one support group meeting. Maternal outcomes: No. of antenatal visits; recent self reported maternal alcohol use (at birth); positive urinalysis drug toxicology at birth.	Maternal outcomes: No. of antenatal visits 8.7 in support group attenders vs. 6.8 in non-attenders (p= 0.002) Recent self reported maternal alcohol use (at birth) no significant difference observed. (38% in support group attenders vs. 54% in non-attenders) Positive urinalysis drug toxicology at birth no significant difference observed	The group selection was based on women's self selection and although both groups have similar socio-demographic profile the difference between motivation levels could be a potential confounder. Funded

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			urinalysis during toxicology at first antenatal visit and had labour and birth records available for chart review.	week on-site support group in addition to one of the several neighbourhood drug treatment programmes. The support group was led by a substance abuse counsellor. Group content included: Discussion of target topic Establishment of social support networks Behavioural contracting. In order to minimize barriers to care lunch was provided, transportation cost were covered by the hospital and women were allowed to bring their preschool children with them. The support group meetings were scheduled immediately before obstetric clinic and to maintain confidentiality no significant others were permitted in the	Neonatal outcomes: Estimated gestational age at birth (wks); birth weight (kg); low birth weight (<2.500 kg); Apgar Score (1 min); Apgar Score < 6 at 1 min; Apgar Score at 5 min; Apgar score < 6 at 5 min; meconium staining.	(48% in support group attenders vs. 54% in non-attenders) Neonatal outcomes: Estimated gestational age at birth (wks) No significant difference observed (38.4 in support group attenders vs. 37.5 in non-attenders) Birth weight 3.137 kg in support group attenders vs. 2.805 kg in non-attenders (p= 0.002). Low Birth Weight (<2.500 kg) (15% in support group attenders vs. 25% in non-attenders) (no significant difference) Mean Apgar Score at 1 min: 7.9 in support group attenders vs. 7.2 in non-attenders (p=0.02) Apgar Score <6 at 1 min: 12% in support group attenders vs. 28% in non-attenders (p= 0.04).	through internal institutional support.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				meetings.		Mean Apgar Score at 5 min: no significant difference observed Apgar Score <6 at 5 min: no significant difference observed Meconium staining: no significant difference observed	
Funai, F.E. at al Compliance with prenatal care visits in substance abuser. The Journal of Maternal- fetal and Neonatal Medicine 2003. 14: 329-332. [71]	Retrospective cohort study Review of medical records EL= 2-	To determine whether pregnant inner city substance abuser, cared for by a multidisciplinary team could achieve a similar number of missed appointments and similar pregnancy outcomes in comparison with a low-risk population.	Country: USA A sample of 97 women with uncomplicated pregnancies receiving antenatal care at Bellevue hospital (New York) over a 7 year period (1994-2001), was chosen by random and compared to the 88 substance misusing women (convenience sample) cared for in a multidisciplinary setting and giving birth at the same hospital over the same period. Study group (substance abusers) were significantly older (p< 0.0001)	Multidisciplinary setting (offered private waiting area, meals, transportation and "public recognition of achievement") During their antenatal visit , women offered substance abuse counselling, family planning advice, nutrition education and HIV education.	Number of antenatal care appointments. Birth weight	Substance misusing women attended fewer antenatal visits than obstetrically low-risk women (86.6 vs. 94.2, p<0.0005). Substance misusing women missed significantly more appointments than the comparison group (1.6 vs. 0.7; p< 0.0005)but this difference is not clinically significant (less than 1 visit difference) Substance misusing women had babies that were similar in size to those born to women in the comparison group (3.237kg. vs. 3.346kg; p=0.24).	Authors acknowledge study limitation that the two groups differed with regard to race. Funding: The study was internally funded by Yale University School of Medicine, New Haven, Connecticut, USA

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			than the comparison group; had more previous pregnancies and children. Greater percentage of black women among study group with fewer Asian and Hispanic women (54% Black in study group vs. 8% in comparison group).				
Little BB et al. Treatment of substance abuse during pregnancy and infant outcome. American Journal of Perinatology, vol.20, no.5 2003[72]	Retrospective matched cohort study EL=2-	The purpose of the study was to investigate and analyse the effects of residential substance abuse treatment during pregnancy on maternal and infant health outcomes.	Country: US All clients who entered a residential substance abuse program for pregnant and postpartum women were eligible for inclusion in the study (n=95) during 1993 to 1998. Those who were in the programme at the time of giving birth and for whom records could be found were included in the present analysis (n=55).	Residential substance abuse treatment program for pregnant and postpartum women funded by the centre for substance abuse treatment. None of the women in either control group received substance abuse treatment or case management services, although they were available through the hospital social services department.	Number of antenatal care visits. Time spent in programme. Primary and secondary substance of abuse. Birth weight, length, head circumference, estimated gestational age (EGA), Apgar score. Maternal complications: gonorrhoea, hepatitis C, genital herpes, premature rupture of membranes, syphilis, birth <37weeks.	The number of antenatal care visits differed significantly between women in the intervention group (mean = 6.7, sd = 1.3) and those in the positive control group (mean =1.3, sd = 3.4) ($p<0.01$), but not between women in the intervention group and negative controls (mean = 5.6, sd = 2.7). The number of women who had no antenatal care visits was significantly higher in the positive control group (11%) compared with the treatment group (3%) ($p<0.01$).	Physicians were not blinded to treatment status and knowledge of the mothers' treatment status could have influenced physician diagnosis and treatment.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			2 comparison groups were used: 1. Substance abusers who received no treatment programme during pregnancy (positive control group) and 2. Pregnant women who were not substance misusers (negative control group). Women in the intervention group were matched with controls on ethnicity. The positive control group was matched to women in the intervention group on primary and secondary substances of abuse, including tobacco use. Ethnicity: 45.5% black, 41.8% white, 10.9% Hispanic, 1.8% native American. The socioeconomic status of the		Infant complications: anaemia, apnea, bradycardia, congenital syphilis, heart murmur, bilateral hydrocele, hyperbilirubinaemia, hypoglycaemia, hypotonia, grade 1 intraventricular haemorrhage, jittery, lethargic, meconium, premature birth, respiratory distress syndrome, umbilical hernia ~1cm.	No difference was found in the number of antenatal care visits between the negative control group (6%) and the treatment group. The primary drug choice for clients in the substance abuse treatment programme was cocaine (56.1%), followed by heroin (15.8%), alcohol (10.5%), marijuana (8.8%), methamphetamine (7.0%), and other drugs (1.8%). Average length of time in treatment programme before giving birth was 11.7 weeks (range 1 to 228 days). Only one infant (EGA 40 weeks) went to the neonatal intensive care unit. 2 infants in the treatment group were positive for a substance of abuse at birth, both were born to women who were in treatment for<48 hours prior to child birth.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			treatment group and control groups was similar because all received medical care as indigent patients.			In the treatment group vs. the positive control group mean birth weight was 3237g vs. 2800g. Mean birth length was 48.8cm vs. 47.9cm (NS). Mean head circumference was 33.8 vs. 32.6cm ($p<0.01$). The mean EGA was 38.9 weeks in the treatment group, compared to 38.0 in the positive control group ($p=0.05$), and 39.2 weeks in the negative control group (NS) No infant in the treatment group contracted a vertically sexually transmitted disease (STD), although 30% of the mothers had STDs for which infants were at risk and treated prophylactically. One infant in the positive control group had congenital syphilis. The frequency of individual complications did not differ between groups.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						However, the total number of maternal perinatal complications was significantly higher in treatment (n=12) and positive control groups (n=11) compared with the negative control group (n=1) ($p<0.0001$) The frequency of individual perinatal infant complications was not increased in frequency in any group. The total number of perinatal infant complications was increased in the treatment group (n=25) compared with the positive (n=10) and negative (n=6) control groups. For every 10 weeks the mother stayed in the program, birth weight increased by 340g and EGA by 1 week.	

Q.3 What additional consultations and/or support should be provided to women misusing substances, their partners and families in order to improve pregnancy outcomes? (Additional here means over and above that described in the NICE Antenatal care guideline).

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Miles J, et al. Methadone-exposed newborn infants: outcome after alterations to a service for mothers and infants. Child: care, health and development 2006 33(2): 206-212.[56]	Before and after retrospective cohort study EL = 2-	To describe the neonatal outcome in methadone-exposed infants and the results of follow-up before (1991-1994) and after (1997-2001) antenatal care was modified and altered the clinical management of these infants.	Country: UK All live births to women on methadone treatment at St. Mary's Hospital Central Manchester. 78 infants born in 1991-1994 98 infants born in 1997-2001.	In 1991-1994 antenatal care received by drug users followed normal routine at St.Mary's Hospital clinics with no additional support in the community. It comprised attending antenatal clinics after receiving an appointment by post. In 1997-2001 after the Drug Liaison Midwife (DLM) was appointed, all know pregnant drug users were notified to the DLM. Referrals in both periods came from the Manchester Drug Service, general practitioners, midwives and doctors from antenatal clinics at local hospitals, Manchester Action on Street Health, Drug Advice and Support in Hulme, Social services, or the probation service, and some were self-referrals. At the first visit to an antenatal	Data were collected for re-admission to hospital for NAS or other conditions and follow-up for regular health checks of weight, length, and head circumference and routine assessments for congenital abnormalities and for growth and development impairment in the first 18-24 months.	In 1997-2001 the booking visit took place in the first trimester of pregnancy in 84 of 97 women (86.6%). In 1991-1994 data was available for 63 women, 37 (58.7%) had booked in the first trimester of pregnancy. 60% of women prescribed methadone in both study periods were polydrug users, while the remaining 40% used methadone only. In 1997-2001, the infants had less pharmacological intervention and spent less time in hospital with fewer admissions to the NMU, where they stayed for a shorter period compared with 1991-1994. In 1997-2001, the women had a higher dose of methadone, and there were more preterm births and more breastfed infants, while fewer infants had	Historical controls, difference in practice regarding admission to NICU. Different amounts of methadone taken. Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				clinic, a consultant obstetrician or a senior registrar saw the woman and when possible the DLM would be there. The subsequent antenatal appointments were offered monthly. If a woman missed a clinic appointment, the DLM would carry out a home visit. At monthly meetings the DLM informed a consultant neonatologist about forthcoming deliveries and any other relevant information. The DLM provided specialist advice regarding methadone treatment, care of the newborn and the advantages of breastfeeding. Neonatal care: In 1991-1994, all methadone-exposed infants were admitted to the neonatal medical unit (NMU). In 1997-2001, neonatal management was modified and in-		jaundice or convulsions compared with 1991-1994. The reasons for increased pre-term births were not clear as they would not be explained by a significant increase in pre-eclampsia, antenatal infections or caesarean sections between the two study groups.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				service training in looking after these infants was offered to medical, midwifery and nursing staff by the DLM. Infants were usually admitted to a maternity ward, being transferred to the NMU on clinic grounds if they developed neonatal abstinence syndrome (NAS) that required treatment, or required specialist care because of preterm birth or low birthweight.			
Goler NC et al. Substance abuse treatment linked with prenatal visits improves perinatal outcomes: a new standard. Journal of perinatology 2008 28: 597-603[67]	Retrospective cohort study EL = 2-	To provide a comprehensive evaluation of Early Start, an obstetric clinic-based antenatal substance abuse treatment programme, on maternal and neonatal outcomes	Country: USA 49,985 women at Kaiser Permanente Northern California (KPNC) who completed Early Start Prenatal Substance Abuse Screening Questionnaires between Jan 1999 and June 2003. Study eligibility required that the pregnant women had at least one urine toxicology	Early Start has 3 components: Placing a licensed substance abuse expert in the Ob/Gyn department, whose appointments for assessment and treatment are linked to the women's antenatal care appointments; universally screening all women for drugs and alcohol by questionnaires and by urine toxicology testing; educating all providers and patients about the	Maternal outcomes: caesarean delivery, preterm labour and placental abruption. Neonatal outcomes: Intrauterine fetal death, neonatal-assisted ventilation, low birth weight (<2500g), preterm birth (<37 weeks), neonatal intensive care unit admission, infant rehospitalisation with 30 days of discharge.	The mean age in group 1 was 24.9 years and 25.4 years in group 2. Race % in group 1 was 31.6% white, 26.5% black, 12.3% Hispanic, 4.8% Asian, 21% other. In group 2 was 36.9% white, 20.1% black, 14.3% Hispanic, 5.2% Asian, 19.6% other. The proportion of white and black women was statistically significantly different between group 1 and group 2.	Retrospective study, not randomised. May get better outcomes in the treatment group because women who initially have higher risk may be more acutely aware of the real risks of their substance abuse, possibly due to having already experienced

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			screening test during the pregnancy.	effects of drugs, alcohol and cigarette use in pregnancy. Group 1, n= 2073, screened, assessed and treated at Early Start (at least 1 follow-up appointment) Group 2, n=1203, screened and assessed, positive for substance misuse but did not have any subsequent Early Start appointments Group 3, n=156, screened only, positive for drug misuse but not assessed or treated in Early Start Group 4, n=46,553, controls, no evidence of substance abuse There was otherwise no difference in the antenatal care programme for the 4 groups.		42.8% were married in group 1, and 49.4% in group 2, p<0.05. 48% of group1 had ≤high school, compared to 42.5% in group 2, p<0.05. 41.9% of group 1 had an annual income <$25,000, compared to 33.8% of group 2, p<0.05. 22.2% of group 1 entered prenatal care late (>13 weeks), 26% of group 2, p<0.05. Gestational age (<=36 weeks: Group 1: 8.1% vs Group 2: 9.7%) vs Group 3 (17.4%), NS. Mean birth weight: Group 1: 3.352kg vs Group 2: 3.356kg vs Group 3 3.182kg, NS. No significant differences were observed between Groups 1 and 2 for other maternal and neonatal outcomes reported.	negative consequences. Therefore they might be more motivated to return for care. Women who admit to use might be more motivated to stay clean in pregnancy.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						<37 weeks' gestation: Group 3 17.4% vs. Group 1 8.1%; p<0.05. Birth weight <2.500kg: Group 3 12.4% vs. Group 1 6.5%; p<0.05. Placental abruption: Group 1: 0.9%; Group 2: 1.1%; Group 3: 6.5%; Group 1 vs. Group 3 p<0.001. Group 2 vs. Group 3 p<0.05. Group 1 vs. Group 2 NS. Intrauterine fetal death: Group 1: 0.5%; Group 2: 0.8%; Group 3: 7.1%); Group 1 vs. Group 3 p<0.0001. Group 2 vs. Group 3 p<0.0001. Group 1 vs. Group 2 NS. Other neonatal and maternal outcomes were not statistically significantly different. Whilst women in the treatment group showed a marked reduction in substance misuse a similar	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						reduction was seen for women in Group 2 who were assessed but did not receive substance misuse treatment. A reduction was also seen in some areas for Group 3.	
Armstrong et al. Perinatal substance abuse intervention in obstetric clinics decreases adverse neonatal outcomes. 2003. Journal of Perinatology 23[1], 3-9[59]	Retrospective cohort study EL= 2-	To evaluate the relationship between maternal substance abuse interventions during pregnancy, as provide by a large, community clinic-based programme, and subsequent neonatal outcome.	Country: USA 6774 women member of Kaiser Permanente medical care, Northern California Region, were screened for substance abuse from July 1995 to June 1998. Four groups were compared: Group 1: 'screened assessed and treated' (SAT), n=782 consisted of women who were screened and assessed by Early Start Programme and diagnosed as chemically dependent or substance-abusing by Early Start specialist and had	An obstetrics clinic-based antenatal substance abuse intervention programme known as Early Start. The programme provided women with screening and early identification of substance abuse problems, early intervention, ongoing counselling and case management by a licensed clinical therapist with expertise in substance abuse- the Early Start specialist.	Neonatal outcomes: Assisted ventilation Birth weight < 2500 grams Gestational age <37 weeks NICU admission	The SAT and SA groups were similar on all maternal demographic variables (age, marital status, ethnicity, education and annual income) and there were no significant difference between two groups (p>0.02). The S group were similar to the SAT and SA groups in term of marital status, education and income but they were less likely to be younger than 19 years old and more likely to be black. The percentage of women who began antenatal care late, were significantly higher in all three substance abusing groups compared to the control group. (p<0.001).	Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			at least one follow-up Early Start appointment. Group 2: 'screened and assessed'(SA) (n=348), consisted of women assessed and diagnosed as chemically dependent or substance-abusing by an Early Start Specialist but who, for a variety of reasons, did not have any subsequent early Start follow-up appointments. Group 3: 'screened only' (S)(n=262), consisted of pregnant women who were identified as substance abusers based on screening but, for a variety of reasons, were never assessed or treated by the Early Start programme. Women in group 3 had a positive universal toxicology screening test with either a positive			The rate for women in the SAT group significantly lower than the rate for the SA group (p=0.003). Women in the SAT group had significantly higher median amount of antenatal care than SA, S and control groups (p<0.0001). Women in the SAT group had lower rates than the SA group and S group for assisted ventilation, low birth weight and preterm birth. SAT group compared with controls: Assisted ventilation: OR 1.2 (95% CI 0.6 to 2.3), p=0.56. Birthweight < 2500g: OR 1.3 (95% CI 1.0 to 2.1), p=0.05. Gestational age<37 weeks: OR 1.3 (95% CI 0.9 to 1.8), p=0.11. SA group compared with controls: Assisted ventilation: OR 3.1 (95% CI 1.7 to 5.7), p=0.0003.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			screening questionnaire (n=108) or negative screening questionnaire (n=154). Group 4: 'control' (C) (n=5382), was composed of women with no evidence of substance abuse during pregnancy, defined as negative screening questionnaire and negative toxicology test.			Birthweight < 2500g: OR 2.4 (95% CI 1.6 to 3.7), p=0.0001. Gestational age<37 weeks: OR 1.6 (95% CI 1.1 to 2.4), p=0.02. S group compared with controls: Assisted ventilation: OR 2.0 (95% CI 0.9 to 4.3), p=0.07. Birthweight < 2500g: OR 2.5 (95% CI 1.6 to 3.9), p=0.0001. Gestational age<37 weeks: OR 1.7 (95% CI 1.2 to 2.8), p=0.006. Babies born to women in all three substance misusing groups had higher rates of admission to NICU than those in the comparison group.	
Sweeney, P.J. et al. The effect of integrating substance abuse treatment with prenatal care on birth outcome. 2000. Journal of	Prospective cohort study EL=2+	To determine whether engaging a pregnant substance misuser in an integrated programme of antenatal care and substance abuse treatment would improve neonatal outcome.	Country: USA Neonatal out comes in 87 women enrolled in an intensive outpatient substance abuse treatment programme with antenatal care were compared with an equal number of	Project Link was 5 year, hospital based, intensive outpatient substance misuse programme with committed staff, expertise in maternal-child health and substance abuse treatment with cultural competence, knowledge of	Mean birth weight (gm) Birth weight <1500 gm Birth weight <2,500 gm Mean gestational age (weeks)	Mean birth weight (g): Study group 3059 vs. comparison group 2669 (p<0.001) Birth weight <1500g: Study group 2.3 % vs. comparison group 10.3 % (p<0.05)	Funding: U.S. Department of Health and Human Services, U.S. Public Health Service, Substance Abuse and Mental Health Services

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
perinatology : official journal of the California Perinatal Association 20[4], 219-224[73]			women with similar socioeconomic & demographic profile and with similar histories of substance abuse who received equal amount of antenatal care but did not enrol for substance abuse treatment programme before child birth.	community resources. Services were individualized to the needs of the enrolees and include crisis intervention, comprehensive psychosocial and substance use assessment, individualized treatment plan development, individual and group therapy, child and family therapy, home visiting, parenting education and support, and infant developmental assessment. Transportation, on-side child care and other services were provided in an effort to address barriers.	Gestational age < 37 weeks Admitted to NICU Apgar at 1 minute < 4 Apgar at 5 minute < 8 Positive infant toxicology	Birth weight <2,500 g (%): Study group 19.5 % vs. comparison group 40.2 % (p<0.001) Mean gestational age (weeks): Study group 38.6 vs. comparison group 36.7 (p<0.001) Gestational age < 37 weeks: Study group 14.9% vs. comparison group 40.2% (p<0.001) Admitted to NICU: Study group 25.3 % vs. comparison group 35.6 % (p<0.05) Apgar at 1 minute < 4: Study group 3.4 % vs. comparison group 12.6 % (p<0.05) Apgar at 5 minute < 8: Study group 6.9 % vs. comparison group 18.4 % (p<0.05) Positive infant toxicology Study group 21.8% vs. comparison group 57.5% (p<0.001)	Administration, Center for Substance Abuse Prevention Women in comparison group were more likely to be the head of the household (64% vs. 44 % P<0.05) and to have other children (87% vs. 68 % P<0.05) Over all antenatal care were similar Study group have initiated care earlier 54% started in first trimester compared to 39 % of comparison group (p =0.05) Similar substance use history except those enrolled while pregnant

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
							were more likely to have been in treatment previously and were more likely to admit difficulty in abstaining.
McMurtrie C, et al. A unique drug treatment programme for pregnant and postpartum substance-using women in New York City: results of a pilot project, 1990-1995. Am J. Drug Alcohol Abuse, 25(4), pp.701-713, 1999[74]	Descriptive study EL=3 including Comparison of intervention sub-groups EL=2-	Describes the qualitative and quantitative results of the evaluation of the Parent and Child Enrichment (PACE) project in New York City.	Country: USA From October 1990 to March 1994, 192 women enrolled in PACE. Most women (84%) entered while pregnant (60% after their first trimester) 16% entered postpartum. Most clients lived near PACE in northern Manhattan or the Bronx.	Drug treatment included 2 phases: orientation (6 weeks) and therapy. Orientation allowed stabilization of client's life, adjustment to new environment and development of trust with staff. Drug treatment plans were tailored to the clients' needs and were coordinated by the obstetrician, the drug treatment counsellor, and the nurse. Urine toxicologies were obtained 3x a week (2 scheduled, 1 unscheduled), but clients were not discharged from treatment for positive urine toxicologies. Onsite services included prenatal, postpartum, and paediatric care; group	Length of stay was determined using the intake form, discharge, and activity logbook databases. Findings from urine toxicology. Mean birth weight Low birth weight (<2500g)	Client age averaged 29 years (range 19 to 44 years); 80% were African-American, 13% Hispanic, and 5% white. The mean total length of stay was 100 days, mean pregnancy length of stay was 48 days, and mean postpartum length of stay was 56 days. Urine toxicologies – The long-stay clients had a much lower % of positive tests than the short-stay clients: 19.5% of long-stay clients screens were positive compared to 55.1% in the short-stay group. Clients in the low activity group (<1 activity/week) were 1.34 times more likely than those in the high	Qualitative findings from interviews with clients and staff not reported here due to poor methodology including no reported interview data or other evidence to support reported findings. Funding: Dept. of Health and Human Services Office of Substance Abuse Prevention, grant 5H86SP01691

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				and individual counselling; nutritional assessments; on-site enrolment for food supplementation; psychosocial assessments; parenting education; high school equivalency classes; vocational preparation and counselling; and linkage to social services. Project staff included a coordinator, an intake worker, 2 drug treatment counsellors, a social worker, a parent educator, a part-time child care worker, and a nutritionist. Medical staff included a full-time nurse, a part-time paediatrician, and a part-time nurse midwife. Women in PACE were permitted to come in 3 to 4 days a week. 4 retrospective comparison groups:		activity group (≥1 activity/week) to have ≥30% of all toxicologies positive. In long-stay clients who were crack cocaine users 84% of all positive tests were between the clients' first 3 weeks and their last 3 weeks in PACE. Birth outcomes: Mean birthweight was 3045g in the PACE long stay, 2791g (p=0.006) in the PACE short stay, 2682g (p=0.0001) Harlem Hospital special prenatal clinic, 2502g (p=0.0001) Central Harlem Health District Cocaine positive. 16.7% of the PACE long stay were LBW (<2500g), 29.2% of the PACE short stay (p=0.10), 34.9% of the Harlem Hospital Special Prenatal Clinic (p=0.011), and 47.4% of the Central Harlem Health District – cocaine positive (p=0.0001).	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				Long-stay ≥42 days (n=54); PACE short-stay<42 days (n=72), 1991-1993 cocaine-positive women in the Central Harlem Health District (n=175), and women receiving care 1991-1993 Harlem Hospital Center Special Prenatal Clinic (n=597).		7.7% of the PACE long stay had intrauterine growth restriction, 18.1% of the PACE short stay (p=0.11), 19% of the Harlem Hospital Special Prenatal Clinic (p=0.06), and 23.4% of the Central Harlem Health District – cocaine positive (p=0.001).	
Whiteside-Mansell L, Crone CC, and Conners NA. The development and evaluation of an alcohol and drug prevention and treatment program for women and children. The AR-CARES program. *Journal of Substance Abuse Treatment* 1999; 16:(3)265-75.[75]	Prospective cohort study (a quasi-experimental design involving a non-participating group). [EL=2-]	To evaluate the impact of a programme designed to provide comprehensive substance misuse prevention and treatment services to low-income pregnant and parenting women and their children.	Country: USA City: Little Rock (Arkansas) Data concerning current and past alcohol and other drug (AOD) use was obtained from 72 participating women and 23 non-participating women at study intake. Delivery assessments were obtained for 27 participating women and 10 non-participating women. Demographic characteristics: Average age (SD): Participating women: 28.8 (5.2)	The Arkansas Centre for Addictions Research, Education, and Services (AR-CARES) is a facility that provides a residential and outpatient substance misuse prevention as well as treatment services to low-income pregnant and parenting women and their children. It was established as a 5 year Centre for Substance Abuse Prevention (CSAP) PPWI demonstration project. The initial programme was planned as a 4 and 1/2 hours per day, 5 days per week,	% of women reporting alcohol, other drug and tobacco use No. and % of women experiencing obstetrical/neonatal complications Maternal outcomes: Average no. of days as in-patient Neonatal outcomes: Birthweight Infant head circumference (cm) Weeks of gestation at birth Child growth and development:	% of women reporting alcohol, other drug and tobacco use: Alcohol <u>At intake:</u> Participating women:83.6 Non-participating: 90.5 <u>At birth</u> Participating women: 4 Non-participating: 33.3 (p<0.05 between intake and delivery for both the groups and at delivery between participating and non-participating group.) Other drug misuse <u>At intake:</u> Participating women: 91.7 Non-participating: 95.7 <u>At birth</u> Participating women:	Funded by Department of Health and Human Services Substance Abuse and mental Health Services Administration Centre for Substance Abuse Prevention Pregnant and Postpartum Women and their Infants demonstration project (H86-SPO4670) Data for birth outcomes taken from a much smaller sub-sample of

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			years Non-participating women: 26.3(5.2) years Marital Status: Participating Women: Married 17.4%, Never married 60.9% Non-participating Women: Married 11.6%, Never married 60.9% Race (African American): Participating women: 75% Non-participating women: 70%. Average years of education (SD): Participating women: 11.1 (1.7) years Non-participating women: 11.6 (1.9) years. Average monthly income (SD): Participating women: $268.0(279) Non-participating women: $192.0	intensive outpatient program. The intensive phase of the programme was designed to last for at least 12 weeks and serve 9 to 12 women at any one time. As much as possible, the programme was to be a "one-stop shopping" model implemented by a multidisciplinary team and guided by an individualized treatment plan. programme Initial services: 4–5 hour treatment day Assistance in locating child care in the community, as needed Alcohol and drug use assessment Education and treatment Mental health assessment and referral		3.7 Non-participating: 33.3 ($p<0.05$ between intake and delivery for both the groups and at delivery between participating and non-participating group.) Tobacco <u>At intake:</u> Participating women:67.0 Non-participating: 88.0 <u>At birth</u> Participating women (n=72): 55.6 Non-participating: 90.0 ($p<0.05$ at delivery between participating and non-participating group.) No. and % of women experiencing obstetric/neonatal complications: Any type of complication: Participating women: 12/27 (46%) Non-Participating women: 4/10 (40%) NS Placental abruption:	original study sample

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			Average week of pregnancy at intake (SD): Participating women: 24.2 (10.4) Non-participating women: 23.8 (10.9) Average no. of previous births (SD): Participating women: 2.8 (2.2) Non-participating women: 1.6 (1.3) Current AOD (alcohol or other drugs) by partner: Participating women: 65.5% Non-participating women: 68.8% Current DCFS (Department of Child and Family Services) case open: Participating women: 31.4% Non-participating women: 11.4% History/victim of abuse: Rape: Participating	Life skills assessment and development Group and individual counselling, covering the following areas: Denial The disease process of addiction Physiology and pharmacology of tobacco, alcohol, and other drugs Effect of tobacco, alcohol, and other drugs on the mother and foetus Maternal–foetal/infant bonding Parenting the drug-exposed infant Women in relationships Women's issues in recovery Loss and grief Anger and blame Family dynamics in recovery 12-step recovery Self-esteem building Relapse prevention AIDS and other sexually transmitted diseases Preterm-birth		Participating women: 1/27 (4%) Non-Participating women: 0/10 (0%) NS Maternal infection: Participating women: 3/27 (11%) Non-Participating women: 4/10 (40%) ($p<0.05$) Premature labour: Participating women: 2/27 (7%) Non-Participating women: 4/10 (40%) ($p<0.05$) Preeclampsia: Participating women: 1/27 (4%) Non-Participating women: 0/10 (0%) NS Foetal distress: Participating women: 2/27 (7%) Non-Participating women: 0/10 (0%) NS Meconium-stained amniotic fluid: Participating women:	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			women: 40.6% Non-participating women: 63.2%. Incest: Participating women: 21.9% Non-participating women: 42.1%. Physical abuse: Participating women: 71.9% Non-participating women: 75%. Childhood abuse: Participating women: 30.3% Non-participating women: 31.6%. Emotional abuse: Participating women: 72.7% Non-participating women: 78.9%. History of arrest: Participating women: 71.4% Non-participating women: 85.7%. History of treatment in residential	prevention Preparation for labour and delivery Family planning Child development and care Parenting education and support Health services, including: Prenatal care Delivery services Postpartum and inter-conceptional care Child health services Health education, including: Prenatal Infant health and development Nutrition Child safety Labour and delivery Family planning Prevention of sexually transmitted disease Service coordination The programme changed significantly over the 5 years based upon inputs from staff and clients and in response to changing community		6/27 (23%) Non-Participating women: 1/10 (10%) NS Other Participating women: 4/27 (15%) Non-Participating women: 1/10 (10%) NS Average no. of days as in-patient (SD): Participating women: 2.3 (1.2) Non-Participating women: 5 (5.9) P<0.05 (after excluding one non-participating women with 21 days hospital stay mean hospital stay = 3 days, NS) Neonatal outcomes: Birth weight (SD): Participating women: 6.5 (1.4) Non-Participating women: 5.8 (1.1) p<0.05 (unit of measurement not reported, presumed to be lbs)	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			treatment programme: Participating women: 60.0% Non-participating women: 42.8%. History of family AOD: Participating women: 80.0% Non-participating women: 90.0%.	resources. Service addition by the fifth year: 7–8 hour treatment day On-site residential support Licensed early intervention services On-site licensed child care for Infant and toddler, preschool and school age School age summer program Entrepreneurial skills/vocational education Art classes Community 12-step meeting attendance Cooperative extension services – life skills Off-site residential support Employment skills and counselling Licensed mental health services for client, child, and family On-site evening outpatient treatment/transitional services		Infant head circumference (cm): Participating women: 35 (3.6) Non-Participating women: 33 (0.7) p< 0.10 Weeks of gestation at birth: Participating women: 38 (2.7) Non-Participating women: 36 (2.6) t=2.2, p=0.03	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				Transportation Tobacco-free environment			
Elk R, Mangus L, Rhoades H *et al.* Cessation of cocaine use during pregnancy: Effects of contingency management interventions on maintaining abstinence and complying with prenatal care. *Addictive Behaviors* 1998; 23:(1)57-64. [76]	RCT EL=1-	To determine if adjunctive contingency management interventions (CMIs) enhanced treatment outcome in a cohort of pregnant women with a history of cocaine use in the ongoing pregnancy.	Country: US 12 out of 59 cocaine dependent pregnant women were enrolled in a multifaceted treatment study, reported having used cocaine during the ongoing pregnancy but had ceased use more than 30 days prior to entering the study. Randomly assigned to one of two treatment groups following stratification on referral source (self vs. court/probation/parole) Group A (n=6) received baseline treatment plus CMIs compared with Group B (n=6) who received only baseline treatment (control group). Study Duration: September 1994 to	All women received a multifaceted baseline treatment in a supportive, nonjudgmental atmosphere with free transportation for each visit and child care during appointments. The baseline treatment included antenatal care (1 visit/week), 2 individual and 1 group sessions of behaviourally based drug counselling, monthly antenatal and nutritional education and HIV pre and post test counselling and testing every 3 months. Women in group A received an adjunctive CMI designed to reinforce both cocaine abstinence and compliance with antenatal care. The adjunctive	Retention in treatment: % of cocaine free samples: % of other drug use: Compliance with antenatal visits: Occurrence of any of 4 perinatal adverse outcomes associated with cocaine use or poor antenatal care (i.e. premature rupture of the membranes, preterm labour, preterm birth, low birth weight): Change in ASI composite scores: Data from 2 groups were compared using χ^2 test, t-test, and repeated measures analysis of variance. Statistically significant when $p<0.05$ either the exception of ASI where difference are	Retention in treatment: No. of women retained in the study: Group A: 5/6 (83%) Group B: 4/6 (67%) P=0.21(not significant) All women remained in the study for at least 4 weeks, with a mean of 16 weeks (range; 4-26 weeks). % of cocaine free samples: Group A: 100% Group B: 98% p=0.34 (not significant) Other drug use: % nicotine positive urine samples in women who used nicotine during this study: Group A: 75% (n=4) Group B: 62% (n=5) p=0.58 (non significant) % THC-positive urine samples in women who used marijuana during this study:	Small sample size. Half of the women had received form of treatment or had been incarcerated which may have played a role in the abstinence. Funded by NIDA GRANT DA 08348

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			August 1996 Population characteristics: Race: Group A African American: 4/6 (67%) Hispanic: 1/6 (17%) White: 1/6 (17%) Group B African American: 3/6 (50%) White: 3/6 (50%) Marital status: Group A Married: 0/6 (0%) Separated/divorced /widowed: 4/6 (67%) Never married: 2/6 (33%) Group B Married: 1/6 (17%) Separated/divorced /widowed: 3/6 (50%) Never married: 2/6 (33%) Education: Group A <High school: 1/6 (17%) High school: 1/6 (17%) >High school: 4/6 (67%) Group B	contingency management interventions (CMIs) included monetary incentives for each cocaine free urine sample ($18) and a weekly bonus of $20 if all 3 required samples were cocaine free and woman had attended all 3 required visits including the weekly antenatal checkups.	significant at p<0.07 reflecting Bonferroni adjustment for multiple testing.	Group A: 73% (n=3) Group B: 70% (n=1) p=0.11 (non significant) Average no. of weekly drinks in women who drank alcohol during the study (one drink is defined as 1 oz. hard liquor, 4 oz. wine, or 12 oz. beer): Group A: 3.2 (n=1) Group B: 0.4 (n=2) p=0.47 (non significant). % compliance with antenatal visits: Group A: 100% Group B: 83% p=0.077 No. of women experiencing occurrence of any of 4 perinatal adverse outcomes associated with cocaine use or poor antenatal care (i.e. premature rupture of the membranes, preterm labour, preterm birth, low birth weight): Group A: 0/6 (0%) Group B: 4/6 (67%) p=0.022	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			<High school: 2/6 (33%) High school: 3/6 (50%) >High school: 1/6 (17%) Usual or last occupation: Group A Clerical/administrative/sales: 2/6 (33%) Skilled manual labour: 1/6 (17%) Semiskilled: 2/6 (33%) Unskilled: 1/6 (17%) Group B Clerical/administrative/sales: 3/6 (50%) Skilled manual labour: 1/6 (17%) Semiskilled: 2/6 (33%) Unskilled: 0/6 (0%) Usual employment pattern, last 3 years Group A: Employed: 3/6 (50%) Unemployed: 2/6(33%) Controlled environment: 1/6 (17%) Group B: Employed: 3/6			Change in ASI composite scores: Did not differ between the 2 groups.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			(50%) Unemployed: 3/6(50%) Controlled environment: 0/6 (0%) Current employment status: Group A: Employed: 1/6 (17%) Unemployed: 5/6 (83%) Group B: Employed: 1/6 (17%) Unemployed: 5/6 (83%) Gravidity: Group A: 1-2: 0/6 (0%) 3-4: 2/6 (33%) ≥5: 4/6 (67%) Group B: 1-2: 1/6 (17%) 3-4: 1/6 (17%) ≥5: 4/6 (67%) Trimester at study entry: Group A: First: 1/6 (17%) Second: 5/6 (83%) Third: 0/6 (0%) Group B: First: 0/6 (0%) Second: 4/6 (67%)				

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			Third: 2/6 (33%) Drug use prior to entry: Primary drug of misuse: Group A: Cocaine: 5/6 (83%) Heroine & cocaine: 1/6 (17%) Group B: Cocaine: 6/6 (100%) Heroine & cocaine: 1/6 (17%) Lifetime regular cocaine use (at least 3 times/week) Group A: < 1year: 0/6 (0%) 1-5 year: 2/6 (33%) 6-10 years: 2/6 (33%) >10 years: 2/6 (33%) Group B: < 1year: 1/6 (17%) 1-5 year: 1/6 (17%) 6-10 years: 2/6 (33%) >10 years: 2/6 (33%) Mean (SD) length of current period of abstinence (weeks): Group A: 9.7 (3.4) Group B: 10.2 (4.4)				

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			Lifetime regular marijuana use (at least 3 times/week) Group A: < 1year: 2/6 (33%) 1-5 year: 2/6 (33%) 6-10 years: 1/6 (17%) >10 years: 1/6 (17%) Group B: < 1year: 0/6 (0%) 1-5 year: 2/6 (33%) 6-10 years: 0/6 (0%) >10 years: 4/6 (67%) Lifetime regular alcohol use (at least 3 times/week) Group A: < 1year: 0/6 (0%) 1-5 year: 2/6 (33%) 6-10 years: 2/6 (33%) >10 years: 2/6 (33%) Group B: < 1year: 3/6 (50%) 1-5 year: 1/6 (17%) 6-10 years: 0/6 (0%) >10 years: 2/6 (33%) No. of women in recent drug misuse treatment or incarcerated (30 days prior to				

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			intake): Group A: 3/6 (50%) Group B: 3/6 (50%) No. of women who ceased cocaine use either prior to or without any formal treatment: Group A: 2/5 (40%) one is unknown Group B: 4/6 (67%)				
Carroll et al. Improving treatment outcome in pregnant, methadone-maintained women. Results from a randomized clinical trial. 1995. American Journal on Addictions 4[1], 56-59United States. [68]	Randomised control trial EL=1-	To compare enhanced vs. standard methadone maintenance for pregnant opiate-addicted women.	Country: USA All pregnant women enrolled in the methadone maintenance programme of the Division of Substance Abuse at Yale- New Haven hospital between October1990-September 1992 were screened and invited to participate in the study. A total of the 20 women provided informed consent were randomly selected. n=6 women were excluded from the study for various reason, therefore n=7 women were	Enhanced methadone maintenance programme. The enhance treatment programme offered weekly antenatal care by a nurse midwife, weekly relapse-prevention group, positive contingency award for abstinence (women could earn $15 weekly for three consecutive negative urine screens), and provision of therapeutic child care during treatment visits. Standard treatments were consisted of daily methadone medication, weekly group counselling,	Maternal urine toxicology screen Number of antenatal visit Neonatal outcome: Gestational age Birth weight Length of infant remained in hospital for treatment.	The two groups were comparable for age, employment, marital status, number of previous pregnancies and daily methadone dose. Women in both groups averaged 23 weeks pregnant in the study, provided an average of 45 urine specimens and attended weekly counselling sessions 71% of the time. Mean methadone dose throughout the study were 50mg and averaged 55mg at delivery. Women in the enhanced programme had an average of 15 antenatal visits, whereas	Very small scale study with low statistical Power. Funding: Supported by National Institute on Drug Abuse Grants.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			randomly allocated to the standard treatment group and others n=7 to the enhanced treatment group.	and three times weekly toxicology screening.		women in standards treatment had an average of 5 visits. Women in the enhanced programme tended to have longer gestation times (median: 40 vs.38) and larger babies (median: 3.348 vs.2951 grams). No difference in two groups with respect to percentage of maternal urine toxicology screen positive for cocaine, illicit opiates, or any other drugs.	
Chang et al. Improving Treatment Outcome in Pregnant Opiate-Dependent Women. 1992. Journal of Substance Abuse Treatment 9[4], 327-330[69]	Retrospective cohort study EL=2-	To compare outcomes for pregnant opiate-dependent women enhanced methadone maintenance with those for a group receiving treatment as usual.	Country: USA, Boston Outcomes of n=6 pregnant methadone-maintained opiate dependant subjected in enhanced treatment were compared to n=6 women received conventional methadone maintenance. The conventional treatment as usual was consisting of	Enhanced methadone maintenance programme. The enhance treatment programme offered weekly on- site antenatal care, weekly relapse- prevention group, positive contingency award for abstinence (women could earn $15 weekly for three consecutive negative urine screens), and provision of therapeutic child care	Drug use during pregnancy Numbers of antenatal visits Neonatal outcome: Gestational age. Birth weight	The two groups were highly comparable for age, years of education, minority group status, marital status, number of previous pregnancies and children, cigarette use and daily methadone dose. Both groups began methadone treatment average of 10 weeks after conception. Women in enhance treatment programme demonstrated lower percentage of urine screens positive for	Small sample size. Sample size bias: 32 pregnant opiate-dependant women were invited to participate in the study, 12 who agreed to participate in the study could have been more motivated for the treatment.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			daily methadone medication, counselling, and random urine toxicology screening.	during treatment visits in addition to treatment as usual. Standard treatments were consisted of daily methadone medication, weekly group counselling, and three times weekly toxicology screening.		overall illicit substance use (59% vs. 76%), had more antenatal care (8.8 vs. 2.7), longer gestation (38.2 vs. 35.7 weeks), deliver heavier infants (median birth weight 2959 vs. 2344 grams).	Funding: Supported by National Institute on Drug Abuse Grants.
Svikis, D. et al. Drug dependence during pregnancy. Effect of an on-site support group. 1998. Journal of Reproductive Medicine 43[9], 799-805[70]	Retrospective cohort study EL=2-	To examine clinical and economic efficacy of an onsite support group for drug abusing pregnant women.	Country: US 121 pregnant women registered for antenatal care before 28th week, in an inner city academic hospital obstetric clinic during a 16 month period from 1989 to 1990. All subjects screened positive for alcohol and/or drug use based on clinicians' interview or urinalysis during toxicology at first antenatal visit and had labour and birth records available for chart review.	Self reporting women or women with the positive urine toxicology for illicit drugs were referred for further evaluation by a substance abuse counsellor. The evaluation included CAGE screening questions and the Addiction Severity Index (ASI). Women in need of substance misuse treatment were referred to a once a week on-site support group in addition to one of the several neighbourhood drug treatment programmes. The support group was led by a	Women were categorized as: 1. Attenders (n=54) who attended at least two or more support group meetings. 2. Non-attenders (n=67) who attended none or one support group meeting. Maternal outcomes: No. of antenatal visits; recent self reported maternal alcohol use (at birth); positive urinalysis drug toxicology at birth. Neonatal outcomes: Estimated gestational age at birth (wks); birth weight (kg); low birth weight (<2.500 kg); Apgar Score (1 min); Apgar Score < 6 at 1	A nine fold increase in attendance at the programme compared with previous substance misuse programme 45% (54/121)of women referred to the support group attended at least two sessions as compared to a 5% in a previous study by the same authors Maternal outcomes: No. of antenatal visits 8.7 in support group attenders vs. 6.8 in non-attenders (p= 0.002) Positive urinalysis drug toxicology at birth no significant difference observed (48% in support group attenders vs. 54% in non-attenders)	The group selection was based on women's self selection and although both groups have similar socio-demographic profile the difference between motivation levels could be a potential confounder. Funded through internal institutional support.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				substance abuse counsellor. Group content included: Discussion of target topic Establishment of social support networks Behavioural contracting. In order to minimize barriers to care lunch was provided, transportation cost were covered by the hospital and women were allowed to bring their preschool children with them. The support group meetings were scheduled immediately before obstetric clinic and to maintain confidentiality no significant others were permitted in the meetings.	min; Apgar Score at 5 min; Apgar score <6 at 5 min; meconium staining.	Neonatal outcomes: Estimated gestational age at birth (wks) No significant difference observed (38.4 in support group attenders vs. 37.5 in non-attenders). Birth weight 3.137 kg in support group attenders vs. 2.805 kg in non-attenders (p= 0.002). Low Birth Weight (< 2.500 kg) (15% in support group attenders vs. 25% in non-attenders) (no significant difference) Mean Apgar Score at 1 min: 7.9 in support group attenders vs. 7.2 in non-attenders (p=0.02) Apgar Score <6 at 1 min: 12% in support group attenders vs. 28% in non-attenders (p= 0.04). Mean Apgar Score at 5 min: no significant	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						difference observed Apgar Score <6 at 5 min: no significant difference observed Meconium staining: no significant difference observed	
Little BB et al. Treatment of substance abuse during pregnancy and infant outcome. American Journal of Perinatology, vol.20, no.5 2003[72]	Retrospective matched cohort study EL=2+	The purpose of the study was to investigate and analyse the effects of residential substance abuse treatment during pregnancy on maternal and infant health outcomes.	Country: US All clients who entered a residential substance abuse programme for pregnant and postpartum women were eligible for inclusion in the study (n=95) between 1993 and 1998. Those who were in the intervention programme at the time of giving birth and for whom records were available were included in the present analysis (n=55). 2 comparison groups were used: 1. Substance	Residential substance abuse treatment programme for pregnant and postpartum women funded by the centre for substance abuse treatment. None of the women in either control group received substance abuse treatment or case management services, although they were available through the hospital social services department.	Number of antenatal care visits.. Birth weight, length, head circumference, estimated gestational age (EGA), Apgar score. Maternal complications: gonorrhoea, hepatitis C, genital herpes, premature rupture of membranes, syphilis, delivery <37weeks. Infant complications: anaemia, apnea, bradycardia, congenital syphilis, heart murmur, bilateral hydrocele, hyperbilirubinaemia, hypoglycaemia, hypotonia, grade 1 intraventricular haemorrhage, jittery,	The number of antenatal care visits differed significantly between women in the intervention group (mean = 6.7, sd = 1.3) and those in the positive control group (mean =1.3, sd = 3.4) ($p<0.01$), but not between women in the intervention group and those in the negative control group (mean = 5.6, sd = 2.7). The number of women who had no antenatal care visits was significantly higher in the positive control group (11%) compared with the intervention group (3%) ($p<0.01$). No difference was found in the number of antenatal care visits between the negative control group (6%) and	Physicians were not blinded to treatment status and knowledge of the mothers' treatment status could have influenced physician diagnosis and treatment.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			abusers who received no treatment during pregnancy (positive control group) and 2. Pregnant women who were not substance abusers (negative control group). Women in the intervention group were matched with controls on ethnicity. The positive control group was matched to women in the intervention group on primary and secondary substances of abuse, including tobacco use. Ethnicity: 45.5% black, 41.8% white, 10.9% Hispanic, 1.8% native American. The socioeconomic status of the treatment group and control groups was similar because all received medical	lethargic, meconium, premature birth, respiratory distress syndrome, umbilical hernia ~1cm.	the intervention group. Average length of time in intervention programme before giving birth was 11.7 weeks (range 1 to 228 days). 2 infants in the treatment group were positive for a substance of abuse at birth, both were born to women who were in treatment for<48 hours prior to delivery. The primary drug choice for clients in the substance abuse programme was cocaine (56.1%), followed by heroin (15.8%), alcohol (10.5%), marijuana (8.8%), methamphetamine (7.0%), and other drugs (1.8%). In the intervention group vs. the positive control group mean birth weight was 3237g vs. 2800g. Mean birth length was 48.8cm vs. 47.9cm (NS). Mean head circumference was 33.8 vs. 32.6cm ($p<0.01$).	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			care as indigent patients.			The mean EGA was 38.9 weeks in the intervention group, compared to 38.0 in the positive control group (p=0.05), and 39.2 weeks in the negative control group (NS) No infant in the intervention group contracted a vertically sexually transmitted disease (STD), although 30% of the mothers had STDs for which infants were at risk and treated prophylactically. One infant in the positive control group had congenital syphilis. The frequency of individual complications did not differ between groups. However, the total number of maternal perinatal complications was significantly higher in intervention group (n=12) and positive control groups (n=11) compared with the negative control group (n=1) (p<0.0001)	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						The frequency of individual perinatal infant complications was not increased in frequency in any group. The total number of perinatal infant complications was increased in the intervention group (n=25) compared with the positive (n=10) and negative (n=6) control groups. For every 10 weeks the woman stayed in the programme, birth weight increased by 340g and EGA by 1 week.	

Q.4 What additional information should be provided to women misusing substances, their partners and families in order to improve pregnancy outcomes? (Additional here means over and above that described in the NICE Antenatal care guideline).?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
Sarvela, P.D and Ford, T.D An Evaluation of Substance Abuse Education Program for Mississippi Delta Pregnant Adolescents. Journal of School Health. 1993 63(3): 147- 152[77]	Prospective cohort study Quasi-experimental. antenatal and postnatal questionnaires EL=2-	To investigate the effects of a substance abuse education programme on women's knowledge, attitude, and drug use behaviour and to evaluate the program effect on newborn and infant outcomes	Country: USA Data were collected from pregnant adolescent substance misusers, from two regional health centres .in Mississippi delta. Participation in the study was voluntary. Women were assigned to the comparison or intervention group based of geographical area of residence. At pre-test, 113 participants were allocated at the intervention group and 99 participants to the comparison group. A post test was conducted with the same groups following birth of their babies, (preferably while they were still in hospital).	The ASPEN programme, a self administered series of 8 educational modules completed by participants in the intervention group while they waited to see a physician in antenatal clinic. One module was completed during each antenatal visit. Modules consisted of an educational page and an activity page. The modules were: smoking and your unborn baby; your baby's growth; your baby and alcohol; use of OTC drugs; smoking marijuana and how it affects your baby; health and nutrition; stress; and you and decision making. The comparison group received the usual care provided in antenatal clinic.	Questionnaire data collected: knowledge test, attitude survey and a behaviour survey. Infant outcomes: Prematurity, Birth weight, infant complications.	Significant differences between 2 groups on substance use attitudinal result at pre-test (p=.048), post test result showed no significant between two group. The program had a positive impact on substance abuse knowledge of the prenatal care patient (p=.038) No significant differences between groups on infant outcomes: Prematurity: Intervention 8.3%. vs. comparison 4.0%. Infant complications (not defined): Intervention 78.1% vs. comparison 75.7%.(RR 0.96) Mean birth weight: Intervention 7.13 kg, Study 7.35 kg. Mean Apgar score (timing not clear): intervention 8.70 vs. comparison 8.36. Stillbirths: Intervention 3.1% vs. comparison 5.3%. Substance misuse: At post-test significantly more women in the intervention group (47.6%) than comparison group (29.5%) had quit or reduced drug use in the previous 5 months (p=.0197).	Non-equivalent groups, significant difference between groups regarding to race. The study group had significantly larger percentage of black women (39.4% vs. 16.8% in comparison group). In order to control for this an equal members of black and white participants were drawn randomly from each group and analyses were then conducted on this random post-hoc sample, however this has not been performed for all analyses. Funding: This study was supported in part by a grant from the U.S. Office for Substance Abuse Prevention.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
			At post-test (after taken up the ASPEN programme), 103 participated in intervention group and 85 in comparison group				

Recent migrants, women with little or no English, asylum seekers and refugees

Q1a. What aspects of service organisation and delivery are effective at improving access to antenatal services for women who are recent migrants to the UK, refugees , asylum seekers or who have little or no English?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
Mason. The Asian Mother and Baby Campaign (the Leicestershire experience). 1990. Journal of the Royal Society of Health 110[1], 1-4[29]	Retrospective case-control study EL= 2-	a) To measure the improvement of Asian women's use and understanding of health care during and following pregnancy. b) To measure the resulting improvement in the health of babies due to increased knowledge in the Asian population, by measuring any increase in birth weight and condition of babies.	Country: UK Leicestershire was one of the 10 districts selected for inclusion in the Asian Mother and Baby Campaign, a campaign undertaken to help overcome the problems experienced by Asian women during pregnancy. To achieve this aim eight link workers were allocated to this district for a two year period. Pregnant women entered into the study when registering for antenatal care for one year from may 1985 to April 1986. 475 women participated in the study. The analyses presented in the study were based on whether a woman did (n=133) or did not have a contact with a link worker (n=244),	A local evaluation was undertaken using general practices with evidence of a higher than average antenatal risk. Link workers were distributed equally between the hospital and community setting. Women from the selected practices were interviewed at three points; booking for antenatal care, following delivery and at the postnatal visits.	Asian women's use and understanding of health care	63% (n=286) of the total sample were Gujarati speakers and 17% (n=78) were Punjabi speakers. Over 80% of the sample were originally from India or New Commonwealth Africa. Nearly 60% (n=167) of all Gujarati speakers had a good understanding of English. The distributions of the religion between groups were similar. Link workers provided a much needed interpreter service but were less successful in imparting health education knowledge to Asian women. Improvement in health education knowledge only occurred in women with a good understanding of English. A surprising finding was that there is still a very large proportion (approximately 50%) of Asian women in Leicestershire who are unable to communicate in English and are not therefore able to make full use of the available services.	Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			by each women's understanding of the English language. Women who did not have contact with a link worker (n=244) were compared with those who had 1-2 contacts (n=124) and those who had 3+ contacts with link workers (n=89).				
Parsons et al. Improving obstetric outcomes in ethnic minorities: an evaluation of health advocacy in Hackney. 1992. Journal of Public Health Medicine 14[2], 183-191[80]	Retrospective cohort study EL=2-	Evaluation of a health advocacy program in Hackney with respect to hospital policy and practice.	Country=UK A study was carried out comparing n=923 non-English-speaking women delivering at the Mothers' Hospital (MH), Hackney, in 1984-1986 who had been accompanied by an advocate (study group), with n=866 non-English speaking women delivering at the same hospital in 1979 before the start of advocacy project, and two similar groups from a reference hospital (Whipps Cross (WX)1979 n=999, Whipps Cross 1986 n=993). At Whipps Cross translators from the	The Multi-Ethnic women's Health Project (MEWHP): was started in 1980 to help meet the needs of non-English speaking women at Mothers Hospital. The women who worked for the project were called "health advocates" because they mediated between women and professionals to make sure that women were offered an informed choice of health care. The advocates	Obstetrics outcomes: Gestation at booking DNA (did not attend antenatal appointment) rate Antenatal length of stay Induction and mode of delivery The changes in caesarean section rate Birth weight and mortality rate	Personal Characteristics of the study groups: Mean age at delivery/years: MH (1979): n=835, 25.1 WX (1979): n=993, 25.9 MH (1986): n=921, 25.9 WX (1986): n=988, 26.9 Primips: MH (1979): 30% WX (1979): 3.5% MH (1986): 25.4% WX (1986): 31.1% Born in Asia or Turkey: MH (1979): 89% WX (1979): 75% MH (1986): 90% WX (1986): 70% The study found significant differences between the groups in three outcomes: antenatal length	All changes on outcomes of the labour in the study group cannot be directly attributed to health advocacy (due to the complexity of the issues). Women identified as Turkish or Asian by surname. Not possible to ascertain level of knowledge of English from medical records. Funding: Grant from NETRHA locally Organized

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			local authority were used rather than health advocators. Therefore four groups were generated; the study group (MH1986) and three comparison groups (MH 1979, WX 1986 and WX 1979)	'booked' the new women following a set protocol and presented the history to the midwife or doctor.		of stay, induction and mode of delivery. Caesarean section: MH (1979) n=866, 10.6% WX (1979) n=999, 11.2% MH (1986) n=923, 8.5% WX (1986) n=993, 17.4% Antenatal booking: Women booked significantly earlier in both Hospitals in 1986, compared with 1979, and attended Whipps Cross significantly earlier than the Mother's Hospital at both time periods. Gestation first booking/weeks: MH (1979): n=837, 19.5 WX (1979): n=707, 17.7 MH (1986): n=905, 18.8 WX (1986): n=850, 16.8 The overall attendance rate was 5.9% (n=3330) but there was wide variation between hospitals and times, and for the women parity. The non-attendance rate at the Mothers' Hospital was 7.2% compared with 4.5% at Whipps Cross, which is statistically significant. DNA rate:	Research Grant Scheme.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						MH (1979): n=840, 6.6% WX (1979): n=715, 4.5% MH (1986): n=905, 7.8% WX (1986): n=871, 4.6% Antenatal length of stay: MH (1979) n=242, 8.6 days WX (1979) n=165, 5.9 days MH (1986) n= 229, 5.7 days WX (1986) n=238, 5.8 days Birth weight/kg: MH (1979) n=865, 3.02 WX (1979) n=998, 3.08 MH (1986) n=923, 3.07 WX (1986) n=985, 3.13 Low birth weight <2500g: MH (1979) n=865, 13.6% WX (1979) n=998, 11.8% MH (1986) n=923, 10.07% WX (1986) n=984, 9.9% Caesarean section rate: MH (1979) n=866,10.6% WX (1979) n=999,11.2% MH (1986) n=923, 8.5% WX (1986) n=993, 17.4% Spontaneous birth: MH (1979) n=866, 87.4% WX (1979) n=999, 79.3% MH (1986) n=923, 86.8% WX (1986) n=993, 74.8%	
Watkins EL, Harlan C, Eng E	Retrospective case control	To analyze changes in	Country: USA (Indiana)	Latina migrant farm worker	Assessment of LHAs:	Assessment of LHAs	Funding: Special Projects of

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
et al. Assessing the effectiveness of lay health advisors with migrant farmworkers. *Family and Community Health* 1994; 16:(4)72-87.[81]	study. EL=2-	knowledge, health status and behaviours of migrant farm worker women (and their children) who were in contact with a Lay Health Advisor (LHA)	Association between Health Status, Knowledge of Health Practices and Exposure to Lay Health Advisors were studied in 470 Latina women (258 received antenatal care, 140 received both antenatal and child care, 72 received health care for their infants only) seen at 2 health centres (in North Carolina) serving the health needs of migrant farm workers. 20 Lay Health Advisors were assessed before they began the training program and at 2 weeks and 6 weeks after it for their knowledge of health practices by means of a 19 items Knowledge Test questionnaire. LHAs were also surveyed using the Helping Contact Questionnaire at 2 weeks and 6 weeks after their training	women in rural North Carolina were trained to be Lay Health Visitors (LHAs). LHA was defined as a person who naturally provides unplanned assistance to those persons familiar to her. Natural helpers with leadership ability, empathetic and caring attitude, interest in maternal and child health and understanding the importance of knowledge sharing, were selected from the community and trained to enable them to demonstrate the essential knowledge of maternal-child health issues and community resources, and display a non-	Knowledge Score Helping Contacts Assessment of the Target Population: Association between exposure to LHAs and maternal and birth outcomes. Association between knowledge score and maternal & birth outcomes.	Knowledge Test Significant improvement in average score at 2 weeks (84%) and 6 weeks (80%) after training as compared to pre-test (60%) $p \leq 0.05$, Helping Contacts Questionnaire: On an average 3.25 'helping contacts' were made during the specified 2 weeks periods at 2 and 6 week after training. Assessment of the Target Population Women receiving antenatal care Women who had known at least one LHA and reported to have received any help =22% Women who had known at least one LHA and did not report to have received any help =44% No significant differences were observed in between Pregnant women with or without "LHA exposure" in regard to the trimester when ANC was initiated; number of antenatal visits made or birthweight.	Regional and National Significance (SPRANS) granted by Maternal and Child Health Bureau, Department of Health and Human Services

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			regarding the social support they offered and self-assessment of their effectiveness in it. The knowledge and exposure questioners were administrated to women attending antenatal or paediatric clinic. Health status data were available on 93 respondents to the Knowledge Test and 268 respondent to exposure questionnaire and 68 women who had data on all three, health status and practice, knowledge and exposure to LHAs	judgmental, affirming attitude in effective sharing of information.		Knowledge Score There was no significant association between knowledge score and trimester when ANC was initiated, number of antenatal visits made or birthweight.	
Watkins EL, Larson K, Harlan C *et al.* A model program for providing health services for migrant farmworker mothers and children. *Public Health Reports* 1990; 105:(6)567-75.[82]	Project evaluation by retrospective analysis of medical records. EL=3	To evaluate the effectiveness of a program designed to deliver primary health care services for migrant farm-worker women and children.	Country: USA The Medical records of 359 pregnant farm-worker women and 560 children (0-5 years), who had received the primary care services at Tri-County Community Health Centres between April1985 and September 1987.	A bilingual, multidisciplinary team of health professionals collaborated with a migrant health centre in North California to develop a model program for delivery of primary care to migrant farm worker women and children. The program	Outcomes regarding Antenatal Care: Initiating care in first trimester Antenatal risk factors Dietary assessment Low birthweight (<2500g)	Socio-demographic characteristics More than half of the women were Hispanic and almost all the white women in the study were married to Hispanic men. The mean age of total group was 23.1 years. 47% of sample completed 8 or fewer years of education 75% Hispanic, 67% White and 30% Black women were married. Reproductive History: Gravidity ranged from 1-16.	Funded by Health Resources and Services Administration, Maternal and Child Health Bureau.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
				included case finding and outreach, coordination of maternal and child health services locally as well as interstate and innovative health education programme to train migrant farm worker women as lay health adviser.	Rate of spontaneous births Caesarean section rate	For approx. half of women the current pregnancy was either the first or second. The average number of pregnancies for the total sample during the 3 year period was 2.9. A significant decline was observed in mean parity from 2.0 in 1985 to 1.2 in 1987. Hispanic women in this sample did not have higher fecundity levels than black or white women. Proportion of women initiating care in first trimester: 1985 - 41% 1986 - 44% 1987 – 51% NS Antenatal Risk Factors: The most frequently reported health problems were urinary tract infection (23%) and sexually transmitted diseases (7%). 43% in the sample had a hematocrit of less than 34 at sometime during the pregnancy. Tobacco use was reported most often by North American women. Dietary Assessments. 84% had dietary recalls showing caloric intake less than 90% of their RDA. Protein intakes appeared far more adequate. 53% of women's diet	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						had 90% or more of the RDA for protein. Pregnancy outcomes and associated factors: Observed decrease in low birth weight infants born to women in the 1986 and 1987 cohorts. Birth weight <2,500 grams: 1985: 11/87 (13%) 1986: 7/107 (7%) 1987: 6/96(7%) Total 24/286(8%) 79% of all births were normal, spontaneous, vaginal delivery. 18% were by caesarean section.	
Auluck. R and Lies. P (1991) The referral progress: A study of working relationships between antenatal clinic nursing staff and hospital social workers and their impact on Asian women. Br. J. Social Wk.21, 41-61[83]	Multi-method process evaluation. Interview and questionnaire based. EL=3	To improve working relationships between nursing staff and hospital social workers and thus referral rates of Asian women to social workers.	Country: UK The study involved 3 phases; a) A statistical survey of the referrals received from the maternity unit and the antenatal clinic between January 1985- January 1986. b) Survey feedback/ action planning phase; Meeting with social work team, involving feedback and discussion of the survey result. A	To appoint 2 social workers (one male, one female, both white) physically present at the antenatal clinic during booking–in session; where women first came into contact with the maternity services, in order to improve interagency relationship, and therefore improve general	To measure referral rate To survey perceptions and attitude of maternity unit/ social work staff To improve inter-agency relationships, including referral rates.	a) During one year (1985-1986) 124 referrals were made to the social services department; of which 28 were made from the antenatal clinic. Only 5 out of 28 women referred from antenatal clinic appeared to be Asian in origin. b) The staff questionnaires responses indicated difficulties with Asian naming systems and communication with Asian women. Non-attendance at the antenatal clinic was attributed by staff mainly to cultural restrictions rather than provision of inappropriate services. 90% of	Low response rate for staff questionnaires (37.5%) Funding: not reported.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			questionnaire designed to explore relationship between maternity unit staff and hospital social work staff, was given to n=81 nurses working in the maternity unit. c) Action implementation and evaluation phase	referral rates.		respondents believed Asians in Britain to have supportive extended family networks, and therefore have less need of social services support. 60% of staff indicated that in their view Asian women were less likely to want such support, as they preferred to keep problems within the family. The questionnaire data revealed nurses' moderate knowledge of social work in general. c) Having 2 social workers physically present in the antenatal clinic during booking did not result in any consistent improvement in the referral rate, but some indications of improved communication were detected. The success of this project seemed undermined by lack of commitment of nursing staff (especially senior managers) to the project, failure to provide adequate resources and adequate office space and ineffective inter-agency collaboration.	
Carolan M, and Cassar L. Pregnancy care for African refugee women in Australia: attendance at antenatal appointments.	Qualitative study Interviews and observation EL=3	To examine factors that facilitate or impede antenatal care uptake among refugee communities using observational methods and	Country: Australia The study was conducted at the African Women's clinic located in a community health centre in the western suburbs of	Community-based clinic where staff made a particular effort to see things form the viewpoint of recent migrant women.	Women's views of the service provided.	Most of the participants came from Dinka and Amharic (Ethiopian) cultural and linguistic backgrounds. Geographic origin for all but one participant was the Horn of Africa, comprising parts of Sudan, Ethiopia, Eritrea and Somalia. One participant came from Kenya.	Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
Evidence based midwifery 5(2):54-8 (2007)[84]		semi-structured interviews.	Melbourne. 10 African women were interviewed. They were recruited by the clinic staff and those indicating interest were approached. Their length of stay in Australia varied from 3 weeks to 2 years. Parity ranged from 0 to 13. Most were in transitional housing, awaiting resettlement.	Interpreters provided, flexibility of appointments, photographs to help women understand location of the clinic and which bus to take.		Most considered pregnancy as something "women simply did, because they were women". In general, clinic attendance was high and women were seldom lost to follow-up once booked. This was despite high mobility among the group, with many living in transient housing or moving between several addresses. Telephone numbers were frequently unreliable, but contact after a missed appointment was usually possible by mobile phone or through the community worker. Participants indicated the following circumstances impacted positively on their attendance at appointments: Staff attitudes Availability of interpreters Knowledge about the clinic at community level Convenient location of the clinic Participants spoke of feeling welcome at the clinic, and also of understanding that the midwife there had an interest in their progress. For many, going to the clinic was a social event. It afforded opportunities to meet other African women, to exchange views and to learn information that would assist them.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						In contrast, women often felt alienated when attending larger hospital clinics. This seemed to relate principally to perceptions of staff as rushed and busy, to feeling 'different' and to not speaking English. The availability of interpreters was also considered important by women attending the clinic. Knowing that there would be an interpreter booked specifically to be present at their appointment made it easier for them to attend. The degree of knowledge about the clinic at community level and the convenience of its location both impacted significantly on attendance. For the midwife a whole new approach was needed: 'I had to learn to think like they did… to think about what matters to them too and not to burden them too much… I didn't want to make it hard for them to come… You have to make it very simple… and I am ashamed to say this, but I didn't give them options… they just didn't understand options…it was too confusing…they had never heard of so many things… to ask them to make choices was just too hard.' 'And just understanding their	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						ways…like I never give them early appointments now… they don't get up until late and some of them have no concept of time…they just arrive at 12.30pm for a 4pm appointment…I just learnt to fit them in and then next time I would point out the time to them'.	

Q1b. What aspects of service organisation and delivery act as barriers to take up of antenatal services for women who are recent migrants to the UK, refugees, asylum seekers or who have little or no English?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Zaid A, Fullerton JT, and Moore T. Factors affecting access to prenatal care for U.S./Mexico border-dwelling Hispanic women. *Journal of Nurse-Midwifery* 1996; 41:(4)277-84.[85]	Retrospective Cohort study EL=2-	To study attitudes, beliefs and behaviours about antenatal care of Hispanic women who had resided on the US-Mexico border.	Country: USA (San Diego County-California) 118 consenting Hispanic (Mexican & Central American) women, who gave birth at a teaching hospital participated in this study. Women were further grouped according to whether they had received one or more antenatal care (ANC) visit (ANC; n=82) or had not received any ANC (No ANC; n=36) Both groups were similar in age, education, gravidity and parity A greater proportion of women without ANC were single (44.4%) as compared to Women with ANC (28.4%).	Women were interviewed within the first 72 hours after childbirth by bilingual and bicultural Hispanic female research assistants using a dual-language interview form, and their hospital records were reviewed. Information concerning social and demographic status of the individuals and their families, attitudes and beliefs concerning the utility of ANC, personal health practices, border-crossing behaviour for reproductive health care, and intention for the future were solicited.	Barriers to Antenatal Care As reported by whole study group (n=118) As reported by Women without ANC (n=36) As reported by women with ANC (n=82) Maternal outcomes Entry in ANC in first trimester No ANC NSVD(vertex) Caesarean section Neonatal outcomes Birth weight <2,500 gm Birth weight >4,000 gm	Barriers to Antenatal Care <u>As reported by whole study group (n=118)</u> <u>Financial</u> No money/Insurance = 54 Medi-Cal(Medicaid) not acceptable by clinics = 8 <u>Organization/Practice of ANC</u> Distance = 36 Did not know where to look for care = 29 No Transportation = 28 Difficult to get the correct information = 19 Inconvenient Clinic Schedule = 15 Language = 14 <u>Cultural & Personal</u> Felt sad/depressed = 34 Too far along in the pregnancy to be accepted = 23 Fear of Immigration Services = 16 No baby sitter = 15 Did not know that ANC is important = 8	This article analyzed data of a subgroup from a multi centric larger study (n=587) Descriptive study with a convenient sample. Almost one third of data of antenatal variables like gestational age at first ANC visit is reported to be missing. No comparison in maternal and neonatal outcomes between ANC and No ANC group has been reported explicitly. Funding: by University of California Policy Seminar, Latina/Latino Policy research Program and Packard Foundation. Authors also

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			Women without ANC were significantly more likely to have family income less than $300 per month (43.3% vs. 22.2%), less likely to have US medical insurance (61.1% vs. 81.7%) and less likely to have wanted that pregnancy (77.8% vs. 92.4%).			Was told that pregnancy was too complicated to be accepted at the clinic site = 7 Could not take time off from work or school = 8 <u>As reported by Women without ANC (n=36)</u> <u>Financial</u> No money/Insurance = 27 Medi-Cal(Medicaid) not acceptable by clinics = 5 <u>Organisation/Practice of ANC</u> Distance = 16 Did not know where to look for care = 16 No Transportation = 12 Difficult to get the correct information = 8 Inconvenient Clinic Schedule = 10 Language = 9 <u>Cultural & Personal</u> Felt sad/depressed = 15 Too far along in the pregnancy to be accepted = 10 Fear of Immigration Services = 7 No baby sitter = 6 Did not know that ANC is	Received Stokes Memorial Award for Excellence in Medical Student Research and Resident Research Award of American College of Obstetrics & Gynaecologists.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						important = 3 Was told that pregnancy was too complicated to be accepted at the clinic site = 4 Could not take time off from work or school = 1 <u>As reported by women with ANC (n=82)</u> <u>Financial</u> No money/Insurance = 27 Medi-Cal(Medicaid) not acceptable by clinics = 3 <u>Organisation/Practice of ANC</u> Distance = 20 Did not know where to look for care = 13 No Transportation = 16 Difficult to get the correct information = 11 Inconvenient Clinic Schedule = 5 Language = 5 <u>Cultural & Personal</u> Felt sad/depressed = 19 Too far along in the pregnancy to be accepted = 13 Fear of Immigration Services = 9 No baby sitter = 9 Did not know that ANC is	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						important = 5 Was told that pregnancy was too complicated to be accepted at the clinic site = 3 Could not take time off from work or school = 7 Maternal outcomes Entry in ANC in first trimester; 21/118 (30.4%) No ANC; 36/118 (30.5%) NSVD (vertex); 76/118 (64.4%) Caesarean section; 35/118 (29.6%) Women in ANC group were significantly more likely to undergo caesarean section ($p<0.05$) Neonatal outcomes Birthweight <2,500 gm; 15/118 (12.8%) Birthweight<4,500 gm; 13/118 (11.1%)	
Wallace HM and Fullerton JT. Maternity care for Hispanic women who cross to the United States side of the Mexico	Cohort study EL=2-	To find data on the extent of USA-Mexico border crossing to seek maternity care, the characteristics of the pregnant women, their	Country: USA 83 border crossers 452 women who reported that they did not cross the border for reproductive health services.	N/A	N/A	Border crossers identified the following barriers to care: Lack of transportation Lack of information about where prenatal care could be received Fear of being identified by agents of the US Immigration Service Sadness or depression Work or family responsibilities	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Border. Journal of Tropical Pediatrics vol.42, 1996[86]		health status, knowledge, or needs.	1991-1992 San Diego County, California			that limited the opportunity to seek prenatal care Long waiting periods for a first appointment Long waiting times on the day of the appointment Language barriers No differences in maternal and infant outcomes were reported between the groups. The crossers were more likely to be 18 years of age or younger, less likely to speak, read, or write English, less likely to have a residence of their own, or to have the financial resources to pay for their care. They also lacked familiarity with the US health care system, leading to significant barriers to entry into prenatal care.	
Watson (1984) Health of infants and use of the health services by mothers of different ethnic group in east London. Community Medicine 6, 127-135[31]	Retrospective cohort study. EL=2-	To identify the level of satisfaction with the services offered, causes for inappropriate or under-used facilities, and to ascertain whether mothers of infants found to suffer excess morbidity differ	Country: UK 101 women randomly selected from the birth notifications (held at Tower Hamlets District health Authority). The women were from a varied population and included 49 indigenous women, 28 Bengalis, 12	Women were interviewed 8 weeks, 8 months and 14 months after giving birth. Interview questions focused on process and outcome of care during the antenatal, delivery and postnatal period. Interviews conducted by the researcher;	Level of satisfaction with services offered. Causes for inappropriate use or under-use of the facilities. Level of morbidity in women and children using the services.	82% of Bengalis, 71% of the English-speaking immigrants and 64% of the indigenous women felt that standards of care they had received in the antenatal clinic was excellent or good. Bengali mothers tended to consult a GP about their pregnancy later than others (39% at 8-12 weeks of their pregnancy vs. 84% and 88% in English-speaking immigrants and the indigenous group	The causes for inappropriate use or under-use of the facilities were not properly addressed in the research. The research was supported by DHSS research grant.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
		from other women in their attitudes towards services, the use they make of them and their expressed satisfaction.	West Indian and the rest Sikh, Indian, Chinese, Egyptian, Vietnamese or Greek. Women were divided into 3 groups: non-English speaking- (which in the event were all Bengali); English speaking immigrants; and indigenous group (Caucasians with at least 2 generations settled in the UK)	when interviewing Bengali mothers she was accompanied by an interpreter. Interviews were semi structured and tape recorded.		respectively). Only 8% of Bengali mothers went to antenatal classes and none to any form of parent-craft, because they did not know about their existence. 35% of the English-speaking immigrants and 56% of indigenous women went to antenatal and parent-craft classes. The Bengali women reported much longer waiting times in the antenatal clinic than the other two groups. A higher proportion of the Bengali and English-speaking immigrants had caesarean sections compared with the indigenous women (14 % vs. 17% vs. 4% respectively). By the time their baby was 8 weeks of age 75% of the Bengali women complained about their health problems (cold, wheezing, cough, fever, diarrhoea, restlessness, infection) compared with 29% of English speaking immigrants and 51% of indigenous women.	
McLeish. Maternity experiences of asylum seekers in	Retrospective study EL=3	To describe maternity experiences of asylum seekers in the UK.	Country: UK The article describes the findings of a qualitative study of	33 women were recruited for this study through convenience and snowball sampling.	Accessing care Information needs Experiences with	Difficulties accessing care: No directing agencies Had been refused GP registration	Funding: study was carried out by the national charity Maternity alliance

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
England. 2005. British Journal of Midwifery 13[12], 782-785[33]			the maternity experiences of thirty-three asylum seekers, based on semi-structured interviews carried out in seven English cities. The study was carried out in London, Manchester, Plymouth, Hastings, Brighton, Oxford and King's Lynn. The study focused on women who were or had recently been asylum seekers.	The women ranged in age from 14 to over 40. n=4 women were pregnant at the time of the interview and n=29 had babies from 6 days to 18 month old. The women came originally from 19 different countries and their ability to speak English varied. This study was published nationally through maternity alliance's networks who acted as intermediaries introducing potential participants.	Midwives Communication Informed consent Postnatal support Women's emotions	No money for transportation Information needs: No useful information received about maternity service Not able to attend AN classes, because: Not been told about it. Arrived in UK in the late stage of their pregnancy. No interpreter available. Communication: 18 women needed an interpreter. No interpreter available for the antenatal classes, postnatal wards and postnatal visits. Experience with midwives: Half of the women had positive experiences and commented on professionalism, warmth and kindness shown by midwives. Around half of the women encountered indifference, rudeness and racism; none had made a formal complaint. Emotional needs: Many women had complex emotional and mental health	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						needs (lack of control over their lives, missed presence of female relative, grieved aspect of the lives they had lost). Informed consent: While some women noted that they had been given clear choices about their care, others felt they were coerced into accepting interventions that they feared, or were not consulted.	
Davies MM. The maternity information concerns of Somali women in the UK. Journal of Advanced Nursing 36(2), 237-245[32]	Descriptive EL=3	To explore the maternity information concerns of a group of Somali women in a Northern English city to investigate the relationships of these women with maternity health professionals.	Country: UK Individuals selected were Somali women living in a Northern English city who had used maternity and women's health services in that city. 13 participants were used in the study, all of whom were Somali women living in the UK.	A purposive and convenience sampling approach was used to recruit participants. The maternity information experiences were explored using focus groups and semi-structured interviews. All exchanges in English were translated into Somali by an interpreter.	Demographic information Personal details Marital status Length of residency Areas for discussion: Appropriateness of information sources available Language barriers Attitudes towards patients from a non-English speaking background Semi-structured interview procedure,	The ages of the participants ranged from 21 to 40 years. The majority (85%) were currently married. Participants had been pregnant up to 4 times in the UK; the median number of pregnancies in the UK was 3. The socio-economic class was not measured because it was not a focus of the study. The majority had been resident in the UK for less than 10 years. For many Somali women obtaining advice from the health service was an arduous task. For many women, the GP was their only point of reference within the NHS. Understanding the different services within the health service was a major step in getting the right information. Difficulties were compounded for recent	Small sample may not be representative of Somali women in the UK. The researcher was white and did not speak Somali; participants may have been less ready to discuss complaints and to describe incidences of discrimination. The length of time that the participants had spent in the UK was not considered when selecting participants for the focus group. The

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
					open-ended questions relating to: Quality of information Perceived relationship with health professionals Uses to which maternity information was put.	immigrants by their unfamiliarity with its multilayered organisational structure. Several participants described the language barrier as the most important obstacle they had encountered. Women often received no information about their care due to difficulties in understanding English. For Somali women who have difficulties communicating in English, an interpreter is a necessary prerequisite for any consultation with a health professional. In some cases the health professional insisted on the presence of an interpreter, with GPs occasionally refusing to see patients who had not brought someone to provide interpretation. The need to find an interpreter could lead to acquaintances and family members being used. Criticisms were made of this practice, which many women felt was embarrassing and which inhibited them from seeking information concerning sensitive issues. Participants also reported that	degree to which individuals were established within the community may have strongly influenced interactions within the focus group. Also, for women who had lived in the UK for a number of years, experiences of poor information provision may no longer accurately reflect current local practice. Funding: University of Sheffield

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						concerns about confidentiality prevented them from disclosing issues. An individual's decision to avoid communicating health concerns could lead to being denied appropriate medical treatment. While an interpreting service was provided by health trusts in secondary care, this was on an ad-hoc basis and so women who needed to use the service were required to book 3 days in advance. Given the necessary booking-time, contact with health professionals for non-English speaking women was often delayed until the women's health had deteriorated or had improved to the point that she no longer required advice. Where professional interpreters were provided, individual differences in translation could confuse patients. Problems of interpretation were also exacerbated by the use of untrained staff. In this study, non-English speaking women considered that they received less attention from health professional because they were perceived as 'difficult patients'.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						A further cause of difficulty for Somali women seeking maternity information was perceived to involve the negative attitudes of health professionals towards women with large families. The participants compared their treatment negatively with that offered to 'other women'. As other mothers in the maternity ward were likely to be Caucasian it raised questions about the racial basis about information provision and decision-making.	
Jayaweera H, D'Souza L, and Garcia J. A local study of childbearing Bangladeshi women in the UK. *Midwifery* 2005; 21:84-95. [87]	Qualitative interviews EL=3	To examine the circumstance, experiences and needs of a local sample of low income, child bearing women of Bangladeshi origin.	Country: UK (Leeds) This is a sub group analysis (n=9) of a larger study (n=52) of the needs and experience of low income, child bearing women. These women were recruited from a neighbourhood project set up to respond to the needs of Sylheti-speaking women with limited English fluency. Pregnant women or women with a baby under 1 year, who were eligible for	The neighbourhood project was set up to target Sylheti-speaking (also open to Bengali or Urdu speaking) women provide services including benefit advice, antenatal and postnatal services, counselling, English speaking classes, training for employment and business opportunities, and crèche facilities. Antenatal & postnatal sessions were conducted by project and NHS staffs and women were encouraged to join	Experience with Antenatal & Postnatal Care	<u>Experience with Antenatal & Postnatal Care</u> Most of them satisfied with access to, and quality of care they received during pregnancy and after child birth. Non English speaking women appreciated the role of home visits by GP and midwives with interpreter. English speaking women believed that being able to communicate in English is associated with quality of care.	Small sample size non representative of women who are more isolated from organised care. Funding: Community Fund and Department of Health.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			means-tested benefits were interviewed in Sylheti (6) and English (3)	mainstream maternity services. Outreach health promotion classes on topics like diet and exercise in pregnancy, pain control in labour, breast feeding, weaning and parenting offered by local teaching hospitals.			
McCourt et al. Does continuity of carer matter to women from minority ethnic groups? 2000. Midwifery 16[2], 145-154[88]	Retrospective study Interview based EL=3	To explore the maternity care views and experiences of minority ethnic women who did not respond to a postal survey of mothers' responses to care and to assess whether the concept of continuity mattered to them	Country: UK Maternity care in a London NHS Trust with two teaching hospital units, where women in a specific neighbourhood received caseload midwifery care (one-to-one) as part of a pilot scheme and other women received conventional (normally 'shared' between GPs, hospital consultants and midwives) maternity care. Participants: 20 women, half receiving caseload midwifery care and half conventional	This study was based on a large scale multidisciplinary evaluation of new model of maternity care; Case load midwifery (A postal survey of mothers, NCT 1995). 20 ethnic women who did not respond to the postal survey of mothers were contacted and interviewed individually, half receiving caseload midwifery care and half conventional maternity care. Interviews tape recorded and conducted in women's home between 3 and 9 months postnatally. The interviews were transcribed in full and	N/A	The women interviewed varied in terms of class, ethnicity, religion, social support and personal history. Important themes emerged from the data: Continuity of carer and women focused care: Knowing the carers and being known by them were valued by women in both groups (knowing women as a person with her history and experiences, hopes and fears). Many of the women's concerns were about whether they felt themselves or the institution to be focus of care. Language and Communication: Language remained a major barrier to access to good services for non-English	Funding: study was supported by a grant from the Kings Edwards hospital Fund for London

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			maternity care. The one-to-one midwives carried a personal caseload, set at 40 women of all risks giving birth per year, working with a partner to provide antenatal, intrapartum and postnatal care for women on their caseload.	an open text analysis was then performed.		speaking women, which is aggravated in fragmented care system (conventional maternity care) with absence of prior knowledge of the individual woman. Care and Support: Women's needs had not been met appropriately in conventional care. Having a sense of control: Having a sense of control flowed from: Being focus of care Being known by your midwife	
Lyons SM. Et al. Cultural diversity in the Dublin maternity services: the experiences of maternity service providers when caring for ethnic minority women. Ethnicity and Health Vol.13 No.3 June 2008, 261-276[36]	Descriptive EL=3	To explore the experiences, understanding and perspectives of maternity service providers when working with ethnic minority women in the Dublin maternity services during 2002 and 2003	Country: Ireland Three public maternity hospitals in the greater Dublin region.	A purposeful sample of departments and personnel types was taken and data were collected during 2002 and 2003. A total of 15 semi-structured interviews were conducted with obstetricians and key informants from the specialised areas of infection control, social services and bereavement services. Five focus groups with midwives and auxiliary nurses from	The topic guideline covered several different areas, including eliciting views and feelings on the overall situation in their area of work/hospital, unmet needs of ethnic minority women and staff themselves including training and support provided by their hospital.	The biggest issue identified by all service providers was the inability to communicate effectively, mainly due to the women's lack of proficiency in English language. Service providers felt they were unable to get accurate obstetric and medical histories due to lack of proficiency in English. Some participants were uneasy about the appropriateness, including the legality, of using family, friends or even young children as interpreters, because of issues of confidentiality for	Funding: Health Research Board, Ireland

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				the antenatal clinic, postnatal wards and labour wards.		the woman and accuracy of the interpretation. The nature of obstetrics means that interpreters are often needed out of hours or urgently to deal with emergencies, but making arrangements and waiting for the interpreter took time. Concerns about the quality of the professional service: if the interpreter was trained properly or had the necessary medical terminology to understand and explain medical details. The issue of using male interpreters was also raised, as often questions about pregnancy can be personal or intimate, so it can cause difficulties if a man is interpreting. Unfamiliarity with health care system, how to use it and what to expect from it. Late bookers – participants perceived these women very negatively, with more than one participant commenting that they seemed to arrive in the hospital straight from the airport. The service providers saw ethnic minority women as not	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						conforming to the 'unwritten' rules of behaviour of the hospital and they were more demanding (not very clear in the paper what this means). They were not in the system and did not have access to medical care and so used the emergency service. Racism - some service providers considered that they were not racist but felt had genuine reasons for their issues in relation to ethnic minority women. Some participants often referred to all ethnic minority women as African when generalising. Many participants classed all ethnic minority women as asylum seekers even though asylum seekers represent only a proportion of ethnic minority women presenting at the maternity hospitals.	
Iliadi P. Refugee women in Greece: - a qualitative study of their attitudes and experience in antenatal care. Vol. 2, issue 3 (2008) [89]	Descriptive EL=3	To examine whether refugee women, resettled in Greece, receive antenatal care and to explore possible factors that may influence their attitude towards maternal care.	Country: Greece Refugee women in Greece are entitled to free medical, pharmaceutical and hospital services, on the condition that they are not covered by any insurance and are in need of financial assistance. Refugee	The criteria of sampling were the participants to be a refugee women already settled in Greece during their pregnancy, to be presently pregnant more than 12 weeks of gestation or to have been pregnant during the last 5 years. The interviews were conducted in	Language barriers Financial Barriers Familiarity with the health system Continuity of care Support Well-being of mother	Language Barriers: Greek maternity services lack interpreting services and the information material was written in Greek. The women were usually escorted to appointments by family members or friends who speak Greek. However, many issues were considered taboo and they were embarrassed to ask questions in front of family members.	Funding sources not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			women are usually sent to outpatient clinics of public maternity hospitals for their antenatal visits and medical examinations. There is no continuity of antenatal care in these clinics, as women are examined by different doctors and midwives at each visit. Primary antenatal care is also provided by 2 non-governmental organisations. Both organisations have an open polyclinic in the centre of Athens which pregnant women may visit to see an obstetrician. Primary antenatal care is also provided by the clinic of Greek Red Cross to women who live in the refugee reception centre of Lavrio. A sample of 30 refugee women	Greek and/or English and in 15 out of 26 interpreters were used, professional, family members or friends.	and child The man's role in pregnancy Vaginal Examination	Finances: Women with social security could visit the antenatal clinic of the local branch of their insurance organisation for antenatal visits and medical tests. These women visited the antenatal clinic regularly, took any prescribed medication and had all the necessary tests done. Women with no social security, nor refugee or asylum seekers status, visited antenatal care rarely and had few to none of the medical tests done. For their antenatal visits they went to public hospitals where the cost was low, or to the NGOs where visits were free. Familiarity with the health system: The majority of women were familiar with the health system, they were aware of the antenatal clinics that provided free antenatal care for the documented refugees, and/or less expensive medical care for undocumented ones. The main sources of information were relatives and friends who had been in Greece for a long time, health professionals who attended these women,	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			were selected through 5 non-governmental organisations, a refugee centre, a refugee network, 3 refugee communities and a public hospital in Athens. The population for the study consisted of 26 women (exclusions not reported)			governmental organisations and NGOs. Continuity of care: There was no continuity of care for the women who visited the antenatal clinics of public hospitals. All the women wished for continuity of care. Support: Refugee women were in need of psychological support. Many of them had no one to talk to, except their husbands. But most felt uncomfortable discussing female matters with them. Women who visited a different doctor at each visit complained about the unwillingness of the caregivers to give them any information and support. No psychological support was offered during the perinatal period, as the social workers in public hospitals make their appearance only to arrange any financial or bureaucratic refugee issues, while the local social services were unaware of women's existence. The ultrasound test was the only test that all the women made a point of having. All the other medical examinations, blood and	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						urine tests, were considered less important to them because there was no visual indication of the baby's health. Refugee women avoided discussing issues related to the female body in the presence of men, even with male doctors. They discussed such issues only if the doctors brought them up, or when women were very concerned with their situation. Refugee women reported that they would feel more comfortable with female doctors.	
Wiklund H et al. Somalis giving birth in Sweden: a challenge to culture and gender specific values and behaviours. Midwifery (2000) 16, 105-115[90]	Descriptive EL=3	To study the childbirth experiences of Somali women and men in Sweden	Country: Sweden 9 women and 7 men were interviewed. Women were born in Somalia, now living in Umeå or nearby, and had given birth to babies in Umeå after 1992. The women were aged between 21 and 55 years, and the men between 27 and 57 years. Most of the Somali	All interviews were conducted in the women's homes. The interviews were semi-structured or themed, interviews with 5 main themes, completed by follow-up questions. All the women's interviews were conducted in Somali with the help of a female interpreter. Two men chose to speak Swedish, and a male interpreter was present for the other interviews.	The themes for the interviews were not reported.	Strong feelings of loneliness and longing for the social network of family and relatives. For the women, even those who knew Swedish spoke about misunderstandings in dialogues with Swedes, for example with a doctor or midwife. In their meeting with antenatal and delivery care, some of the women used interpreters which was not their preference: "I think it is a good thing when two people talk to each other, it is not good to have a third person in the conversation." Some men served as the women's personal interpreter.	Funding: National Institute of Public Health in Sweden

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			women in the study claimed to have belonged to more affluent groups in Somalia. In most cases they had had 4 years in primary school and were relatively well-situated both economically and socially when they lived in Somalia.			One woman reported that she was too shy to ask sensitive, female question while her husband was in the room.	
McCourt et al. Does continuity of carer matter to women from minority ethnic groups? 2000. Midwifery 16[2], 145-154[54]	Retrospective study EL=3	To examine satisfaction with care and services in relation to antenatal care and prenatal testing and to present what women say about what can be done better to improve antenatal care for women from an Islamic background.	Country: Australia Melbourne Metropolitan Area. Participants: 15 women of Islamic background who are now living in Melbourne	Women were recruited through an Islamic school and through a snowball sampling method. All interviews took place in the women's home. All except one were tape recorded in this case notes were taken throughout the interview. In 2 cases when women spoke little English, a female interpreter was employed. A thematic approach was used to analyse data and drive patterns in the women's responses	Experiences with care relating to antenatal care and antenatal testing	15 women who were interviewed migrated from different countries. n=8 from middle east, n=2 from far east, n=1 from Egypt and n=1 from Morocco and n=1 from Pakistan. The mean ages of all women were 32.8 years. 14 were married and one divorced. 9 women were housewives, 3 were students and 3 had professional employments. The average number of years of residence in Australia was 8.7. Women had positive experiences with standard of the antenatal care and antenatal testing they received in Australia. Issues related to women with Islamic background dissatisfaction with service 1) There was a lack of sufficient communication between health care providers and the women.	Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						2) Language barriers and lack of cultural appreciation among health care providers. 3) Healthcare providers' assumptions based on physical appearance. 4) Insensitive service: women identified the issue of gender of health care providers as important; women stated clearly their need to have female doctors for their care. 5) Being informed but not being pressurized to take antenatal tests.	
Sherraden MS and Barrera RE. Prenatal care experiences and birth weight among Mexican immigrant women. *Journal of Medical Systems* 1996; 20:(5)329-50.[91]	Qualitative Interviews EL=3	To examine the barriers to antenatal care from Mexican immigrant women's perspective.	Country: USA (Chicago) 41 Mexican immigrant women (19 with normal weight babies and 22 with low birth weight babies) were interviewed.	Interviews were conducted in a minimum of 2 sessions lasting 4-5 hours or longer. First session was an open ended discussion about women's life, migration history and pregnancy experiences. The second session contained more close ended questions about current circumstances and health service utilization. Interviews were recorded, transcribed, coded and analyzed.	Beginning of antenatal care Number of antenatal care visits Adequacy of antenatal care (Kessner's Index) Antenatal Education Barriers Identified	Beginning of antenatal care 1st Trimester 28/41(68.3%) 2nd trimester 6/41 (14.6%) 3rd trimester 7/41 (17.0%) Number of antenatal care visits 0 to 3 – 5/41 (12.8%) 4 to 6 – 8/41 (20.5%) 7 to 10 – 11/41 (28.2%) 10 or more – 15/41(38.5%) Adequacy of antenatal care (Kessner Index) Adequate 26/41 (63.4%) Intermediate 6/41 (14.6%) Inadequate 9/41 (22.0%)	Descriptive study Funded by Robert Wood Johnson Foundation and the University of Missouri.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Antenatal Education received Nutrition 25/39 (64.1%) Breastfeeding 23/39 (59.0%) Substance use 12/39 (30.8%) Child birth 21/39 (23.1%) Barriers identified (the women often indicated more than one barrier to care, therefore the percentages add up to more than 100%) Long waits - 30/41 (73.2%) Language/ communication - 18/41 (43.9%) Emotional/physical depression - 13/41 (31.7%) Fear/Anxiety - 12/41(29.3%) Lack of transportation - 8/41 (19.5%) High cost of care - 5/41 (12.2%) Lack of child care - 2/41 (4.9%) Inconvenient hours - 1/41 (2.4%)	
Herrel N, et al. Somali refugee women speak out about their needs for care during pregnancy and delivery. Journal of Midwifery and Women's Health vol49,	Descriptive EL=3	To understand how Somali women have experienced pregnancy and childbirth in Minnesota, determine the specific childbirth education needs of Somali women,	Country: USA 14 Somali women recruited from within Minneapolis. All participants had given birth to only one child in the US. Women with multiple birth experiences in the US were believed to be acculturated to	N/A	N/A	Women's ages ranged from 20 to 35 years, and participants had lived in the US for an average of 6.2 years. All the women had given birth to one child in the US. Six participants had no other children. Most women were married, but only half of these were living with their husband. All women had had some form of education, although only 14% reported attending college.	Not specifically prenatal care. Small number of participants, all were good antenatal care attenders. Not recent migrants.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
no.4 2004[46]		determine the most effective ways to increase attendance at prenatal visits, and determine the most appropriate approach to childbirth education for Somali couples.	the American health care system. Focus groups were conducted in the Somali language and facilitated by a trained focus group moderator.			Many women voiced negative opinions regarding the care they received from nursing staff in particular. The general perception was that nurses discriminated against Somali patients on the basis of race and were less sensitive to their needs. Others perceived that they were discriminated against because they did not speak English. Women urged healthcare providers to "understand the cultural differences of Somali women" and as one participant explained "I would advise them to get to know us first because some of us are educated and some of us are not. We are totally mixed – just like them. They should wait before treating us like primitive people." Women were presented with 13 different childbirth education topics. Out of this list each woman was asked to select the three most important topics about which she would want more information. Overall, most women wanted more information about the delivery room experience, pain medication, why prenatal visits are important, how interpreters	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						are used at the hospital, and services and care they can expect hospital nurses and staff to provide. Many women thought that they were not given a choice about whether to use an interpreter and were assigned an interpreter simply because they looked Somali or because they had a Somali name. Many thought interpreters were not competent in medical terminology, and several suggested that patients were sometimes more knowledgeable of medical terms then interpreters themselves. Most women said that they attended their prenatal visits and agreed that prenatal visits were important. Of eight options women were asked to select the three most promising ways to encourage Somali women's attendance at prenatal appointments. Of these, most women endorsed reminder telephone calls to mothers before their appointments, Other suggestions were to provide child care for other children, and transportation to the appointment. Women were presented with 11 different possible formats to	

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						learn about pregnancy and childbirth. The most popular options selected were videotapes to take home, tours of the hospital's birth centre in Somali, audiotapes and printed materials.	
Gurman TA and Becker D. Factors affecting Latina Immigrants' perceptions of maternal health care: findings from a qualitative study. Health care for women international, 29: 507-526, 2008[92]	Descriptive EL=3	To better understand Latina immigrant women's experiences with maternal health care services in the US. To identify barriers that Latinas faced when navigating maternal health care services and to explore participants' perceptions about the quality of the care they received.	Country: USA Latina immigrants to the US who had delivered in hospitals of a Mid-Atlantic urban area during the 12-month period prior to their participation. 13 women participated. 6 participated in the in-depth interviews. 2 had lived in the US for fewer than 2 years, 3 had lived in the US between 5 and 6 years, and 1 for 20 years. 7 women participated in focus groups but the length of time they had been in the US was not collected. Although Latinos residing in the US	All interviews were conducted in the participant's preferred language. Participants were compensated with one $10 international phone card. In-depth interviews were organised around open-ended questions.	Psychological support during pregnancy and social networks Pregnancy related healthcare seeking behaviour Perceived quality of health care services Expectations of childbirth related to experiences in their country of origin Communication with providers	One of the most important issues affecting women's experiences with care was communication problems due to language barriers. Interpreters often were not available for the women, and, as a result, staff and providers would try to "make do" and would attempt to communicate with women in English or by using gestures. These strategies often were unsuccessful, as women reported limited understanding when providers and staff used these approaches. One participant commented "the doctor spoke [in English], and I would just nod my head. I understood little, about half of what was said". Another issue discussed by several women was discrimination due to either language or being an immigrant. The value of respect for authority may make it difficult for new Latina mothers to criticize the care they received	Funding source not reported. Study conducted in one Mid-Atlantic city, with a group of women who had social networks of support through their families and friends, and who were connected to the social service system.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			demonstrated linguistic heterogeneity, 60% were monolingual speakers of Spanish.			from medical professionals who are perceived as being in positions of authority and who should be respected. Women who had given birth in health facilities in their countries of origin often had experienced care settings with lower standards of care than what was common in many US hospitals. These experiences shaped women's evaluations of their hospital experience in the US.	
Shaffer C, F. Factors influencing the access to prenatal care by Hispanic pregnant women. 2002. Journal of the American Academy of Nurse Practitioners 14[2], 93-96[93]	Retrospective study EL=3	To explore factors influencing the access to antenatal care among Hispanic pregnant women living in the United States	Country: USA A convenience sample of 46 Hispanic migrant pregnant women, attending county clinic or a hospital clinic in Chattanooga, were interviewed over a 12-month period using a set of five open-ended questions.	The interviews were conducted in Spanish by a bilingual researcher, either in person or over the phone. Interviews occurred once at some point during the course of antenatal care. The responses were recorded on the interview sheet for each individual. The data collection was continued until a pattern of merging themes arose and Content analysis was performed.	Gestational age at the beginning of prenatal care Deciding factors that influenced attendance at the clinic Number of pregnancies, live births, deaths of children Country of origin Experiences encountered at other facilities where there were no Spanish-speaking providers.	Demographic information: Age: mean 24 yrs Range: 18-45 Parity: primiparas (n=19) multiparas (n=27) Gestational age at entry into antenatal care: First trimester (n=16) Second trimester (n=23) Third trimester (n=7) Factors influencing access to antenatal care mentioned by women: Ability to communicate (n=46); having someone who spoke their language either a Spanish speaking friend, translator or Spanish speaking health care provider. Cultural sensitivity demonstrated	In phone interviewing all non-verbal elements of communication are missing. Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						by a bilingual health care provider (n=22): having staff being culturally knowledgeable of their customs, expectation had a positive effect decision to access antenatal care. Availability of antennal care (n=13); transportation and clinic hours.	
Guendelman et al. Improving Access to Prenatal Care for Latina Immigrants in California: Outreach and Inreach Strategies. 1991. International Quarterly of Community Health Education 12[2], 89-106[94]	Retrospective descriptive study. EL=3	To assess strategies for improving antenatal care outreach to low income Latina immigrant women in San Francisco	Country: USA 12 focus group sessions were conducted with 67 participants (n=23 providers and n=44 women) between April and September 1990. A purposive sample of 23 providers including n=7 lay health providers, n= 4 nurses, n=4 social workers, n=3 health educators and n=2 nutritionists attended the discussion session. Each session lasted about one hour and included n=3 to n=8 participants. Separate sessions were held with n=34 Latina consumers of	Latina women antenatal care project. The project sought the views and perceptions concerning barriers to early antenatal care of both the health care providers to Latina women in the county as well as the Latina consumers of health care. Both groups were asked to suggest improvements to antenatal health outreach programs.	Barriers to antenatal care. Outreach and inreach strategies.	The mean age of participants was 26.3 (SD 5.4) and had 9.6 (SD 3.5) years of education. a) Main identified barriers to antenatal care: Low socio-economic status Low income Unemployed spouse Low education Immigrant status Undocumented status Language barriers Isolation Fear of deportation Unfamiliarity with community recourses Cultural attitude and beliefs Machismo Female modesty Low self esteem Communication gap between providers and women	Discrepancy in the number of the participants. Claimed the study included 67 participants, however data were explained and analysed for only 56 participants. No clear description on data analysis. Funding: The study was funded by the San Francisco Department of Health

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			antenatal care. Women who had started antenatal care early (first four months) were invited to join separate groups from women who had delayed (fifth month or later) or no care.			Institutional constrains Complex, intimidating bureaucracy Long waiting time Non Spanish speaking staff b) Improving outreach: Health information and education Encourage Spanish mass media Conduct health campaign Provide information at appropriate community location Coordinated community resources Ensure cross agency referrals Identify community leader and train them as case finders To improve motivation toward early use of care: Expanded pregnancy test Implementing women's support groups Provide transportation , childcare services In reach strategies: Increase the personal touch Hire bilingual staff Prioritize needs Reduce waiting time Train eligibility staff in public	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						relations	
Rice PL and Naksook C. The experience of pregnancy, labour and birth of Thai women in Australia. *Midwifery* 1998; 14:(2)74-84.[95]	Descriptive survey Ethnographic Interviews EL=3	To identify the perception and experience of pregnancy care, labour and birth of Thai women	Country: Australia (Melbourne Metropolitan Area). 30 Thai women were recruited through social and cultural centres of Thai communities using snow ball techniques. The women were interviewed in their homes in the Thai language by authors after obtaining an informed consent. Sample characteristics Age (years): 20-30: 9 31-40: 15 41-50: 4 50+: 2 Religion Buddhist: n=30 Marital Status: Married: 25 Divorced: 1 Separated: 1	Service description	Perceptions of Antenatal care Experience of antenatal care Comparison of experience of pregnancy between Thailand and Australia Knowledge of maternity services in Australia	Perceptions of Antenatal care: Women saw AN care as an important aspect of their pregnancy and never missed any AN appointment. The majority of the women sought a general practitioner for confirmation of their pregnancy as soon as they believed that they were pregnant. Nearly all the women were referred directly to a hospital for their AN care; a few were referred to private obstetrician and some remained under the care of their GP. Most women attended AN classes arranged by the hospitals and believed that the classes were important. Experience of antenatal care, Most women felt that the care they received was good. All women mentioned a vaginal examination as a common experience in ANC. Many women felt that the examination was a normal procedure for pregnancy and therefore did not feel too apprehensive about the examination. However, to some women the process was embarrassing particularly when the doctor was male.	Funded by Victorian Health Promotion Foundation and a Post doctoral fellowship by the Faculty of Health Sciences in 1994-95.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			Widowed: 1 Single Mother: 2 Length of Stay in Australia 1-5 years: 16 6-10years: 12 11-15 years: 1 16+: 1 Experience of Birth Thailand only: 4 Australia only:17 Both countries: 9			Some women said that they could not really understand healthcare providers during antenatal checkups because of language barrier. Most, women needed their husband to help with interpretation. Comparison of experience of pregnancy between Thailand and Australia In general, the women said that care received during pregnancy was much better in Australia. Women mentioned the doctor and midwives in spite of not always understanding them, treated them well Health system in Australia was seen being better than in Thailand. Knowledge of Maternity services in Australia Women reported that they did not know much about maternity services in Australia because of their limited English language ability and in result depended upon their husbands, friends or GPs.	
Straus L, McEwen A, and Hussein	Qualitative study using in depth narrative	To study the experiences of childbirth in the	Country: UK	After obtaining and recording verbal consent, in-depth	Themes and sub-themes identified after the analysis of	Themes and sub-themes identified after the analysis of	Most of the interviews conducted in

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
FM. Somali women's experience of childbirth in the UK: Perspectives from Somali health workers. *Midwifery* 2009; 25:(2)181-6.[40]	interviews. [EL=3]	UK from Somali health workers' perspective.	Eight Somali women living the UK, who had been health professionals in Somalia and/or were practising in the UK, were recruited by researcher attending two Somali women's community groups in London over a period of six week. Participants either attended these groups or were identified through snowballing. Age ranged from 23 to 57 years and 6 women had given birth in the UK.	individual interviews were held with the women. An interpreter (who was a friend of the woman) was used on one occasion. Interviews were semi-structured without predefined questions. All interviews were recorded, transcribed and then analysed using a thematic analysis.	narratives.	narratives Circumcision: Female genital mutilation is still wide spread in Somalia. Due to scar formation perineum of women who had undergone to FGM is more prone to rupture during birth. Many midwives and doctors in the UK are not trained to deal with it and often reluctant to accept their request for episiotomy and unnecessarily encourage Caesarean section. Communication: Lack of interpreters/ 'suitable' interpreters. Other aspects of communication barriers identified like, Inability to communicate effectively with limited English, use of complicated language and medical terminologies by healthcare staff. Lack of non-verbal communication (listening and physical contact) which are common in Somalia. Oral traditions were considered as the most significant difference between UK and Somali culture. Somali women did not like information provided in leaflets and preferred to be explained verbally. Cultural aspects of care:	English by an English person which may contain some cultural and communication difficulties. Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Continuity of care: Somali women preferred to see the same health professional (midwife or obstetrician) throughout the pregnancy. The trust that is developed from a relationship with only one person over nine months was considered hard to achieve with the team of multiple health professionals. This difficulty was also compounded by asylum seeker status for which they were required to move the accommodation frequently due to dispersal policies. Stereotyping and judgmental behaviour of healthcare professionals that led the women feeing patronized and not in control of their birth. These stereotypes revolved around the ideas that Somali women were unintelligent, lacking in knowledge about pregnancy or childbirth and were unaware of family planning. Pressure arising from migration experience: Distressing experiences of maternity care were reported to increase by pressures arising from the experience of being a refugee. These pressures included social and psychological problems such as – Isolation and depression,	

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						– family difficulties such as lack of family support and marital breakdown, – insecurity of personal identity, These pressures contribute to feelings of vulnerability and anguish, and are a significant part of the distress experienced whilst pregnant in the UK in addition to fears for the future welfare of the baby.	
Briscoe L and Lavender T. Exploring maternity care for asylum seekers and refugees. *British Journal of Midwifery* 2009; 17:(1)17-24.[96]	Longitudinal, exploratory, multiple, collective case studies. [EL=3]	To explore the experience of maternity care by three asylum seeker and one refugee.	Country: UK 14 asylum seeker/refugee women, identified in hospital notes were approached but 9 of them declined to participate. One of the 5 women who consented to participate in the study was dispersed before 20 weeks of gestation and rest 4 women were followed prospectively for data collection. Three women were asylum seeker and had been in the country for less than 1 year. They were from Afghanistan (26	Data collection occurred in hospital setting or the woman's home and employed multiple methods like semi-structured taped interviews, field notes and photographs taken by the women. Women were given disposable cameras and guided to capture anything related their maternity experiences that they would like to share with the researcher. In-depth interviews were conducted five times during antenatal (3) and postnatal (2) period. Photographs taken by women used as prompts for conversation during	Key themes.	3 key themes emerged after analysis; Perception of self: Identity crisis due to forced displacement. Hatred for 'self' due to previous traumatising experiences. Negative interpretation of gazes and gestures of others. Asylum seeker/refugee women regard and interpret themselves through the eyes of others in the society. Asylum seeker/refugee women may achieve high social status among peers via providing supportive role in child birth. Female dominance around child birth in native cultures. Understanding in practice: Understanding between women and carers appeared to be complicated by language barriers and concepts which were difficult to express in alternative languages. Understanding is taken for	Small sample size non generalisable. Analysis of translated transcripts. Ethical approval granted by local Hospital Trust and University of Central Lancashire funding not reported.

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			years, parity 2), the Congo (36 years, parity 2) and Rwanda (19 years, parity 1). The one who was refugee was from Somalia (23 years, parity 3) and had been in the country for less than 3 years. Except the woman from Rwanda all of them required translation during interviews.	4th interview (during 1st postnatal week). Transcription of tapes and field notes occurred as soon as possible after interviews by researcher and interpretations of the interviews was verified at the final interview with the women around 6 weeks postnatal. The data was then read and re-read and the process of analysis took three key stages; de-contextualization, display and data compilation.		granted in the health system which may contribute misinterpretation. Interpretations of gesture and symbolic representation may lead to serious misunderstanding. When caring non English speaking women the health care staff need to be aware the procedures which are deemed relatively safe here may be viewed from a very different standpoint by women of different background. Partnership in care may emerge from positive aspects of non-verbal communication. Influence of Social Policy Social policy regarding dispersement emerged as an overriding influence upon the women's lives during their maternity care. Being prevented from working increases social exclusion and hampers integration in the new culture as well as lowers economic status. Housing problems.	
Hoang HT, Le Q, and Kilpatrick S. Having a baby in the new land: a qualitative exploration of	Qualitative study using semi-structured interviews. [EL=3]	To study migrant women's view on maternity care between Australia and their native country and the	Country: Australia (Rural Tasmania) 11 women of Asian background living in rural Tasmania who have experienced childbirth in Australia or in her	The interviews took approximately 40 min to complete and consist of 20 questions concerning the background of women, their maternal care	Main themes emerged from transcripts.	Main themes emerged from transcripts. Three main categories identified: Migrant with traditional practices in the new land. Keeping warm after birth: Traditionally women are allowed to shower or wash her hair for at	Small sample size. Funding not reported.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
the experiences of Asian migrants in rural Tasmania, Australia. *Rural and Remote Health* 2009; 9:(1)1084.[97]		barrier they face in accessing health care.	original country and Australia identified through referral by ethnic community members were invited to participate in the interviews and 10 (n=10) accepted the invitation. 2 women spoke limited English and their interviews were by teleconference with interpreters from outside their own rural communities to ensure confidentiality. The rest could communicate in English.	experience in Australia, cultural beliefs and practices and how they adapted these in a new environment, and barriers to accessing healthcare. Country of origin of participating women: Vietnam (n=4), China (n=2), Japan (n=2), Korea (n=1), Philippines (n=1). Transcripts were analyzed and coded using grounded theory. Nvivo v8.0 (QSR International) software was used to organize the data.		least a week after delivery, and in some cases for a month, in order to keep warm. Diet in confinement (period of 30 days after birth) It is believed that because the mother has lost 'heat', blood and vital energy during labour, dietary measure help recover the heat and energy. Good rest and physical precaution during confinement. Social restriction during confinement period. No husband present at birth Adaptation to new culture: 7 out of 10 women did not abide by the traditional practices and adopted modern practices. Support and postnatal experiences. Support from extended family members plays an important role in the wellbeing and maternal health of Asian women. Barriers to accessing maternal care. Lack of English Language skills Unassertive and inhibitive nature of Asian women and reticence in speaking out.	
Bowler I. 'They're not the same as us': midwives'	Descriptive EL=3	To examine the stereotypes of South Asian descent women	Country: UK The majority of women observed	Data collection from observation which was supported by data from interviews	Midwives' attitudes to and perceptions of Asian women	The stereotypes of Asian women have four main themes: the difficulty of communication; the women's lack of compliance with	No funding source reported. Old study, 1988.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
stereotypes of South Asian descent maternity patients. Sociology of Health and Illness Vol.15, no.2 1993[51] (also Bowler, I. Stereotypes of women of Asian descent in midwifery: some evidence. Midwifery 1993, 9, 7-16; and Bowler, I. Further notes on record taking and making in maternity care: The case of South Asian descent women, The Sociological Review 1995)		held by midwives in a British hospital conducted in 1988.	were Muslim (of either Pakistani or Bangladeshi descent) but there were also Hindus and Christians. All were married and working class. Most women were recent migrants from rural areas; did not work outside the home and had limited contacts with non-Asian British people. The use of medical services was therefore one of the few encounters they had with 'dominant' cultural values in British society.	with 25 midwives. Interviews were conducted primarily with midwives but also with a small number of other personnel including hospital doctors and GPs, members of the local community and community relations councils. Both directive and non-directive questions were used. Formal interviews were arranged in advance, 10 were conducted. Natural interviews were interactions which occurred during observation, and in the context of general conversation. There were 15 natural interviews conducted.		care and abuse of the service; their tendency to 'make a fuss about nothing'; their lack of 'normal maternal instinct'. Communication difficulties: The level of competence in English among the Asian women observed was generally low. This resulted in the women being characterised as unresponsive, rude and unintelligent. It also helped to strengthen the stereotypes because it was difficult for women with little English to make a personal relationship with the midwives and therefore challenge the assumptions made about them. None of the midwives in the hospital was of Asian descent and the hospital did not employ interpreters or advocates. Women who tried to speak English frequently offended the midwives. The main complaint was that the women did not say 'please' or 'thank you' and that they 'gave orders'. In Urdu there is a polite form of the imperative with the 'please' built into the verb. The use of the imperative without 'please' is indeed very rude in English, but was not so intended by the women.	Carried out by one researcher so possibility of bias.

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						Four midwives reported that they found the women unrewarding to work with because they were unable to have a 'proper relationship' with them, Communication difficulties also stemmed from the use of colloquial language. It was common for staff to use culturally specific lay terms for symptoms and euphemisms for parts of the body which confused the women. Terms such as 'waterworks', 'down there', 'the other end', 'tummy', and 'dizzy' was difficult even for those Asian women who were competent in English. Some of the misunderstandings between women and midwives can be attributed to differences in social and cultural background rather than the women's poor grasp of English. At their first antenatal clinic visit all women had to give their DoB. For the majority of women this question was expected, understood, and easy to answer. Some of the Asian women did not know their birth date (age and birthdays do not have social significance in South Asia as they do in Europe). Some of the	

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						midwives took this as another example of poor linguistic competence. Lack of compliance with care and service abuse: In interviews Asian women were described as non compliant patients. They were also described as service 'over-users' or even 'abusers due to increased fertility. Non-attendance could result from a variety of factors, including misunderstanding the date and time of the next appointment.	
Hicks C and Hayes L. Linkworkers in antenatal care: facilitators of equal opportunities in health provision or salves for the management conscience? Health Services Management Research, vol. 4, no.2 July 1991[98]	Descriptive EL=3	To identify the extent and nature of current Linkworker provision in the district, and the perceived or known scope of the demand for the services. Linkworkers' aim was to interpret, to explain the healthcare system, to encourage the uptake of services, to	Country: UK A 21-item questionnaire was sent to the Heads of Midwifery Services in 30 multi-racial district health authorities. 20 replied.	The Asian Mother and Baby Campaign was launched in 1984. One of its remits was to improve communication between mother and health professionals by using culturally similar people to act as mentors and aides, the health care system could be made accessible to a group who might otherwise be denied full use of its services.	Extent and nature of current Linkworker Provision in the district Perceived or known scope of the demand for the service Selection and training of Linkworkers.	Of the 20 questionnaires returned, only 17 acknowledged that there may be a client group within their authority which require Linkwork provision and of these just 9 provided such a service. None of the districts had any projected estimates of the number of women who might require Linkworker services. No precise data on the languages required by clients were available to the managers and planners of the Linkworker services. While 12 of the 20 authorities	Funding source not stated Old study 1991, may no longer be relevant.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
		escort women to appointments and generally to act as a bridge between the non-English speaking woman and the healthcare professionals. The linkworker was typically of the same class and background as the client, and had used the NHS and so could identify and forestall any potential problems. However, they were not qualified as interpreters or healthcare workers and received little or no training for their job.				did record in the case notes the language spoken by the client this information was not transmitted to those responsible for organising the Linkworker services. The remaining authorities did not record the language spoken. Even in those authorities which did provide Linkworkers, this facility was only available during standard working hours. Where interpreting services were required, many hospitals provided them on an ad hoc basis, using healthcare workers, such as midwives, nurse, porters, and doctors who spoke the relevant language, as interpreters.	
Edwards N. Factors influencing prenatal class attendance among immigrants in Ottawa-Carleton.	Retrospective longitudinal study EL=3	To analyze the factors predicting antenatal class attendance in immigrant women.	Country: Canada Eligible immigrant women were recruited on the postnatal wards of 5 Ottawa hospitals from April to October, 1990 and	Provision of early antenatal classes with priority to parents with special needs (which included recent immigrants).	Plausible predictor variables which were stable throughout the pregnancy were analyzed for their statistical association with the attendance at antenatal classes.	46.8% of primiparas and 11.6% of multiparas reported attending antenatal classes. Average Number of sessions attended was 5.6 (SD=2.3) Significant Predictors	Funding Fellowship to author from Ontario Ministry of Health and Canadian Nurses Foundation.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Canadian Journal of Public Health 1994; Revue Canadienne de Sante Publique. 85:(4)254-8.[99]			completed the study. Eligibility criteria included -immigrated with in past 15 years either from a 'developing country' or Eastern Europe. -infants birth weight must be >2,000 gm with no congenital deformity detected at birth Women were interviewed within a few days of birth (intake interview) and at 3 months after child birth (follow up interview). Questions were asked about antenatal class attendance and socio-demographic and immigration related characteristics. 283 out of 411 eligible women completed the study. Age: 15-41 yrs,			<u>In case of nulliparous women (n=154)</u> Maternal Age Younger women (<25 yrs) were less likely to attend ANC classes compared with the older women (>35 yrs) OR=0.28 women in the age group of 30-34 yrs were more likely to have attended OR=2.22 Maternal Education 72% of attending women had >13 years of education vs. 36.6% in non attending women. Time since resident in Canada: 65.3% of attending women were resident for >36 months vs. 39% in non attending women Official language (English, French) ability: Among women who reported their English or French ability as fair or poor only 2.9% attended antenatal classes as compared to 71.8% of those had excellent or very good language ability. Current immigration status: Lowest attendance rates were	Partially supported by Community Health Research Unit of the Ottawa-Carleton Health Department funded by Ontario MoH and The University of Ottawa, Department Epidemiology and Community Medicine. Additional funding from Physician's research group Department de Sante Communautaire, Montreal General Hospital

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			average age: 28.9 yrs (SD=4.96) 86.5% Married, 54.4% (n=154) nullipara, 45.6% (n=129) multipara, Average length of time since immigration was 5.1 yrs (1 month-15yrs). Women in the study reported to be from 75 ethnic groups, from 57 countries of birth and spoke 40 different mother tongues. The most frequently reported countries of birth were Lebanon (n=31), Somalia (n=28), Vietnam (n=24) and Poland (n=18)			recorded in refugees (14.3%) in comparison with permanent resident (48.4%) and temporary residents (66.7%). In case of Multiparas(n=129) Maternal Age Highest in the oldest age group (≥35 yrs) Time since resident in Canada: 15.2% in women residing for ≥2yrs vs. 0% in women immigrated within last 23 months.	
Reynolds et al. Views on cultural barriers to caring for South Asian women. 2005. British Journal of Midwifery 13[4], 236-242[35]	Retrospective exploratory survey EL=3	The study examined whether UK midwives perceived any difficulties in providing effective antenatal care to women from South Asian ethnic backgrounds; explored	Country: UK Study conducted in one London hospital, asking their midwives to complete a questionnaire. The result sample comprised n=25 qualified midwives and n=7 student midwives. n=24 considered	The quantitative data were analysed, using descriptive statistics, correlations and regression analysis. The qualitative data (open ended answers) were thematically analysed. The respondents' average length of service as a midwife was 7.9 years. Average reported percentage of	Association between the perceived difficulties and length of midwifery experience and degree of contact with women from South Asia. Student and qualified midwives recommendations to improve antenatal care for South Asian	Barriers associated with culture as perceived by midwives: Communication difficulties with midwives/doctors. Limited social/cultural Integration. Limited comprehension of biomedical healthcare. Culturally specific dietary practice.	Funding: Brunel University

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
		whether perceptions were associated with their length of midwifery experience and degree of contact with women from South Asian cultural backgrounds; and collated suggestions for improving the cultural appropriateness of antenatal care	themselves as white, n=1 oriental, n=2 as Afro-Caribbean and n=3 as South Asian. Their average age was 35 years.	mothers from south Asian backgrounds in respondents' caseloads was 46%.	women	Culturally specific definition of femininity. Preference of culturally specific care in pregnancy. Religious beliefs and practices. The most important reported communication problems with women of South Asia: Reporting problems in pregnancy e.g. Down's syndrome. Providing information about reproductive choices after pregnancy. Providing information about choices about delivery. Promoting the importance of breastfeeding. Providing result of antenatal screening test. Explaining the diagnostic value of antenatal screening. More experienced midwives and those with more south Asian women in their caseloads were more comfortable about communicating sensitive issues during antenatal care. Midwives' extent of contact with women of South Asian cultural background was a significant predictor of perceiving fewer cultural barriers to antenatal care. Midwives' length of service did not add anything of	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						significance. Midwives' recommendations: Greater representation of the south Asian midwives in the profession. User participation in the planning of services. Support for midwives to provide information and education for women. Leaflets in a variety of Asian languages should be developed. Midwives need greater sensitivity to family's norms and values. Respect women's modesty and religion. One person suggested that grandparents need to be involved in the educational process during antenatal care because of their potential influence on mothers.	
Reitmanova et al. "They can't understand it": maternity health and care needs of	Retrospective study Interview based EL=3	To document and explore the maternity health care needs and the barriers to accessing	Country: Canada Purposive approach was used to recruit n=6 individual to participate in-depth	All women spoke English but with varying level of language fluency. Non-English speaking women were	Health care needs of women (in pregnancy phase, Labour and delivery and postpartum in hospital).	Women experienced discrimination, insensitivity and lack of information about their cultural practice. All women agreed that they	Women participated in the study delivered from 1995-2005, a 10 year period which could be

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
immigrant Muslim women in St. John's, Newfoundland. 2008. Maternal and Child Health Journal 12[1], 101-111[41]		maternity health services from the perspective of immigrant Muslim women living in St. John's, Canada	semi structured interviews. Data were analyzed using a two step process of content analysis. The sample consisted of 6 Muslim women aged 25-40 years who delivered at least one of their children in St. John's between 1995-2005.	excluded because of the prohibitive cost of recruiting and training translator for the interviews. All participants were married to men with similar ethnic and religious background and all were stay-at-home mothers with high school diploma or university degree. All but one interview took place in women's homes. All interviews were tape recorded expect one, where responses to the questions were hand written.	Barriers to maternity health care services	need emotional support during the pregnancy. Women did not attend the antennal classes because: 1. Were not told about these classes or did not understand their purposes. 2. The classes did not offer any care arrangements for their other children. 3. were not designed exclusively by women Some women considered their antenatal check up as a routine that did not provide them with any important benefit. Women reported that they did not receive enough information about pregnancy issues such as physical and mental changes, nutrition or exercise. Women found it difficult finding information on financial aid available to eligible pregnant women. Three barriers identified to access to maternity care: 1) Limited access or culturally and linguistically inappropriate	quite different in terms of the quality of service and care provided. Relying on the memory of women for their experience of up to 10 years ago is questionable. Excluded non-English speakers. All participants were married and had a high school diploma or university degree. Funding: the study was supported by Newfoundland and Labrador Centre for Applied Health Research.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						pregnancy and health related information. 2) Lack of knowledge or insensitivity to religious and cultural differences among health care providers and across the maternity health service. 3) Weak social support and few links with in the community.	
McLafferty et al. Immigration and geographic access to prenatal clinics in Brooklyn, NY: a geographic information systems analysis. 2005. American Journal of Public Health 95[4], 638-640[100]	Retrospective study EL=3	To measure geographic availability of antenatal clinics To assess differences among immigrant groups in antenatal care need	Country: USA The data consisted of birth records for the year 2000 for mothers whose residential address was Brooklyn, NY (roughly 39 000 mothers). 52% of the mothers were born outside the United States.	To measure geographic availability of clinics, kernel estimation was used. Kernel estimation depicts the density of points (clinics) as a spatially continuous variable that can be represented as a smooth contour map.	Levels of geographic access to antenatal clinics clinic density (clinics/sq. mile)	Pakistani and Bangladeshi mothers had a high need for antenatal care services but poor geographic access. Immigrant and US-born mothers had similar geographic access to clinics, as reflected in median density values (0.855 US-born; 0.729 immigrant). Among US-born mothers, those covered by Medicaid had the highest median density (1.107), compared with 0.826 for uninsured mothers and 0.632 for mothers with third-party insurance coverage. For immigrant mothers, median density was highest for the Medicaid group (0.801) and lowest for uninsured mothers (0.461). Overall, median clinic density was positively correlated with low birth weight (Spearman R =0.52; P=0.004) and inversely associated with percentage of	Funding: not reported They reported that groups with higher rates of low birth weight infants tended to have a greater density of clinics nearby, which indicated that clinic locations are sensitive to prenatal care needs. But not all groups fitted this trend. Pakistani and Bangladeshi mothers had a high need for antenatal care services but poor geographic access.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						self-pay mothers (R = −0.40; P=0.06). Prenatal clinics were relatively well located in relation to the residential locations of Caribbean and Central American immigrant groups. For Pakistani and Bangladeshi women the density of prenatal clinics in nearby locations was relatively low, Median clinic densities for Pakistani and Bangladeshi mothers were 0.21 and 0.42, respectively.	
Kalofonos I and Palinkas LA. Barriers to prenatal care for Mexican and Mexican American women. *Journal of Gender, Culture, & Health* 1999; 4:(2)135-52.[101]	Quantitative assessment of medical records and qualitative analysis of interviews of Latina women receiving antenatal care services at a medical clinic for homeless and underserved populations. EL=3	To examine the political economic and socio cultural conditions that restrict the access and act as the barriers to adequate antenatal care among Mexican and Mexican American women living in San Diego (California).	Country: USA Phase I Medical records of 173 Mexican and Mexican American women who had given birth at a university medical centre over a 10 month period (May 97 - February 98) reviewed. 89 had ≤ 2 ANC visit and 84 had ≥ 3 ANC visits. Phase II 30 Latina women attending an		Phase I Statistical significance in difference of predictable variables between the two groups (≤2 ANC visits and ≥3 ANC visits) Odds Ratio of inadequate antenatal visits on demographic characteristics and insurance status Phase II Major themes emerged from analysis of interview transcripts.	Phase I Statistical Significance in difference of predictable variables between the two groups (≤ 2 ANC visits and ≥ 3 ANC visits). Lack of insurance coverage (65.9% vs. 27.4%, p<0.0001) and alcohol and/or other drug misuse (7.9% vs. 0.0%, p<0.001) were found to be significantly associated with inadequate use of ANC. Odds Ratio of inadequate antenatal visits (<3) on demographic characteristics and insurance status. Insurance status (1=none) OR=5.91, 95% CI 2.82 to 12.42	Funding by PHS Health Resources and Services Administration.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			antenatal clinic were interviewed. The clinic is a part of a comprehensive social services centre for homeless, uninsured persons regardless of their resident status.			Citizenship (1=undocumented) OR 1.05, 95% CI 0.40 to 2.76 Birthplace (1=US) OR=0.61, 95% CI 0.17 to 2.17 Age(1=25 years or more) OR=0.82, 95% CI 0.36 to 1.87 Marital Status (1=single) OR=1.01, 95%CI 0.47 to 2.14 Social Security Card (1=no) OR=1.21, 95% CI 0.49 to 3.00 Employment (1=no) OR=0.71 95%CI 0.27 to 1.87 Gravidity OR=1.06 95% CI, 0.75 to 1.50 Parity OR=1.02, 95%CI 0.67 to 1.54 Substance use (1=any) OR=2.20 95%CI 0.82 to 5.84 <u>Phase II</u> Major themes emerged from analysis of interview transcripts. 3 major themes 1. Trust or lack of trust in formal vs. informal institution - 13/30 women were reluctant to	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						even apply for Medi-Cal because of possible repercussions on their immigration status. - The clinic affiliated to the Catholic church was more trusted because most of women were Catholic and staff were bilingual and bicultural. 2. Attitude of the women towards the pregnancy 14/19 women (who were asked) reported their pregnancy unplanned/undesired (in some cases). Unplanned pregnancy appears to be associated with late initiation of, and inadequate ANC. 3. Social Support: social networking appeared to be an important determinant of who had received the adequate care and who had not.	
Fullerton JT, et al. Prenatal care in the Paso del Norte Border Region. Journal of Perinatology 2004; 24:62-71[102]	Descriptive EL=3	To provide information about barriers and facilitators to prenatal care for Hispanic women residing in the El Paso Texas/ Juarez Mexico region.	Country: USA 493 women drawn from the population of women who gave birth in Thomason Hospital during a 2 month period in July and August 2000. This sample represented virtually all of the Hispanic births that occurred in this setting	A maternal/infant chart abstraction tool and a dual-language survey research instrument were developed. Bilingual and bicultural nursing students were recruited as research assistants.	Seeking prenatal care Receiving prenatal care Acculturation Social support Health behaviours during pregnancy Border market	The sample was composed of younger women, of average education, a majority of whom had given birth to their first or second child. One-quarter if the respondents reported that they owned their own homes. 71% rented or lived in the home of another person, and 4 were homeless or lived in a sheltered facility. The women were, in the large majority, unemployed, or	Funding: Paso del Norte Health Foundation Not specifically recent migrants, but included women who crossed the border for care.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			during this time period, and was estimated to represent the substantial majority of births to Hispanic women in the community. A very low (less than 1%) rate of refusal was documented.		purchase practices Domestic violence Family planning practices and interventions Future health care interventions Crossing the border for health care services	working in domestic settings (maids, housekeepers, child care providers). Those who were employed in other occupations were in clerical (secretary) or service (waitress, caretaker) capacities, and were unlikely to receive health insurance as an employee benefit. One-quarter of these women were insured via the Medicaid managed care system. The women reported receiving prenatal care at a variety of public and private health facilities both in the US and in Mexico. This care was provided for physicians, certified nurse-midwives, and undocumented midwives. Two-thirds of the women were able to obtain care at the first provider site that they called, but five women had to call a total of four providers in order to receive an appointment. The women expressed very positive opinions about the value of prenatal care. Almost 3 in every 10 respondents had crossed the border from Mexico to Texas to receive some of their prenatal care and/or to deliver their infant in the US. A few women (n=44, 9%) did express the concern that seeking prenatal care would alert the Immigration	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						and Naturalisation Service to their presence in the US. Major factors that affect receiving regular prenatal care: Belief that prenatal care is important Medical staff listened to questions Written information was in the client's language Verbal instructions and information were easy to understand Office staff were friendly Staff spoke the client's language Appointment schedule was convenient Transportation was available Was helped by someone to set up a first appointment Laboratory waiting time was convenient Spouse or family encouraged the woman to seek care A place for prenatal care was close to the client's home Someone was able to take care of the other children during a prenatal appointment Friends encouraged the woman to seek care Barriers Lack of insurance to pay for care Seen by a different provider at each visit	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Had to wait too many days to receive the first visit Afraid to tell spouse/family about the pregnancy Worried about the Immigration service Pregnancy was too advanced for enrolment at the site	

Q2. What aspects of service organisation and delivery improve contact with antenatal services throughout pregnancy for women who are recent migrants to the UK, refugees, asylum seekers or who have little or no English?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
Hirst J and Hewison J. Pakistani and indigenous "white" women's views and the Donabedian-Maxwell grid: a consumer-focused template for assessing the quality of maternity care. *International Journal of Health Care Quality Assurance Incorporating Leadership in Health Services* 2001; 14:(6-7)308-16[103]	Prospective Comparative Survey EL=3	To assess the quality of maternity services, as perceived by Pakistani and indigenous "white" women and To study the relationship of district of residence to women's preference and views.	Country: UK 225 women from 20 general practice settings in 2 different districts within a northern UK NHS region. Date: July 1995 - August 1996. Response rate: 187 (83%). 153 (76 Pakistani + 77 indigenous "white") had first interview before the 30th week of pregnancy and 139 had second interview between six to eight weeks postpartum completed by March 1997. All interviews took place at women's home lasted for around 1 hour and recorded by hand written notes assisted by a bilingual researcher.	ANC was provided to all women in General Practice settings of NHS.	Organisational structure, process and outcomes of care were measured on 6 dimensions: Effectiveness, Acceptability, Efficiency, Access, Equity and Relevance.	The dimensions of the care referred to were not exclusive to either ethnic group or district. Most negative comments related to women's antenatal and postnatal hospital stay and most positive comments related to postnatal community care. Women focused more on the process of care rather than organisational structures or outcomes of care. Few non-English speaking Pakistani women commented directly about communication (partly explained by 3 bilingual link-workers working in each district)	Qualitative analysis of main themes emerging from interviews is reported. No quantitative analysis of results has been reported in the study. Funding: Not Reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
Woollett A and anjh-Matwala N. Pregnancy and antenatal care: the attitudes and experiences of Asian women. *Child: Care, Health and Development* 1990; 16:(1)63-78[30]	Qualitative interview survey EL=3	To determine the attitudes and experiences of Asian women regarding pregnancy and antenatal care.	Country: UK 32 Asian women living in London and who had at least one child <2 years, were recruited from local GP surgeries and interviewed in English (13), Punjabi (9), Hindi (5) and Urdu (5). Mean Age=26.4 years (range 18-34 years) Mean length of marriage 6.03 years (range 2-13 years) Years living in UK Mean 12.9 years (range 1-25 years) In a sub group analysis women who spoke little or no English (n=13) compared with women who spoke "fluent English" (n=13) in terms of their experiences of Pregnancy and antenatal care in UK.	Antenatal care was provided to all women in General Practice settings of NHS.	Characteristics of women with fluent vs. poor English Attendance at Antenatal (AN) clinics Accompanied by someone to AN clinic Attended AN classes Level of Knowledge -very good -poor Read leaflets Negative statements about pregnancy Medical Problems Rating pregnancy as "smooth"	Characteristics of women with fluent vs. poor English Women attended AN clinics: Fluent English 92% (12/13) vs. Poor English 85% (11/13) Accompanied by someone to AN clinic: Fluent English 62% (8/13) vs. Poor English 62% (8/13) Attended AN classes: Fluent English 69% (9/13) vs. Poor English 15% (2/13) Level of Knowledge -"very good": Fluent English 69% (9/13) vs. Poor English 0% (0/13) -"poor": Fluent English 0% (0/13) vs. Poor English 31% (4/13) Read leaflets: Fluent English 100% (13/13) vs. Poor English 69% (9/13) Negative statements about pregnancy:	Small sample size. Funding not reported.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						Fluent English 8% (1/13) vs. Poor English 23% (3/13) Medical Problems: Fluent English 92% (12/13) vs. Poor English 85% (11/13) Rating pregnancy as "smooth" : Fluent English 77% (10/13) vs. Poor English 69% (9/13)	
Woollett A, Dosanjh N, Nicolson P *et al*. The ideas and experiences of pregnancy and childbirth of Asian and non-Asian women in east London. *British Journal of Medical Psychology* 1995; 68:(Pt 1)65-84[104]	Qualitative interview survey EL=3	To examine the differences between ideas and experiences of pregnancy and child birth of Asian (from Indian subcontinent) and non Asian women giving birth in East London	Country: UK (New Ham-East London) 100 Asian and 43 non Asian women were interviewed to collect quantitative data about their experiences of pregnancy, antenatal care, child birth and postnatal care. Also to collect qualitative data from a subset of the sample of Asian women (n=32) who were interviewed more extensively about their experiences and to suggest reasons for the differences found in the quantitative	Antenatal clinic of local Hospital	Multiple regression analyses were conducted to assess the relative impact on women's experience of a range of demographic variables:	Pregnancy and antenatal care Asian and non Asian women's experiences with pregnancy were more associated with parity rather than ethnicity. Most women felt supported by husbands/partners and families. Women living in extended families and those who had lived in the UK for a longer time were more likely to get support. Asian women's interviews suggest more emphasis on diet, gender of baby and extend to which change	Funding by ESRC and a small grant from Health Education Authority

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			analysis.			in activities pregnancy was about to bring. 91% Asian women attended all antenatal care appointments compared to 84% non Asian women 22% Asian women attended parental craft classes compared to 42% non Asian women (fluency in English was found to be significantly associated with attendance in parentcraft class p<0.0001) Mean number of information sources used by Asian women was significantly higher (3.75) compared with non Asian women (3.2) (p=0.001).	
Small R, Rice PL, Yelland J *et al.* Mothers in a new country: the role of culture and communication in Vietnamese, Turkish and Filipino women's experiences of giving birth in	Qualitative Interview survey EL=3	To explore Vietnamese, Turkish and Filipino immigrant women giving birth in Australia about their experience of care during pregnancy, labour, child birth, postnatal stay,	Country: Australia This study is analysis of random sample (n=60) of a larger study of 318 immigrant women (104 Vietnamese, 107 Filipino, 107 Turkish) who had given birth to a live	Details of antenatal care not clearly reported. Women were recruited from postnatal wards of one of three teaching hospitals in Melbourne	Interpreting needs and assistance received in antenatal care Nature of cultural practices women wish to observe during pregnancy Preference for and	Interpreting needs and assistance received in antenatal clinic <u>Needed Assistance</u> Vietnamese 65/104 (62.5%) Turkish 47/107 (43.9%) Filipino 2/107(1.9%)	Funding not reported.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
Australia. *Women and Health* 1999; 28:(3)77-101.[105]		cultural practices and use of interpreting services.	baby of >1,500 grams in one of Melbourne teaching hospitals. A brief interview at the time of recruitment gathered socio-demographic data and background information and the main interview was conducted six to nine months after the birth.		access to female caregivers	<u>How often was someone available to interpret for women who needed it?</u> Vietnamese Always 42/65 (64.6%) Sometimes 23/65 (35.4%) Never 0/65 (0%) Turkish Always 33/47 (70.2%) Sometimes 14/47 (29.8%) Never 0/47 (0%) Filipino Always 0/2(0%) Sometimes 0/2 (0%) Never 2/2 (100%) <u>Who interpreted most often?</u> Vietnamese Hospital Interpreter 56/65(86.1%) Partner 6/65 (9.2%) Family/friends 0/65(0%) Other 3/65(4.6%) Turkish Hospital Interpreter 15/47(31.9%)	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						Partner 24/47(51.1%) Family/friend 7/47(14.9%) Others 1/47 (2.1%) <u>Preferred Person to Interpret</u> Hospital Interpreter: Vietnamese: 42/49 (85.7%) Turkish: 22/48 (45.8%) Partner: Vietnamese: 6/49 (12.3%) Turkish: 21/48(43.8%) Family/friends: Vietnamese: 0/49 (12.3%) Turkish: 5/48(10.4%) Others: Vietnamese: 1/49 (2%) Turkish: 0/48 (0%) Nature of Cultural Practices Women wish to Observe during Pregnancy Vietnamese: Dietary restriction: 20/47 Abstaining from heavy physical activity: 20/47	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						Not wearing high heels: 17/47 Restriction on sexual intercourse: 4/47 Turkish: Preference for female care givers 5/7 Abstaining from heavy physical activity: 2/7 Filipino: Dietary restriction: 6/29 Rest and exercise requirement: 5/29 Massaging of the stomach or back: 4/29 Abstaining from heavy physical activity: 2/29 Preference for and Access to Female Caregivers General Preference for Female care givers Vietnamese: 78/100 (78%) Turkish: 74/107 (69.2%) Filipino: 62/107 (57.9%) Told about the possibility of a female doctor for pregnancy care Vietnamese: 19/103 (18.5%)	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						Turkish: 44/106 (41.5%) Filipino: 43/107 (40.2%) Would had liked a female doctor for pregnancy care Vietnamese: 51/102 (50%) Turkish: 69/107 (64.5%) Filipino: 63/107 (58.9%) If female doctor preferred, did women have one? Vietnamese: 15/51 (29.4%) Turkish: 37/69 (53.6%) Filipino: 26/63 (41.3%)	
Larson K, McGuire J, Watkins E *et al.* Maternal care coordination for migrant farmworker women: program structure and evaluation of effects on use of prenatal care and birth outcome. *Journal of Rural Health* 1992; 8:(2)128-33.[106]	Project Evaluation by retrospective analysis of medical records. EL=3	To evaluate a migrant-specific maternal care coordination project	Country: USA Data were abstracted from The medical records at migrant health centres and hospitals which provided maternal care to the project participants between 1985 and 1989. 599 migrant farm worker women participated in the project. Pregnancy outcome data were tracked for	To develop a comprehensive and continuous system of health care delivery to female migrant health workers, Department of Maternal & Child Health at University of North Carolina's School of Public Health collaborated with Tri-County Community Health Centre Migrant health Project team consisted of project coordinator, health	Characteristics of female migrant farm workers in antenatal care at Tri-County Health Centre. Characteristics of use of antenatal care by female migrant farm workers. Trimester of entry Number of antenatal care visits Low-Birth Weights	Characteristics of female migrant farm workers in antenatal care at Tri-County Health Centre. Ethnic group (n=599) % break-up over the period. <u>1985 (n=109)</u> White 13%, Black 20%, Hispanic 55%, Haitian/other 12%. <u>1986 (n=125)</u> White 12%, Black 19%, Hispanic 66%, Haitian/other 2%.	Funded by Maternal and Child Health Bureau, Department of Health and Human Services, Health Resources and Service Administration.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			500/599(84%).	educator, nutritionist The specific objectives were to: 1) Increase first trimester enrolment into ANC. 2) Improve continuity of care, including frequency of visits and 3) Improve perinatal outcomes Program components included: 1) Bilingual Staff 2) Maternal-Child Focused out reach 3) Maternal Lay Health Advisers 4) Multi-state tracking System		<u>1987 (n=99)</u> White 9%, Black 23%, Hispanic 66%, Haitian/other 2%. <u>1988 (n=120)</u> White 6%, Black 19%, Hispanic 72%, Haitian/other 3%. <u>1989 (n=146)</u> White 5%, Black 15%, Hispanic 80%, Haitian/other 0% Mean maternal age (years): 24.3 (1985), 22.9(1986), 22.4 (1987), 23.3(1988), 22.9 (1989). Mean gravidity: 3.3 (1985), 2.9 (1986), 2.6(1987), 3.1 (1988), 2.6 (1989). Mean Parity: 2(1985), 1.6(1986), 1.3(1987), 1.9(1988), 1.4 (1989). Characteristics of use of antenatal care by female migrant farm workers.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						Trimester of entry (% of total women availing antenatal care that year) First trimester (<15 weeks): 35 (1985), 41 (1986), 52 (1987), 45 (1988), 51 (1989). Second trimester (15-27 weeks) 41 (1985), 30 (1986), 38 (1987), 38 (1988), 30 (1989). Third trimester (> 27 weeks) 24 (1985), 30 (1986), 10 (1987), 18 (1988), 19 (1989). Number of antenatal care visits (n=475 (% of total women availing antenatal care that year excluding those who had spontaneous/ therapeutic abortions): 1-4 antenatal care visits: 39 (1985), 30 (1986), 22 (1987), 20 (1988),	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						19 (1989). 5-8 antenatal care visits: 37 (1985), 34 (1986), 21 (1987), 26 (1988), 28 (1989). 9+ antenatal care visits: 24 (1985), 35 (1986), 56 (1987), 54 (1988), 53 (1989). Low-birth weights (n=468) % of total live births in that year: 12 (1985), 7 (1986), 7 (1987), 9 (1988), 6 (1989)	
Pearce CW, Hawkins JW, Carver-Chase D *et al.* Comprehensive interdisciplinary care: making a difference in pregnancy outcomes for Hispanic women. *Public Health Nursing* 1996; 13:(6)416-24[107]	Descriptive survey - retrospective analysis of medical records EL=3	To examine well being during pregnancy and pregnancy outcomes for a cohort of Hispanic women receiving antenatal care at the clinic of a community hospital.	Country: USA Data from antenatal, postpartum and new born records of a non probability purposive sample of 113 Hispanic women who delivered in 1991 and 1992 through services of the antenatal clinic of a community hospital in an old industrial city northwest of Boston were retrieved and	Hospital had developed a comprehensive and interdisciplinary model of antenatal, postpartum and well-woman care for a predominantly Hispanic and high-risk population, evolving into a programme now called Women's Services. Several staff members spoke Spanish and some were bilingual and bicultural.	Birth outcomes Mode of Birth Gestational Age Low Birth Weight Infants Birth weights Feeding at Discharge Characteristics of Women with 1-8 vs. 9+ AN visits Kessner/Institute of Medicine IOM Index Adequacy	Birth outcomes Mode of Birth Vaginal: 56/110 (50.91%) Caesarean section; 45/110 (40.91) Vaginal Birth After CS: 9/110 (8.18%) Gestational Age <37 weeks: 5/110 (4.63%) Low Birth Weight Infants: 3/110 (2.97%) Feeding at Discharge	Partially funded by Eta Omega Chapter and Alpha Chi Chapter, Sigma Thet Tau International and Massachusetts Nurse Foundation

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			analyzed. Study Sample Characteristics Mean Age = 21.8 years Age Range = 13-38 years Marital Status Single = 88/113 (79.3%) Married = 15/113 (13.3%) Divorced = 2/113 (1.8%) Separated = 6/113 (5.3%) Education = 4 -17 years mean 10 years (n=68) Obstetric History Primigravidas = 40/113 (35.4%) Mutigravidas = 73/113 (64.6%) Parity = 0-4	Content of antenatal care included all the risk assessment and health promotion activities recommended by the Public Health Service Expert Panel (1989). Women were taught about self-care including frequency and content of antenatal care visits, weight gain within the recommended guidelines, nutrition, the need for antenatal vitamins and iron, using Women's, Infants and Children (WIC) supplements, common pregnancy discomforts, exercise, work, travel, caffeine and appropriate use of health care services. They were given advice about the behaviours known to place pregnancy at risk such as smoking, alcohol, and recreational and over-the-counter drug use.	Adequacy of Prenatal Care Utilization Index (APNCU) Kotelchuck Index, Initiation Adequacy Received Adequacy Total Adequacy Gestational Age: weight average for gestational age, small for gestational age, large for gestational age, gestational age <37 weeks, Birth weight <2,500 g	Breast: 33/108 (30.56%) Bottle: 63/108 (58.3%) Both; 12/108 (11.1%) Characteristics of Women with 1-8 vs. 9+ antenatal visits Kessner/Institute of Medicine IOM Index Adequacy 1-8 visits: 0/36 (0%) 9+ visits: 31/76 (42.5%) Adequacy of Prenatal Care Utilization Index (APNCU) Kotelchuck Index, Initiation Adequacy 1-8 visits: 7/36 (19.4%) 9+ visits: 47/76 (64.4%) Received Adequacy: 1-8 visits: 17/36 (47.2%) 9+ visits: 71/76 (97.3%) Total Adequacy: 1-8 visits: 2/36 (5.6%) 9+ visits: 47/76 (64.4%) Gestational Age: weight Average for Gestational	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
				Antenatal classes were available as part of this comprehensive-care model.		Age 1-8 visits: 25/36 (78.1%) 9+ visits: 52/76 (72.2%) Small for Gestational Age 1-8 visits: 0/36 (0%) 9+ visits: 0/76 (0%) Large for Gestational Age 1-8 visits: 7/36 (21.9%) 9+ visits: 20/76 (27.8%) Gestational Age <37 weeks; 1-8 visits: 2/36 (5.6%) 9+ visits: 2/76 (2.7%) Birth weight <2,500g; 1-8 visits: 1/36 (2.8%) 9+ visits: 1/76(1.4%)	

Q.3 What additional consultations and/or support should be provided to women who are recent migrants to the UK, refugees, asylum seekers, women who have little or no English, and their partners and families, in order to improve pregnancy outcomes? (Additional here means over and above that described in the NICE Antenatal care guideline).

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
Parsons et al. Improving obstetric outcomes in ethnic minorities: an evaluation of health advocacy in Hackney. 1992. Journal of Public Health Medicine 14[2], 183-191[80]	Retrospective cohort study EL=2-	Evaluation of a health advocacy program in Hackney with respect to hospital policy and practice.	Country: UK A study was carried out comparing n=923 non-English-speaking women delivering at the Mothers' Hospital, Hackney, in 1984-1986 who had been accompanied by an advocate (study group) with n=866 non-English speaking women delivering at the same hospital in 1979; before the start of the advocacy project and two similar groups from a reference hospital (Whipps Cross 1979 n=999, Whipps Cross 1986 n=993). At Whipps Cross translators from local authority were used rather than health advocators.	The Multi-Ethnic women's Health Project (MEWHP): was started in 1980 to help meet the needs of non-English speaking women at Mothers Hospital. The women who worked for the project were called "health advocates" because they mediated between women and professionals to make sure that women were offered an informed choice of health care. The advocates 'booked' the new women following a set protocol and presented the history to the midwife or doctor.	Obstetrics outcomes: Gestation at booking DNA (did not attend antenatal appointments)rate Antenatal length of stay Induction and mode of delivery The changes in caesarean section rate Birth weight and mortality rate	Personal Characteristics of the study groups: Mean age at delivery/years: MH (1979): n=835, 25.1 WX (1979): n=993, 25.9 MH (1986): n=921, 25.9 WX (1986): n=988, 26.9 Primips: MH (1979): 30% WX (1979): 3.5% MH (1986): 25.4% WX (1986): 31.1% Born in Asia or Turkey: MH (1979): 89% WX (1979): 75% MH (1986): 90% WX (1986): 70% The study found significant differences between the groups in three outcomes: antenatal length of stay, induction and mode of delivery. The changes in Caesarean section were	All changes on outcomes of the labour in the study group cannot be directly attributed to health advocacy (due to the complexity of the issues). Women identified as Turkish or Asian by surname. Not possible to ascertain level of knowledge of English from medical records. Funding: Grant from NETRHA locally organised research grant scheme.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			Therefore four groups were generated; the study group (MH 1986) and three comparison groups (MH 1979, WX 1986 and WX 1979)			of particular note. The rates rose from 11 to 17 percent at the reference hospital, whereas they fell from 10·8 to 8·5 percent at the Mothers' Hospital. Caesarean section: MH (1979) n=866, 10.6% WX (1979) n=999, 11.2% MH (1986) n=923, 8.5% WX (1986) n=993, 17.4% Antenatal booking: Women booked significantly earlier in both Hospitals in 1986, compared with 1979, and attended Whipps Cross significantly earlier than the Mother's Hospital at both time periods. Gestation first booking/weeks: MH (1979): n=837, 19.5 WX (1979): n=707, 17.7 MH (1986): n=905, 18.8 WX (1986): n=850, 16.8	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						The overall attendance rate was 5.9% (n=3330) but there was wide variation between hospitals and times, and for the women, parity. The non-attendance rate at the Mothers' Hospital was 7.2% compared with 4.5% at Whipps Cross, which is statistically significant. DNA rate: MH (1979): n=840, 6.6% WX (1979): n=715, 4.5% MH (1986): n=905, 7.8% WX (1986): n=871, 4.6% Antenatal length of stay: MH (1979) n=242, 8.6% WX (1979) n=165, 5.9% MH (1986) n=229, 5.7% WX (1986) n=238, 5.8% Birth weight/kg: MH (1979) n=865, 3.02 WX (1979) n=998, 3.08 MH (1986) n=923, 3.07 WX (1986) n=985, 3.13 Low birth weight <2500g: MH (1979)	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						n=865, 13.6% WX (1979) n=998, 11.8% MH (1986) n=923, 10.07% WX (1986) n= 984, 9.9% Caesarean section rate: MH (1979) n=866,10.6% WX (1979) n=999,11.2% MH (1986) n=923, 8.5% WX (1986) n=993, 17.4% Spontaneous birth: MH (1979) n=866, 87.4% WX (1979) n=999, 79.3% MH (1986) n=923, 86.8% WX (1986) n=993, 74.8%	
Watkins EL, Harlan C, Eng E *et al.* Assessing the effectiveness of lay health advisors with migrant farmworkers. *Family and Community Health* 1994; 16:(4)72-87.[81]	Longitudinal descriptive study. EL=3	To analyse changes in knowledge, health status and behaviours of migrant farm worker women (and their children) who were in contact with a Lay Health Advisor (LHA)	Country: USA (Indiana) Association between health status, knowledge of health practices and exposure to Lay Health Advisors were studied in 470 Latino women (258 received	Latina migrant farm worker women in rural North Carolina were trained to be Lay Health Visitors (LHAs). LHA was defined as a person who naturally provides unplanned assistance to those persons familiar to	Assessment of LHAs Knowledge Score Helping Contacts Assessment of the Target Population Association between exposure to LHAs and maternal and birth outcomes.	Assessment of LHAs <u>Knowledge Test</u> Significant improvement in average score at 2 weeks (84%) and 6 weeks (80%) after training as compared to pre-test (60%) p≤0.05. <u>Helping Contacts</u>	Funding: Special Projects of Regional and National Significance (SPRANS) granted by Maternal and Child Health Bureau, Department of Health and Human Services

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			antenatal care, 140 received both antenatal and child care and 72 received health care for their infants only) seen at 2 health centres (in North Carolina) serving the health needs of migrant farm workers. 20 Lay Health Advisors were assessed before they began training program and at 2 weeks and 6 weeks after it for their knowledge of health practices. LHAs were also surveyed using the Helping Contact Questionnaire at 2 weeks and 6 weeks after their training regarding the social support they offered and self-assessment of their effectiveness in it.	her. Natural helpers with leadership ability, empathetic and caring attitude, interest in maternal and child health with an understanding of the importance of knowledge sharing were selected from the community and trained to enable them to demonstrate the essential knowledge of maternal-child health issues and community resources and display a non-judgmental, affirming attitude in effective sharing of information.	Association between knowledge score and maternal & birth outcomes.	<u>Questionnaire:</u> On average, 3.25 'helping contacts' were made during the specified 2 weeks periods at 2 and 6 week after training. Assessment of the Target Population <u>Women receiving antenatal care</u> Women who had known at least one LHA and reported to have received any help =22% Women who had known at least one LHA and did not report to have received any help =44% No significant differences were observed in between Pregnant women with or without "LHA exposure" in regard to the trimester when ANC was initiated, number of antenatal visits made or birthweight. <u>Knowledge Score</u>	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						No significant association between knowledge score and trimester when ANC was initiated, number of antenatal visits made or birthweight.	
Watkins EL, Larson K, Harlan C *et al.* A model program for providing health services for migrant farmworker mothers and children. *Public Health Reports* 1990; 105:(6)567-75.[82]	Project evaluation by retrospective analysis of medical records. EL=3	To evaluate the effectiveness of a program designed to deliver primary health care services for migrant farm-worker women and children.	Country: USA The Medical records of 359 pregnant farm-worker women and 560 children (0-5 years), who had received the primary care services at Tri-County Community Health Centres between April1985 and September 1987.	A bilingual, multidisciplinary team of health professionals collaborated with a migrant health centre in North California to develop a model programme for delivery of primary care to migrant farm worker women and children. The programme included case finding and outreach, coordination of maternal and child health services locally as well as interstate and innovative health education programming.	Outcomes regarding Antenatal Care: Antenatal risk factors Dietary assessment Low birthweight (<2500g) Rate of spontaneous births Caesarean section rate	Socio-demographic characteristics More than half of the women were Hispanic and almost all the white women in the study were married to Hispanic men. The mean age of total group was 23.1 years. 47% of sample completed 8 or fewer years of education. 75% Hispanic, 67% White and 30% Black women were married. Reproductive History: Gravidity ranged from 1-16 For approx. half of women the current pregnancy was either the first or second. The average number of pregnancies for the total sample during the 3 year period was 2.9. A significant decline	Funded by Health Resources and Services Administration, Maternal and Child Health Bureau.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						was observed in mean parity from 2.0 in 1985 to 1.2 in 1987. Hispanic women in this sample did not have higher fecundity levels than black or white women. Antenatal Risk Factors: The most frequently reported health problems were urinary tract infection (23%) and sexually transmitted diseases (7%). 43% in the sample had a hematocrit of less than 34 at some time during the pregnancy. Tobacco use was reported most often by North American women. Dietary Assessments. 84% had dietary recalls showing caloric intake less than 90% of their RDA. Protein intakes appeared far more adequate. 53% of women's diet had 90% or more of the RDA for protein.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						Pregnancy outcomes and associated factors: Observed decrease in low birth weight infants born to women in the 1986 and 1987 cohorts. Birth weight <2,500 grams: 1985: 11/87 (13%) 1986: 7/107 (7%) 1987: 6/96 (7%) Total 24/286 (8%) 79% of all births were normal, spontaneous, vaginal delivery. 18% were by caesarean section.	
Small et al. Shared antenatal care fails to rate well with women of non-English-speaking backgrounds. 1998. Medical Journal of Australia 168[1], 15-18[108]	Retrospective descriptive study EL=3	To compare the view of the women from non-English-speaking backgrounds who received antenatal care at the public hospital clinic with those whose care was shared between a public hospital clinic and a general practitioner.	Country: Australia Women were recruited from the postnatal wards of three maternity teaching hospitals in Melbourne between July 1994 and November 1995 and had three bicultural interviews. Women born in Vietnam, turkey and Philippines who gave birth to a live healthy baby (>1500) were	Structured interviews conducted in women's home, 6 to 9 month after giving birth, in the language of their choice. Women were categorized in four groups: 1. Public clinic care (n=143): Women who attended only public antenatal clinics for their	Women's rating of quality of antenatal care.	No differences in socio-demographic and obstetrics variables, length of time in Australia, or English speaking ability in two groups. Women in shared care were not more likely than women attended public hospital clinics to describe their care as "very good". Women attending a specialist/GP-obstetrician or birth	Funding: the study was supported by funding from the Victorian health Promotion Foundation.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
			eligible. 435 women were recruited, and 318 completed the study: Vietnamese (n=104) Turkish (n=107), Filipino (n= 107).	pregnancy care. 2. Shared antenatal care (n=150): Women saw a local GP in combination with hospital public clinic 3. Obstetrician care (n=8): Women saw only a specialist obstetrician or a GP-obstetrician. 4. Birth Centre Care(n=14): Women attended a team of midwives at any of the hospitals' birth centres.		centre rated their antenatal care more positively but the numbers in these group were very small Women rating of antenatal care: Public clinic care (n=143): Very good n=22 (15.4%) Good n=93 (65.0%) Shared care (n=150): Very good n=30 (20.0%) Good n=92 (61.3%) Specialist/GP-obstetrician care (n=8): Very good n=3 (37.5%) Good n=4 (50.0%) Birth centre care (n=14): Very good n=8 (57.1%) Good n=6 (42.9%) No significant difference was observed between the responses of those in shared care and those in public care in regards to waiting times, more opportunity to ask questions, having	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						concerns taken seriously and having a care giver who was not rushed. Women in shared care were more likely to feel that they had a choice about who provided their care than women in public clinic care (n=52 [34.7%] vs. n=32 [22.5%] OR, 1.60 (95% CI 0.97 to 2.64)). They were also more likely to experience continuity of medical care, defined as always or mostly seeing the same doctor, but this was not quite statistically significant. Women in shared care were more likely to see a caregiver who spoke their language (OR 17.69 (95% CI 6.15 to 69.06)).	
Dejin-Karlsson and Ostergren (2004) Country of origin, social support and the risk of small for gestational age birth. Scand J	Retrospective descriptive study EL=3	To investigate the risk of small for gestational age (SGA) in relation to country of origin of the mother.	Country: Sweden The study was based on all pregnant nulliparous women living in the city of Malmo, Sweden. Women	All women were asked to complete a self administered questionnaire at their first antenatal visit. The questionnaire was used to obtain background	Birth weight and gestational age. Maternal social factors and life style factors.	Social network in the study was defined using two sub-concepts of social anchorage and social participation. Social support was defined as: Emotional support	Validity of the instrument for measuring social network and social support in foreign born population is uncertain. Funding: not

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Public Health. 32: 442-449[109]			were recruited among those booked for their first antenatal care. Data collected from 826 women whose pregnancy resulted in a singleton live birth; 22% (n=182) of those women were foreign born (32 from western Europe, North America and Australia; 50 from Eastern Europe; 49 from middle East and North Africa; 24 from Asia and the rest from Central and South America and sub-Saharan Africa (n=27).	information on women's social and lifestyle factors. Data on maternal pregnancy weight, height and outcomes of pregnancy such as birth weight and gestational age were collected from the medical records and the perinatal database of the Malmo university hospital.		Foreign-born women who reported low access to social anchorage and emotional support had an increased risk of delivering small for gestational age babies (OR=4.4 (95% CI 0.7 to 13.2) vs. OR=5.2 (95% CI 1.5 to 18.9)) Instrumental support (a person's access to advice, information and available services). Foreign-born women who reported low instrumental support had an increased risk of delivering small for gestational age babies (OR 2.5 (95% CI 0.9 to 6.8) vs. OR=1.0 (95% CI 0.3 to 3.3)). Women of foreign origin with low social anchorage when compared with Swedish women with high access to social anchorage, had an increased odds ratio for giving birth to SGA infants (OR=4.4 (95% CI 1.9 to 10.1)).	reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						Support from child's father Maternal support (support received from her own mother). Significantly more foreign born women (16.8%) had their first antenatal visit late (>15 weeks of their pregnancy) compared with Swedish born women (4.8%). Fewer migrants (57.3%) than Swedish women (82.9%) attended antenatal parent classes. Of all infants born n=55 (6.7%) were classified as SGA, n=37(5.7%) of Swedish nativity and n=18 (9.7%) of foreign nativity. Immigrants status was significantly related to SGD (OR=1.8 (95% CI 0.7 to 2.5)). Immigrant women who did not speak Swedish at all were at higher SGA risk (OR=2.6 (95%	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention /survey details	Outcomes	Findings	Comments
						CI 1.1 to 6.2)). Foreign born women who were smokers had a significant risk for delivering SGA babies (OR=4.1 (95% CI 1.3 to 13.3) as did foreign born women with a low educational level (OR=3.3 (95% CI 1.3 to 8.8)).	

Q.4 What additional information should be provided to women who are recent migrants to the UK, refugees, asylum seekers, women who have little or no English, refugees, and their partners and families, in order to improve pregnancy outcomes? (Additional here means over and above that described in the NICE Antenatal care guideline).

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Washington WN, Stafford VM, Stomsvik J *et al.* Prenatal education for the Spanish speaking: an evaluation. *Patient Education and Counseling* 1983; 5:(1)30-4. [111]	Quasi-randomised Control Trial EL=1-	To assess whether Spanish speaking pregnant women taking health education classes are able to answer more questions correctly on selected topics than those not taking the classes.	Country: USA 68 Spanish speaking pregnant (20 weeks) women who were willing to take at least 4 antenatal classes were randomly assigned to the experimental and control groups. Data from 40 women who completed all the phases of study were analysed. Experimental and control groups were further divided. Experimental subgroup 1 (n=10) was matched with control subgroup 1 (n=10) and likewise experimental group 2 (n=10) was matched with control group 2 (n=10). Randomisation method: flips of a coin	The members of the experimental group had been given antenatal health education classes in Spanish. Each class was followed by a quiz and discussion on the answers to aid in learning process. Women were given a post-test at the 36th week of pregnancy. Women in the control group received their questionnaire as soon as they entered the study. The objective of the classes was to increase the participants' knowledge of: newborn care, labour and child birth, family planning and dental health care.	Subgroup 1 (experimental + control) received questions on topics of family planning & dental health and Subgroup 2 (experimental + control) received questions on topics of newborn care and labour and child birth. Mean score of their responses was measured.	Mean score of experimental groups was significantly higher than control groups (13.20 vs. 10.30; $p<0.05$) Considering subgroup 1 only, mean score of experimental group was significantly higher than control groups (14.00 vs. 11.10; $p<0.05$). Considering subgroup 2 only, mean score of experimental group was significantly higher than control groups (12.40 vs. 9.50 $p<0.05$)	Funding Not Reported
McEnery et al. The effectiveness	Prospective cohort study	To evaluate the effect of	Country: UK	Specialist education: A course for 12	Neonatal outcomes:	E="Educated" NE="Non-Educated"	Low intervention uptake in

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
of antenatal education of Pakistani and Indian women living in this country. 1986. Child: Care, Health and Development 12[6], 385-399[112]	EL=2-	antenatal education on an Asian community in the UK.	69 Asian women living In East London age range: from 18-40 years 35 women were randomly allocated to experimental group, receiving specialist education, with 34 women acting as comparison group who were offered routine antenatal care including parentcraft classes in English. Entry criteria: pregnant at the time of entering the study >16 weeks, born in Indian subcontinent, registered in a specific General Practice in London borough of Waltham Forest, intended to be delivered at Whipps Cross Hospital. The infants were assessed during the second year of their life for growth, nutrition, morbidity, development and vaccination history.	weekly lectures by health visitor, midwife or nutritionist, covered fertility, pregnancy, childbirth and childbearing. They were relayed in Urdu by an interpreter and held in a health clinic. Of the original experimental group, only n=16 attended >3 of the classes they were considered as being the "educated" group (E). All other women in the trial (n=53) were allocated to "Non-Educated" (NE) group irrespective of their initial allocation to the experimental or comparison group.	Birth weight Apgar score Breast feeding Maternal outcomes: Mode of delivery Duration of pregnancy Child development after one year: Height, Weight, Head circumference, Laboratory assessments of child's nutritional state.	Neonatal outcomes: Birth weight average random sample in the district (3.26 kg) E (n=16): Mean 3.13kg, SD 0.39 NE (n=51) Mean 3.12kg, SD 0.50. Low birth weight: 7.5% in the study sample compared with 6.2% amongst all women gave birth in the maternity unit. Apgar score E: Mean 8.33, SD 0.62 NE: Mean 8.32, SD 1.40 Exclusive Breast feeding at leaving hospital) E: 4 (25%) NE: 16 (31%) Breast fed with supplementary artificial feeds at leaving hospital) E: 7 (48%) NE: 16 (31%)	experimental group. Funding: Study funded by North East Themes Regional Heath Authority and Waltham Forest District Health Authority.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Maternal outcomes: Duration of the pregnancy (weeks) E (n=16): Mean 38.9, SD 1.98. NE (n=52): Mean 39.1, SD 1.43. Mode of birth: Forceps: E: 0 NE 1, (2%) Caesarean: E: 4 (25%) NE: 8 (15%) No significant benefit due to antenatal education on any infant outcomes.	
Spring et al. Sociocultural factors in the use of prenatal care by Hmong women, Minneapolis. 1995. American Journal of Public Health 85[7], 1015-1017[113]	Retrospective study EL=3	To explain social cultural context of antenatal care involvement of an urban Hmong population. To describe interventions that were implemented to provide a more positive clinic experience, and assesses those interventions.	Country: USA Survey interviews were conducted during 1987/88 with 48 Hmong women who had delivered their babies at university hospital and who had received all antenatal care for the pregnancy at the clinic near their home. Survey results guided reform in	The 1984/1988 group was interviewed between 1 month and 38 months after delivery. Women were questioned about six procedures performed during clinical antenatal care: Blood pressure, fundal height measurement, urinalysis, ultrasound, blood test, and pelvic examination. Interviews of the	Clinic reforms: The addition of a staff nurse-midwife who learned some Hmong language. Pelvic examinations were reduced by all providers to one or two during a pregnancy Institutional reform:	Demographic data: Interviewed 1987/88: Age: mean 27yrs SD=7.2 Parity: mean 4.2 SD=2.6 Married: 92% Interviewed 1993: Age: mean 27.8yrs SD=7.3 Parity: mean 5.7 SD=2.6 Married: 94%	Funding: The Emma B. Howe Memorial Foundation provided financial support for the study.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			1989/90. In 1993 interviews were conducted with 18 women who had delivered between 1990/1992 at the same hospital.	1990/1992 group occurred between 8 to 13 months after delivery.	New telephone system with a direct line to an interpreter Expansion of obstetric clinics from one to two mornings a week. Educational antenatal care videotape in Hmong language (explained technical procedures and their rationale, addressed concerns reported by women during interview and informed them of their rights).	Results from 1987/88 interviews: Factors that may have impeded clinic attendance: Pelvic examinations were unacceptable to majority of women (61%) and it was objectionable enough to limit antenatal visits. 37% of women acknowledged their husbands objections to clinic participation (75% of these complaints were because of the pelvic examination). Limited clinic hours (25%) The discontinuity in physician care (63%), which they associated with an increase in pelvic examination. Medical student involvement (13%). Women's motivation for using the clinic: Women (57%) linked	

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						the frequency of clinic visits with the quality of care that they would receive in the hospital and feared that delivery assistance would be withheld if they did not attend an obstetric clinic. Results from 1993 Interviews: Women were generally more positive about their antenatal care experience, compared with women interviewed before interventions. Acceptability of all procedures increased among the 8 people who viewed the videotape, while the 10 women who did not see the videotape mirrored the earlier group. Half of the women interviewed in 1993 reported new concerns. They believed early ultrasound performed in the first half of	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						pregnancy may induce miscarriage and women reasoned that they could avoid this danger by delaying entering into antenatal care. Institutional Factors that may impeded clinic attendance: Believing that illness may be of either supernatural or natural aetiology. Intercultural, asymmetrical social interactions within the clinic's institutional settings.	
Montgomery KS, Norr KF, and Vonderheid SC. Ethnicity and prenatal health promotion content. *Western Journal of Nursing Research* 2003;388-404[114]	Cross-sectional study EL=3	To examine the relationship between health promotion content, satisfaction with care and maternal health behaviours among low-income Mexican-American and African-American women.	Country: USA 112 African-American and 47 Mexican-American women who were able to communicate in English and had at least 3 antenatal care visits were recruited between 28-36 weeks of gestation during February to August 1999 from a low risk antenatal clinic affiliated with large Midwestern US	Certified Nurse-Midwives (CNM) and physicians (MD) delivered the antenatal care at study clinic. At initial antenatal care visit a registered nurse or a medical assistance initiated health promotion education, informed women about the availability of CNM and MD as primary providers and offered a choice of providers.	Topics women wanted or needed, and topics discussed	In total sample <u>Women wanted information but did not discuss</u> 1) Using seatbelt in the correct position 2) Dealing with stress and conflicts 3) Family planning 4) Caring for their baby 5) Safe sex practices (not statistically significant)	Higher probability of recall bias, as the women's responses were not cross-checked with their medical records. Women were interviewed at different stages of their pregnancies: may cause under-reporting of topics intended to be covered in later stages of

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			University tertiary-care hospital. Sample characteristics <u>Age</u> 18-24 years: 114/159 (72%) 25-29 years: 29/159 (18%) 29-37years: 16/159 (10%) <u>Parity</u> Primiparas 54/159 (35%) Multiparas 104/159 (65%) <u>Gestational Age (at the time of interview)</u> 28-31 weeks: 96/159 (60%) 32-36 weeks: 63/159 (40%) <u>Number of antenatal care visits</u> 3-5: 73/159 (46%) 6-12: 86/159 (54%) <u>Marital status</u> Unmarried: 123/159 (77%) <u>Education</u> Less than 12 years:	In addition to any health promotion content provided by a CNM or MD a discharge nurse was available to conduct health promotion education following each primary provider visit. Women seen by MD were more likely referred to the discharge nurse, whereas women seen by CNM were more likely to discuss health promotion content with CNM during antenatal care visits.		6) Attending Child birth classes(not statistically significant) <u>Women did not want information but discussed</u> 1) Taking vitamins and minerals 2) Eating specific food groups 3) Drinking adequate amount of water 4) Stopping/ eliminating specific substance use. In African American Group <u>Women wanted information but did not discuss</u> 1) Using seatbelt in the correct position 2) Family planning 3) Caring for their baby <u>Women did not want information but discussed</u> 1) Taking vitamins and minerals 2) Eating specific food	pregnancy. Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			62/159 (39%) 12 years: 61/159 (38%) More than 12 years: 36/159 (23%) <u>Household Income</u> Less than $1000/ month: 71/159 (45%) $1000-$1999 per month: 47/159 (30%) More Than $1999 per month: 41/159 (26%) <u>Health Insurance</u> Public Insurance: 136/159 (85%) Private Insurance: 11/159 (7%) Uninsured: 12/159 (8%			groups 3) Drinking adequate amount of water 4) Stopping/ eliminating specific substance use. In Mexican American Group <u>Women wanted information but did not discuss</u> 1) Using seatbelt in the correct position 2) Dealing with stress and conflict 3) Attending Child birth classes 4) Family planning 5) Caring for their baby <u>Women did not want information but discussed</u> 1) Taking vitamins and minerals. 2) Stopping/ eliminating specific substance use. Association between health promotion content and characteristic of	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						women Discussing a higher number of topics was significantly associated with: Higher numbers of AN visits (t= -2.51; p=0.01) Being African American (t= -3.09; p=0.002) Residing in public housing (t= -2.48; p=0.01) Not drinking alcohol (t=2.02; p=0.05) Not using marijuana and/or cocaine (t=2.36; p=0.02) Wanting or needing to discuss higher number of topics (r=0.42; p=0.000) Being in the midwifery group (t=4.19; p=0.000) Having a primary provider of ANC (t= -4.81; p=0.000)	
Sarnoff et al. Disparities in reported prenatal care advice from health care providers among women of Mexican origin in California. 2001.	Retrospective study EL=3	To examine disparities in the reported receipt of health behaviour advice during pregnancy among U.S. born women of Mexican origin	Country: USA 1,423 women of Mexican descent giving birth in California completed interviews concerning received antenatal counselling regarding	The study was based on data collected in the 1994-1995 California Pregnancy Risk Assessment and Monitoring Services (PRAMS). PRAMS was a population based surveillance system,	Receipt of antenatal advice on smoking, alcohol, and diet.	The immigrant women had less formal education, with ¾ not completing high school vs. 1/3 of US born women. The US born women were likely to be teen	Study limitations acknowledged by the author include: Internal validity was limited by reliance on maternal reports of antenatal

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Journal of Immigrant Health 3[2], 77-84[115]		and Mexican immigrant women in California.	diet, smoking, and alcohol use. From n=1,423 women included in the study, 53% were born in Mexico and remaining 47% were US- born. All participants had a live birth in California from 1994 to 1995. Women were interviewed about the antenatal counselling they received related to diet, smoking, and alcohol use.	designed to study antenatal risk factors for the purpose of the planning and assessing antenatal health program. PRAMS data were generally collected in hospital, during women's hospitalization for the delivery. Survey by self- reported questionnaire was available in Spanish and English. Women who did not respond to the questionnaire during hospital stay were contacted at home with a mailed questionnaire within 2 months of discharge. 80% of the respondents completed the in-hospital questionnaires, with the remaining 20% responding by mail or telephone.		mothers (13%) vs. (5%) of the immigrant women. The US born women were about 3 times more likely to report recent smoking (15.7% vs. 5.6%) and over twice as likely to report recent alcohol consumption (31.4% vs. 14.4%). Immigrant women were more likely than the US-born women to report receipt of antenatal advice on smoking, alcohol, and diet (OR=1.83, CI=1.22, 2.74, $p<0.05$). The percentage of US born women who reported not receiving all three types of advice was double that the immigrant women (29.1% vs. 14.2%). The immigrant women in the sample were 45% more likely to have participated in WIC (Women, Infants and Children program) during their pregnancy	advice. The study examined the reported presence of advice without any measure of its quality. No information about WIC program was given.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						(80% vs. 55%) Participation in the WIC was associated with an increased likelihood of reporting antenatal health advice (OR= 2.08, CI=1.38 to 3.13).	

Teenagers

Q1a. What aspects of service organisation and delivery are effective at improving access to antenatal services for young women aged under 20?

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
Elster et al. The medical and psychosocial impact of comprehensive care on adolescent pregnancy and parenthood. 1987. JAMA: the journal of the American Medical Association 258[9], 1187-1192 [121]	Prospective cohort study EL=2-	To evaluate the effectiveness of a comprehensive adolescent pregnancy and parenthood intervention program.	Country : USA The sample of clients included adolescents who entered TMCP between January 1983 and July 1984. Intervention group Sample of 135 pregnant teens receiving care through a comprehensive programme aimed exclusively at adolescents. The Teen Mother and Child Program (TMCP) at Utah School of Medicine provides medical, psychological and nutritional services to pregnant adolescents. Components of the TMCP programme are education about pregnancy, labour and delivery, contraception, infant health, individual counselling about inter personal relationship, financial management, school	Adolescents received an in-depth psychosocial and nutritional assessment entry into the program, during late gestation and every six month after the delivery. Participants from both group were interviewed when first entered the study. Antenatal, labour and neonatal data were collected from review of hospital records. Participants were interviewed in their home or during antenatal visit, four weeks, 6, 18 and 26 months after delivery. Group differences in antenatal and postnatal outcomes were assessed using $\chi 2$ and log linear analyses for categorical data	Initiation of antenatal care Gestational age Birth weight Apgar score Neonatal complications (requiring neonatal intensive care) Postpartum pregnancy rate Number of antenatal visits	There were no significant differences between two groups with variable examined (age, marriage, drinking, substance abuse, medical and obstetrics history and smoking). The TMCP adolescents came from higher SES family background ($p<.01$) than participants from CG, and more likely to be enrolled in school, graduated or working at the time of conception ($p<.01$) Initiation of antenatal care: < 13 weeks TMCP (n=33/125) CG (n=46/135) NS 13-14 weeks: TMCP (n=54/125) CG (n=43/135) NS >24 weeks: TMCP (n=13/125) CG (n=11/135) NS	Funding: partially funded by Office of Adolescent Pregnancy Programs grant APR.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			and work. Supplemental food coupons are provided through federally sponsored Women Infant and Children (WIC) program. Adoption counselling and formal educational and vocational training were provided by outside agencies. Comparison group Second sample served as comparison group (CG) composed of 135 pregnant teens who received traditional medical care service through the community health provider (Salt lake City- County Health Department for WIC services).	and t- test for interval data. Differences in pregnancy outcomes between groups were also determined after controlling for pre-existing in background characteristic.		Gestational age >42 weeks: TMCP (n=0/125) CG (n=1/135) 38-42 weeks: TMCP (n=93/125) CG (n=89/135) <38 weeks: TMCP (n=7/125) CG (n=10/135) Unknown: TMCP (n=3/125) CG (n=8/135) Birth weight >2500g: TMCP (n= 89/125) CG (n= 91/135) <2501g: TMCP (n= 11/125) CG (n= 9/135) Unknown: TMCP (n= 3/125) CG (n= 10/135) Apgar score 1 min <7: TMCP (n= 20/125) CG (n= 15/135) Apgar score 5 min <7: TMCP (n= 5/125)	

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
						CG (n= 2/135) Unknown: TMCP (n= 3/125) CG (n= 10/135) Neonatal complications (newborn hospitalisation): Normal length TMCP (n= 74/125) CG (n= 87/135) Extended stay TMCP (n= 26/125) CG (n= 13/135) p<0.01 Unknown TMCP (n= 2/125) CG (n= 9/135) Postpartum pregnancy rate TMCP (n= 29/52) CG (n= 39/66) Number of prenatal visits: Adolescents from TMCP attended a significantly great percentage of the expected number of antenatal visits than those in the CG (p<.01) [figures not reported]	
Piechnik SL et al 1985 Reducing low birth weight among socioeconomically high-risk	Retrospective cross sectional study EL=3	To evaluate care provided by a multidisciplinary, comprehensive AN service for adolescents.	Setting: AN clinic in a University Hospital, South Carolina, USA. Population: Pregnant	Intervention: An adolescent obstetric clinic providing comprehensive AN care inc. screening,	Gestation at onset of AN care Low birthweight	Gestation < 21 weeks at onset of AN care: Group A: 48.9% Group B: 50.9%	Much analysis done between subgroups of a given study sample, few comparative

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
adolescent pregnancies Journal of Nurse-Midwifery 30(2): 88-98[123]			adolescents aged 12-17 years attending AN clinics on study sites 1974-1978. Intervention group A: All adolescents attending the Adolescent Obstetric clinic 1974-1978 n=738 Comparison group B: Adolescents attending the Adolescent Obstetric clinic 1976-1978 who had a low risk AN score for obstetric and medical complications n=493 (a sub-group of Group A). Comparison group C: Adolescents attending state maternal health AN clinics 1976–1978 with a low risk AN score n=2034 All adolescents were receiving state-funded services and so are considered to be of low socioeconomic	patient education, psychosocial evaluation and counselling, nutritional assessment and counselling. Multidisciplinary team comprised: 2 obstetricians, 2 nurse-midwives, 1 nutritionist, 2 social workers, a psychiatrist and nursing staff. All adolescents see a nurse-midwife at each visit, a nutritionist at least once for an assessment, a social worker at least once for assessment with home visiting where appropriate. Referrals are made to obstetricians as necessary. The psychiatrist aimed to see as many adolescents as possible and provide counselling where appropriate. Members of the team also provide AN classes which are run in the AN		Group C: 49.8% By inspection - NS Gestation >28 weeks at onset of AN care: Group A: 13.1% Group B: 13.5% Group C: 15.7% Comparing groups B and C χ^2 =1.392, p=0.24* Birthweight <2500g: Group A: 9.1% Group B: 9.2% Group C: 12.7% Group B vs. Group C Fisher's Exact test p=0.036* Note: Groups B and C do not include low birthweight babies who were stillborn. It is not clear whether this subset is also removed from figures for Group A.	statistics between study groups. Statistical significance sometimes reported inaccurately and test used not apparent. Where possible statistical significance has been recalculated and reported here. Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			status. Approx. 80% of the study sample is described as "non-white". The study samples from the adolescent obstetric clinic (Groups A and B) contained a higher percentage of non-white women (83.0 and 82.6% vs. 74.6%) and unmarried women (88.3% and 88.2% vs. 74.4%) compared with the comparison state-wide group.	clinic and provided for adolescents who have their appointment that same day. Team aim to provide care that is non-judgemental and based on trust.			
Patterson et al.(1994) Evaluation of a clinic for pregnant adolescents. 1994. Journal of the Arkansas Medical Society 91[3], 131-134 [122]	Retrospective observational study EL= 3	To evaluate maternal and infants outcomes related to the goals of the TOPPS (Teens Obstetrics Perinatal Parenting Service). Antenatal care goals of TOPPS included nutritional intake for delivery of healthy, term average weight	Country: USA Intervention group: A retrospective review of the TOPPS clinic medical records from1985 to 1986 was completed for 120 adolescent young women. Comparison group: State and national data based on 6,602 live births to women under 18 in Arkansas in 1988.	Intervention: TOPPS (Teens Obstetrics Perinatal Parenting Service): An interdisciplinary team that provided services for pregnant adolescent, providing nutritional counselling and making appropriate referral (i.e. WIC, AFDC, Medicaid, etc.) with the aim of decreasing risk and	Initiating antenatal care Birth weight	Initiating antenatal care during: First trimester TOPPS: 27.6% Arkansas: 49.9% Second trimester TOPPS: 55.0% Arkansas: 38.8% Third trimester TOPPS:12.2% Arkansas: 10.5% Birth weight < 1500g TOPPS: 2.1% Arkansas: 1.8%	Funding: not reported Poor report of the service and findings

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
		infants.		improve long-term outcomes for both the young woman and her baby.		1501-2500g TOPPS: 11.2% Arkansas: 8.4 % >2501g TOPPS: 86.7% Arkansas: 89.5% Arkansas data; are based on 6,602 live births to women under 19 in Arkansas in 1988	
Silva MO et al 1993 Adolescent pregnancy in Portugal: Effectiveness of continuity of care by an obstetrician Obstetrics and Gynaecology 81(1): 142-146.[124]	Retrospective cohort study EL=2-	To evaluate an antenatal care intervention provided by an obstetrician	Setting: Intervention group: Hospital-based AN clinic. Comparison group: Health centre. Lisbon, Portugal. Intervention population: Women registered for antenatal care at the study hospital Comparison population: Women receiving AN care form their GP. Intervention group: 80 adolescents recruited as they enrolled for AN care. Comparison group: 80 women recruited after giving birth at	Intervention: AN care initiated at registration with hospital clinic. Care from an obstetrician with a specialist knowledge in teenage pregnancy and who provided continuity of carer throughout pregnancy. Comparison: "Routine" AN care. AN care initiated after registration and provided by different GPs at each visit.	Gestation at start of AN care. Total number of AN visits Other outcomes reported included: Sexually Transmitted Disease (STD) during pregnancy Drug misuse Birth weight Gestational age Apgar score <7 at 5 mins Caesarean birth Admission to "high risk paediatric unit"	Outcomes only reported for 60 of the 80 women in the comparison group as 20 did not receive AN care. Findings reported as Intervention vs. Controls, mean with standard deviation or % Timing of first visit: 17.1 +/- 4.7 vs. 19.5 +/- 6.7 weeks p=0.02. Total no. of visits: 9.0 +/- 4.1 vs. 5.2 +/- 1.8 p=0.001 STD during pregnancy: 15% vs. 12% p=0.57 AN drug use: 1% vs. 0% NS Birthweight: 3172+/- 501 vs. 2991 +/- 562 grams	Only 60 of the 80 women in the comparison group received AN care. These women were subsequently dropped from the analysis thus losing the opportunity to compare their intrapartum outcomes. Funding: Supported in part by Fundação Luso-Americana Para o desenvolvimento.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			the study hospital. Matched on age at conception, race, socioeconomic status, years of education, unplanned pregnancy, previous BMI. Sample population mostly women of low socioeconomic status living in poor housing conditions (e.g. no running water)			p=0.05 Gestational age: 38.8 +/- 1.6 vs. 38.8 +/- 2.2 NS Apgar score < 7 at 5 mins: 0% vs. 7% p-0.03 Caesarean birth: 13% vs. 15% NS Admission to "high risk paediatric unit": 4% vs. 10% p=0.005	
Berg M. et al. 1979 Prenatal care for pregnant adolescents in a public high school. The journal of school health. 49(1): 143-153.[125]	Retrospective cohort study EL=2-	To measure the adequacy of prenatal care, pregnancy complications and incidence of prematurity and low birth weight infants in the group enrolled in the school program with a comparison group receiving care in a non-school Maternal and Infant Care (MIC) clinic.	Setting: State school and hospital-based AN clinic, Minnesota (USA) Pregnant adolescents (aged 13-18 yrs) who received antenatal care and gave birth in St.Paul Minnesota MIC project from 1973 to 1976. Intervention group n=36 adolescents enrolled on school-based MIC AN program Comparison group n=36 adolescents randomly selected from those receiving	Intervention (school) group – enrolled in a public school where services of a nurse practitioner, social worker and clinic attendant were available on a daily basis. Other members of the interdisciplinary team were available on a weekly basis. Comparison group: received care at a weekly non-school hospital-based MIC adolescent prenatal clinic.	Uptake of antenatal care. Number of AN visits. A range of specific health outcomes were also reported including anaemia, toxaemia, urinary tract infections and birthweight.	Uptake of AN care: In the school group 58.3% initiated care during the first trimester compared with 36.1% of the comparison group; Fisher's exact test p=0.098 NS* Only one student in the school-based group made a first visit during the third trimester. 10 women in the comparison group began care in the third trimester of pregnancy. Number of visits: In the school-based group 2.0% women made 1-5 AN visits vs. 30.6% in the hospital-based group. In the school-based group number of visits ranged	Small sample size. Specific intervention compared across different sites. May not be generalisable.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			care at hospital-based MIC AN clinics. Comparison groups were matched for race. 44.4% of the study sample were black, 30.6% white, 19.4% Hispanic and 5.6% native American			from 3 to 23. In the in the comparison group from 1 to 16. Clinical outcomes: Presented as School-based group vs. hospital-based group (%): Anaemia: 13.9 vs. 30.6 UTI: 5.6 vs. 13.9 Toxaemia: 11.1 vs. 16.7 Birthweight <2500g: 5.5 vs. 13.9 Not significant difference (NS).	
Taylor B et al 1983 School-based prenatal services: Can similar outcomes be attained in a nonschool setting? JOSH 53(8): 480-486[126]	Retrospective cohort study EL=2-	To evaluate whether enhancement of hospital-based antenatal care for adolescents results in outcomes comparable to those attained by a school-based clinic.	Setting: State school and hospital-based AN clinic, Minnesota (USA) Pregnant adolescents (aged 14-18 yrs) who received antenatal care and gave birth in St.Paul Minnesota MIC project from 1976 to 1979. Intervention group: n=53 of the total sample of adolescents receiving care at the school-based MIC AN clinics.	Intervention (school) group – enrolled in a public school where services of a nurse practitioner, social worker and clinic attendant were available on a daily basis. Other members of the interdisciplinary team were available on a weekly basis. Comparison group: received care at a weekly non-school hospital-based MIC	Uptake of antenatal care. No. of visits A range of specific health outcomes were also reported including anaemia, toxaemia, urinary tract infections and birthweight.	Uptake of antenatal care: In the school group 58.5% began prenatal care during the first trimester compared with 45.4% of the comparison group; Fisher's exact test p=0.24 NS* In the school group 3.0% women made a first visit during the third trimester. 11.3% women in the comparison group began care in the third trimester of pregnancy; Fisher's exact test p=0.27 NS*. No. of visits: In the	Small sample size. Specific intervention compared across different sites. May not be generalisable.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			Comparison group: n=53 drawn from total population of 85 adolescents receiving care at nonschool hospital-based MIC AN clinics. Intervention and comparison groups were matched for race. 34.0% of the study sample were black, 60.4% white, 3.8% Hispanic and 1.9% native American. Age at conception and parity were similar for the 2 groups.	adolescent prenatal clinic. This service had been "improved and personalized" but the authors note that the services provided by the school-based clinics were still able to provide more comprehensive care.		school-based group 7.5% women made 1-5 AN visits vs. 13.2% in the hospital-based group. Approximately half the adolescents in both groups made 12 or more AN visits (exact numbers not ascertainable from figures in paper) Clinical outcomes: Presented as School-based group vs. hospital-based group (%): Anaemia: 13.2 vs. 9.4 NS UTI: 9.4 vs. 3.8 NS Toxaemia: 18.9 vs. 17.0 NS Caesarean birth: 22.6% vs. 13.2% $p<0.05$ "Low" Apgar at 5 mins – no signif. difference (scores not reported) Birthweight <2500g: 11.3% vs. 13.2% NS Birth <37 weeks gestation: NS (figures not reported)	

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
						>4 days spent in hospital (baby): 32% vs. 17% p<0.05	
Barnet B et al 2003 Reduced low birthweight for teenagers receiving prenatal care at a school-based health center: effect of access and comprehensive care Journal of Adolescent Health 33:349-358[127]	Retrospective cohort study EL=2-	To compare access to care, comprehensiveness of care, and birth outcomes for teenagers receiving antenatal care in comprehensive adolescent pregnancy programs (CAPPs) in two different settings: school-based vs. hospital-based.	Setting: school-based and hospital based clinics, Baltimore, USA Pregnant teenagers giving birth between July 1st 1995 and August 30th 1996 receiving care from a CAPP SB-CAPP n=109 HB-CAPP n=284 Demographic details of samples: Age: SB-CAPP 15.1 years (12 – 18 years) HB-CAPP 16.2 years (11 – 18 years) P<0.001 African-American: SB-CAPP 97% HB-CAPP 90% P<0.05 History of STI prior to pregnancy: SB-CAPP 41%	School-based (SB-CAPP): School for pregnant teenagers providing onsite antenatal care, family planning services, primary care to infants and children, case-management, nutrition education, parenting education and mental health services. Intrapartum and postpartum care provided by same staff. Also includes day care for infants. Hospital-based (HB-CAPP): antenatal care, primary and preventive care, nutrition services, educational services relating to STI, responsible parenting, substance misuse prevention, mental health services.	Adequacy of antenatal care -- assessed using Kotelchuck's Adequacy of Prenatal Care Utilization Index – a measure of initial and continuing access of care, adjusted for gestational age. Inadequate (initiation after fourth month of pregnancy or < 50% expected visits); intermediate (50-79% visits); adequate (80-109% visits); adequate plus (> 110%). Comprehensiveness of care (screened and received advice on substance misuse (inc. cigarettes); nutrition, condom use, depression/suicide, physical and sexual abuse, school	Month of initiation of care: SB-CAPP: 4.2 (Std. Dev. 1.6) HB-CAPP: 3.6 (1.7) P=0.002 Total number of visits: SB-CAPP 10.5 (3.7) HB-9.6 (4.8) p=0.05 Adequacy of AN care: Adequate plus: SB-CAPP 12% HB-CAPP 18% NS Adequate: SB-CAPP 27% HB-CAPP 27% NS Intermediate: SB-CAPP 18% HB-CAPP 18% NS Inadequate: SB-CAPP 43% HB-CAPP 38% NS	Composite outcome for comprehensiveness of AN care requires that all 6 components of psychosocial screening and advice are included. Funding: Supported by Robert Wood Johnson Foundation.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			HB-CAPP 56% P<0.05 Cigarette smoker: SB-CAPP 9% HB-CAPP 13% NS Prior birth: SB-CAPP 8% HB-CAPP 14% NS High risk pregnancy SB-CAPP 10% HB-CAPP 6% NS		problems). Birthweight	Comprehensiveness of care: Screened/advised for: Adequate nutrition: SB-CAPP 57% HB-CAPP 96% p<0.001 Substance misuse: SB-CAPP 87% HB-CAPP 90% NS Condom use: SB-CAPP 52% HB-CAPP 15% p<0.001 Depression/suicide: SB-CAPP 74% HB-CAPP 7% p<0.001 Physical and sexual abuse: SB-CAPP 82% HB-CAPP 84% NS School problems: SB-CAPP 73% HB-CAPP 98% P<0.001 Pregnancy complications: Pre-term labour:	

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
						SB-CAPP 5% HB-CAPP 4% NS Gonorrhoea or Chlamydia: SB-CAPP 25% HB-CAPP 45% P<0.001 UTI: SB-CAPP 30% HB-CAPP 16% p=0.02 Birthweight: Mean birthweight: SB-CAPP 3225g HB-CAPP 3050g P=0.006 Low birthweight: SB-CAPP 5% HB-CAPP 12% P=0.06 Inadequate/intermediate AN care: Percent with risk factor 57% RR for low birthweight 1.2 Attributable risk 0.10 [95% CI 0.04 to 0.16] Logistic regression analysis controlling for	

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
						confounding variables (age, race, household income, prior birth, cigarette smoking, history of STI and high risk pregnancy): SB-CAPP 1.00 (ref) HB-CAPP 3.75 [95% CI 1.05 to 13.36], p=0.04 Controlling for confounding variables listed above plus adequacy of care: SB-CAPP 1.00 (ref) HB-CAPP 3.52 [95% CI 0.99 to 12.55], p=0.053 Controlling for confounding variables listed above plus comprehensiveness of care: SB-CAPP 1.00 (ref) HB-CAPP 2.43 [95% CI 0.68 to 8.69], p=0.171 I.e. comprehensiveness of care seems to be contributing more to the difference between the two models than adequacy of care. Lack of comprehensive care (i.e. did not receive all 6 areas of screening and advice):	

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Percent with risk factor 90% RR for low birthweight 3.7 Attributable risk 0.71 [95% CI 0.55 to 0.87]	
Kay et al. Process, costs, and outcomes of community-based prenatal care for adolescents. 1991. Medical Care 29[6], 531-542[128]	Retrospective cohort study EL=2+	To evaluate differences in the process of care provided by community based antenatal care programme designed especially for adolescent relative to traditional antenatal care which was not adolescent focused.	Country : US Ypsilanti; Michigan A retrospective review of medical records of two sample of adolescent receiving antenatal care: Sample of 180 pregnant teens receiving care through a community based programme aimed exclusively at adolescent. The young adult health centre (known as The Corner) located in freestanding facility accessible to area teens. Components of the Corner's programme are health services and peer education that stress pregnancy prevention and comprehensive primary health care. Second sample served as control	The sample of clients attending The Corner included all adolescents who made a minimum of three antenatal visits and who gave birth at Women's Hospital between January 1991 and June 1998. All Corner clients consider to be at high risk were directed to Women's Hospital for birth, other low risk women could choose between Women's Hospital and a second non tertiary hospital for birth (40% of all births among Corner clients during study period occurred at Women's Hospital). The Control sample was constructed by selecting the first 180 medical	Number of antenatal visits per client Initiating antenatal care during first trimester Full term birth Low birth weight pregnancy complications Neonatal complications (requiring neonatal intensive care) Resources consumed in delivering antenatal care (laboratory test, ultrasounds, non-scheduled outpatient visits and antenatal inpatient stay) Postpartum pregnancy rate and use of	There were no significant differences between two groups with variable examined (age, marriage, occupation, race, medical and obstetrics history and smoking), with exception of health insurance coverage. The Corner population was significantly more likely to be without coverage (15.6% vs. 7.4% p=0.024) Number of antenatal visits per client (mean) The Corner 12.79 OB Clinic 9.79 p=0.00 Initiating antenatal care during first trimester The Corner 53.1% OB Clinic 46.3% NS Full term birth The Corner 90.4% OB Clinic 90.0% p=0.91 Low birth weight	Funding: Supported by a grant from form Michigan Health Care Education and Research Foundation

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			composed of 180 pregnant teens who received the care through the university hospital obstetric clinic (OB clinic) whose programme was not adolescent focused but was representative of antenatal care in a traditional, institutional setting.	records of women with a minimum of three antenatal visits at the Women's Hospital who gave birth there, matching age and year of delivery with clients from The Corner sample.	contraception	The Corner 15.5% OB Clinic 10.8% P=0.20 Mean Apgar score 1 minute: The Corner 7.5 OB Clinic 7.5 5 minutes: The Corner 8.6 OB Clinic 8.5 NS Index Newborn Complication Score The Corner 5.54 OB Clinic 4.15 P=0.25 Percent who stopped / reduced smoking: The Corner 27.6% OB Clinic 9.5% P=0.00 No significant differences between the two groups for variables describing pregnancy, labour and birth complications. Comparative percentage of contraception use At 6 months, 12 months and 24 months were	

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
						78.4% vs. 45.0%, 48.5% vs. 28.8% and 27.4% vs. 12.8% for The Corner and the OB Clinic, respectively. Postpartum pregnancy rate: Comparative pregnancy rate at the same interval 4.7% vs. 26.6% vs. 23.3% and 15.4% vs. 30.4% respectively. Use of the resources: The Corner clients consistently used fewer of the recourses (ultrasounds, non stress tests, non-scheduled outpatients visits, and antenatal inpatient days) than did clients at the OB Clinic	
Julnes et al. Community-based perinatal care for disadvantaged adolescents: evaluation of The Resource Mothers Program. 1994. Journal of Community Health 19[1], 41-53[129]	Retrospective cohort study EL=2-	To compare the result of a lay home visitor programme with those of the more traditional clinic based health programme	Country: USA, Virginia, Norfolk RMP (Resource Mother Programme) was a community service project initiated to serve teens in targeted neighbourhoods having high rates of adolescent pregnancy and infant mortality. The Resource Mother Programme recruited	Several sources of quantitative data were used including a data base from monthly reports of Norfolk births and a perinatal statistics for prenatal Region of Virginia were obtained from state and national sources and compared with the outcome from the	Adequacy of antenatal care (month of initiating antenatal care, number of the visits) Occurrence of preterm delivery and low birth weight	Maternal characteristics in antenatal programme: Age<17: RMP = 75.5% MDP = 45.6% No ANC= 44.4% Black RMP= 91.8% MDP= 69.6% No ANC= 79.3%	Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			women from the community and provides them with intensive training to serve as resource mothers for pregnant teens with limited social and financial support. The comparison model was a clinic based multi-disciplinary programme (MDP). MDP programme used a team of professionals to provide eligible pregnant women and new mothers with medical services, nutritional services, home health services. While the primary goal was to compare these two community based programs, an additional comparison group, composed of adolescents who received no antenatal medical care during pregnancy was also added.	evaluation study. These resources led to three comparison populations of births to young women (restricted to those 19 years old and younger) during a 12 month period: RMP = A total of 49 births MDP = A total of 46 births No ANC= A total of 29 births (Teens in Norfolk who had not received any antenatal care) The effectiveness of the RMP lay home visitors programme is evaluated in terms of: (1) outreach objectives- the ability of the programme to reach high risk pregnant teens; (2) behavioural objectives- the		Poor neighbourhood RMP= 91.9% MDP= 59.1% No ANC=62.0 % Education (<= 11th grade) RMP= 93.9% MDP= 76.1% No ANC= 72.4% First time mother RMP= 81.6% MDP= 78.3% No ANC= 41.4% Differences between RMP and the other two groups are significant at p< 0.01 with the exception for RMP and MDP first time mothers (p>0.30) and RMP - No ANC ethnicity comparison (p>0.10) Adequacy of Antenatal Care: Entry into ANC (before the 4th month of pregnancy) RMP= 53% MDP= 32.6% (p<0.05	

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
				impact of the programme on the health related activities of the pregnant teens; and (3) health objectives- the effect of the programme on health outcomes measures for the neonates. High risk was characterized by young maternal age, non white race, compilation of less than high school education, living in a poor neighbourhood, and no prior pregnancies		comparison with RMP) No ANC= 0.0 Antenatal Visits (more than 6 times) RMP= 87.8% MDP= 73.9% No ANC= 0.0 No Hospital Delivery RMP= 0.0 MDP= 2.2% No ANC= 3.5% (for RMP-MDP comparison, p>0.25; for RMP-No ANC, p>0.15) Birth weight outcomes (chi square analysis of RMP-MDP birth weight outcomes not significant p>0.30; chi square of RMP - No ANC is significant p>0.05) 1499 Grams and Less RMP= 0.0% MDP= 2.2% No ANC=13.9% 1500 to 2500 RMP= 10.2% MDP= 4.3% No ANC=8.4% <2500 grams	

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
						RMP= 89.8% MDP= 93.5% No ANC=77.7% Gestational Age at Delivery (comparison with RMP not significant p>0.05) Less Than 38 Weeks RMP= 12.2% MDP= 4.3% No ANC=14.3% 38-42 Weeks RMP=87.8 % MDP= 95.7% No ANC=85.7% (4% over 42 weeks)	

Q.1b What aspects of service organisation and delivery act as barriers to take up of antenatal services for young women aged under 20?

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
Lee SH and Grubbs LM. Pregnant teenagers' reasons for seeking or delaying antenatal care. Clinical Nursing Research vol.4 no.1 1995[130]	Qualitative study Interview-based EL=3	To address teenagers' subjective reasons for initiating and delaying antenatal care.	Adolescent women who had recently within 2 days delivered or who were receiving care in antenatal programs in Florida. Both rural and urban settings. 37 entered antenatal care during the 1st trimester and 12 delayed care until the 3rd trimester. Early care was defined as started before the 14th week. Late care was after the 27th week. Country: US	N/A		The groups were similar in age, education and parity. Decisions to seek care: Early group: Felt sick or had problems, n=15 Wanted a pregnancy test, n=12 Mother told them to go, n=6 Wanted to take care of themselves, n=4 Late group delayed because: Afraid to tell their mother, n=5 Did not know they were pregnant because test was negative, n=4 The late group had fewer perceived health problems and felt better during the early months than did the early teens. Those who entered antenatal care during their 1st trimester found care more accessible than did those who delayed entry.	Small sample size. Those who sought and received early antenatal care were more likely to be interviewed. Suggest school based education and educating mothers.

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
May KM. Social networks and help-seeking experiences of pregnant teens. JOGNN 1992 [131]	Qualitative study Questionnaires and interviews EL=3	Study aims were to report on teenagers' perception of their social networks and experiences of seeking help.	Urban setting, 31 unmarried pregnant women aged 16 to 19yrs attending an outpatient antenatal clinic of an urban hospital. Ethnicity: 61.3% Latino, 25.8% white, 6.5% black, and 6.5% Native American. Mean length of gestation had been 7.7 weeks at the time of confirmation of pregnancy and 11.2 weeks at the first antenatal care appointment. Country: USA	N/A	Instruments used: Norbeck Social Support Questionnaire (NSSQ) which measures total functional support, sources of support, recent loss, and total network score. Two antenatal support questions to address the experiences of seeking help with decision making and obtaining information. Interview guide with open-ended questions addressing types of help needed, resources, satisfaction with help, choice of antenatal care site, barriers to help and network members' attitudes toward antenatal care.	Younger teens (16-17yrs, n=13) did not differ from older teens (18-19yrs, n=17) on network size and emotional and tangible support. Younger teens perceived a larger proportion of total functional support from family or relatives and a smaller proportion from friends than did older teens. Moderate negative relationship between number of weeks pregnant and social network size, emotional support, tangible support and antenatal support. Types of care the teens most often needed were emotional and financial, followed by medical care, information and transportation. The most common barriers to receiving help were unavailability of a network member and lack of financial resources. A desire was conveyed	Limitations of the study included small sample, unavailability of a comparison sample of pregnant teens not in antenatal care, and inability to measure outcomes because of the cross-sectional nature of the study.

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						for teen antenatal classes. Concerning negative feelings, teens described themselves as scared, nervous, and needing help. Their positive feelings reflected happiness at receiving support from parents and friends. Their negative perceptions of pregnancy were that it was difficult to support oneself and get things for the child, it was not fun, there was a lot of responsibility and pressure on one to do and not do a lot of things.	
Cartwright PS et al. Teenagers' perceptions of barriers to antenatal care. Southern Medical Journal Vol.86, no.7 1993[132]	Qualitative Structured interviews EL=3	Questions were designed to collect information about barrier perception due to money, time, knowledge of available resources and institutional factors such as when clinics were held.	All women delivering at Metropolitan Nashville General Hospital. 1989-1990 Teenagers were defined as ≤17 yrs. Country: USA	N/A	Adequacy of antenatal care was categorised according to the Kessner index as adequate, intermediate or inadequate. This is based on the number of antenatal visits and gestational age at entry into care. It categorizes according to quantity of antenatal visits and	Those saying the antenatal clinics were held at inconvenient times of day had worse Kessner scores (p=0.012). So did those saying they had trouble getting transportation to and from the clinic (p=0.001). Teenagers who were working while pregnant perceived more time barriers than those who were not. Being in school	Postpartum therefore recall bias. Questions were yes/no when a scaled response would have been more appropriate.

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
		Structured interviews conducted postpartum prior to discharge.			does not address quality of care during those visits.	correlated with receiving less adequate antenatal care. The explained variance in the dependent variable was frequently quite small. The variables that correlated significantly with the dependent variable were never collected or analysed during the study. Only able to explain 17% of the variance in adequacy of antenatal care means that other forces besides those analysed must be involved.	
Kinsman SB and Slap GB. Barriers to adolescent antenatal care. Journal of adolescent health 1992; 13:146-154[133]	Qualitative Structured interviews EL=3	Objectives were to compare the attitudes and barriers identified by adolescents who receive inadequate antenatal care with those who receive better care; and to develop a model based on the adolescents' responses that can be used to identify pregnant adolescents who are likely to	Structured interviews conducted with 101 adolescents less than 17 years of age who delivered infants at an urban university hospital between 1988 and 1989, Pennsylvania. All interviews were conducted within 48hrs of birth by a single investigator. 140 questions. Country: USA	N/A	The Maternal Health Services Index was used to divide subjects into those who received intermediate or adequate care.	15 adolescents were assigned to the adequate care groups, 49 to the intermediate, and 37 to the inadequate care group. The 3 groups did not differ in age, race, occupational score for head of household, marital status, hospital service, school grade, or last attendance in school. Mothers in the adequate and intermediate care groups were 2 to 3 times more likely to use the Teen Obstetrics Clinic	The lack of exposure to pregnant peers was a newly identified potential barrier. They suggested that school-based education about pregnancy and antenatal care could compensate for lack of exposure to pregnant

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
		receive adequate care.				than were mothers in the inadequate care group (p=0.001). The mean number of antenatal visits ranged from 11.1 for mothers in the adequate care group to 1.8 in the inadequate care group (p=0.001). The adequate care group was first seen at 9.7 weeks mean gestation compared with 20.1 weeks for the intermediate group and 29.2 weeks for the inadequate care group (p=0.001). There were no significant differences between the groups in parity, gravidity, previous miscarriages, or previous abortions. During the current pregnancy, mothers in the inadequate care group were more likely to report cocaine use and to have anaemia at the time of delivery than were mothers in the other groups (p<0.05). There were no significant	friends. The sample was predominantly black, urban, poor and unmarried. They had a high-risk profile which may limit the generalisability to other adolescent populations. Retrospective design.

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						differences between the groups in cigarette or alcohol use, sexually transmitted diseases, vaginal bleeding, or hypertension. There were higher rates of asthma and premature rupture of membranes among mothers in the intermediate care and adequate care groups than among mothers in the inadequate care group. The babies born to mothers in the 3 groups did not differ significantly in mean gestational age, preterm delivery, birth weight, mean Apgar score, congenital anomalies, neonatal complications, need for intensive care, stillbirth, or neonatal deaths. The rates of low birth weight were high across all 3 groups, birth weight less than 2500gm, 19% of the inadequate group, 27% of the adequate group. Mothers receiving inadequate care	

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						recognized the pregnancy later. They were more likely to describe confusion about available services and medical coverage, more likely to view physicians negatively and less likely to have experienced a friend's pregnancy. Mothers in the inadequate care group also were more likely to consider antenatal care unimportant and to rely on their families for antenatal advice. The desire for a separate adolescent antenatal clinic was the only variable that differed significantly among the groups. Participants in the inadequate care group placed more importance on a special clinic for teenagers (p=0.03) than did those in the intermediate-adequate care group. The most frequently cited ways to improve care were teaching the importance of antenatal care to families and to all school students. In	

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						addition, adolescents suggested having smaller clinics, after-school clinic hours, weekend clinic hours, and special classes for pregnant adolescents in school.	
Teagle SE and Brindis CD. Perceptions of motivators and barriers to public antenatal care among first-time and follow-up adolescent patients and their providers. Maternal and Child health Journal vol.2, no.1 1998[50]	Qualitative Interview-based EL=3	To compare perceived motivators and barriers to public antenatal care among pregnant adolescents coming for their first antenatal care appointment and those coming for a follow-up visit. To compare motivators and barriers identified by adolescents and by providers.	250 adolescent, public antenatal patients, 1993 to 1993. They had to be at least 12 weeks pregnant, between 15 and 19 years old, and English speaking. Consecutive adolescent patients coming to in of the 5 public antenatal clinics in one county in Arkansas. Country: USA	N/A	N/A	Adolescents were predominantly African American, nulliparous and single. Most were coming for a follow-up appointment. Nearly all providers were female and white (92%). Nearly all teenagers attending for booking and those attending follow-up appointments indicated that concern over the health of their baby was the primary motivation for obtaining antenatal care. Approximately half of first-time and follow-up patients had a family member or close friend urge them to go for antenatal care. Only one-third of teenagers indicated that a personal health problem was a reason for	Small sample of providers. Women interviewed during pregnancy to avoid recall bias.

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						obtaining antenatal care. Whereas providers perceived that the most important motivation for their adolescent patients was concern over their own health. Nearly all pregnant adolescents indicated that they came to the clinic out of concern for the health of their baby, whereas only a third of the providers perceived this as a motivating factor among their adolescent patients. Most providers thought adolescents sought antenatal care primarily out of concern over their own health or because they were not feeling well. All providers indicated that urging by family and friends was a primary motivator for adolescents in obtaining antenatal care, as compared with only half of the adolescent self-reports. Adolescents most frequently reported	

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						waiting time for appointment (33%), fear of procedures and not knowing where to go for care (30%), transportation (22%), and fear of providers (17%). Teenagers attending for booking were also more likely to identify difficulty getting an appointment as a barrier (17%). Teenagers attending for follow-up appointments were significantly more likely to identify not wanting to be pregnant as a barrier (31%), as compared with first-time patients (18%). 71% of providers identified 'feeling depressed' as a barrier, while only 18% of teenagers mentioned this. Adolescents tended to identify system barriers as opposed to personal barriers. Providers perceived that personal barriers would be the most frequently experienced.	

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						Teenagers and providers agreed that 'fear of procedures' and 'not wanting to be pregnant' were important barriers.	
Joyce K et al. Internal and external barriers to obtaining antenatal care. Social work in health care vol. 9 (2) 1983.[134]	Descriptive Examination of medical records EL=3	To examine the reasons women give for not seeking antenatal care and to explore hypotheses about how these reasons vary among different subgroups.	Chart review of cases from 2 hospitals in 1978. 1,975 women gave birth of which 70 had no antenatal care. Age 15-40 Mean age 23 14% 15-17 years 57% 18-24 years 19% 25-35 years 10% >36years 54% non-white 46% white Reasons for not seeking antenatal care were available for 43 out of 70 women. Country: USA	N/A	N/A	Internal barriers: Depression Denial of pregnancy Fear of doctors Unplanned pregnancy External barriers: Financial problems No transportation No child care Inability to obtain clinic appointment Clinic wait too long No particular reasons: No problems with the pregnancy Teenagers experienced more internal barriers	Small sample size. Not specifically teenagers.
Gazmararian JA et al. Barriers to antenatal care among Medicaid managed care enrolees: patient	Qualitative Focus groups EL=3	To identify what patients and providers perceive as barriers to antenatal care among women	Tennessee Focus groups enrolled in 1995. Women between 13 and 45 years of age, divided	N/A	N/A	Enrolled women had 6 general themes: treatment by office personnel rapport with health providers	Responses based on small samples. Group process may stimulate social

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
and provider perceptions. HMO practice 1997 vol.11 no.1[135]		enrolled in a Medicaid managed care plan.	into 3 groups: recently pregnant, currently pregnant and women who did not have any children. Four focus groups were conducted for providers, one each for physicians, nurse practitioners, nurses, and medical assistants. 50% <20years 50% >20years Country: USA			knowledge of TennCare (state insurance program) transportation substance abuse recognition of pregnancy Need to be treated with compassion and respect. Substance misusers were not aware of the increased risk for their newborn's health during pregnancy. Most of the teenagers began antenatal care during their second or third trimester. Provider focus. There were some differences in perception of the extent of the problem of antenatal care use. The physicians tended to think barriers to antenatal use were a minor problem. The nurse, nurse practitioners and medical assistants remarked about a high degree of non-compliance by patients. 6 general themes were identified: lack of education inability to see cause and effect relationship contributes to a tendency	conformity. Not specifically teenagers.

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						to minimize the importance of the things they are asked to do and their own responsibility for a positive outcome. Women will not tell them that they cannot read or write. Knowledge of TennCare Transportation Child care Limited hours of operation – limited appointment times for working women, long wait times increases the amount of time away from work required beyond the point that these women feel they can afford. Some women are dependent on someone who works full-time for their transportation. Substance abuse – some respondents suspect that fear of discovery and legal consequences inhibit access of antenatal care. Other characteristics that cause problems were operating with a crisis mentality and only seeking care under emergencies; having no	

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						conceptual framework for prevention; and having social problems than are more important to focus on rather than their health care.	
De Jonge A. Support for teenage mothers: a qualitative study into the views of women about the support they receive as teenage mothers. Journal of Advanced Nursing, 36 (1), 49-57[48]	Qualitative study Interview-based EL=3	To gain insight into the support teenage mothers received during pregnancy, birth and their child's pre-school years and young women's perceptions of the usefulness of a support group for teenage mothers.	1999-2000 Edinburgh. 26 women recruited several years after birth (median 8.5yrs). 9 dropped out before interview, 5 were in the pilot study, 12 in the main study. Country: UK	N/A	N/A	4 women mentioned the danger of stigmatisation if a support group were organised exclusively for teenage mothers. They felt a group should include women in their early 20s and be given a name such as 'young mothers group'. All women felt it would be useful to gather a group of people together who shared similar circumstances because they would be able to support each other. Some of the comments made raised doubts about whether these respondents would have actually attended regular antenatal classes. All others felt inhibited to be with older mothers who were in stable relationships. Other problems were embarrassment felt from attending any kind of group, mental health	Very small study mainly looking at other issues, e.g. benefits available, childcare, role models and why women get pregnant.

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
						problems and time pressure. Both a regular group and a drop-in session were thought to be useful. Thought groups needed to be well advertised and would probably need some personal introduction by a health professional to persuade most women to attend. Suggested a health visitor should attend with the teenager the 1st session.	
Howie L and Carlisle C. Teenage Pregnancy Midwives Vol. 8 No.7 2005[49]	Qualitative study Questionnaire-based EL=3	To explore what pregnant teenagers want from antenatal education classes. Self-completed questionnaire during the postnatal inpatient stay. Semi-structured interview carried out 4-6 weeks postnatally.	Large, inner city teaching hospital in West Scotland. Teenagers ≤17 yrs at time of giving birth. 1st pregnancy, postnatal teenagers who had a healthy term baby. Excluded stillbirth, neonatal death, foetal anomaly, preterm or ill babies in SCBU, substance-using teenagers, maternal illness or morbidity or mothers where babies were to be adopted. Jan-July 2002	N/A	N/A	Aged 14- 17yrs Majority were in categories 6 and 7 of the Carstairs and Morris 1991 deprivation scale. 9 had attended antenatal classes. Reasons for non-attendance: Age discrepancy between themselves and other attendees 7 stated they just did not want to attend good support from home so felt it was unnecessary embarrassed by comparison of their unplanned circumstances with expectations of older attendees	Small sample size.

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
			30 teenagers in questionnaire sample. 29 respondents, only 4 agreed to be interviewed. Country: UK			not typical of most class attendees They felt it was important to establish the best time, the classes should be easily accessibility, most teenagers would have attended a 'young mums club'. Need to find strategies to change attitudes from negative to positive. More likely to attend if classes coincide with visits to the clinic.	
Gee et al. Service evaluation of the teenage clinic. 2002. British Journal of Midwifery 10[9], 560-564 [136]	Qualitative descriptive study (Grounded theory) EL= 3	To establish a user perspective of a teenage clinic to inform future improvement of the service, including care and support provided. Methods: Data were collected by the means of semi-structured interview. Formal written consents were taken at interview appointments. Each interviews lasted 15-45 minutes. Participants were	Country: UK (North Wales) It is not clear whether the clinic was based in an urban or rural setting. Population: 6 pregnant or postnatal teenagers aged 15-20	The teenage clinic allocated at North Wales was a multidisciplinary service addressing the needs of pregnant adolescent and teenage mothers. It provided antenatal and postnatal care including regular medical checks, parent craft classes, information on labour, analgesia, baby care, contraception, sexual health and parenting skills.	Emergent themes relating to service provision, care and support.	Themes relating to barriers: Preparation and reduction of anxiety Information given in sessions helped participants feel more prepared regarding what to expect and this in turn reduced anxiety Reduction of stigmatisation Participants felt that attendance at the clinic reduced the stigma surrounding being a pregnant teenager. It also helped to normalise their experience and helped maintain self-esteem Peer support Made the women feel	Funding: not reported Inadequate description of the service and setting

Reference	Study type and evidence level	Aim of study	Population and Setting	Service intervention and comparison	Outcomes	Findings	Comments
		asked 4 main questions: 1- What did they like about the service? 2- What did they dislike about the service? 3- What did they think would improve the current service? 4- How do they think the service could be better publicised? The interviews were tape recorded and transcribed verbatim.				even more confident in asking questions and expressing themselves. Acceptance of partners and other family members It was important for parents, family members or friends to attend the clinic as this provided further support. Involvement in the process Participants found they were kept both informed and involved over and above what they expected to have happened at the regular antenatal clinic. They were also given a level of choice in their treatment that they were happy with. Inadequate promotion of the clinic Young women appeared to have found out about the clinic through a limited number of routes. Participants expressed concern that young women in the same situation as them may not find out about the clinic.	

Q2. What aspects of service organisation and delivery improve contact with antenatal services throughout pregnancy for young women aged under 20?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
M E Jones, L W Mondy 1990 "Antenatal Education outcomes for Pregnant Adolescents and their infants using trained volunteers' Journal of Adolescent Health Care 11:437-444.[137]	Retrospective cohort study EL=2+	Study reports the effects of providing antenatal lessons to pregnant adolescents attending community antenatal clinics using trained non-professional volunteer women.	Dallas County, Texas, USA Program provided at community antenatal clinics Pregnant women aged 18 or younger already obtaining PN care. Women were found to be medically low risk, of low socio-economic status. Data analysis compared participants who were: High treatment - attended >8 lessons (n=94) And Low treatment- attended <8 lessons (n=116) Compared to: women who had no opportunity to attend (n=189). This group had a recorded birth in the 3 months prior to the project commencing.	Provision of an educational program of 17 lessons based on the American Red Cross Preparation for Parenthood Curriculum modified to address a multicultural adolescent population. 4 lessons were: Preparing for labour Course of labour Postpartum Family planning Lessons included an AV presentation and a manual was also provided to each adolescent participant. Lessons provided by volunteers trained by qualified personnel from sponsor agencies and certified as instructors by the American Red Cross Participants asked to commit to a minimum of 8 lessons. Three 45	<u>Antenatal Care and Infant Outcomes</u> No. attending for AN visit Gestational Age; Weight gain; Mode of delivery; Gestational age at delivery; Fetal weight at delivery; Apgar 1 score; Apgar 5 score.	<u>Antenatal Care and Infant Outcomes</u> Attended AN Visit: High treatment 9.59 ± 2.97 Low treatment 6.37 ± 2.81 No lessons 6.59 ± 3.48 (P<0.001; analysis of variance) Gestational age at birth (weeks): High treatment 39.63± 1.15 Low treatment 39.45± 1.27 No lessons 38.86 ± 2.68 (P<0.006; analysis of variance) The following outcomes showed no significant differences between high and low treatment participants and comparisons. Statistical test values not reported: Fetal weight at delivery Apgar 1 score Apgar 5 score	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			Demographics: High treatment vs. low treatment vs. comparison Mean age at conception: 16.91 ± 1.27 vs. 16.66 ± 1.25 vs. 16.75 ± 1.07 (P=NS) Ethnicity (%): Black – 55, White – 26, Hispanic – 19, Southeast Asian – 0 vs. Black – 55, White – 22, Hispanic – 22, Southeast Asian – 1, vs. Black – 68, White – 16, Hispanic – 16, Southeast Asian – 0 (P=NS) No previous pregnancies (%): 79 vs. 69 vs. 68 (P=NS) No other children (%): 83 vs. 76 vs. 77 (P=NS) Completed less than grade 12: 73% vs. 80% vs. 74% (P=NS) Clinic location (%): Clinic 1 – 45, Clinic 2 – 55 vs. Clinic 1 – 39, Clinic 2 – 61 vs. Clinic 1 – 28, Clinic 2 – 72	minute lessons presented to participants during a typical half-day antenatal clinic session. Group sizes ranged from 4-20 (average 10) After each 3-hour class, each participant received a layette item or small personal gift worth ~$2. After completing 8-lesson agreement, participants received a certificate, small personal gift and ticket to be exchanged at postpartum visit for a layette worth ~$15		Birth weight Mode of birth Delivery outcome Labour/delivery complications	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			(P<0.013, log linear modelling) Marital status (%): Single – 64, married – 36, separated – 0 vs. single – 72, married – 24, separated – 4 vs. single – 80, married – 19, separated – 1 (P<0.004, log linear modelling Antenatal care entry (%): High treatment: 1st trimester – 30, 2nd trimester – 55, 3rd trimester – 13, no AN care – 0, no information – 2 vs. Low treatment: 1st trimester – 15, 2nd trimester – 53, 3rd trimester – 29, no PN care – 0, no information – 3 vs. Comparison (no treatment): 1st trimester – 17, 2nd trimester – 45, 3rd trimester – 30, no PN care – 1, no information – 7 (P<0.002, log linear modelling)				
Hovenden-Hall H, Fisch N	Retrospective cohort study	To evaluate whether antenatal education classes	Setting: Specialty clinic in Harlingen, Texas (USA)	Service intervention: Six parental education classes taught during	Outcome of interest: missed antenatal appointments.	Missed antenatal appointments: 0% in intervention group vs. 0%	Descriptive statistics only reported. Not

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Reducing Pregnancy Complications in Adolescents Through Antenatal Education[138]	EL=3	provided in a specialty clinic reduced perinatal complications in adolescents	Intervention group: 50 lower income, primiparous, English-speaking from birth Mexican American adolescents (13-18) who were Cameron County Residents. Participants had to present for their initial antenatal visit by the beginning of the third trimester. The 50 randomly selected adolescents had completed four of the six antenatal classes. Control: 50 randomly selected adolescents who did not attend the classes No significant differences between the experimental and control groups with respect to maternal age, marital status or stage of gestation at initiation of antenatal care	antenatal visits. Each class one and half hours long covering six topics: antenatal care, maternal nutrition and the physiology and psychology of pregnancy; coping with the experience of labour and delivery; breast feeding versus bottle feeding; infant care; family planning; and practice in prepared childbirth techniques. Attendees receive a booklet prepared by instructors. Classes taught by family nurse practitioner with the assistance of an adolescent counsellor/social worker Nurse midwife or nurse practitioner adds reinforcement during the antenatal visits immediately following the class.	Other outcomes included: Incidence of cephalopelvic disproportion (CPD); incidence of infections during pregnancy; use of drugs during labour; incidence of caesarean sections; breast-feeding; and hematocrit of ≥30 at end of pregnancy	in control group Incidence of CPD: 0% in intervention group vs. 14% in control group Incidence of infection/acute problem: 58% in intervention group vs. 86% in control group Use of drugs in labour: 34% in intervention group vs. 64% in control group Incidence of Caesarean section: 4% in intervention group vs. 14% in control group (P=NS) Breast-feeding 62% in intervention group vs. 44.9% in control group Hematocrit of ≥30 at end of pregnancy: 100% in intervention group vs. 98% in control group (2% in control group <30) One-way analysis of variance showed a significant different between intervention group control group in	reported whether results were significant. Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						total obstetric complications (F=7.63, p=0.007)	
Smith PB, Wait RB, Mumford DM, Nenney SW, Hollins BT The medical impact of an antepartum program for pregnant adolescents: a statistical analysis 1978[139]	Retrospective cohort study EL=2-	To evaluate the impact of an ongoing comprehensive antepartum psycho-social educational program on the medical outcome of pregnant adolescents	Setting: USA Houston Texas. Study undertaken in large city-county hospital Control and Experimental groups of adolescents (each n=100 (of an original sample of 126)) selected at random from a sample of 500 adolescents who attended a general obstetric clinic. Groups matched for age, race, parity and month of delivery. Not matched for marital status (40% of experimental group married at time of selection)	Intervention: experimental group enrolled in weekly 3-hour group classes taught by a multidisciplinary team. Provided with information on nutrition, contraception, child development, labour preparation and psychosocial aspects of pregnancy. Group discussion was encouraged. Sessions run concurrently with routine obstetric examination Control group: received routine obstetric examination	Mean number of antenatal visits, number of admissions for false labour, dilation at admission for labour, birth weight (grams), Apgar score, frequencies of UTIs and frequencies of caesarean sections	All results reported intervention group vs. control group Mean number of antenatal visits: 6.25 vs. 5.125 (F=6.445, P<0.05) Mean number of admissions for false labour: 0.01 vs. 0.41 (F=21.645, P<0.001) Mean dilation at admission for labour: 4.938 vs. 3.988 (F=7.098, P<0.01) Birth weight (grams): 3105 vs. 2941 (F=5.821, P<0.05) Mean Apgar score: 8.602 vs. 8.143 (F=4.459, P<0.05) Percentage of UTIs: 1% vs. 8.1% (χ^2 4.19, P=0.05) Percentage of caesarean sections: 4.1% vs. 14.4% (χ^2 4.96, P=0.05)	Funding: Not reported
Covington DL,	Retrospective	To evaluate a	Country: US	Service intervention:	Adequate antenatal	Percentage of sample	Non-

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Peoples-Sheps MD, Buescher PA, Bennet TA, Paul MV An evaluation of an adolescent antenatal education program 1998[140]	cross-sectional study EL=3	antenatal education and support program for adolescents <18 years	Setting: Large county public health department in south-eastern North Carolina Intervention – Baby-talk (BT): n=184 adolescents ≤17 years of age who participated in the program (attended at least one session prior to 33 weeks gestation) and delivered a single infant between Jan 1990 and Dec 1994. Historical cohort (HC): n=191 adolescents ≤17 years of age who sought antenatal care at the same health department clinic and delivered a single infant over the 4-year period before the initiation of the program in Nov 1989 Geographically close group (GCG): n=312 adolescents ≤17 years of age who sought antenatal care at two neighbouring county health departments from Jan 1990 to Dec 1944 Resource similar group	Baby Talk – an educational component of a comprehensive system of antenatal care. A series of talks led by a health educator focusing on a variety of topics. The program also allows referral other health services. Participants receive a gift at almost every session (pacifiers; bibs; toys; t-shirt after four sessions; diaper bag or infant outfit after eight sessions) Partners and parents invited to attend. Previous program participants invited back to share their experiences. Group baby showers and holiday parties held periodically	care (according to the Adequacy of Antenatal Care Utilization (APNCU) Index. Index measures adequacy of number of antenatal care visits in relation to the recommended number of visits from the ACOG. Calculates the number of expected visits based on length of gestation and so avoids preterm delivery bias). Other outcomes reported: low birth weight (<2500g); maternal satisfaction	with adequate antenatal care (BT vs. HC vs. RSG vs. GCG): 85.6% vs. 68.6% vs. 78.0% vs. 80.7% (difference between BT and HC P≤0.05) Percentage of sample with low birth weight (BT vs. HC vs. RSG vs. GCG): 7.6% vs. 15.3% vs. 12.8% vs. 7.1% (difference between BT and HC P≤0.05) Maternal satisfaction: Focus group respondents indicated that they benefited from the support provided by Baby Talk. They said it was beneficial to invite partners and family to the meeting and to have input from parenting teens. They also felt that the gifts were good incentives to encourage participation.	randomization could lead to potential selection bias between groups Little qualitative data reported regarding maternal satisfaction with service Finding: Partial support from a grant from Eastern Chapter of the March of Dimes,NC

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			(RSG): n=227 adolescents ≤17 years who sought antenatal care from another county in the state more similar to the study county than the geographically close group in terms of economic and demographic factors and health department resources and programs. Study period for this group was Jan 1990 to August 1993 Demographics: No significant difference between the groups in terms of mean age. RSG had a significantly lower number of adolescents with an educational level appropriate for their age compared to BT (42.7% vs. 53.8 P≤0.05) HC had a significantly higher proportion of married adolescents compared to BT (25.1% vs. 10.3% P≤0.05) RSG had a significantly higher proportion of black adolescents than BT (81.1% vs. 62.0% P≤0.05)				

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			Both the RSG and GCG had a lower proportion of adolescents who had had a previous live birth compared to BT (83.7% vs. 86.2% vs. 94.0% P≤0.05)				
R Martin, N M MacDowell, Janice M Macmann "Effectiveness of a teen pregnancy clinic in a managed care setting' 1997[141]	Retrospective cohort study EL=2-	Evaluation of the effectiveness of a comprehensive teen pregnancy clinic at a large multi-specialty group	Country: Ohio, USA. Setting: teen pregnancy clinic A total of 105 pregnant teens, aged between 14 and 17. The control group consisted of 33 teens that delivered before the implementation of the Teen Pregnancy Program (TPP). The intervention group had 72 teens that received antenatal care through the TPP. Demographics (reported as intervention group vs. control group: Mean Maternal age – 16.1± 0.1 vs. 16.3 ± 0.1 (P=NS)	The Teen Pregnancy Program aimed to provide comprehensive obstetric care to teenage women who previously received non-specific care through the regular obstetrics office. Participants offered a free infant car-seat for completing all the classes Operational objectives of the TPP were increased compliance in attending: AN appointments, educational classes, postpartum checkups. Comparison group received non-specific care through regular obstetric office	Interventional variables evaluated: Number of antenatal visits attended; good antenatal care (ANC), late ANC and few ANC (all based on the adequacy of Antenatal Care Utilization Index (ACPUI)) (few ANC means those patients who did not receive adequate ANC because of attending too few classes); number of antenatal classes attended Outcomes evaluated the effects of the interventions made by the TPP. Outcomes included: Detection of the presence of STD's during pregnancy, maternal weight gain	Intervention variables (intervention vs. control) Mean no. AN Visits: 14.3 ± 0.4 vs. 10.7 ± 0.7 (P<0.001, OR 95% CI - 2.10 to 5.25) Good ANC: 73.3% vs. 60.6% (P=NS, OR 2.10, 95%CI 0.79 to 5.59) Late ANC: 20.2% vs. 30.3% (P=NS, OR 0.66, 95% CI 0.24 to 1.84) Few ANC: 1.4% vs. 18.2% (P<0.01, OR 0.06, 95%CI 0.009 to 0.577) Antenatal Classes: 88.9% vs. 6.1% (P<0.000001, OR 124, 95%CI 22 to 408)	Demographic information on drug, alcohol and cigarette use all self-reported. No standardised method of inquiring about their use and so values are questionable Small number of study subjects and so limited in power to detect effects of program Limited information about what was involved in the program Unequal group size

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			Race (white/nonwhite) - 42/30 vs. 20/13 (P=NS) Mean Gravidity - 1.1 ± 0.04 vs. 1.2 ± 0.10 (P=NS) Mean Parity – 0.04 ± 0.02 vs. 0.09 ± 0.05 (P=NS) Insurance (private/Medicaid) - 62/9 vs. 33/0 (P=NS) Smoking - 14% vs. 27% (P=NS) Alcohol use – 0% vs. 9% (P<0.03) Drug use – 1% vs. 3% (P=NS)		during pregnancy, good gain, poor gain, over gain, type of delivery, gestational age at delivery, fetal weight at delivery, Apgar 1min score Apgar 5min score, Good apgar, admission to NICU, total length of stay (LOS)	Outcome variables (Intervention vs. control) STDs: 37.5% vs. 31.3% (P=NS, OR 1.32, 95%CI - 0.5 to 3.53) Weight gain: 36.2 ± 13.1 vs. 30.4 ± 11.3 (P<0.03, 95%CI – 0.58 to 11.80) Poor gain: 2.8% vs. 15.2% (p<0.04, OR -6.25, 95% CI - -0.985 to -39.9) Type of birth: 8.3% vs. 21.2% (P=NS) Mean gestational age at delivery: 38.9 ± 2.4 vs. 38.3 ± 3.6 (P=NS) Mean fetal weight at delivery: 3217 ± 566 vs. 3017 ± 830 (P=0.22 (NS)) Apgar 5min score: 8.9 ± 0.4 vs. 8.7 ± 0.3 (P=NS)	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Good apgar: 93.1% vs. 87.5% (P=NS, OR 1.91 , 95%CI - 0.39 to 9.08) NICU admit: 12.5% vs. 9.4% (P=NS, OR 1.38, 95%CI – 0.31 to 194) Total LOS: 3.5 ± 1.2 vs. 3.0 ± 0.7 (P=NS)	
Dickens HO et al 1973 One hundred pregnant adolescents, treatment approached in a university hospital American Journal of Public Health 63(9): 794-800[142]	Retrospective cohort study EL=2+	To evaluate outcomes for adolescents attending a specialised teenage clinic compared with adolescents attending usual AN clinic at same hospital.	Setting: University Hospital of Pennsylvania, USA. Adolescents aged 18 and under attending hospital based AN clinic between September 1967 and September 1970. Intervention group: n=50. Sample of adolescents woman attending the specialised teenage AN clinic. Comparison group: n=50. Sample of adolescents attending the usual AN clinic at the same hospital. Demographic	Intervention: Teen Obstetrical Clinic – established and run by one (black female) obstetrician with special interest in adolescent pregnancy with a team comprising 3 rotating hospital nurses, one "case worker", "one group worker", one school counsellor and 3 medical students. Clinic held on a Saturday morning. Weekly antenatal discussion groups also held for adolescents, their mothers and their partners. As well as usual AN education topics groups also discussed issues	Average no. AN visits Attendance at group classes or case interview Attendance at postnatal follow-up Prematurity (not defined) Antenatal UTI "Toxaemia of pregnancy" Anaemia (<10g/dl) Group classes or case interviews Accepted	Findings reported as Teen-Obstetrical clinic vs. standard AN clinic Average no. AN visits 8 visits vs. 6 visits (reported in round figures as an "average"). Group classes or case interviews 66% vs. 50% Fisher's exact test p=0.156 NS* Did not attend postnatal follow-up 10% vs. 18% Fisher's exact test p=0.755 NS*	Both AN programs very intensive. Reporting of outcomes lack detail. No statistical evaluation of differences reported. Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			characteristics of both groups very similar. Of total sample: Black: 95% Unmarried: 73% Living with own mother: 84% Attending school at time of booking: 86%	relating to school and "other realistically practical issues as brought up by the patients". Also included a variety of activities aimed at broadening the adolescents' "fun interests" e.g. knitting classes, trips to concerts and a ballet performance. The group discussions and social activities continued into the postnatal period. Reminder for 2 week postnatal check made by phone call from social worker. Comparison group: Usual AN care. Sessions staffed by one senior physician, 5 residents, 4 medical students, 15 nurses, 11 nursing assistants, 7 family planning workers and 3.5 wte social workers – a ratio of one member of staff to 3 patients. Care also included individual health and social needs assessment and care plan. Course of 8	contraceptives Repeat pregnancies	Prematurity 8% vs. 15% Fisher's exact test p=0.525 NS* Accepted contraceptives 10% vs. 16% Repeat pregnancies 20% vs. 26% For antenatal complications: Antenatal UTI "Toxaemia of pregnancy" Anaemia (<10g/dl) Study reports no significant differences between groups.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
				weekly AN education sessions also run within clinics. Reminder for 4 week postnatal check sent by post.			
Smoke et al. Effectiveness of prenatal care and education for pregnant adolescents: nurse-midwifery intervention and team approach. 1988. Journal of Nurse-Midwifery 33[4], 178-184[143]	Retrospective cohort study EL = 2-	To evaluate pregnancy outcomes for a dedicated teenage clinic including comprehensive group education compared with traditional care without group education.(A second study aim to assess the change in pregnancy related knowledge by pre and post test education testing is not reported here.)	Country: USA Sample: Pregnant adolescents <18 years old with gestation of <36 weeks, having their first full term pregnancy The intervention group (n=70) consisted of pregnant adolescents receiving antenatal care from Adolescent Obstetrical Services (AOS) of the university Hospital of Cincinnati. The comparison group (n=46) received conventional antenatal care from Cincinnati Health Department Clinic (CHDC)	The intervention (AOS) was an antenatal educational program for pregnant adolescents. The AOS staff consisted of a registered nurse, a nutritionist and a social worker who were coordinated by a certified nurse midwife. An obstetrical chief resident was available as indicated. A social worker interviewed each pregnant adolescent at first visit to AOS then provided follow up counselling. At each visit participants were also interviewed by a registered nurse and assessed by a nurse midwife. A nutritionist provided counselling for adolescents in majority of visits. The adolescents	Total number of antenatal visits Gestational age at delivery < 37 weeks Birth weight Apgar score Breast Feeding	The two group were similar in age and marital status but had significant differences in: Race: n=22 (48%) were black in CHDC n=53 (76%) were black in AOS p<.01 Education: n=28 (61%) attending school in CHDC n=58 (79%) attending school in AOS p<.05 Gestational age at the first visit (weeks): CHDC (Mean ± SD) 15.9 ± 6.4 AOS (Mean ± SD) 20.8 ±6.1 p<.001 Total number of antenatal visits: Mean ± SD: CHDC (n=46): 9.2 ± 3.4 AOS (n=70): 11.7 ± 3.2 p< .001 by t-test Gestational age at birth (weeks):	Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
				attended an educational program of nine one hour classes taught by a nurse and nutritionist with assistance from the nurse midwife. The subjects covered in the nine sessions were; discussion on problems and "danger signs" of pregnancy , maternal nutrition, baby nutrition, baby's growth and development, family planning, labour and birth anaesthesia, second stage of delivery and a tour to hospital. The comparison group (CHDC) were seen at each antenatal visit by a staff physician and a registered nurse. The social worker and nutritionist were available as needed. The majority (82%) of CHDC group attended the regular obstetrical clinics which used individual teaching.		Mean ± SD: CHDC (n=46): 38.9 ± 2.5 AOS (n=70): 39.0 ± 1.8 NS Gestational age < 37: CHDC (n=7/46) 15% AOS (n=4/70): 6% Birth weight Mean ± SD: CHDC (n=46): 3167.7 ± 606.9 AOS (n=70): 3230.5 ± 540.5 NS Birth weight < 2500 grams CHDC (n=6/46): 13% AOS (n=6 /70): 8.6% NS by chi-square Apgar score: One minute Mean ± SD: CHDC (n=46): 7.6 ± 1.6 AOS (n=70): 7.9 ± 1.3 NS Five minutes Mean ± SD: CHDC (n=46): 8.7 ± 0.6 AOS (n=70): 8.9 ± 0.3 P<0.6 Beast Feeding: CHDC (n=6/46): 13% AOS (n=13/70): 18.6% NS	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Hall RT et al 2003 Perinatal outcomes in a school-based program for pregnant teenagers Missouri Medicine 100(2):148-152[144]	Retrospective cohort study EL=3	Evaluation of a teenage pregnancy centre on pregnancy outcomes.	Setting: school-based service, Kansas City, Missouri, USA. Intervention group: Students enrolling in TAPC January 1994 – December 1998. n=530 Comparison group: Pregnant teenagers in Kansas City not attending the TAPC. Matched by age at giving birth, year of infant birth, zip code, race and parity. n=531	Specialised school for pregnant teenagers. As well as usual school curriculum education given in life skills; childcare, breastfeeding. School transportation, breakfast and lunch provided plus infant day care for first 6 weeks of life. Antenatal care provision at adolescent's own choice. Includes an on-site nurse-midwife clinic. If other clinic/obstetrician chosen transport was provided.	Primary outcomes: Birthweight <2500g Gestation,38 weeks Repeat birth within 2 years Infant mortality rate Secondary outcomes: Adequate prenatal care (not defined) Cigarette smoking Alcohol use Drug misuse Medical risk factors Caesarean birth 5 minute Apgar <6 Neonatal complications	"Adequate antenatal care": TAPC 78.0% Controls 67.0% P=0.009 Primary outcomes: Birthweight <2500g: TAPC 11.7% Controls 15.8% P=0.048 Gestation<38 weeks TAPC 15.8% Controls 18.9% NS Repeat birth within 2 years: TAPC 17.0% Controls 20.0% NS Infant mortality rate: TAPC 3.8/1000 live births Controls 9.4/1000 live births NS Secondary outcomes: Cigarette smoking: TAPC 4.7% Controls: 9.5% p=0.003	"Adequate" antenatal care not defined. School attendance for adolescents in the TAPC is described as being "encouraged and rigorously enforced" with incentives given for good attendance (e.g. infant car seats and "personal rewards"). Also describes discipline as being "strictly enforced" with "profanity, abusive language and dress code violation being prohibited.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Alcohol use: TAPC 0.2% Controls 0.8% NS Drug misuse TAPC 2.1% Controls 2.1% NS Medical risk factors: TAPC 33.0% Controls 31.0% NS Caesarean birth: TAPC 11.7% Controls 10.6% NS 5 minute Apgar <6 TAPC 0.13% Controls 0.17% NS Neonatal complications: TAPC 1.5% Controls 1.8% NS	
Taylor B et al 1983 School-based antenatal services: Can similar	Retrospective cohort study EL=2-	To evaluate whether enhancement of hospital-based antenatal care for adolescents results	Setting: State school and hospital-based AN clinic, Minnesota (USA) Pregnant adolescents (aged 14-18 yrs) who	Intervention (school) group –enrolled in a public school where services of a nurse practitioner, social worker and clinic	Uptake of antenatal care. Number of AN visits. A range of specific	In the school group 58.5% began antenatal care during the first trimester compared with 45.4% of the comparison group. Fisher's exact test	Small sample size. Specific intervention compared across different sites. May not be

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
outcomes be attained in a nonschool setting? JOSH 53(8): 480-486[126]		in outcomes comparable to those attained by a school-based clinic.	received antenatal care and gave birth in St. Paul Minnesota MIC project from 1976 to 1979. Intervention group: n=53 of the total sample of adolescents receiving care at the school-based MIC AN clinics. Comparison group: n=53 drawn from total population of 85 adolescents receiving care at nonschool hospital-based MIC AN clinics. Intervention and comparison groups were matched for race. 34.0% of the study sample were black, 60.4% white, 3.8% Hispanic and 1.9% native American. Age at conception and parity were similar for the 2 groups.	attendant were available on a daily basis. Other members of the interdisciplinary team were available on a weekly basis. Comparison group: received care at a weekly non-school hospital-based MIC adolescent antenatal clinic. This service had been "improved and personalized" but the authors note that the services provided by the school-based clinics were still able to provide more comprehensive care.	health outcomes were also reported including anaemia, toxaemia, urinary tract infections and birthweight.	p=0.24 NS* In the school group 3.0% women made a first visit during the third trimester. 11.3% women in the comparison group began care in the third trimester of pregnancy. Fisher's exact test p=0.27 NS*. 7.5% of school group had 1-5 visits vs. 13.2% of comparison group. Fisher's exact test p=0.0526*. 35.8% of school group had 6-11 visits vs. 45.5% of comparison group. Fisher's exact test p=0.429* 45.2% of school group had 12.17 visits vs. 39.6% of comparison group. Fisher's exact test p=0.695* 7.5% of school group had 18-23 visits vs. 3.7 in comparison group. Fisher's exact test p=0.695* 3.7 of school group had 24-29 visits vs. 0% in	generalisable.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						comparison group Clinical outcomes: Presented as School-based group vs. hospital-based group (%): Anaemia: 13.2 vs. 9.4 NS UTI: 9.4 vs. 3.8 NS Toxaemia: 18.9 vs. 17.0 NS Differences in clinical outcomes are not statistically significant. Caesarean birth: 22.6% vs. 13.2% p<0.05 "Low" Apgar at 5 mins – no signif. difference (scores not reported) Birthweight <2500g: 11.3% vs. 13.2% NS Birth <37 weeks gestation: NS (figures not reported) >4 days spent in hospital (baby): 32% vs. 17% p<0.05	
Jones ME,	Retrospective	To evaluate the	Setting: USA – Dallas	Lifespan Program:	Mean number of	All results reported	Different sample

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Mondy LW Lessons for prevention and intervention in adolescent pregnancy: A five-year comparison of outcomes for two programs for school-aged pregnant adolescents 1994[145]	cohort study EL=2-	effectiveness of two different interventions for antenatal adolescents	County, Texas Intervention 1 – Lifespan Program. N=37 adolescents receiving care in community antenatal clinics. Sample taken from existing data set of adolescents served by the program over a 3-month period within 21 months of the project's inception in 1984. Intervention 2 – Special school. N=71 adolescents receiving antenatal care on-site at the school provided by the Division of Maternal Health and Family Planning of the University of Texas Southwestern Medical Center. Sample drawn from the entire population of 282 mothers participating in the school program during the fall semester of the 1984-1985 school year. Comparison group – n=108 adolescents who received their antenatal care in the same community clinic in those	Adolescents attended one community clinic and participated in eight or more lessons of antenatal education programming. Group sessions led by trained volunteers. Participants awarded with a variety of incentives to attend eight or more lessons. Program also provides a one-time hospital visitation by a trained volunteer during the postnatal period to assess immediate needs and make referrals. Each adolescent provided with a token at the hospital visit which could be exchanged for a layette at the time of the postpartum visit. Special school: Adolescents attend a special school which provides antenatal care in conjunction with content on health care issues related to pregnancy, childbirth and childcare. Most mothers deliver at one	antenatal visits, mean gestation age of infant (weeks) and mean infant birth-weight (grams)	Lifespan program vs. special school vs. comparison Mean number of antenatal visits 9.80 vs. 6.9 vs. 6.58 (χ^2[2, N = 208] = 16.525, P=0.0003) Mean gestational age of infant(weeks): 39.6 vs. 38.5 vs. 38.6 (P=0.0830 – NS) Mean infant birth weight (grams) 3137 vs. 2777 vs. 3027 (P=0.783 – NS) Initiating AN care: Lifespan group entered AN care significantly earlier for the first pregnancy than the other two groups (χ2[2, N = 202] = 11.251, P=0.0036)	size for each group. Small sample size for Lifespan program group Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			in the Lifespan group prior to the introduction of the program. Sample had a recorded birth in the three months immediately preceding the commencement of the Lifespan program in 1984 All subjects African-American, single, <18years of age at the time of their first birth. And of low socio-economic status	particular hospital and then return to their home school Comparison: adolescents received their antenatal care from the community clinic which was subsequently the location for the Lifespan program			
Perkocha VA & Novotny TE 1995 The efficacy of two comprehensive perinatal programs on reducing adverse perinatal outcomes American Journal Preventative Medicine 11 (suppl 1): 21-29.[146]	Retrospective cross-sectional study EL=3	To compare perinatal outcomes for 2 comprehensive adolescent programs.	Setting: Medical centres and schools in Oakley, California, USA. Population: Adolescents enrolled in either the Comprehensive Perinatal Services Program (CPSP) or the Comprehensive Teenage Pregnancy and Parenting Program (CTAPPP), or both. Study samples: Adolescents who were Medi-Cal clients and enrolled in at least one the programs who gave birth June 1991 – June 1992. Total n=312 women.	CPSP: Care provided in medical centres. Provides medical, nutritional, psychosocial, childbirth and parenting education interventions. Provided by physician or certified nurse-midwife, nutritionist and master's level social worker. (not clear if all hospital-based or some community-based). Not school-based. CTAPPP: school-based programme offering specialised education	Primary outcome: Adverse perinatal outcome defined as at least one of the following: birthweight <2500g; gestational age <37 weeks and admission to NICU (not related to congenital syphilis). Other outcomes: Adequacy of AN care: Care defined as sub-standard if one or more of the following were documented: antenatal care begun	35% total study sample received substandard antenatal care 12% had pregnancy complications. Adverse perinatal outcome: Adverse perinatal outcomes were significantly associated with substandard antenatal care (20.2% vs. 6.9% women with adverse outcome with adequate antenatal care; $X^2 = 9.5$, $p<0.001$). Adverse perinatal outcome not significantly related to any	Groups self-selected. Many data missing/incomplete, especially data relating to use of social services. Details about actual care received not available. Composite outcomes. Women whose baby was stillborn excluded from study.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			CPSP enrolment n=143 women. CTAPPP enrolment n=132 women. (Enrolment status not available for all women) Demographic details of total study sample: 75.9% African American; 8.4% Latin American; 7.8% white; 4.9% Asian; 3.0% Middle Eastern. Maternal age: 16 years and younger 40.4%; 17 years old 29.8%; 18 years old 29.8%. Education 10th grade or less 44.5%	curriculum and referral to medical and social services programs. Provides case-management as well as academic, health, nutrition, perinatal and parenting education and support.	in first trimester; fewer than 3 antenatal visits documented; no antenatal care recorded in medical records. Pregnancy complications: Pregnancy induced hypertension (PIH); anaemia; cervical bleeding; preterm labour; pre-eclampsia; premature rupture of membranes (PRoM).	sociodemographic variable, nor pregnancy complications CTAPPP enrolled (n=132) vs. women not enrolled in CTAPPP (n=124): Demographic variables: Younger women more likely to be enrolled in CTAPPP (12-16 years old: 73% vs. 41%; X^2 = 25.9, p<0.01); greater percentage less educated women enrolled in CTAPPP (less than 10th grade: 53.9% vs. 33.3%; X^2 = 9.53, p<0.01); African Americans more likely to be enrolled in CTAPPP than other ethnic groups (86.4% vs. 73.4%; X^2 = 5.96, p<0.01) No signif. difference between the groups for substandard AN care (37.1% vs. 36.6%); nor pregnancy complications (8.3% vs. 13.7%). CPSP enrolled (n=143) vs. women not enrolled in CTAPPP (n=70): Demographic variables:	Definition of CTAPPP and CPSP enrolment approximate and based on woman receiving care from a provider where the program was available (i.e. assumed all who could use the program did so). Enrolment in CPSP and CTAPPP were first considered as separate interventions. It is not clear whether the comparison groups for these analyses include women enrolled in the other model of care or no program, or both. Funding : Provided by Summit Medical Centres for Disease Control and Prevention

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						No signif. differences between women enrolled in CPSP and those not: Age 12-16 years old: 42.7% vs. 40.0%; percentage less educated women (less than 10th grade): 49.1% vs. 55.0%; African American: 72.0% vs. 72.8%. No signif. difference between the groups for substandard AN care (31.9% vs. 31.7%). Women enrolled in CPSP more likely to have pregnancy complications: 16.1% vs. 1.4% (X^2 = 8.68, p<0.01) Logistic regression analysis carried out to look at enrolment in either or both programs whilst controlling for potential confounders. Enrolment in both programs associated with decreased risk of adverse perinatal outcomes (RR 0.3 [95% CI 0.1 to 1.1]). Substandard antenatal care again found to be associated with adverse	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						perinatal outcomes (adjusted RR 3.4 [95% CI 1.6 to 6.1]).	
Chen S-PC et al. 1991 Effects of a school nurse prenatal counselling program[147]	Retrospective cohort study EL=2-	To determine the effects of a school-based nurse-run prenatal counselling program on infant birth-weight and adequacy of care	Setting: Public high school in Chicago, USA. School located in predominantly Hispanic community. Population: treatment group consisted of pregnant students enrolled in the study school. Comparison group consisted of teen mothers not enrolled in the program but residing in the community School demographics as of October 31st 1988: Student enrolment at study school totalled 2874 with 3.0% White, 15.2% Black, 80.3% Hispanic (63.0% Puerto-Rican, 14.0% Mexican, 3.3% Cuban) and 1.4% Other. Treatment group consisted of 339 pregnant students. After deletions, a total of n=288 cases were matched to controls.	Intervention: Monthly visit to school-nurse supported by two bilingual Spanish-speaking health aides (high school graduates given training by nurse). Additional counselling sessions offered from academic and youth counsellors at the school. Topics discussed included natural history of pregnancy, nutrition, child and infant care, finance, family support, father of the baby, future plans, schooling, alternative education programs, antenatal care visits and use of community resources. Nurse monitored the antenatal visits made by adolescents to physicians, negotiated with PE teachers for special gymnastic classes, solicited	Adequacy of antenatal care (based on Kessner index); Birth weight	Findings reported as intervention vs. control Adequacy of antenatal care (%) Adequate: 48.4 vs. 35.7 Intermediate 37.3 vs. 33.6 Inadequate 14.3 vs. 30.7 (χ^2 (3, N=180) = 25.801; p<0.001) This result was further analysed. Looked at: Difference in month antenatal care began and Difference in number of antenatal care visits. Significant difference in month antenatal care began with intervention adolescents initiating care on average 23 days earlier than controls (t (277) = -4.312; p<0.0001) Significant difference in number of antenatal visits with intervention adolescents having an average of 1.6 more physician visits than	Results may not be generalisable given the demographics (predominantly Hispanic) Study design not able to differentiate the effects of program as distinct from school enrolment. Also not able to differentiate whether effects were from program content or increased attention received by students. Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			Matching criteria in order of priority were: Designated code of community area; mother's age within one year; mother's race or ethnicity; mother's origin within race; closest infant's birth date; infant's sex; mother's marital status; and mother's education Study period from 1985-1987	parental support, conducted in-service education lessons for parents and met with community health care agencies		controls (t (267) = 4.914; p<0.0001) Birth weight Difference of birth-weight compared between intervention students and controls (Mean = 27.8g, SD = 864.7g). Result was not statistically significant (t (287) = 0.543; p>0.05)	
Flynn L, Budd M & Modelski J "Enhancing Resource Utilization Among Pregnant Adolescents" 2008[148]	Retrospective cross-sectional study EL = 3	To test the impact of a home visitation intervention on resource utilization and birth outcomes among pregnant adolescents	Country: New Jersey, USA. Urban setting. Intervention group: 65 low-income pregnant adolescents who met the following criteria: 1) ≤18 years old 2)pregnant with first child 3)living within one of 11 target municipalities in the county (New Jersey) Comparison group: constructed from 216 deidentified birth records who met the following criteria: 1) primiparous adolescent (≤19 years at time of birth)	Teen Parenting Partnership (TPP) Program. Participants received monthly home visits from both a public-health registered nurse (PHN) and a medical social worker (MSW). Program lasted until children reached 1 year of age but could continue for a period of 3-5 years after this. Participants provided with information about the Women, Infants and Children (WIC) Program, the Medicaid Program and	Study investigated number of visits to antenatal care provider, birth weight and gestational age at birth	Mean number of visits to a antenatal care provider significantly higher among the intervention teens (12.2 vs. 7.9) (p<0.01). Proportion of teens receiving no antenatal care significantly lower in intervention group (χ^2(1, N=280) = 4.75, p=0.02) 4.2% of teens in comparison group received no antenatal care vs. 0% of teens in intervention group received no antenatal care. 100% teens in	Highly intensive programme. High attrition rate in intervention group: 22.90% of intervention teens lost to attrition between completion of 3 month program and birth of infant (original sample size n=83) No randomization of groups Unequal group size

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			2)singleton birth 3)resident of one of the identified comparison municipalities 4)infant birth between 2002 & 2003 No participants in either group came from rural areas. Demographics: Intervention group – African-American 43.1%, Asian 1.5%, Hispanic 23.1%, White 32.3%, Other 0% Comparison group – African-American 44%, Asian 2.3%, Hispanic 34.7%, White 11.6%, Other 7.4%	other community resources, and given assistance to enrol. Assisted in locating and selecting a antenatal care provider, given encouragement to independently make and keep their own appointments and provided with transportation to antenatal care appointments and other healthcare appointments. Assessed and referred for mental health counselling, substance abuse counselling and other services as appropriate Comparison: taken from birth certificate data from municipalities that were demographically and socio-economically similar to the program's target areas but were not in its catchment area.		intervention group received at least 6 antenatal care visits vs. 22.2% of teens in comparison group received fewer than 6 visits. Low birthweight: No significant difference between intervention teens (10.80%) and comparison teens (10.60%) in proportion of births of low birth-weight infants $\chi^2(1, N=281) = 0.00, p=0.97$ Gestational age at birth: no significant difference between intervention teens (mean 39.0 weeks, SD 2.41) and comparison teens (mean 38.3 weeks, SD 4.29) P=0.12	Funding: A grant from the office of adolescent pregnancy programs, US. Department of Health and Human services
Heins HC et al. 1987	Retrospective cohort study	To evaluate the effect of a home visiting program on antenatal outcomes	Setting: Rural county in South Carolina, USA	Intervention: Resource Mothers Program – Indigenous workers who received six	Inadequate antenatal care (fewer than 5 antenatal visits)	All results reported as intervention vs. control	Full demographic details for study and control groups not

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Social support in improving perinatal outcome: The Resource Mothers Program[149] And Heins HC et al. 1988 The Resource Mom – A program of social support for pregnant teens[150]	EL=2-	and adequacy of care in a rural population in South Carolina	List of 753 women participating in the program reviewed. After removal of missing records (n=32), duplicates (n=12), women who lived outside of the project area (n=26) and women over 18 years old who had had a previous pregnancy (n=108), 575 cases were left in the study population. 89% were black and 11% white. 93% were single. Age of mothers ranged from 13-18 Intervention women matched with controls selected from women aged under 19 years of age who had had a singleton live birth during 1981-1985, had no previous pregnancy and who resided in health district of four nearby rural counties (matched for year of delivery, age of mother, race of child and sex of child) Controls were found for 565 of 575 cases (98.3%)	weeks of intensive training made regular home visits to adolescents during and after pregnancy. Training involved information on pregnancy, labour and delivery, family planning, nutrition, communication skills, infant stimulation, well-child development, home visiting techniques and skills, community resources, referral skills and work with extended families Each resource mother had a caseload of 30-35 adolescents. Home visits structured with learning objectives geared towards supplementing and reinforcing professional services Resource mothers often provided adolescent with transportation to	Percentage of small for gestational age infants Percentage of low birth-weight infants (<2500g) Percentage of very low-birth weight infants (<1500g) Number of neonatal deaths per 1000 Number of infant deaths per 1000	Inadequate antenatal care 18.3% vs. 35.9% (χ^2 = 44.3, p=0.000001) Percentage of small for gestational age infants 4.9 vs. 9.8 (χ^2 = 9.3, p=0.002) Percentage of low birth-weight infants 10.6 vs. 16.3 (χ^2 = 7.6, p=0.006) Percentage of very low birth-weight infants 1.4 (n=8) vs. 2.6 (n=15) (NS) Number of neonatal deaths per 1000 10.6 vs. 12.4 (NS) Number of infant deaths per 1000 16.7 vs. 19.0 (NS)	provided. No mention made of socio-economic status, smoking rates or nutritional status Analysis of antenatal care did not segregate inadequacy from care begun after the sixth month of gestation Funding: Supported in part by grant from the Robert Wood Johnson Foundation, New Jersey.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			Data collected from 1981-1985	clinic, physician's office or other services Recruitment for program conducted through schools, health departments, private physicians and other community service agencies It is assumed the comparison group received standard care although this is not made explicit in the study			
Julnes et al. Community-based perinatal care for disadvantaged adolescents: evaluation of The Resource Mothers Program. 1994. Journal of Community Health 19[1], 41-53[129]	Retrospective cohort study EL=2-	To compare the result of a lay home visitor programme with those of the more traditional clinic based health programme	Country: USA, Virginia, Norfolk RMP (Resource Mother Programme) was a community service project initiated to serve teens in targeted neighbourhoods having high rates of adolescent pregnancy and infant mortality. The Resource Mother Programme recruited women from the community and provides them with intensive training to serve as resource mothers for pregnant teens with	Several sources of quantitative data were used including a data base from monthly reports of Norfolk births and a perinatal statistics for prenatal Region of Virginia were obtained from state and national sources and compared with the outcome from the evaluation study. These resources led to three comparison populations of births to young women (restricted to those 19 years old and	Adequacy of antenatal care (month of initiating antenatal care, number of the visits) Occurrence of preterm delivery and low birth weight	Maternal characteristics in antenatal programme: Age<17: RMP = 75.5% MDP = 45.6% No ANC= 44.4% Black RMP= 91.8% MDP= 69.6% No ANC= 79.3% Poor neighbourhood RMP= 91.9% MDP= 59.1% No ANC=62.0 %	Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			limited social and financial support. The comparison model was a clinic based multi-disciplinary programme (MDP). MDP programme used a team of professionals to provide eligible pregnant women and new mothers with medical services, nutritional services, home health services. While the primary goal was to compare these two community based programs, an additional comparison group, composed of adolescents who received no antenatal medical care during pregnancy was also added.	younger) during a 12 month period: RMP = A total of 49 births MDP = A total of 46 births No ANC= A total of 29 births (Teens in Norfolk who had not received any antenatal care) The effectiveness of the RMP lay home visitors programme is evaluated in terms of: (1) outreach objectives- the ability of the programme to reach high risk pregnant teens; (2) behavioural objectives- the impact of the programme on the health related activities of the pregnant teens; and (3) health objectives- the effect of the programme on health outcomes measures for the neonates. High risk was		Education (<= 11th grade) RMP= 93.9% MDP= 76.1% No ANC= 72.4% First time mother RMP= 81.6% MDP= 78.3% No ANC= 41.4% Differences between RMP and the other two groups are significant at p< 0.01 with the exception for RMP and MDP first time mothers (p>0.30) and RMP - No ANC ethnicity comparison (p>0.10) Adequacy of Antenatal Care: Entry into ANC (before the 4th month of pregnancy) RMP= 53% MDP= 32.6% (p<0.05 comparison with RMP) No ANC= 0.0 Antenatal Visits (more than 6 times)	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
				characterized by young maternal age, non white race, compilation of less than high school education, living in a poor neighbourhood, and no prior pregnancies		RMP= 87.8% MDP= 73.9% No ANC= 0.0 No Hospital Delivery RMP= 0.0 MDP= 2.2% No ANC= 3.5% (for RMP-MDP comparison, p>0.25; for RMP-NOANC, p>0.15) Birth weight outcomes (chi square analysis of RMP-MDP birth weight outcomes not significant p>0.30; chi square of RMP - No ANC is significant p>0.05) 1499g and less RMP= 0.0% MDP= 2.2% No ANC=13.9% Birthweight 1500g to 2500g RMP= 10.2% MDP= 4.3% No ANC=8.4% <2500 g RMP= 89.8% MDP= 93.5% No ANC=77.7% Gestational Age at Delivery (comparison	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						with RMP not significant p>0.05) Less Than 38 Weeks RMP= 12.2% MDP= 4.3% No ANC=14.3% 38-42 Weeks RMP=87.8 % MDP= 95.7% No ANC=85.7% (4% over 42 weeks)	
Rogers MM et al. 1995 Impact of a social support program on teenage antenatal care use and pregnancy outcomes Journal of Adolescent Health 19:132-140.[151] *And* Rogers M et al 1995 Translating research into MCH service: comparison of a pilot project	Retrospective cross-sectional study EL=3	To evaluate the effect of a home visiting program on antenatal outcomes and adequacy of care in 13 rural and 3 moderately urban counties in South Carolina	Setting: Urban and rural counties, South Carolina, USA. Resource mothers program (RMP) group: n=1901. Nulliparous teenagers, aged 18 years or younger at time of giving birth, who gave birth to a single baby between January 1st 1986 and December 31st 1989. Other counties comparison group: n=4613. Nulliparous teenagers, aged 18 years or younger at time of giving birth, who gave birth to a single baby between January 1st 1986 and December 31st 1989. Women resided in 16	Resource Mothers Program – Indigenous workers who received three weeks of intensive training made regular home visits to adolescents during and after pregnancy. Targeted younger, black, unmarried adolescents. Training involved information on pregnancy, labour and delivery, family planning, nutrition, communication skills, infant stimulation, well-child development, home visiting techniques and skills, community resources, referral	Time of initiation of AN care Inadequate antenatal care (fewer than 5 antenatal visits) Incidence of preterm birth Percentage of low birth-weight infants (<2500g) Percentage of very low-birth weight infants (<1500g)	Findings presented for intervention group vs. main comparison group vs. same counties comparison group. Initiation of AN care: 1-3 months: 45.3% vs. 40.9% (p<0.005) vs. 40.0 (p<0.005) 7-9 months: 11.1% vs. 11.6% (NS) vs. 13.5% (NS) Adequacy of AN care: Adequate: 35.6% vs. 31.1% (p=0.001) vs. 33.6% (p=0.38) Birthweight < 2500g: 11.6% vs. 10.8% (p=0.39) vs. 11.7% (p=0.95) Birth < 37 weeks:	Findings from the larger-scale study do not support those from the pilot studies. The reduction in incidence of small for gestational age and low birthweight babies seen in the RMP previously were not repeated here. Authors report likely reasons for this being the reduced training following roll-out of the program (3 weeks vs. 6 weeks), diminished supervision of support workers

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
and a large-scale Resource Mothers Program Public Health Reports 110: 563-569.[152]			matched counties and did not participate in the RMP. Same counties comparison group: n=712. Nulliparous teenagers, aged 18 years or younger at time of giving birth, who gave birth to a single baby between January 1st 1986 and December 31st 1989. Women resided in 10 of the same counties as women in the RMP counties but did not participate in the resource mothers program. These women could have been programme participants but were pregnant before it became available in their county. RMP group had significantly higher proportion of adolescents aged 16 years or younger (47.2% vs. 36.0% main comparison group vs. 33.4% same counties comparison group); RMP group significantly higher proportion of single adolescents (82.6%	skills and work with extended families Each resource mother had a caseload of 50-65 adolescents. Home visits structured with learning objectives geared towards supplementing and reinforcing professional services Resource mothers often provided adolescent with transportation to clinic, physician's office or other services Recruitment for program conducted through schools, health departments, private physicians and other community service agencies Comparison group: Adolescents living in South Carolina receiving usual AN care not enrolled in the RMP.		19.0% vs. 18.3% (p=0.64) vs. 20.5% (p=0.31) Findings from logistic regression analysis controlling for age, marital status, race and previous pregnancies. RMP vs. main comparison group: Early initiation of AN care: OR 1.48 [95% CI 1.32 to 1.66] Adequate AN care: OR 1.58 [95% CI 1.40 to 1.78] Low birth weight: OR 0.97 [95% CI 0.81 to 1.15] NS Preterm birth: Unmarried: OR 0.81 [95% CI 0.70 to 0.95] Married: OR 1.22 [95% CI 0.87 to 1.73] NS Similar findings are reported for RMP group vs. same counties comparison group.	and their increased case-load.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			vs. 67.2% vs. 73.7%); RMP group significantly higher proportion of black adolescents (77.0% vs. 54.6% vs. 70.9%); RMP group lower proportion of multiparous adolescents (5.4% vs. 6.9% vs. 7.3%)				
Silva MO et al 1993 Adolescent pregnancy in Portugal: Effectiveness of continuity of care by an obstetrician Obstetrics and Gynaecology 81(1): 142-146.[124]	Retrospective cohort study EL=2-	To evaluate an antenatal care intervention provided by an obstetrician	Setting: Intervention group: Hospital-based AN clinic. Comparison group: Health centre. Lisbon, Portugal. Intervention population: Women registered for antenatal care at the study hospital Comparison population: Women receiving AN care form their GP. Intervention group: 80 adolescents recruited as they enrolled for AN care. Comparison group: 80 women recruited after giving birth at the study hospital. Matched on age at conception, race, socioeconomic status, years of education, unplanned pregnancy, previous BMI.	Intervention: AN care initiated at registration with hospital clinic. Care from an obstetrician with a specialist knowledge in teenage pregnancy and who provided continuity of carer throughout pregnancy. Comparison: "Routine" AN care. AN care initiated after registration and provided by different GPs at each visit.	Gestation at start of AN care. Total number of AN visits Other outcomes reported included: STD (Sexually Transmitted Disease) during pregnancy Drug misuse Birth weight Gestational age Apgar score <7 at 5 mins Caesarean birth Admission to "high risk paediatric unit"	Outcomes only reported for 60 of the 80 women in the comparison group as 20 did not receive AN care. Findings reported as Intervention vs. Controls, mean with standard deviation or % Timing of first visit: 17.1 +/- 4.7 vs. 19.5 +/- 6.7 weeks p=0.02. Total no. of visits: 9.0 +/- 4.1 vs. 5.2 +/- 1.8 p=0.001 STD during pregnancy: 15% vs. 12% p=0.57 AN drug use: 1% vs. 0% NS Birthweight: 3172+/- 501 vs. 2991 +/- 562 grams	Only 60 of the 80 women in the comparison group received AN care. These women were subsequently dropped from the analysis thus losing the opportunity to compare their intrapartum outcomes. Funding: Supported in part by Fundação Luso-Americana Para o desenvolvimento.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			Sample population mostly women of low socioeconomic status living in poor housing conditions (e.g. no running water)			p=0.05 Gestational age: 38.8 +/- 1.6 vs. 38.8 +/- 2.2 NS Apgar score < 7 at 5 mins: 0% vs. 7% p-0.03 Caesarean birth: 13% vs. 15% NS Admission to "high risk paediatric unit": 4% vs. 10% p=0.005	
Daniels et al. A clinic for pregnant teens. 1983. American Journal of Nursing 83[1], 68-71[153]	Retrospective cohort study EL=2-	To measure the effectiveness of the teen clinic experience.	Country: US 52 teenagers attending the programme were matched with a control group of 52 teenagers whose antenatal care and delivery took place at the same hospital (Booth) before the teen clinic was established. The two groups were similar in age, living with their families, attending high school, parity, and payment for care.	The teen clinic was a part of Booth's comprehensive family centered programme that aimed to make childbirth a confidence building experience for parents. The teen clinic met one afternoon a week. Topics for teaching and discussion were arranged in a series of eight sessions including information on nutrition, fetal movement, labour and delivery, infant care, well baby checkups, parenting skills and contraception. A variety of teaching	Number of antenatal visits kept Antenatal, intrapartum complication (length of labour (>20 hours or <3 hours), premature rupture of membranes, meconium in the amniotic fluid, oxytocin augmentation of the labour, caesarean section, forceps delivery, preeclampsia, use of magnesium sulfate, placenta praevia, shoulder dystocia, narcotic withdrawal and general anaesthesia.)	Based on the one way analysis of the variance, no significant difference observed between the two groups on the antenatal complication observed. Same degree of the excessive weight gain or loss observed and the incidence of drug withdrawal, thyroid and cardiac problems were evenly distributed between the two groups. Anaemia, vaginal infection and preeclampsia were seen less in the clinic group (no statistic provided).	No information about the rate of uptake of educational session. No information provided regarding how the data were obtained, Medical record? Self report? Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
				techniques – role-play, films, and charts were used to present the necessary information. Visual aids were used to explain anatomy or to clarify obstetrical procedures. The team consisted of a nurse midwife conducting all antenatal checkups, a social worker/coordinator, community worker, and a second nurse midwife leading informal discussion with teenagers. Another staff social worker assisted the team with intake interviews, individual and family counselling, home visits after baby was born, parent child discussion groups and visits to paediatric clinic.	Neonatal complications (Birth weight <2500gr, apgar <5 at one or five minutes) Breast feeding How many returned for postnatal check ups How many obtained birth control Support person	Number of antenatal visits kept Significant differences observed between the two groups in the number of the antenatal visits (p<0.01 df 103). n= 43 in the clinic group made at least the recommended number of antenatal visit vs. n=30 in the control group. Intrapartum complications A significant difference between the groups observed in the intrapartum complication measured (p<0.05 df 103). Neonatal complication: The clinic group differed from the control group on neonatal complications (p<0.05 df 103). Rate of prematurity: 4% in clinic group vs. 6 % in control (NS) Breast feeding:	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						54% of the clinic teen mothers were breast feeding their babies at their postpartum check up, in contrast to 28% of the control group (p<0.01, df 103) Postnatal check us 98% of the clinic teens returned for the postpartum exam comparing to 61% of the controls. birth control 83% of the clinic group decided on a method of birth control in contrast to 50% of the control group.	
Kay et al. Process, costs, and outcomes of community-based prenatal care for adolescents. 1991. Medical Care 29[6], 531-542[128]	Retrospective cohort study EL=2+	To evaluate differences in the process of care provided by community based antenatal care programme designed especially for adolescent relative to traditional antenatal care which was not	Country : US Ypsilanti; Michigan A retrospective review of medical records of two sample of adolescent receiving antenatal care: Sample of 180 pregnant teens receiving care through a community based programme aimed	The sample of clients attending The Corner included all adolescents who made a minimum of three antenatal visits and who gave birth at Women's Hospital between January 1991 and June 1998. All Corner clients consider to be at high risk were directed to Women's	Number of antenatal visits per client Initiating antenatal care during first trimester Full term birth Low birth weight pregnancy complications	There were no significant differences between two groups with variable examined (age, marriage, occupation, race, medical and obstetrics history and smoking), with exception of health insurance coverage. The Corner population was significantly more likely to be without coverage (15.6% vs. 7.4% p=0.024)	Funding: Supported by a grant form form Michigan Health Care Education and Research Foundation

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
		adolescent focused.	exclusively at adolescent. The young adult health centre (known as The Corner) located in freestanding facility accessible to area teens. Components of the Corner's programme are health services and peer education that stress pregnancy prevention and comprehensive primary health care. Second sample served as control composed of 180 pregnant teens who received the care through the university hospital (OB clinic) whose programme was not adolescent focused but was representative of antenatal care in a traditional, institutional setting.	Hospital for delivery, other low risk women could choose between Women's Hospital and a second non tertiary hospital for delivery (40% of all deliveries among Corner clients during study period occurred at Women's Hospital). The Control sample was constructed by selecting the first 180 medical records of women with a minimum of three antenatal visits at the Women's Hospital who gave birth there, matching age and year of delivery with clients from The Corner sample. Statistical Package for the Social Sciences (SPSS) was used to compare pregnancy outcomes of the two study groups.	Neonatal complications (requiring neonatal intensive care) Resources consumed in delivering antennal care (laboratory test, ultrasounds, nonscheduled outpatient visits and antenatal inpatient stay) Postpartum pregnancy rate and use of contraception	Number of antenatal visits per client (mean) The Corner 12.79 OB Clinic 9.79 P=0.00 Initiating antenatal care during first trimester The Corner 53.1% OB Clinic 46.3% P=NS Full term birth The Corner 90.4% OB Clinic 90.0% P=0.91 Low birth weight The Corner 15.5% OB Clinic 10.8% P=0.20 Mean Apgar score 1 minute: The Corner 7.5 OB Clinic 7.5 5 minutes: The Corner 8.6 OB Clinic 8.5 P=NS	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Index Newborn Complication Score The Corner 5.54 OB Clinic 4.15 P=0.25 Percent who stopped / reduced smoking The Corner 27.6% OB Clinic 9.5% P=0.00 No significant differences between the two groups for variables describing pregnancy, labour and birth complications. Comparative percentage of contraception use At 6 months, 12 months and 24 months were 78.4% vs.45.0%, 48.5% vs. 28.8% and 27.4% vs. 12.8% for The Corner and the OB Clinic, respectively. Postpartum pregnancy rate Comparative pregnancy rate at the same interval	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						4.7% vs. 26.6% vs. 23.3% and 15.4% vs. 30.4% respectively. Use of the resources The Corner clients consistently used fewer of the recourses (ultrasounds, non stress tests, non-scheduled outpatients visits, and antenatal inpatient days) than did clients at the OB Clinic	

Q 3. What additional consultations and/or support should be provided to young women aged under 20, their partners and families in order to improve pregnancy outcomes? (Additional here means over and above that described in the NICE Antenatal care guideline).

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Effective Public Health Practice Project (authors G Brunton & H Thomas) The effectiveness of public health strategies to reduce or prevent the incidence of low birthweight in infants born to adolescents: a systematic review 2001[154]	Systematic review EL=2++	To determine the effectiveness of public health, health promotion and primary care strategies to reduce or prevent the incidence of low birthweight in infants born to adolescents up to 19 years of age.	Studies that included adolescents (either exclusively or as a sub-group). Ages of participants in included studies ranged from 13 to 23 years. Countries of included studies: USA (n=11), New Zealand (n=1), Latin America (n=1) Both rural and urban settings included. Studies of interventions designed to reduce low birthweight were included. Locations used were: hospitals, community-based clinics, schools, woman's home or by telephone.	Interventions were: health information, support strategies, encouragement to attend antenatal care, standard medical care and referrals. Interventions delivered by: nurses, public health nurses, health educators, social workers, nutritionists, health care aides, and lay or paraprofessional home visitors. Many studies included a range of interventions and care providers implemented as part of one programme.	Birthweight Incidence of low birthweight (<2500g) Preterm birth Rate of small for gestational age babies Rate of birthweight above 25th percentile	5 studies found a statistically significant effect on low birthweight: 1. Population:14-16 year olds, low SES. USA; semi-rural. Setting: Home and community clinic. Intervention: home visiting by public health nurse plus transportation to appointments (n=45); control group n=189. Mean birthweight Intervention group 3423 g vs. control group 3028g p=0.02 2. Population: 13-16 year olds, low SES, 50% Maori. New Zealand, urban. Setting: Maternity clinic of university hospital. Intervention: individualised one-to-one health education and counselling plus nurse provider's home telephone number for 24 hour contact (n=55); control group n=55. Preterm birth: Intervention group 5.5%	The authors comment that the interventions did not seem to have different effects for different ethnic groups. It is not possible to determine which, if any, single intervention is most effective, or if it is the use of multiple interventions that is the key to impacting on outcomes.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						(n=3) vs. control group 18.2% (n=10); p<0.05. Birthweight below 25th percentile: 25.5% (n=14) vs. 43.6 (n=24); p<0.05. 3. Population: Adolescents under 17 years old. Setting: Antenatal clinic in public health department (not stated whether urban or rural). Intervention: enrolled in the Baby Talk health education programme, also provided social support and referrals. Intervention group (n=184) vs. historical control group n=191. Incidence of low birthweight: Intervention group 7.6% (n=14) vs. control group 15.3% (n=29); p<0.05. However when compared with geographical control group (n=312): Intervention group 7.6% (n=14) vs. control group 7.1% (n=22); NS. And when compared with matched cohort (n=227): Intervention group 7.6%	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						(n=14) vs. 12.8% (n=29); NS. 4. Population: Adolescents aged 13-18 years, mixed SES. USA; rural. Setting: home. Intervention: Resource Mothers Programme. Home visits by trained lay workers plus transportation to appointments (n=575); control n=565. Low birthweight: Intervention group 10.6% (n=61) vs. control group 16.3% (n=92); p=0.006 IUGR: Intervention group 4.9% (n=28) vs. control group 9.8% (n=55); p=0.002. 5. Population: Women aged 13-21 and single women aged 21-23, mean age 19.7 years. USA; non-urban. Setting: Clinic (no further details given). Intervention "Young Mom's Clinic" – 7 weekly sessions of health education and support (n=101) vs. controls (n=95).	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Mean birthweight: Intervention group 3393.5g vs. control group 3156.5g; adjusted p=0.001. Mean gestational age at birth: Intervention group 39.5 weeks vs. control group 38.8 weeks; NS. IUGR: Intervention group 2.0% (n=2) vs. control group 11.6% (n=11); p=0.007. 8 studies did not report a significant effect on low birthweight. These studies also consisted of multiple interventions delivered by a range of providers and in many ways were similar to those which did find a significant difference in birthweight. In a number of cases small sample sizes may have contributed to lack of finding of statistical significant differences. Presence of many confounders and lack of control between intervention and	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						comparison groups may have also contributed.	
Kitzman H, Olds D, Henderson CR, Hanks C, Cole R, Tatelbaum R, McConnochie KM, Sidora K, Luckey D, Shaver D, Engelhardt K, James D & Barnard K (1997) "Effect of prenatal and infancy home visitation by nurses on pregnancy outcomes, childhood injuries and repeated childbearing. A randomised controlled trial. JAMA vol 278(8): 644-652.[155]	Stratified randomised controlled trial EL=1+	To test the effect of prenatal and infancy home visits by nurses on pregnancy-induced hypertension, pre-term delivery, low birth weight, childhood injuries, immunizations, children's mental development and behavioural problems, and on maternal life course.	Country: USA Setting: Urban – Memphis Tennessee Population: Pregnant women with no previous live births, <29 weeks gestation and no chronic illness thought to contribute to low birthweight or preterm birth, and with at least two of the following characteristics: 1) < 12 years of education 2) unmarried 3) unemployed 92% African-American 64% aged 18 or under 85% from low income households N=1139 Response rate 88%	Treatment 1: (control): Free taxi cab to and from scheduled antenatal appointments. (n=166) Treatment 2: Free transport to and from regular antenatal and well-child care at local clinics and physicians at 6, 12 and 24 months (n=515) Treatment 3: The same as treatment 2 plus intensive nurse home-visitation during pregnancy (mean n=7), I postnatal visit in the hospital prior to discharge and 1 in the home. (n=230) Treatment 4: Same as treatment 3 + nurses continued to visit until babies were 2yrs of age (n=228)	Pregnancy induced hypertension Incidence of sexually transmitted infections Birthweight Length of gestation Low birth weight Preterm birth Apgar scores	Reported for treatment groups 1+2 vs. groups 3+4 adjusted to take into account differences between groups regarding confounding variables. Pregnancy induced hypertension 20 vs. 13 OR=0.6 [95% CI 0.5 to 0.9; p=0.01] No. of sexually transmitted infections 0.21 vs. 0.22 [95% CI -0.32 to 0.18; NS] Incidence of yeast infections 0.19 vs. 0.14 [95% CI 0.00 to 0.58; p=0.05] Birthweight (mean/g) 3050.4 vs. 3032.2 [95% CI -62.4 to 98.7; NS] Gestational age (mean/weeks) 39.0 vs. 39.0 Spontaneous preterm birth/% 9 vs. 8 OR=0.8 [95% CI 0.5 to 1.3; NS]	Not adolescent-specific although populations have a majority of adolescents. Women who agreed to participate were more likely to be African-American than non-African American (89% vs. 74%; p<0.001); younger (average age 18 vs. 19 years; p=0.001); and non-high school graduates (89% vs 84%; p=0.01). Control groups had free transport to and from appointments. There is no control group with no intervention/usual care.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Indicated preterm birth/% 3 vs. 3 IUGR (birthweight <10th centile)/% 9 vs. 9 Low birth weight (<2500g)/% 14 vs. 15 OR=1.1 [95% CI 0.8 to 1.6; NS] Preterm birth (<37 weeks)/% 13 vs. 11 OR=0.8 [95% CI 0.6 to 1.2] 5 minute Apgar score 8.7 vs. 8.6 NS	
David L. Olds, PhD, Charles R. Henderson, Jr, Robert Tatelbaum, MD and Robert Chamberlin, MD "Improving the Delivery of Antenatal Care and Outcomes of	Quasi - Randomised Control Trial - stratified block design EL=1+	To evaluate the effectiveness of an antenatal home visitation programme on enhancing antepartum social support, health habits and obstetrical health status of socially disadvantaged women and of improving the length of gestation	Country: US Setting: Small semirural county of approximately 100,000 residents in the Appalachian region of New York State Population: Pregnant women with no previous live births and with at least one of the following characteristics: 1) young age <19 years 2) single parent status	Treatment 1: (control): No services provided. Child screened at 1 and 2 years of age by an infant specialist Treatment 2: As well as the screening at 1 and 2 years, families received free transport for regular antenatal and well-child care at local clinics and physicians	Wide range of outcomes investigated for whole population. Only outcomes reported for women aged <20 years were: birth weight, % Low birth weight, length of gestation and % preterm delivery	Reported for adolescents: Birthweight: Nurse visited young adolescents (n=28) gave birth to babies an average of 395g heavier than young adolescents in comparison group (n=17) (p=0.02) Low birthweight: % low birth weight (≤2500g) infants in nurse-visited adolescents	It should be noted that the birth weight findings are surprising in that the effect size is larger than would be expected (the authors do acknowledge this). Additionally, the results may not be of clinical significance as the

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Pregnancy: A Randomized Trial of Nurse Home Visitation" (1986)[156]		and birth weight of their babies	3) low socio-economic status However study design allowed any woman who asked to participate and who was bearing a first child to be enrolled Women more than 25 weeks pregnant were to be excluded but ultimately 30 women were enrolled between the 26th and 29th week of pregnancy 500 women interviewed and 400 enrolled No differences in age, marital status or education between women who participated and those who declined (no further details provided) All data analysis reported included only white women (excluded 46 non-white women as sub-group too small to allow comparative analysis) At enrolment: 47% aged <19 years	Treatment 3: The same as treatment 2 + a nurse home-visitor who visited approx. every two weeks. Made an average of 9 visits each of which lasted approx. 1hr 15 mins Treatment 4: Same as treatment 3 + nurses continued to visit until babies were 2yrs of age (visited once per week for first month after delivery, then on a schedule of diminishing frequency until infants aged 18-24 months when visits were made every 6 weeks)		0.00% vs. 11.76% for comparison adolescents (2 cases of low birth weight infants in control group vs. no cases in nurse-visited groups) Length of gestation (weeks) in nurse-visited adolescents: 40.41 vs. 39.71 for comparison adolescents % preterm (<37 weeks) birth in nurse-visited adolescents 0.00% vs. 11.76% for comparison adolescents (2 cases of preterm delivery in control group vs. no cases in nurse-visited groups) After adjustment for length of gestation among young adolescents (14-16 years), treatment effect on birth weight reduced to 324g. This was still significant (P=0.02). (Birth weight of nurse visited group 3335g vs. 3011g in comparison group)	average birth-weight for the comparison group was still at a healthy level.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			62% unmarried 61% came from low socio-economic background 15% of women classed as "not at risk" according to criteria above. 23% of women possessed all three risk characteristics Enrolled between: April 1978 – September 1980				
Patterson et al.(1994) Evaluation of a clinic for pregnant adolescents. 1994. Journal of the Arkansas Medical Society 91[3], 131-134 [122]	Retrospective observational study EL= 3	To evaluate maternal and infants outcomes related to the goals of the TOPPS (Teens Obstetrics Perinatal Parenting Service). Antenatal care goals of TOPPS included nutritional intake for delivery of healthy, term average weight infants.	Country: USA Intervention group: A retrospective review of the TOPPS clinic medical records from1985 to 1986 was completed for 120 adolescent young women. Comparison group: State and national data based on 6,602 live births to women under 18 in Arkansas in 1988.	Intervention: TOPPS (Teens Obstetrics Perinatal Parenting Service): An interdisciplinary team that provided services for pregnant adolescent, providing nutritional counselling and making appropriate referral (i.e. WIC, AFDC, Medicaid, etc.) with the aim of decreasing risk and improve long-term outcomes for both the young woman and her baby.	Initiating antenatal care Birth weight	Initiating antenatal care during: First trimester TOPPS: 27.6% Arkansas: 49.9% Second trimester TOPPS: 55.0% Arkansas: 38.8% Third trimester TOPPS:12.2% Arkansas: 10.5% Birth weight < 1500g TOPPS: 2.1% Arkansas: 1.8% 1501-2500g TOPPS: 11.2% Arkansas: 8.4 % >2501g TOPPS: 86.7% Arkansas: 89.5%	Funding: not reported Poor report of the service and findings

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Arkansas data; are based on 6,602 live births to women under 19 in Arkansas in 1988	
Berg M. et al. 1979 Prenatal care for pregnant adolescents in a public high school. The journal of school health. 49(1): 143-153.[125]	Retrospective cohort study EL=2-	To measure the adequacy of prenatal care, pregnancy complications and incidence of prematurity and low birth weight infants in the group enrolled in the school program with a comparison group receiving care in a non-school Maternal and Infant Care (MIC) clinic.	Setting: State school and hospital-based AN clinic, Minnesota (USA) Pregnant adolescents (aged 13-18 yrs) who received antenatal care and gave birth in St.Paul Minnesota MIC project from 1973 to 1976. Intervention group n=36 adolescents enrolled on school-based MIC AN program Comparison group n=36 adolescents randomly selected from those receiving care at hospital-based MIC AN clinics. Comparison groups were matched for race. 44.4% of the study sample were black, 30.6% white, 19.4% Hispanic and 5.6% native American	Intervention (school) group –enrolled in a public school where services of a nurse practitioner, social worker and clinic attendant were available on a daily basis. Other members of the interdisciplinary team were available on a weekly basis. Comparison group: received care at a weekly non-school hospital-based MIC adolescent prenatal clinic.	Uptake of antenatal care. Number of AN visits. A range of specific health outcomes were also reported including anaemia, toxaemia, urinary tract infections and birthweight.	Uptake of AN care: In the school group 58.3% initiated care during the first trimester compared with 36.1% of the comparison group; Fisher's exact test p=0.098 NS* Only one student in the school-based group made a first visit during the third trimester. 10 women in the comparison group began care in the third trimester of pregnancy. Number of visits: In the school-based group 2.0% women made 1-5 AN visits vs. 30.6% in the hospital-based group. In the school-based group number of visits ranged from 3 to 23. In the in the comparison group from 1 to 16. Clinical outcomes: Presented as School-based group vs. hospital-based group (%):	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Anaemia: 13.9 vs. 30.6 UTI: 5.6 vs. 13.9 Toxaemia: 11.1 vs. 16.7 Birthweight <2500g: 5.5 vs. 13.9 Not significant difference (NS).	
Taylor B et al 1983 School-based prenatal services: Can similar outcomes be attained in a nonschool setting? JOSH 53(8): 480-486[126]	Retrospective cohort study EL=2-	To evaluate whether enhancement of hospital-based antenatal care for adolescents results in outcomes comparable to those attained by a school-based clinic.	Setting: State school and hospital-based AN clinic, Minnesota (USA) Pregnant adolescents (aged 14-18 yrs) who received antenatal care and gave birth in St.Paul Minnesota MIC project from 1976 to 1979. Intervention group: n=53 of the total sample of adolescents receiving care at the school-based MIC AN clinics. Comparison group: n=53 drawn from total population of 85 adolescents receiving care at nonschool hospital-based MIC AN clinics. Intervention and comparison groups were matched for race. 34.0%	Intervention (school) group –enrolled in a public school where services of a nurse practitioner, social worker and clinic attendant were available on a daily basis. Other members of the interdisciplinary team were available on a weekly basis. Comparison group: received care at a weekly non-school hospital-based MIC adolescent prenatal clinic. This service had been "improved and personalized" but the authors note that the services provided by the school-based clinics were still able to provide more comprehensive care.	Uptake of antenatal care. No. of visits A range of specific health outcomes were also reported including anaemia, toxaemia, urinary tract infections and birthweight.	Uptake of antenatal care: In the school group 58.5% began prenatal care during the first trimester compared with 45.4% of the comparison group; Fisher's exact test p=0.24 NS* In the school group 3.0% women made a first visit during the third trimester. 11.3% women in the comparison group began care in the third trimester of pregnancy; Fisher's exact test p=0.27 NS*. No. of visits: In the school-based group 7.5% women made 1-5 AN visits vs. 13.2% in the hospital-based group. Approximately half the adolescents in both groups made 12 or more AN visits (exact numbers	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			of the study sample were black, 60.4% white, 3.8% Hispanic and 1.9% native American. Age at conception and parity were similar for the 2 groups.			not ascertainable from figures in paper) Clinical outcomes: Presented as School-based group vs. hospital-based group (%): Anaemia: 13.2 vs. 9.4 NS UTI: 9.4 vs. 3.8 NS Toxaemia: 18.9 vs. 17.0 NS Caesarean birth: 22.6% vs. 13.2% p<0.05 "Low" Apgar at 5 mins – no signif. difference (scores not reported) Birthweight <2500g: 11.3% vs 13.2% NS Birth <37 weeks gestation: NS (figures not reported) >4 days spent in hospital (baby): 32% vs. 17% p<0.05	
Barnet B et al 2003 Reduced low birthweight for teenagers	Retrospective cohort study EL=2-	To compare access to care, comprehensiveness of care, and birth outcomes for	Setting: school-based and hospital based clinics, Baltimore, USA Pregnant teenagers	School-based (SB-CAPP): School for pregnant teenagers providing onsite antenatal care, family	Adequacy of antenatal care -- assessed using Kotelchuck's Adequacy of Prenatal	Month of initiation of care: SB-CAPP: 4.2 (Std.Dev. 1.6) HB-CAPP: 3.6 (1.7)	Composite outcome for comprehensiveness of AN care requires that all 6

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
receiving prenatal care at a school-based health center: effect of access and comprehensive care Journal of Adolescent Health 33:349-358[127]		teenagers receiving antenatal care in comprehensive adolescent pregnancy programs (CAPPs) in two different settings: school-based vs. hospital-based.	giving birth between July 1st 1995 and August 30th 1996 receiving care from a CAPP SB-CAPP n=109 HB-CAPP n=284 Demographic details of samples: Age: SB-CAPP 15.1 years (12 – 18 years) HB-CAPP 16.2 years (11 – 18 years) P<0.001 African-American: SB-CAPP 97% HB-CAPP 90% P<0.05 History of STI prior to pregnancy: SB-CAPP 41% HB-CAPP 56% P<0.05 Cigarette smoker: SB-CAPP 9% HB-CAPP 13% NS Prior birth: SB-CAPP 8%	planning services, primary care to infants and children, case-management, nutrition education, parenting education and mental health services. Intrapartum and postpartum care provided by same staff. Also includes day care for infants. Hospital-based (HB-CAPP): antenatal care, primary and preventive care, nutrition services, educational services relating to STI, responsible parenting, substance misuse prevention, mental health services.	Care Utilization Index – a measure of initial and continuing access of care, adjusted for gestational age. Inadequate (initiation after fourth month of pregnancy or < 50% expected visits); intermediate (50-79% visits); adequate (80-109% visits); adequate plus (> 110%). Comprehensiveness of care (screened and received advice on substance misuse (inc. cigarettes); nutrition, condom use, depression/suicide, physical and sexual abuse, school problems). Birthweight	P=0.002 Total number of visits: SB-CAPP 10.5 (3.7) HB-9.6 (4.8) p=0.05 Adequacy of AN care: Adequate plus: SB-CAPP 12% HB-CAPP 18% NS Adequate: SB-CAPP 27% HB-CAPP 27% NS Intermediate: SB-CAPP 18% HB-CAPP 18% NS Inadequate: SB-CAPP 43% HB-CAPP 38% NS Comprehensiveness of care: Screened/advised for: Adequate nutrition: SB-CAPP 57% HB-CAPP 96% p<0.001	components of psychosocial screening and advice are included. Funding: Supported by Robert Wood Johnson Foundation.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			HB-CAPP 14% NS High risk pregnancy SB-CAPP 10% HB-CAPP 6% NS			Substance misuse: SB-CAPP 87% HB-CAPP 90% NS Condom use: SB-CAPP 52% HB-CAPP 15% p<0.001 Depression/suicide: SB-CAPP 74% HB-CAPP 7% p<0.001 Physical and sexual abuse: SB-CAPP 82% HB-CAPP 84% NS School problems: SB-CAPP 73% HB-CAPP 98% P<0.001 Pregnancy complications: Pre-term labour: SB-CAPP 5% HB-CAPP 4% NS Gonorrhoea or Chlamydia: SB-CAPP 25% HB-CAPP 45%	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						P<0.001 UTI: SB-CAPP 30% HB-CAPP 16% p=0.02 Birthweight: Mean birthweight: SB-CAPP 3225g HB-CAPP 3050g P=0.006 Low birthweight: SB-CAPP 5% HB-CAPP 12% P=0.06 Inadequate/intermediate AN care: Percent with risk factor 57% RR for low birthweight 1.2 Attributable risk 0.10 [95% CI 0.04 to 0.16] Logistic regression analysis controlling for confounding variables (age, race, household income, prior birth, cigarette smoking, history of STI and high risk pregnancy): SB-CAPP 1.00 (ref) HB-CAPP 3.75 [95% CI	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						1.05 to 13.36], p=0.04 Controlling for confounding variables listed above plus adequacy of care: SB-CAPP 1.00 (ref) HB-CAPP 3.52 [95% CI 0.99 to 12.55], p=0.053 Controlling for confounding variables listed above plus comprehensiveness of care: SB-CAPP 1.00 (ref) HB-CAPP 2.43 [95% CI 0.68 to 8.69], p=0.171 I.e. comprehensiveness of care seems to be contributing more to the difference between the two models than adequacy of care. Lack of comprehensive care (i.e. did not receive all 6 areas of screening and advice): Percent with risk factor 90% RR for low birthweight 3.7 Attributable risk 0.71 [95% CI 0.55 to 0.87]	
Mead M et al.	Description	To describe 2 new	Country: UK	Interface Model (IM) –	Cigarette smoking	Younger women were	Small

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Evaluation of midwifery support service for pregnant teenagers. British Journal of Midwifery, Dec 2005, vol.13 No.12[157]	and comparison of 2 specialized midwifery services. EL=3	midwifery services	Two forms of specialized midwifery services were introduced in Hertfordshire in 2001: Interface model (IM) and Case-load model (CLM). Records were available for 199 women, IM n=115, CLM n=84, who were referred to the two midwives and had given birth to their baby by the time of the survey. Majority were Caucasian, IM 90%, CLM 94%. Maternal age ranged between 15 and 20 years at time of birth.	part-time midwife appointed taking responsibility for all pregnant teenagers and supplementing the care provided by the NHS trust's midwives. She did not provide normal antenatal, intrapartum and postnatal midwifery care. This model allowed the midwife time to make contact with primary and secondary care sector, social workers, family planning services, schools and other agencies. Case Load Model (CLM) – full-time teenage support midwifery post with responsibility to a specific case load of teenage mothers. This midwife was appointed as the community midwife of the young women, and provided antenatal care, intrapartum and postnatal care up to 28days. Neither midwives had	and other drug use Sexually transmitted infections Domestic abuse Pregnancy complications Neonatal outcomes inc. birthweight Breastfeeding Process outcomes: Sources of referral Number and types of referrals made to other agencies Receipt of benefits	more likely to live with their parents, 83.3% up to 16 yrs, 42.6% ≥19yrs. 55% of women faced eviction during pregnancy. Drug use: 59% smoked cigarettes. 21% were identified as using drugs, most commonly cannabis. Sexual health: 3% were involved in prostitution. There were no cases of syphilis, gonorrhoea or HIV, but Chlamydia was found in 12 women, herpes in 2 and warts in 6. Domestic abuse: 5 women reported a history of domestic or family abuse and a further 6 reported major family problems, including one arranged and one forced marriage. Offending behaviour: 2 women had previous convictions and 4 were in the care of the Youth Offending Team.	retrospective study. Design of the records was not devised for the purpose of this research at the outset so care must be taken over validity and reliability of the data. Only one midwife's performance in each of the models. Possible that the personalities of the midwives as well as the ethos of the 2 NHS Trusts had an impact on the delivery of care.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
				specific training or expertise, but both had a keen professional interest.		Disability: 5 had learning disabilities. Mental health: Psychiatric disorders were common, eating disorders, self-harm, suicide attempts. Pregnancy complications: Anaemia (83 cases), asthma (26 cases) and UTIs (16 cases) were the most common physical problems. There was 1 case of heart disease, 1 case of renal disease, 5 cases of pregnancy-induced hypertension, 3 cases of antepartum haemorrhage and 7 cases of premature labour. Labour and birth: 70% of women went into spontaneous labour and 13% developed intrapartum complications. 79% proceeded to a spontaneous vaginal delivery, 11% to assisted delivery and 10% to an emergency caesarean section. No difference between the 2 models.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Neonatal outcomes: All babies were born alive. 8% weighed less than 2500g, and 11% 4000g or more. 7% had an Apgar score <7, at one minute, and 1% at 5 minutes. 12 babies were transferred to SCBU for adoption (3), maternal drug user (3), low Apgar score or neonatal apnoea (2), prematurity (1), streptococcus B infection (1) and mother transferred to intensive care (1). No difference between the 2 models. 55% of babies were initially breastfed, IM – 64/95 (70%) and CLM midwife 28/63 (44%) p=0.002. Process outcomes: Referrals made to the CLM midwife were mainly from the antenatal clinic (93%), with 3 mothers referred from GPs and 2 from 'other' areas. 39% were referred to the IM midwife via the antenatal clinic, 10% self-referred, 9% by social	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						services, 7% by their GP. Other professionals referred smaller numbers. Housing referrals: The IM midwife referred 75/115 and the CLM midwife 61/84 either to their local council or housing agencies or both. Sexual health screening: Offered to women: IM 93/111 (84%) and CLM 5/81 (6%) P<0.001. Screening performed: IM midwife 49/111 (44%), and CLM midwife 1/81 (1%) p=0.000. Benefits received postnatally: Housing benefit IM 74/109 (68%) and CLM 36/69 (52%) Income support IM 104/109 (95%) and CLM 46/69 (67%) Sure Start IM 34/109 (31%) and CLM 5/69 (7%) Maternity grant IM 103/109 (95%) and CLM 10/69 (14%) Maternity benefit IM 79/109 (72%) and CLM 6/69 (9%).	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Child protection issues: Concern expressed regarding child protection IM 20/106 (19%) and CLM 36/81 (44%); p<0.001. Social worker allocated to child IM 19% and CLM 27%.	
Flynn L, Budd M & Modelski J "Enhancing Resource Utilization Among Pregnant Adolescents" 2008[148]	Retrospective cross-sectional study EL = 3	To test the impact of a home visitation intervention on resource utilization and birth outcomes among pregnant adolescents	Country: New Jersey, USA. Urban setting. Intervention group: 65 low-income pregnant adolescents who met the following criteria: 1) ≤18 years old 2) pregnant with first child 3) living within one of 11 target municipalities in the county (New Jersey) Comparison group: constructed from 216 deidentified birth records who met the following criteria: 1) primiparous adolescent (≤19 years at time of birth) 2) singleton birth 3) resident of one of the identified comparison municipalities 4) infant birth between	Teen Parenting Partnership (TPP) Program. Participants received monthly home visits from both a public-health registered nurse (PHN) and a medical social worker (MSW). Program lasted until children reached 1 year of age but could continue for a period of 3-5 years after this. Participants provided with information about the Women, Infants and Children (WIC) Program, the Medicaid Program and other community resources, and given assistance to enrol. Assisted in locating and selecting a antenatal care provider, given	Study investigated number of visits to antenatal care provider, birth weight and gestational age at birth	Mean number of visits to a antenatal provider significantly higher among the intervention teens (12.2 vs. 7.9) (p<0.01). Proportion of teens receiving no antenatal care significantly lower in intervention group (χ^2(1, N=280) = 4.75, p=0.02) 4.2% of teens in comparison group received no antenatal care vs. 0% of teens in intervention group received no antenatal care. 100% teens in intervention group received at least 6 antenatal care visits vs. 22% of teens in comparison group received fewer than 6 visits.	Highly intensive programme. High attrition rate in intervention group: 22.90% of intervention teens lost to attrition between completion of 3 month program and birth of infant (original sample size n=83) No randomization or matching of groups

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			2002 & 2003 No participants in either group came from rural areas. Demographics: Intervention group – African-American 43.1%, Asian 1.5%, Hispanic 23.1%, White 32.3%, Other 0% Comparison group – African-American 44%, Asian 2.3%, Hispanic 34.7%, White 11.6%, Other 7.4%	encouragement to independently make and keep their own appointments and provided with transportation to antenatal care appointments and other healthcare appointments. Assessed and referred for mental health counselling, substance abuse counselling and other services as appropriate Comparison: taken from birth certificate data from municipalities that were demographically and socio-economically similar to the program's target areas but were not in its catchment area		Low birthweight: No significant difference between intervention teens (10.80%) and comparison teens (10.60%) in proportion of births of low birth-weight infants $\chi^2(1, N=281) = 0.00$, p=0.97 Gestational age at birth: no significant difference between intervention teens (mean 39.0 weeks, SD 2.41) and comparison teens (mean 38.3 weeks, SD 4.29) P=0.12	
Rogers MM et al. 1995 Impact of a social support program on teenage antenatal care use and pregnancy outcomes Journal of	Retrospective cross-sectional study EL=3	To evaluate the effect of a home visiting program on antenatal outcomes and adequacy of care in 13 rural and 3 moderately urban counties in South Carolina	Setting: Urban and rural counties, South Carolina, USA. Resource mothers program (RMP) group: n=1901. Nulliparous teenagers, aged 18 years or younger at time of giving birth, who gave birth to a single baby	Resource Mothers Program – Indigenous workers who received three weeks of intensive training made regular home visits to adolescents during and after pregnancy. Targeted younger, black, unmarried adolescents.	Time of initiation of AN care Inadequate antenatal care (fewer than 5 antenatal visits) Incidence of preterm birth Percentage of low	Findings presented for intervention group vs. main comparison group vs. same counties comparison group. Initiation of AN care: 1-3 months: 45.3% vs. 40.9% (p<0.005) vs. 40.0 (p<0.005)	Findings from the larger-scale study do not support those from the pilot studies (see below). The reduction in incidence of small for gestational age and low birthweight babies seen in the RMP

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Adolescent Health 19:132-140.[151] *And* Rogers M et al 1995 Translating research into MCH service: comparison of a pilot project and a large-scale Resource Mothers Program Public Health Reports 110: 563-569.[152]			between January 1st 1986 and December 31st 1989. Other counties comparison group: n=4613. Nulliparous teenagers, aged 18 years or younger at time of giving birth, who gave birth to a single baby between January 1st 1986 and December 31st 1989. Women resided in 16 matched counties and did not participate in the RMP. Same counties comparison group: n=712. Nulliparous teenagers, aged 18 years or younger at time of giving birth, who gave birth to a single baby between January 1st 1986 and December 31st 1989. Women resided in 10 of the same counties as women in the RMP counties but did not participate in the resource mothers program. These women could have been programme participants but were pregnant before it became available in their county.	Training involved information on pregnancy, labour and delivery, family planning, nutrition, communication skills, infant stimulation, well-child development, home visiting techniques and skills, community resources, referral skills and work with extended families Each resource mother had a caseload of 50-65 adolescents. Home visits structured with learning objectives geared towards supplementing and reinforcing professional services Resource mothers often provided adolescent with transportation to clinic, physician's office or other services Recruitment for program conducted through schools,	birth-weight infants (<2500g) Percentage of very low-birth weight infants (<1500g)	7-9 months: 11.1% vs. 11.6% (NS) vs. 13.5% (NS) Adequacy of AN care: Adequate: 35.6% vs. 31.1% (p=0.001) vs. 33.6% (p=0.38) Birthweight <2500g: 11.6% vs. 10.8% (p=0.39) vs. 11.7% (p=0.95) Birth <37 weeks: 19.0% vs. 18.3% (p=0.64) vs. 20.5% (p=0.31) Findings from logistic regression analysis controlling for age, marital status, race and previous pregnancies. RMP vs. main comparison group: Early initiation of AN care: OR 1.48 [95% CI 1.32 to 1.66] Adequate AN care: OR 1.58 [95% CI 1.40 to 1.78] Low birth weight: OR 0.97 [95% CI 0.81 to 1.15] NS	previously were not repeated here. Authors report likely reasons for this being the reduced training following roll-out of the program (3 weeks vs. 6 weeks), diminished supervision of support workers and their increased case-load.

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			RMP group had significantly higher proportion of adolescents aged 16 years or younger (47.2% vs. 36.0% main comparison group vs. 33.4% same counties comparison group); RMP group significantly higher proportion of single adolescents (82.6% vs. 67.2% vs. 73.7%); RMP group significantly higher proportion of black adolescents (77.0% vs. 54.6% vs. 70.9%); RMP group lower proportion of multiparous adolescents (5.4% vs. 6.9% vs. 7.3%)	health departments, private physicians and other community service agencies Comparison group: Adolescents living in South Carolina receiving usual AN care not enrolled in the RMP.		Preterm birth: Unmarried: OR 0.81 [95% CI 0.70 to 0.95] Married: OR 1.22 [95% CI 0.87 to 1.73] NS Similar findings are reported for RMP group vs. same counties comparison group.	
Heins HC et al. 1987 Social support in improving perinatal outcome: The Resource Mothers Program[149] And Heins HC et al. 1988 The Resource Mom – A program of	Retrospective matched cohort study EL=2-	To evaluate the effect of a home visiting program on antenatal outcomes and adequacy of care in a rural population in South Carolina	Setting: Rural county in South Carolina, USA List of 753 women participating in the program reviewed. After removal of missing records (n=32), duplicates (n=12), women who lived outside of the project area (n=26) and women over 18 years old who had had a previous pregnancy (n=108), 575 cases were left in the study population. 89% were black and 11%	Intervention: Resource Mothers Program – Indigenous workers who received six weeks of intensive training made regular home visits to adolescents during and after pregnancy. Training involved information on pregnancy, labour and delivery, family planning, nutrition, communication skills, infant stimulation, well-child	Inadequate antenatal care (fewer than 5 antenatal visits) Percentage of small for gestational age infants Percentage of low birth-weight infants (<2500g) Percentage of very low-birth weight infants (<1500g) Number of neonatal deaths per 1000	All results reported as intervention vs. control Inadequate antenatal care 18.3% vs. 35.9% (χ^2 = 44.3, p=0.000001) Percentage of small for gestational age infants 4.9 vs. 9.8 (χ^2 = 9.3, p=0.002) Percentage of low birth-weight infants 10.6 vs. 16.3 (χ^2 = 7.6, p=0.006)	Full demographic details for study and control groups not provided. Analysis of antenatal care did not segregate inadequacy from care begun after the sixth month of gestation

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
social support for pregnant teens[150]			white. 93% were single. Age of mothers ranged from 13-18 Intervention women matched with controls selected from women aged under 19 years of age who had had a singleton live birth during 1981-1985, had no previous pregnancy and who resided in health district of four nearby rural counties (matched for year of delivery, age of mother, race of child and sex of child) Controls were found for 565 of 575 cases (98.3%) Data collected from 1981-1985	development, home visiting techniques and skills, community resources, referral skills and work with extended families Each resource mother had a caseload of 30-35 adolescents. Home visits structured with learning objectives geared towards supplementing and reinforcing professional services Resource mothers often provided adolescent with transportation to clinic, physician's office or other services Recruitment for program conducted through schools, health departments, private physicians and other community service agencies It is assumed the comparison group received standard care	Number of infant deaths per 1000	Percentage of very low birth-weight infants 1.4 (n=8) vs. 2.6 (n=15) (NS) Number of neonatal deaths per 1000 10.6 vs. 12.4 (NS) Number of infant deaths per 1000 16.7 vs. 19.0 (NS)	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
				although this is not made explicit in the study			
Elster et al. The medical and psychosocial impact of comprehensive care on adolescent pregnancy and parenthood. 1987. JAMA: the journal of the American Medical Association 258[9], 1187-1192 [121]	Prospective cohort study EL=2-	To evaluate the effectiveness of a comprehensive adolescent pregnancy and parenthood intervention programme.	Country : USA The sample of clients included adolescents who entered TMCP between January 1983 and July 1984. Intervention group Sample of 135 pregnant teens receiving care through a comprehensive programme aimed exclusively at adolescent. The Teen Mother and Child Program (TMCP) at Utah School of Medicine provides medical, psychological and nutritional services to pregnant adolescents. Components of the TMCP programme are education about pregnancy, labour and delivery, contraception, infant health, individual counselling about inter personal relationship, financial management, school and work. Supplemental food coupons are provided through federally sponsored Women Infant and Children (WIC) program. Adoption counselling and formal	Young women aged 18 and under received an in-depth psychosocial and nutritional assessment upon entry into the programme, during late pregnancy and every six months after giving birth. Participants from both groups were interviewed when they first entered the study. Antenatal, labour and neonatal data were collected from review of hospital records. Participants were interviewed in their home or during antenatal visit, four weeks, 6, 18 and 26 months after delivery. Group differences in antenatal and postnatal outcomes were assessed using $\chi 2$ and log linear analyses for categorical data and t-test for interval data. Differences in pregnancy outcomes	Gestation at Initiation of antenatal care Number of prenatal visits Gestational age at birth Birth weight Apgar score Neonatal complications (requiring neonatal intensive care) Postpartum pregnancy rate	There were no significant differences between two groups with demographic variables examined (age, marriage, alcohol intake, substance misuse, smoking, medical and obstetric history). The TMCP adolescents came from higher SES family background ($p<.01$) than participants from CG, and were more likely to be enrolled in school, graduated or working at the time of conception ($p<.01$) Initiation of antenatal care < 13 weeks TMCP (n=33/125) CG (n=46/135) 13-14 weeks TMCP (n=54/125) CG (n=43/135) >24 weeks TMCP (n=13/125) CG (n=11/135) Number of prenatal visits Adolescents from TMCP attended a significantly greater percentage of the expected number of antenatal visits than	Signif. more young women in intervention group were from families of higher SESD and more wer enrolled in full-time education at time of conception. These differences at baseline make interpretation of findings difficult. Funding: partially funded by Office of Adolescent Pregnancy Programs grant APR.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			educational and vocational training were provided by outside agencies. Comparison group Second sample served as comparison group (CG) composed of 135 pregnant teens who received traditional medical care service through the community health provider (Salt lake City- County Health Department for WIC services).	between groups were also determined after controlling for pre-existing in background characteristic.		those in the CG (p<.01) [figures not reported] Gestational age <38 weeks TMCP (n=7/125) CG (n=10/135) NS Unknown TMCP (n=3/125) CG (n=8/135) NS Birth weight <2501g TMCP n= 11/125 CG n= 9/135 NS Apgar score 5 min <7 TMCP n= 5/125 CG n= 2/135 NS Neonatal complications (newborn hospitalisation) Extended stay TMCP n= 26/125 CG n= 13/135 p<0.01 Postpartum pregnancy rate at 12 months TMCP n=8/75	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						CG n=18/83 NS (p<0.01) Postpartum pregnancy rate 12-24 months TMCP n= 29/52 CG n= 39/66 NS	
Korenbrot C et al (1989) Birth Weight Outcomes in Teenage Pregnancy Case Management Project Journal of Adolescent Health Care 10:97-104[158]	Prospective descriptive survey EL=3	Information was gathered prospectively on participants involved in the Teenage Pregnancy and Parenting Program (TAPP)	San Francisco, USA. 411 individuals took part in the TAPP project and this was compared with over 2000 births prior to the programs development. Pregnant teens had to be aged 18 or younger and live in SF.	TAPP included case management, including repetitive counselling of teenagers and coordination of agencies offering service to teenagers. Unclear whether this included home visitation but service is described as community-based. This was compared to teen births in SF prior to the availability of the program.	Teen Characteristics associated with birth weight outcomes.	Low birth weight Intervention: 8.1% Control: 12.0% p<0.05	The only relevant outcome that could be extracted from this study was low birth weight. Funding: Contract APH-000101-05-0 with the Office of Adolescent Pregnancy and Parenting, US Dept. of Health and Human Services.
Kathleen Ford et al Effects of a Prenatal Care Intervention for Adolescent Mothers on Birth Weight, Repeat Pregnancy, and Educational	RCT EL=1-	To evaluate a peer-centred prenatal program for adolescent mothers	USA, Detroit and Michigan. Setting: Participants were drawn from 5 urban clinics 282 urban pregnant adolescents 94% of these women were African American,	Experimental: Care in a small group setting and learning how to perform critical measurements with a pregnant peer partner during antenatal visits. These measurements include fetal heart tones, fundal height measurements, weights, urine monitoring using	Birth weight Planned and unplanned pregnancy at one year post partum	Low birth weight: Intervention: 6.6% Control: 12.5% P=0.08 Planned pregnancy at one year post partum: Intervention: 15.8% Control: 20.4% P=0.52 NS Unplanned pregnancy at	Limitation: Although 282 enrolled in the study, less than half of these women participated in the telephone interview one year after birth. Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Outcomes at one year postpartum The Journal of Perinatal Education Vol. 11, Ni. 1, 2002[159]			4% Caucasian and 2% other.	dipsticks and blood pressure monitoring Education on prenatal care was also provided in a group setting. Control: Received individual antenatal care in the same clinics.		one year post partum: Intervention: 13.4% Control: 15.9% NS	
S Das et al The impact of a dedicated antenatal clinic on the obstetric and neonatal outcomes in adolescent pregnant women. Journal of Obstetrics and Gynaecology July 2007 27(5): 464-466[160]	Retrospective before and after observational study. EL=3	Investigation of the impact of a dedicated antenatal clinic service, the Young and Pregnant Clinic (YAP) on obstetric and neonatal outcomes among teenage mothers.	Manchester, UK District General Hospital setting Adolescent pregnant women aged between 11-17 years at initial booking.	Data was collected from the year 2000 (before YAP was established) and 2004 (a year after YAP had been established) The clinic provided psychosocial support and maternity care appropriate to need by a named midwife and a single named consultant. Appointments include advice on postnatal contraception, breast feed, smoking cessation. Education session provide information regarding parenting skills, health in the pregnancy continuum, labour and the care of the neonate.	Rate of preterm deliveries Incidence of low birth weight infants Rates of spontaneous and induced labours Assisted delivery and emergency c section Rate of admission to SCBU (Secondary outcomes: uptake and continuation of postnatal contraception and breast feeding)	Preterm births(overall): Intervention: 4% Control: 8% Not sig Incidence of low birth weight infants (2500g) Intervention: 5% Control: 14% p=0.01 Rates of spontaneous labours Intervention: 79% Control: 60% p=0.0009 Rates of induced labours Intervention: 20% Control: 27% NS Assisted birth Intervention: 15% Control: 13% NS	Results also showed higher attendance to YAP when compared with general antenatal clinics. Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Emergency caesarean section Intervention: 9% Control: 7% NS Rate of admission to SCU Intervention: 5% Control: 11% p=0.08 NS Secondary outcomes: Uptake and continuation of postnatal contraception Intervention: 77% Control: 36% p< 0.0001 Breast feeding Intervention: 20% Control: 2% p< 0.0001	
Dipti Ukil and U I Esen Early teenage pregnancy outcome: a comparison between a standard and a dedicated teenage and antenatal clinic	Retrospective cross-sectional study EL=3	To evaluate the outcomes of teenagers who attended the dedicated teenage antenatal clinic with those who attended a standard adult clinic. Authors also wished to improve	South Shields, UK Setting: Teenage clinic set up in urban hospital. Retrospective study of obstetric records of 113 teenagers aged 16 or under between Jan 96 and Dec 99.	Differences were analysed between a dedicated teenage clinic and a standard adult clinic at the same hospital.	Pregnancy and labour complications and were reported for each group.	IUGR Intervention: 6% (n=5) Control: 6% (n=2) Pregnancy induced hypertension Intervention:13% (n=10) Control:9% (n=3) Premature labour Intervention: 2.5% (n=2) Control: 15% (n=5)	Small study. No comparative findings reported for neonatal outcomes. Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
Journal of Obstetrics and Gynaecology (2002) Vol. 22 No. 3, 270-272[161]		the service and find way to prevent teenage pregnancies.				Anaemia (not defined) Intervention: 4% (n=3) Control: 6% (n=2) 3rd degree tear Intervention: 2.5% (n=2) Control: 0 Shoulder dystocia Intervention: 1.2% (n=1) Control: 0	
JA Quinlivan & SF Evans (2004) Teenage antenatal clinics may reduce the rate of preterm birth: a prospective study BJOG: an International Journal of Obstetrics and Gynaecology 111:571-578[162]	Multicentre prospective cohort study EL=2+	To examine whether teenage antenatal clinics reduce the incidence of preterm birth.	Country: Australia All participants: Pregnant women aged < 18 years at time of conception who had had a dating scan performed by 20th week of pregnancy and intended keeping their baby. Intervention group: Young women attending a multidisciplinary teenage antenatal clinic (n=541). Comparison group: Young women attending a general hospital-based antenatal clinic (n=253).	Hospital-based antenatal clinic. In addition to usual antenatal care women also received: evaluation of anaemia with vitamin screens and dietician referral; intensive social work appraisal with psychosocial assessments for domestic abuse, housing and support levels; screening for STDs and genital tract pathogens, cervical screening abnormalities and drug use. Care provided by a team of midwives, obstetricians, social workers and a psychiatrist.	Preterm birth Threatened preterm labour Gestation at birth Birthweight Stillbirth Initiation of breastfeeding	Preterm birth: Teenage clinic 12% (54/448) General clinic 26% (52/203) OR 0.40 (95% CI 0.25 to 0.62) p<0.0001 Threatened preterm labour: Less likely in teenage clinic OR 0.45 (95% CI 0.29 to 0.68) (raw data not reported Gestation at birth (weeks): Teenage clinic: 38.7 (SD 2.7) General clinic: 37.4 (SD 3.9) p<0.0001 (t test value not reported)	Teenagers attending the 2 types of antenatal clinic were similar demographically and in terms of cigarette/alcohol and drug use except there were more women classified as homeless in the teenage clinic sample (15% vs. 4% p=0.0006) Rate of preterm birth in the general clinic population of teenagers was higher than the 20% predicted based on epidemiological

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Birthweight (g) (raw): Teenage clinic: 3183 (SD 610) General clinic: 2980 (SD 787) p<0.0004 (t test value not reported) Birthweight (g) (adjusted): Teenage clinic: Not reported General clinic: 3114 (723) p=0.33 (t test value not reported) Stillbirth: Teenage clinic: 1.3% (4/448) General clinic:1.5% (2/203) NS Initiated breastfeeding: Teenage clinic:77% (345/448) General clinic: 72% (146/203) OR 1.31 (95% CI 0.88 to 1.94) p=0.16	data at 26% Funding: Funding for Homeless Youth Support Services Scheme, Health Department of Australia
Kay et al. Process, costs, and outcomes of community-based prenatal care for	Retrospective cohort study EL=2+	To evaluate differences in the process of care provided by community based antenatal care programme designed	Country : US Ypsilanti; Michigan A retrospective review of medical records of two sample of adolescent receiving antenatal care:	The sample of clients attending The Corner included all adolescents who made a minimum of three antenatal visits and who gave birth at Women's Hospital	Number of antenatal visits per client Initiating antenatal care during first trimester Full term birth	There were no significant differences between two groups with variable examined (age, marriage, occupation, race, medical and obstetrics history and smoking), with exception of health	Funding: Supported by a grant from form Michigan Health Care Education and Research Foundation

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
adolescents. 1991. Medical Care 29[6], 531-542[128]		especially for adolescent relative to traditional antenatal care which was not adolescent focused.	Sample of 180 pregnant teens receiving care through a community based programme aimed exclusively at adolescent. The young adult health centre (known as The Corner) located in freestanding facility accessible to area teens. Components of the Corner's programme are health services and peer education that stress pregnancy prevention and comprehensive primary health care. Second sample served as control composed of 180 pregnant teens who received the care through the university hospital obstetric clinic (OB clinic) whose programme was not adolescent focused but was representative of antenatal care in a traditional, institutional setting.	between January 1991 and June 1998. All Corner clients consider to be at high risk were directed to Women's Hospital for birth, other low risk women could choose between Women's Hospital and a second non tertiary hospital for birth (40% of all births among Corner clients during study period occurred at Women's Hospital). The Control sample was constructed by selecting the first 180 medical records of women with a minimum of three antenatal visits at the Women's Hospital who gave birth there, matching age and year of delivery with clients from The Corner sample.	Low birth weight pregnancy complications Neonatal complications (requiring neonatal intensive care) Resources consumed in delivering antennal care (laboratory test, ultrasounds, non-scheduled outpatient visits and antenatal inpatient stay) Postpartum pregnancy rate and use of contraception	insurance coverage. The Corner population was significantly more likely to be without coverage (15.6% vs. 7.4% p=0.024) Number of antenatal visits per client (mean) The Corner 12.79 OB Clinic 9.79 P<0.001 Initiating antenatal care during first trimester The Corner 53.1% OB Clinic 46.3% NS Full term birth The Corner 90.4% OB Clinic 90.0% p=0.91 Low birth weight The Corner 15.5% OB Clinic 10.8% P=0.20 Mean Apgar score 1 minute: The Corner 7.5 OB Clinic 7.5 5 minutes: The Corner 8.6 OB Clinic 8.5 NS	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Index Newborn Complication Score The Corner 5.54 OB Clinic 4.15 P=0.25 Percent who stopped / reduced smoking: The Corner 27.6% OB Clinic 9.5% P=0.00 No significant differences between the two groups for variables describing pregnancy, labour and birth complications. Comparative percentage of contraception use At 6 months, 12 months and 24 months were 78.4% vs.45.0%, 48.5% vs. 28.8% and 27.4% vs. 12.8% for The Corner and the OB Clinic, respectively. Postpartum pregnancy rate: Comparative pregnancy rate at the same interval 4.7% vs. 26.6% vs. 23.3% and 15.4% vs. 30.4% respectively.	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Use of the resources: The Corner clients consistently used fewer of the recourses (ultrasounds, non stress tests, non-scheduled outpatients visits, and antenatal inpatient days) than did clients at the OB Clinic	
Smoke et al (1988) Effectiveness of prenatal care and education for pregnant adolescents: nurse-midwifery intervention and team approach. 1988. Journal of Nurse-Midwifery 33[4], 178-184[143]	Retrospective cohort study EL = 2-	To evaluate a dedicated adolescent antenatal service including a comparison of pregnancy outcomes between two adolescent groups.	Country: USA Sample: Pregnant adolescents <18 years old with gestation of <36 weeks, having their first full term pregnancy The intervention group (n=70) consisted of pregnant adolescents receiving antenatal care from Adolescent Obstetrical Services (AOS) of the university Hospital of Cincinnati. The comparison group (n=46) received conventional antenatal care from Cincinnati Health Department Clinic (CHDC)	The intervention (AOS) was an antenatal educational program for pregnant adolescents. The AOS staff was consisted of a registered nurse, a nutritionist and a social worker who were coordinated by a certified nurse midwife. An obstetrical chief resident were available for women examination as indicated. A social worker interviewed each pregnant adolescent at first visit to AOS then provided follow up counselling. At each visit participants were also interviewed by a registered nurse and assessed by nurse midwife. A nutritionist	Total number of antenatal visit Gestational age at delivery < 37 weeks Birth weight Apgar score Breast Feeding	The two group were similar in age and marital status but had significant difference in race: 48% n=22 were black in CHDC 76% n=53 were black in AOS p<.01 Education: 60.9% n=28 attending school in CHDC 79.2% n=58 attending school in AOS p<.05 Gestational age at the first visit (weeks): CHDC (Mean ± SD) 15.9 ± 6.4 AOS (Mean ± SD) 20.8 ±6.1 P<.001 Total number of antenatal visits: Mean ± SD: CHDC (n=46): 9.2 ± 3.4	Funding: not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
				was provided counselling for adolescents in majority of visits. The adolescents attended an educational program of nine one hour classes taught by a nurse and nutritionists with assistance from the nurse midwife. The subjects covered in the nine sessions were; discussion on problems and danger signs of pregnancy , maternal nutrition, baby nutrition baby's growth and development, family planning, labour and birth anaesthesia, second stage of delivery and a tour to hospital. The comparison group (CHDC) were seen at each antenatal visit by a staff physician and a registered nurse. The social worker and nutritionist were available as needed. The majority (82%) of CHDC group attended the regular obstetrical clinics which used individual teaching.		AOS (n=70): 11.7 ± 3.2 p< .001 by t-test Gestational age at delivery (weeks): Mean ± SD: CHDC (n=46): 38.9 ± 2.5 AOS (n=70): 39.0 ± 1.8 NS Gestational age < 37: CHDC (n=7/46) 15% AOS (n=4/70): 6% Birth weight/g Mean ± SD: CHDC (n=46): 3167.7 ± 606.9 AOS (n=70): 3230.5 ± 540.5 NS Birth weight < 2500g CHDC (n=6/46): 13% AOS (n=6 /70): 8.6% P= NS (chi-square) Apgar score: One minute Mean ± SD: CHDC (n=46): 7.6 ± 1.6 AOS (n=70): 7.9 ± 1.3 NS Five minutes Mean ± SD: CHDC (n=46): 8.7 ± 0.6 AOS (n=70): 8.9 ± 0.3 NS Breast Feeding: CHDC (n=6/46): 13%	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						AOS (n=13/70): 18.6% NS	
Daniels et al. A clinic for pregnant teens. 1983. American Journal of Nursing 83[1], 68-71[153]	Retrospective cohort study EL=2-	To measure the effectiveness of the teen clinic experience.	Country: USA 52 teenagers were attending the programme were matched with a control group of 52 teenagers whose antenatal care and birth took placed at the same hospital (Booth) before the teen clinic was established. The two groups were similar in age, living with their families, attending high school, parity, and payment for care.	The teen clinic was a part of Booth's comprehensive family centered programme that aimed to make childbirth a confidence building experience for parents. The teen clinic met one afternoon a week. Topics for teaching and discussion were arranged in a series of eight sessions including information on nutrition, fetal movement, labour and delivery, infant care, well baby checkups, parenting skills and contraception. A variety of teaching techniques- role, play, films, and charts are used to present the necessary information. Visual aids were used to explain anatomy or to clarify obstetrical procedures. The team consisted of a nurse midwife conducting all antenatal check-ups , a social worker/coordinator, community worker,	Number of antenatal visits kept Neonatal complications: Birth weight <2500g Apgar < 5 at one or five minutes Maternal outcomes: Initiation of bBreast feeding No. returning for postnatal check up Number of women obtaining birth control	One way analysis of variance showed no difference between groups regarding antenatal complications: excessive weight gain or loss observed, same incidence of drug withdrawal; thyroid and cardiac problems. It was noted that anemia, vaginal infection and pre-eclampsia were seen "somewhat less" in the intervention group although no statistic provided. Number of antenatal visits kept Significant differences observed between the two groups in the number of the antenatal visits ($p<0.01$ df 103). n= 43 in the clinic group made at least the recommended number of antenatal visit vs. n=30 in the control group. Neonatal complication: The intervention group differed from the control group on neonatal	No information about the rate of uptake of educational session. Findings very poorly reported. Funding: Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
				and a second nurse midwife- leading informal discussion with teenagers. Another staff social worker assisted the team with intake interviews, individual and family counselling, home visits after baby is born, parent child discussion groups and visits to pediatric clinic.		complications ($p<0.05$ df 103). The paper does not make clear which group had the better outcomes Rate of prematurity: 4% in clinic group vs. 6 % in control (NS) Breastfeeding: 54% of the clinic teen mothers were breast feeding their babies at their postpartum check up, in contrast to 28% of the control group ($p<0.01$, df 103) Postnatal check us 98% of the teenagers in the intervention group returned for the postpartum examination compared to 61% of the controls. One-way analysis of variance showed intervention group membership was significantly associated with breastfeeding ($p<0.01$, df=103) Contraceptive use 83% of the intervention group had decided on a method of birth control in contrast to 50% of the	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						control group (Fisher's exact test p=0.003, df=1)*.	
Oliva et al. Integral care for pregnant adolescents: impact on offspring. 2008. International Journal of Adolescent Medicine and Health 20[4], 537-546[163]	Prospective descriptive study EL=3	To assess the impact of integral support on the health of children of adolescent mothers and their children.	Country: Brazil 50 adolescent mothers attended the ICPA (Integral care for pregnant Adolescent) between January 1998 and December 200 in Sao Paulo city were included in the study.	The ICPA (Integral Care for Pregnant Adolescent): A multidisciplinary global care service with aims to diminish bio-psychosocial risk factors in teenagers, which run parallel with antenatal care. The programme consisted series of 2 hours meeting with a team included a pediatrician, social worker, psychologist, and physiotherapist and is attended by pregnant adolescents, their partners, mothers, together with their children. The meeting represent an opportunity to prepare the adolescent during pregnancy, birth and postnatal. The ICPA were seeking to develop maternity and paternity, to stimulate the identity of each member of the couple and to discuss family, continuation of life plan, valuating self esteem, baby care,	Schooling level School dropout Life plan Profession and job Planning and desire for pregnancy Contraceptive use Repeat pregnancy Breast feeding Vaccination Level of child's development Relationship with child and partner Emotional aspect and support	The mean ages of mothers were 15.72 yr at conception and 19.1 +_ 2.5 yr on assessment. Pregnancy had been planned in only 4% of the adolescents, but only 60.8% reported using methods of contraception. Repeat pregnancy: During ICPA follow up, a second pregnancy occurred in only 2% whereas 96% reported using contraceptive methods correctly and consistently. Low rate of pregnancy recurrence (2%) among adolescents after an average follow up of 33 months in ICPA, proved much lower than the 22.9% rate found in the state of Sao Paulo. Breast feeding: 50% of infants were given exclusively mother's milk up to sixth month. The	Funding; Not reported

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
				breast feeding, prevention of repeat pregnancy in adolescence; encouraging to resume or carry on with study and training for a profession. After the birth of baby, a follow up of the mother and child were carried out at the paediatric outpatient unit of the same institution on a monthly basis for the first year, every 3 months in the second year, and every 6 months from the third year onward. Individual interview were carried out in January 2005 and data were assessed.		prevalence of exclusive breast feeding for the first six month of age was greater in the sample studied $p<.05$ compared with state of Sao Paulo and to Brazil.	
Kay et al. Process, costs, and outcomes of community-based prenatal care for adolescents. 1991. Medical Care 29[6], 531-542[128]	Retrospective matched cohort study EL=2+	To evaluate differences in the process of care provided by community based antenatal care programme designed especially for adolescent relative to traditional antenatal care	Country : USA Ypsilanti; Michigan A retrospective review of medical records of two sample of adolescent receiving antenatal care: Sample of 180 pregnant teens receiving care through a community	The sample of clients attending The Corner included all teenagers received a minimum of three antenatal visits and who gave birth at Women's Hospital between January 1991 to June 1998. All Corner clients consider to be at high risk were directed to Women's	Number of antenatal visits per client Initiating antenatal care during first trimester Full term birth Low birth weight pregnancy	There were no significant differences between two groups with variable examined (age, marriage, occupation, race, medical and obstetrics history and smoking), with exception of health insurance coverage. The Corner population was significantly more likely to be without coverage	Funding: Supported by a grant from form Michigan Health Care Education and Research Foundation

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
		which was not adolescent focused.	based programme aimed exclusively at adolescent. The young adult health centre (known as The Corner) located in freestanding facility accessible to area teens. Components of the Corner's programme are health services and peer education that stress pregnancy prevention and comprehensive primary health care. Second sample served as control composed of 180 pregnant teens who receive the care through the university hospital (OB clinic) whose programme was not adolescent focused but was representative of antenatal care in a traditional, institutional setting.	Hospital for delivery, other low risk women could choose between Women's Hospital and a second non tertiary hospital for delivery (40% of all deliveries among Corner clients during study period occurred at Women Hospital). The Control sample was constructed by selecting the first 180 medical records of women with a minimum of three antenatal visits at the Women's Hospital who gave birth there, matching age and year of delivery with clients from The Corner sample.	complication Neonatal complication(requiring neonatal intensive care) Resources consumed in delivering antennal care (laboratory test, ultrasounds, non-scheduled outpatient visits and antenatal inpatient stay) Postpartum pregnancy rate and use of contraception	(15.6% vs. 7.4% p=0.024) Number of antenatal visits per client (mean) The Corner 12.79 Obstetric (Ob) clinic 9.79 P<0.001 Initiating antennal care during first trimester The Corner 53.1% Ob Clinic 46.3% NS Full term birth The Corner 90.4% Ob Clinic 90.0 % p=0.91 Low birth weight The Corner 15.5% Ob Clinic 10.8% p=0.20 Mean Apgar score 1 minute: The Corner 7.5 Ob Clinic 7.5 5 minutes: The Corner 8.6 OB Clinic 8.5 NS	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Index Newborn Complication Score The Corner 5.54 Ob Clinic 4.15 p=0.25 Percent who stopped / reduced smoking The Corner 27.6% Ob Clinic 9.5% P<0.001 No significant differences between the two groups for variables describing pregnancy, labour and birth complications. Comparative percentage of contraception use At 6 months, 12 months and 24 months were: 78.4% vs. 45.0%, 48.5% vs. 28.8% and 27.4% vs. 12.8% for The Corner and the Ob clinic respectively. Postpartum pregnancy rate Comparative pregnancy rate at the same interval 4.7% vs. 26.6% vs. 23.3% and 15.4% vs. 30.4% respectively. Use of the resources	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						The Corner clients consistently used fewer of the recourses (ultrasounds, non stress tests, non-scheduled outpatients visits, and antenatal inpatient days) than did clients at the Ob clinic	
Tatelbaum et al. Management of teenage pregnancies in three different health care settings. 1978. Adolescence 13[52], 713-728[164]	Retrospective cohort study EL=2-	To determine if differences existed in obstetric, paediatric, and psychological outcomes of RAMP (Rochester Adolescent Maternity Project) clients compared with those cared for in a traditional obstetric clinic and a neighbourhood health centre.	Country: USA New York Pregnant teenagers included in the study were cared for in three different health setting: 1) A hospital clinic: Care provided by rotating house staff. A social worker was available on referral. No antenatal classes were offered. Women were seen once a month until 32 weeks gestation; every 2 weeks until 36 weeks and then weekly. Postnatal visits were scheduled at 6 weeks and then yearly. Family planning discussed in the postnatal visit by the house staff. 2) A neighbourhood health centre: Care provided by a team consisting of physicians,	Women received antenatal care between July 1972 and June 1973 were screened for inclusion in the study Criteria for inclusion in the study: <19 years old at delivery Primigravidas, unmarried at the first visit, <30 weeks gestation. During the intake period n=46 women from RAMP, n=64 in hospital clinic group, and n=38 from health centre group, met the criteria and included in the study. Information regarding to medical aspects of the pregnancy,	Special maternal procedures (Amniocentesis, Amnioscopy, Arneth count, Blood volume, Creatinine clearance, Glucose tolerance test, Renography, 24 hr. urinary oestriol and ultrasonography) Ante partum complications Obstetrics outcomes Contraceptive usage Repeat pregnancy rate	No significant differences in all three groups as to age, race, marital status, financial status and prior medical problems. Previous contraceptive usage: RAMP 13% Clinic group 2% Health centre group 11% p=0.01 Over 70% of women in each site were initiated antenatal care prior to their 20th weeks of pregnancy. Special maternal procedures were utilized by all groups ante partum: RAMP 28.3% Hospital Clinic group 57.8% Health centre group	Funding: supported by patient care programmes

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			community health nurse, and health assistants. During the pregnancy the care were provided by 5 obstetricians and a nurse midwife. The nurse midwife role included obstetric evaluation, antenatal teaching and counselling. A social worker was not available but the community health nurse worked with families with social problems. Weekly antenatal classes were offered to women of all ages and teenagers were invited to participate. Women were seen monthly until 28 weeks gestation, every 2 weeks until 36 weeks then weekly. Postnatal visit were scheduled at 6 weeks, 12 weeks and 6 months, then every 6 months. Contraceptive counselling was done by the nurse midwife antenataly during visits, I the classes and postpartum. 3) RAMP (Rochester Adolescent Maternity Project): The care was provided by four physicians. Antenatal	delivery and postpartum were obtained by reviewing Hospital chart and health centre record. F-test and Chi-square test were employed analyzing the data.		31.6% p= 0.003 Ante partum complications Pre-eclampsia: RAMP 4.3% (n=2) Hospital Clinic group 14.1% (n=9) Health centre group 2.6 % (n=1) Anaemia RAMP 2.2% (n=1) Hospital Clinic group 20.3% (n=13) Health centre group 23.7% (n=9) P=0.004 All other antenatal complications were seen in small numbers in all three group Neonatal complications: Birth weight <2500gr RAMP 8.7% (n=4) Hospital clinic 10.9% (n=7) Health centre 7.9% (n=3) NS Over 95% of infants in all three groups had apgar scores of 6 or more at 5 minutes after birth. No still birth reported, 2	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
			visits alternated between a physician and an obstetrical nurse. The programme social worker provided direct service. A psychologist was also available during the clinic sessions for evaluation of the patients and a consultant for staff. A series of the group discussion were held for teens early in pregnancy and antenatal classes were offered to the teenager in the last two months of their pregnancies. Women were seen every two weeks until 36 weeks gestation and then weekly. The clinic was held during early evening hours after adult clinic had closed. Postnatal visits were scheduled at 3 weeks, 6 weeks, 6 months and then every6 months. Family planning were discussed during antenatal visits, in antenatal classes and postpartum. All women were delivered in the same university hospital.			neonatal deaths occurred one in hospital clinic group and the other one in health centre group, both had prematurity, one with multiple congenital anomalies and the other one with hyaline membrane disease. Number of antenatal visits kept: 0-6 visits RAMP 2 (4.3%) Clinic group 10 (15.6%) Health centre group 7 (18.4%) 7-12 visits RAMP= 17 (37.0%) Clinic group =36 (56.3%) Health centre group= 23 (60.5%) 13-19 visits RAMP= 27 (18.4%) Clinic group= 18 (28.1%) Health centre group= 8 (21.1%) Birth control usage at 1 year RAMP 59%	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Hospital clinic 25% Health centre 45% P=0.001 Repeat pregnancy one year postpartum Hospital clinic 17.2% Health centre 15.8% RAMP 6.5%	
Hall RT et al 2003 Perinatal outcomes in a school-based program for pregnant teenagers Missouri Medicine 100(2):148-152[144]	Retrospective cohort study EL=3	Evaluation of a teenage pregnancy centre on pregnancy outcomes.	Setting: school-based service, Kansas City, Missouri, USA. Intervention group: Students enrolling in TAPC January 1994 – December 1998. n=530 Comparison group: Pregnant teenagers in Kansas City not attending the TAPC. Matched by age at giving birth, year of infant birth, zip code, race and parity. n=531	Specialised school for pregnant teenagers. As well as usual school curriculum education given in life skills; childcare, breastfeeding. School transportation, breakfast and lunch provided plus infant day care for first 6 weeks of life. Antenatal care provision at adolescent's own choice. Includes an on-site nurse-midwife clinic. If other clinic/obstetrician chosen transport is provided.	Primary outcomes: Birthweight <2500g Gestation,38 weeks Repeat birth within 2 years Infant mortality rate Secondary outcomes: Adequate prenatal care (not defined) Cigarette smoking Alcohol use Drug misuse Medical risk factors Caesarean birth 5 minute Apgar <6 Neonatal	"Adequate antenatal care": TAPC 78.0% Controls 67.0% P=0.009 Primary outcomes: Birthweight <2500g: TAPC 11.7% Controls 15.8% P=0.048 Gestation<38 weeks TAPC 15.8% Controls 18.9% NS Repeat birth within 2 years: TAPC 17.0% Controls 20.0% NS Infant mortality rate: TAPC 3.8/1000 live births Controls 9.4/1000 live births	"Adequate" antenatal care not defined. School attendance for adolescents in the TAPC is described as being "encouraged and rigorously enforced" with incentives given for good attendance (eg. infant car seats and "personal rewards"). Also describes discipline as being "strictly enforced" with "profanity, abusive language and dress code violation being prohibited.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
					complications	NS Secondary outcomes: Cigarette smoking: TAPC 4.7% Controls: 9.5% p=0.003 Alcohol use: TAPC 0.2% Controls 0.8% NS Drug misuse TAPC 2.1% Controls 2.1% NS Medical risk factors: TAPC 33.0% Controls 31.0% NS Caesarean birth: TAPC 11.7% Controls 10.6% NS 5 minute Apgar < 6 TAPC 0.13% Controls 0.17% NS Neonatal complications: TAPC 1.5%	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention and comparison	Outcomes	Findings	Comments
						Controls 1.8% NS	
Levy SR et al. 1992 Reducing the risks in pregnant teens who are very young and those with mental retardation *Mental Retardation* Vol. 30 no. 4 (195-203)[165]	Retrospective cross-sectional study EL=3	To evaluate the effectiveness of the Children and Adolescent Pregnancy Project (CAPP)	Setting Chicago, USA School based intervention. n=98 pregnant females aged 11-19 with mild mental retardation and n=228 pregnant females of elementary school age (11-15) took part in the study between 1983-1985 Majority of population living at or below the poverty level (83% of families eligible for Title XIX (Medicaid) assistance). 91% Black, 7% Hispanic, 2% White Comparison group: Comparison was with local and national statistics taken from Chicago, Illinois and United States figures for 1985	The program aimed to improve the health of mothers and infants by offering services to the mother and her family. Participants received a special education curriculum, additional prenatal care, post-natal classes and training in decision making skills. Three control groups were used: Chicago, Illinois and US figures on live births.	Low birth weight, infant mortality, school drop-out and repeat pregnancy rates. Results were given for all races as well as just black women.	Results for all races: LBW Capp 10.6 Chicago 10.1 Illinois 10.2 US9.3 Infant Mortality Rate per 100 live births Capp 12.5 Chicago 16.6 Illinois 11.7 US 10.6 Repeat pregnancy within 18 months Capp 16% Chicago 38% Illinois US 36%	Funding: not reported

Q.4. What additional information should be provided to young women aged under 20, their partners and families in order to improve pregnancy outcomes? (Additional here means over and above that described in the NICE Antenatal care guideline).

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
M E Jones, L W Mondy 1990 "Antenatal Education outcomes for Pregnant Adolescents and their infants using trained volunteers' Journal of Adolescent Health Care 11:437-444.[137]	Retrospective cohort study EL=2-	Study reports the effects of providing antenatal lessons to pregnant adolescents attending community antenatal clinics using trained non-professional volunteer women.	Dallas County, Texas, USA Programme provided at community antenatal clinics Pregnant women aged 18 or younger already obtaining antenatal care. Women were found to be medically low risk, of low socio-economic status. Data analysis compared participants who were: High attendance - attended >8 sessions (n=94) vs. Low attendance- attended <8 lessons (n=116) vs. Women who had no opportunity to attend (n=189) (made of women who gave birth in the 3 months prior to the project	Provision of an educational programme of 17 sessions based on the American Red Cross Preparation for Parenthood Curriculum modified to address a multicultural adolescent population. 4 sessions were: Preparing for labour Course of labour Postpartum Family planning Sessions included an audiovisual presentation and a manual was also provided to each adolescent participant. Lessons provided by volunteers trained by qualified personnel from sponsor agencies and certified as	Antenatal Care and Infant Outcomes No. attending for AN visit Gestational Age Mode of birth Gestational age at birth Birthweight	Attended AN Visit: High treatment 9.59 ± 2.97 Low treatment 6.37 ± 2.81 No lessons 6.59 ± 3.48 (P<0.001; analysis of variance) Gestational age at birth (weeks): High treatment 39.63 ± 1.15 Low treatment 39.45 ± 1.27 No lessons 38.86 ± 2.68 (p<0.006; analysis of variance) The following outcomes showed no significant differences between high and low treatment participants and comparisons. Statistical test values not reported: Birth weight Mode of birth Birth outcome Labour/delivery complications	Poor quality study with historical comparison. Seemingly arbitrary "treatment" cut off of 8 lessons attended.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			commencing) Demographics: High attendance vs. low attendance vs. no sessions attended: Mean age at conception (age): 16.91 ± 1.27 vs. 16.66 ± 1.25 vs. 16.75 ± 1.07 (p=NS) Ethnicity (%): Black – 55, White – 26, Hispanic – 19, Southeast Asian – 0 vs. Black – 55, White – 22, Hispanic – 22, Southeast Asian – 1 vs. Black – 68, White – 16, Hispanic – 16, Southeast Asian – 0 (p=NS) No previous pregnancies(%): 79 vs. 69 vs. 68 (p=NS) Nulliparous (%): 83 vs. 76 vs. 77 (p=NS) Completed less than grade 12: 73% vs. 80% vs. 74% (p=NS)	instructors by the American Red Cross Participants asked to commit to a minimum of 8 lessons. Three 45 minute lessons presented to participants during a typical half-day antenatal clinic session. Group sizes ranged from 4-20 (average 10) After each 3-hour sessions, each participant received a layette item or small personal gift worth ~$2. After completing 8-lesson agreement, participants received a certificate, small personal gift and ticket to be exchanged at postpartum visit for a layette worth ~$15			

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			Marital status (%): Single – 64, married – 36, separated – 0 vs. single – 72, married – 24, separated – 4 vs. single – 80, married – 19, separated – 1 ($p<0.004$, log linear modelling Antenatal care entry (%): High attendance: 1st trimester – 30, 2nd trimester – 55, 3rd trimester – 13, no AN care – 0, no information – 2 vs. Low attendance: 1st trimester – 15, 2nd trimester – 53, 3rd trimester – 29, no AN care – 0, no information – 3 vs. No sessions: 1st trimester – 17, 2nd trimester – 45, 3rd trimester – 30, no AN care – 1, no information – 7 ($p<0.002$, log linear modelling)				
Sarvela PD and Ford TD. An	Prospective cohort study	To examine the effectiveness of a	Country: USA	The programme was a self-	Three questionnaires: a	Pre-test knowledge results indicated the	Poor quality study.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
evaluation of a substance abuse education program for Mississippi Delta pregnant adolescents. Journal of School Health March 1993, vol.63, no.3[166]	EL=2-	drug and alcohol abuse prenatal care health education programme for pregnant teens in the Mississippi delta region of southern Illinois.	Setting: two regional health centres Population: Pregnant adolescents (the age range was not reported). 113 participants in the experimental group 99 in the control group. Participants were assigned to groups based on county of residence to avoid possibility of experimental group 'contaminating' control group. No significant difference in the number of children they had, the number of times they were pregnant, and the months they were pregnant at pre-test time. No difference in marital status, whom they lived with, and whether or not they were attending school.	administered series of 8 educational modules completed by women at the participating clinics while they waited to see a physician: Cigarette smoking and your unborn baby; your baby's growth during pregnancy; you, your baby, and alcohol; check with your doctor (use of over the counter drugs); smoking marijuana and how it affects your baby; health and nutrition; stress and you; and decision-making. Control group subjects received the usual care provided to clinic prenatal patients.	knowledge test, an attitude survey, and a behaviour survey. Medical outcomes which focused on 10 areas related to maternal and infant outcomes, such as birthweight, maternal complications such as hypertension and diabetes, and prematurity.	experimental group had a mean score of 16.97, while the control group had a mean score of 15.37, statistically significant as measured through ANOVA. Post-test scores showed an increase in knowledge for both groups, with a mean score of 18.58 for the experimental group and 16.58 for the control group. The difference between these two groups was statistically significant. Post-test medical outcomes indicated a statistically significant difference between control and experimental groups with fewer cases of diabetes (p=0.0402), anaemia (p=0.0010), and STDs (p=0.0401) using Yates correction which adjusts for lack of continuity with just two groups. There were no differences between the outcomes of birthweight or pre-term birth.	Differences between groups eg. race mix and pre-test knowledge may affect the outcomes. The outcome of reduced drug use seems subjective.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			The control group had a significantly larger percentage of African-Americans (39.4% vs. 16.8%)			In addition there were no statistically significant differences between groups for: stillbirths, spontaneous or threatened abortion, hypertension, haemorrhage, infection, birth defects, prematurity, resuscitation, fetal distress, complicated forceps delivery, Apgar score. More women in the intervention groups (47.6%) than in the control (29.5%) had "quite reduced" or "reduced" drug use in the last five months (p=0.0062)	
Volpe EM and Bear M. Enhancing breastfeeding initiation in adolescent mothers through the Breastfeeding Educated and Supported Teen (BEST) club. J Hum Lact 16(3), 2000[167]	Cohort study EL=2-	To determine if specific breastfeeding education, provided by a lactation consultant in classes for pregnant adolescents, would increase breastfeeding initiation among students enrolled in a high school adolescent pregnancy	Country: USA Setting: School-based programme - High School Adolescent Pregnancy Program, Florida. 91 adolescent females between 14 and 19 years of age. The mean age was 16.2 years. Those who attended the adolescent pregnancy program	Transportation was provided within the county and on-site day care was available free of charge. Prior to implementation of the study, a limited amount of breastfeeding preparation was incorporated into the childbirth classes. The programme used role playing	Breastfeeding initiation was defined as any breastfeeding one or more times daily for at least 3 days postpartum.	Of the 48 pregnant adolescents in the control group 7 (14.6%) initiated breastfeeding. Of the 43 in the intervention group, 28 (65.1%) initiated breastfeeding. This was a statistically significant difference (p<0.001)	Not possible to randomise within the same school year because the students were in close contact so used historical controls. In Brevard County, an adolescent mother is expected to re-enter the school

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
		program.	during the 1995-1996 school year served as the control group (n=48) and attended the program that offered limited breastfeeding preparedness. Those students who attended the adolescent pregnancy program during the 1996-97 school year served as the experimental group (n=43) and attended the same programme as those in the control group, with the addition of 3 weekly 1-hour comprehensive breastfeeding education sessions. The majority of the sample (63%) was Caucasian, with the remaining split between African Americans (26%) and Hispanics (11%). There were no significant differences with regard to age or ethnicity between the	and games to educate adolescents. The programme not only focused on breastfeeding, but also addressed other maternal-child issues, including nutrition, safety, child development and preventive health care. Participants were given prizes that related to the week's theme. Following completion of the 3 educational sessions, the peer counsellor visited the school weekly to offer continued support. All study participants received their primary education from the same teacher, attended the same school, and were taught in the same classroom.			system at 2 weeks postpartum. Many of the adolescents' social support systems were opposed to, and discouraged, breastfeeding.

Reference	Study type and evidence level	Aim of study	Population, sample and setting	Service intervention and comparison	Outcomes	Findings	Comments
			control and experimental groups.				

Women experiencing domestic abuse

Q1a. What aspects of service organisation and delivery are effective at improving access to antenatal services for women experiencing domestic abuse?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Gunn J, Hegarty K, Nagle C et al. Putting Woman-Centered Care into Practice: A New (ANEW) Approach to Psychosocial Risk Assessment During Pregnancy. Birth: Issues in Perinatal Care 2006; 33:(1)46-55. [175]	Impact evaluation using before and after study design EL=2-	To evaluate the effects of a 6-month educational intervention for health professionals to improve their advance communication skills to identify and support the women with psychosocial issues in pregnancy.	Country: Australia Setting: Mercy Hospital for Women (a public tertiary care hospital in Melbourne). Study duration: Nov. 2001 to Oct. 2003. All midwives (n=28), multi cultural worker (n=1) and resident medical staff and junior consultants (n=10) who worked in antenatal clinic were encouraged to attend the educational programme. 22/29 midwives (76%) and 5/10 (50%) medical staff accepted and consented to be the part of study. Complete baseline and outcome data were received from 22/27 (82%) participants, 18	A 26-week (1-2 hours per week) education programme 'ANEW' (in advance communication skills and psychosocial issues such as depression, domestic violence, child abuse and substance misuse) was offered to midwives and doctors. ANEw was based on a previous post natal program (Guideline for Assessment of Postnatal Problems) and used evidence-based resources, four interactive workshops and role play and feedback with simulated patients.	Comparison of participants' recall of frequency of directly asking women about psychosocial issues like domestic violence. Comparison of participants' self rating of their approaches towards psychosocial issues like domestic violence. Comparison of participants' self rating of their confidence in selected skills before and after ANEW. Comparison of participants' self rating of their competence level in providing pregnancy care before and after ANEW.	Participants' recall of frequency of directly asking women about domestic violence: Before: Rarely: 15/22 Sometimes: 3/22 Often: 2/22 Frequently: 0/22 After: Rarely: 9/22 Sometimes: 8/22 Often: 4/22 Frequently: 2/22 p=0.05 (calculated using Wilcoxon paired test). Participants' self rating of their approaches towards psycho-social issues like domestic violence. Preferred to deal with clinical issues rather than psychosocial issues Before: Strongly Agree: 1/22 Agree: 7/22 Unsure: 4/22 Disagree: 9/22 Strongly disagree: 0/22 After:	Excellent participation among midwifery staff but less so among medical staff. Self-reported data was used to evaluate effectiveness of the program no robust outcome measure of effects on antenatal care were examined. Funded by Department of Human services.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			midwives and 4 medical practitioners. Mean Age (SD) of participants: 38.5 (8.2) years Mean length of time working in ANC(SD): 13 (8) years All participants were female and claimed that they enjoyed learning "new things". 7/22 (32%) reported some previous training in counselling and communication skills. 18/22 (82%) disagreed that it was impossible to teach someone how to be a good communicator and agreed that they enjoy group learning. 21/22 (96%) had found written guidelines useful in the past.			Strongly Agree: 1/22 Agree: 4/22 Unsure: 2/22 Disagree: 14/22 Strongly disagree: 1/22 (p=0.02) Dealing with sensitive topics like domestic violence and past sexual abuse were felt overwhelming: Before: Strongly Agree: 2/22 Agree: 10/22 Unsure: 4/22 Disagree: 6/22 Strongly disagree: 0/22 After: Strongly Agree: 1/22 Agree: 4/22 Unsure: 4/22 Disagree: 11/22 Strongly disagree: 1/22 (p=0.01) Experienced difficulties in raising sensitive issues with pregnant women. Before: Strongly Agree: 0/22 Agree: 5/22 Unsure: 5/22 Disagree: 12/22 Strongly disagree: 0/22	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						After: Strongly Agree: 0/22 Agree: 2/22 Unsure: 0/22 Disagree: 17/22 Strongly disagree: 2/22 (p=0.02) Confidence Knowledge about psychosocial issues: Before: Very Confident: 1/21 Quite Confident: 5/21 A Little Confident: 12/21 Not Confident:3/21 After: Very Confident: 2/21 Quite Confident: 14/21 A Little Confident: 4/21 Not Confident:1/21 (p<0.01) Ability to pick up on cues: Before: Very Confident: 1/21 Quite Confident: 9/21 A Little Confident: 11/21 Not Confident:0/21 After: Very Confident: 1/21 Quite Confident: 18/21 A Little Confident: 2/21 Not Confident:0/21 (p=0.03)	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Identifying women with psycho-social issues; Before: Very Confident: 0/22 Quite Confident: 4/22 A Little Confident: 16/22 Not Confident:2/22 After: Very Confident: 2/22 Quite Confident: 16/22 A Little Confident: 4/22 Not Confident:0/22 ($p<0.01$) Supporting women experiencing psychosocial issues in pregnancy. Before: Very Confident: 0/22 Quite Confident: 9/22 A Little Confident: 10/22 Not Confident:3/22 After: Very Confident: 1/22 Quite Confident: 17/22 A Little Confident: 4/22 Not Confident:0/22 ($p<0.01$) Competence Encouraging women to talk about any psychosocial difficulties they are experiencing;	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Before: Very competent: 1/22 Good enough: 6/22 Could be better: 14/22 Struggle with this: 1/22 Could never do: 0/22 After: Very competent: 4/22 Good enough: 10/22 Could be better: 8/22 Struggle with this: 0/22 Could never do: 0/22 (p=0.02) Identify women who are in abusive relationship: Before: Very competent: 0/22 Good enough: 4/22 Could be better: 12/22 Struggle with this: 6/22 Could never do: 0/22 After: Very competent: 1/22 Good enough: 6/22 Could be better: 15/22 Struggle with this: 0/22 Could never do: 0/22 (p<0.01)	
Schoening AM, Greenwood JL, McNichols JA et al. Effect of an intimate partner violence educational	Quasi-experimental study utilizing a pre-test and post-test. [EL=2-]	To examine the effect of an intimate partner violence (IPV) education program on the attitudes of nurses	Country: USA 52 inpatient nurses at an urban health care system completed both pre-test and post-	All nurses in the health care system attended a curriculum developed by Domestic Violence Coordinating Council of Omaha and	Nurses' behavioural intentions towards women experiencing IPV were measured using Public	Pre test PHNR scores of those having previous IPV education (M=65.2) were significantly higher than those without such education (M=60.6), t(50)=2.08, p <0.05.	Small sample size, Predominantly White married women. No random allocation to 1 or 3 hour group.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
program on the attitudes of nurses. JOGNN - Journal of Obstetric, Gynecologic, and Neonatal Nursing 2004; 33:(5)572-9[176]		towards women experiencing domestic abuse.	test before and after taking either mandatory 1 hour (n=20/114) or expanded 3 hours (n=32/83) IPV education programme in January and February 2002. Only 25% of the participants had previous continuing education on IPV. Participants characteristics total(n=52): Age (years) Range: 22-62 Mean: 40.70 SD: 10.66 Experience (years): Range: 1-42 Mean: 16.63 SD: 11.36 Gender: Female: 49/52(94.2%) Male: 3/53(5.8%)	delivered by its trained trainers. A 1-hour programme was mandatory for all nurses and nurses in obstetrics were encouraged to attend an extended 3 hour long session. All sessions included a 5-minute video followed by a PowerPoint® presentation with objectives: to establish IPV as a primary health care concern and to describe its dynamics, mandatory state reporting laws, proper nursing documentation, screening technique and nursing intervention. In addition, the 3-hour long session included photographs via slides of common IPV injuries, greater discussion and interaction with participants and additional	Health Nurses' Response to Women Who Are Abused Scale (PHNR). PHNR is a standardized tool that measured the reaction of nurses to one of two scenarios describing a new born home visit. In this study scenario A was used for pre-test and scenario B was used for post-test. Nurses' responses were rated on 20 items from each scenario on a 4 point scale with 1=agree and 4=disagree. The sum of the scores can range from 20 (indicating few thoughts, feelings and perceived behaviours, that would be helpful to the abused women) to 80(indicating high frequency of	Means (Standard Deviations) Scores and their comparisons: 1-Hour Class: Previous IPV education: pre-test 62.6 (2.5) vs.72.4(3.4) in post-test, $p<0.01$ No previous IPV education: pre-test 60.3 (9.2) vs. 62.2 (6.6) in post-test (not significant) 3-Hour Class: Previous IPV education: Pre-test 66.9 (6.9) vs. 69.9(4.8) in post-test (not significant). No previous IPV education: pre-test 60.9 (5.7) vs. 67.3 (8.0) in post-test, $p<0.001$	Low post test return rates (35% for 1-hour and 50% for 3-hour group) Funding not reported.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			Race: Caucasian: 51/52 (98.0%) Hispanic: 1/52 (2.0%) Speciality Medical-Surgical: 7/52 (13.5%) OB/GYN: 26/52 (50.0%) Paediatrics: 1/52 (1.9%) Other: 18/52 (34.6%) Participants characteristics 1-hour class (n=20): Age (years) Range: 22-60 Mean: 39.90 SD: 11.46 Experience (years): Range: 1-40 Mean: 15.60 SD: 12.08 Gender: Female: 18/20(90%) Male: 2/20(10%)	information about identification of IPV. Both the 1-and 3-hour sessions concluded with a presentation from local IPV advocates, so that nurses could learn about availability of community resources for the victim.	thoughts, feelings and perceived behaviours, that would be helpful to the abused women)		

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			Race: Caucasian: 20/20 (100%) Speciality Medical-Surgical: 5/20 (25%) OB/GYN: 6/20 (30%) Paediatrics: 1/20 (5%) Other: 8/20 (40%) Experience with family violence (e.g. self, friend, family, client): 12/20(60%) Participants characteristics 3-hour class (n=32): Age (years) Range: 24-62 Mean: 41.25 SD: 10.283 Experience (years): Range: 2-42 Mean: 17.28 SD: 11.04 Gender:				

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			Female: 31/32(96.9%) Male: 1/32(3.1%) Race: Caucasian: 31/32 (96.9%) Hispanic: 1/32 (3.1%) Speciality Medical-Surgical: 2/32 (6.3%) OB/GYN: 20/32 (62.5%) Other: 10/32 (31.2%) Experience with family violence (e.g. self, friend, family, client): 71%				

Q1b. What aspects of service organisation and delivery act as barriers to take-up of antenatal services for women experiencing domestic abuse?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Mezey et al. Midwives' perceptions and experiences of routine enquiry for domestic violence. 2003. BJOG: an International Journal of Obstetrics and Gynaecology 110[8], 744-752[42]	Qualitative survey EL=3 (this is part of a bigger study, please refer to Bacchus 2002)	To examine midwives' perceptions and experiences of routine enquiry for domestic violence	145 midwives from 8 hospital teams, 10 community teams, specialist midwives and midwifery managers Setting: maternity services of Guy's and St Thomas' NHS Hospital Trust, inner London teaching hospital Country: UK	Domestic violence in pregnancy screening questionnaire Midwives invited by letter to attend a training session, using a manual based training pack designed by the research team. On average each training session lasted 2 hours, although this varied with the number of individuals in each group. Of these, 116 midwives (80%) attended a training session, which provided information and educational materials about the prevalence and effects of domestic violence, how to administer the domestic violence screening instrument, and how to refer women to community resources. Training	Experiences and attitudes about the midwife's role in identifying and responding to cases of domestic violence	Of the 116 trained midwives, 109 (94%) were trained in time for the booking screening phase, of whom 81 (74%) participated in the booking screen. At the 34 week screening phase, 27 (23%) of the 116 trained midwives participated. Of the 57 midwives who were trained and who were working on community teams during the postnatal screening phase, 23 (40%) participated in the postnatal screen. Community midwives were more likely to participate in the study than midwives on hospital teams. Only community midwives were required to administer the postnatal screening questionnaire Prior to the commencement of this study, none of the midwives had received information or training in domestic violence during their nursing or midwifery training and none of the midwives had been asking women on a regular or routine basis about domestic violence Pre-training, midwives tended	Data collection & analysis: Focus groups and individual interviews All midwives were invited to attend at least one focus group during the screening phase of the study. Twenty midwives attended one of four focus groups, which were arranged through consultation with the midwifery team leader. Each group lasted approximately an hour and was facilitated by the research team. Towards the end of the study, the research midwife conducted eight semi-structured interviews, each lasting between 30 minutes and 1 hour. All groups and interviews were tape recorded and transcribed. Content analysis was used to categorise the opinions of midwives Domestic violence defined as any adult experience of physical or sexual violence perpetrated by a current or former partner, or family member. These women

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				commenced in July 1998 and was completed in March 1999. The training schedule continued into the screening phase of the project, due to staff rotation and turnover. Midwives required to assess women for domestic violence at the booking appointment, and follow up at 34 weeks and once during the postpartum period (within 10 days). For safety reasons midwives were told to only approach women to participate, if they could be seen alone, and without being overhead.		to believe that women were at lower risk of domestic violence while they were pregnant. At the end of the training some midwives remained anxious and sceptical about screening women for domestic violence The main practical difficulty encountered in administering the questionnaires was lack of time. Because of that there was some evidence that midwives 'selected' women who could be screened quickly and appeared uncomplicated Some midwives felt that screening for domestic violence meant that they were being pushed into yet another new role, that they felt they were poorly equipped, and for a variety of reasons, could not perform well. There was concern that if they asked women about domestic violence other (more important) issues would be missed out Midwives tended to categorise problems as 'medical', which came within their domain, or as 'social', which was not their	were chosen in order to make comparisons between groups with regards to their experiences and perceptions of routine enquiry for domestic violence, and to compare the nature and pattern of domestic violence between the first two groups No data reported on the characteristics of members of the research team Insufficient analysis according to different subgroups: community vs. hospital midwives vs. managers Source of funding: Economic and Social Research Council

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						concern. A few midwives questioned whether asking women about domestic violence should be part of a midwife's role at all, in that it was not directly related to pregnancy or the women's health Even those midwives who were initially keen sometimes lost enthusiasm over time. This appeared to relate to a general lack of morale within the midwifery body, associated with high staff turnover and an ever-increasing workload For the study, midwives were required to offer women confidential time during appointments, so that enquiry about domestic violence could be carried out safely. However, this proved to be extremely difficult to achieve in practice. Although some midwives were confident enough about asking to see women alone, others were more diffident. Sometimes the attitude of the partners (very controlling, dominating) made midwives reluctant to even suggest they withdraw, although these were	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						also the cases in which midwives tended to have a high index of suspicion of domestic violence being present A community midwife distinguished between screening in the clinic and in the woman's home. The clinic, which she regards as her own 'territory' is regarded as a legitimate and acceptable place to ask for confidential time, but in the woman's home the midwife perceives herself to be a 'guest', and is therefore constrained from asking questions of such a personal and sensitive nature Midwives did not want to have to ask more detailed questions about the woman's experience of violence or try to take a more active role (like providing counselling). They did not feel it was appropriate to do anything more than ascertain whether violence was an issue and provide appropriate referral information Although most midwives accepted that they had a	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						limited remit, in terms of offering help to women experiencing domestic violence, midwives often found it difficult to maintain a professional detachment and limit the intervention when faced with a distressed woman asking for help in the clinic or community. This created problems, as midwives did not consider that they had the time, nor the skills, to deal with the problem. Many midwives described feelings of helplessness, about their apparent inability to offer an effective solution which, as midwives, they felt they were expected to provide or if, having given advice, this advice was disregarded. Some midwives felt that the success of screening could only be judged if women were able to leave the violent relationship. Although screening took place in confidence, partners were often nearby, either in the clinic or in the woman's home midwives often expressed fears of being assaulted and, during the course of the study, some midwives were confronted with angry and hostile partners, who resented and, in some cases, attempted to block this	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						line of questioning Many midwives were concerned that they might be placing the woman at increased risk of harm or retaliation from her partner, by merely asking her about partner violence. Even after a disclosure of domestic violence, midwives still had to continue visiting women who disclosed violence, often alone and at night and, for some midwives, concerns about the risk involved acted as a disincentive to inquiring too closely There were several occasions when midwives reported that they felt they had been placed in a difficult and potentially dangerous situation. Even though the midwives dealt with such situations skilfully, it served to increase their apprehension about raising the issue, particularly if they were working in isolation, or visiting the woman at home, when they were not sure who else would be present. Many midwives disclosed personal experiences of	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						violence, both work related and in their personal lives. Midwives who had themselves experienced physical or sexual violence were particularly apprehensive about the prospect of introducing routine screening for domestic violence. Midwives who had failed to resolve such experiences often felt overwhelmed by the prospect of trying to help others deal with it. In some cases, the study appeared to reactivate memories and feelings related to personal histories of abuse and, for many midwives, this was the first time they had talked about their experiences Before the study started there was a feeling that it would have been difficult to know how, or in what circumstances domestic violence could be discussed Before the study started the main attitude amongst midwives was of scepticism and victim blame. Despite a shift in attitudes during the course of the study to an increasing tendency to attribute responsibility to the perpetrator and to express empathy and understanding of	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						the victim's position, some midwives continued to express frustration about the perceived passivity of many women in the face of partner violence, and their inability to get out or seek help. Even when presented with physical evidence of abuse, midwives still found it difficult to ask directly about domestic violence unless women had brought up the subject themselves rather than pretending that everything was fine. Midwives also thought that asking about the violence might ruin their relationship with the woman. At the end of the study, some midwives were sceptical about the need to ask all women about domestic violence, or were not sure that domestic violence was prevalent enough to justify routine screening During the course of the study, around 50 unscheduled contacts made with the researchers by midwives and other maternity staff, requesting assistance or advice regarding women experiencing	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						domestic violence. The majority of these cases concerned women who had disclosed domestic violence outside the screening phase of the project. Many midwives expressed the view that, without a reliable and consistent source of support, they would (despite the training) still have felt ill equipped to participate in the study	
Lutz. Abused pregnant women's interactions with health care providers during the childbearing year. 2005. JOGNN - Journal of Obstetric, Gynecologic, and Neonatal Nursing 34[2], 151-162[43]	Qualitative survey EL=3	To explore how intimate partner abuse during pregnancy influences women's decisions about seeking care and disclosing abuse and their preferences for health care professionals ' responses	Convenience sample of 12 English-speaking women abused by an intimate male partner during current or previous pregnancy or postpartum. 5 participants recruited via prenatal clinics and 7 via snowball sampling Age range 18 to 43 years (mean 29.7) Number of pregnancies: 1 to 9 (mean 3.1) Number of	N.A	-Relationship with partner -Partnered abuse -Obstetric care -Self care Outcomes reported in the following theoretical categories: 1. Process of guarding and revealing 2. Guarding and revealing within obstetric care	1. Process of guarding and revealing Woman perceived sociocultural expectation associated with pregnancy, the emotions of a pregnant woman and the partner/father of the infant as contradictory with her own experiences. Because of that the woman is ashamed and embarrassed about the abuse. She believes that if the abuse were to become public knowledge people would negatively evaluate her, the pregnancy and her decision to be pregnant and remain involved with abusive partner. Potential involvement with and punitive actions by Children's Social Services or other social and legal agencies also promote guarding For many women the belief	Modifications made to original sampling plan and inclusion criteria to complete the research project in a timely manner. Slow recruiting in the first 3 months of the study prompted the inclusion of retrospective and community participants, a broader definitions of abuse encompassing emotional and sexual abuse and use of snowball sampling Additional measures taken to ensure the safety and confidentially of participants Data collection method: 21 in-depth, face-to-face interviews

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			children: 0 to 5 (mean 2.0) Current abuse in pregnancy/postpartum: 41.7% Past abuse in pregnancy/postpartum: 58.3% Setting: clinics staffed by certified nurse-midwives, registered nurses and nursing or medical assistants Country: USA (urban Pacific Northwest area)		a. seeking and attending obstetric care b. choice of providers c. abuse disclosure and screening 3. Obstetric visit as an opportunity for positive interactions	that no one, including health care providers, could truly alter the situation or help end the abuse strongly influenced the decision to guard rather than reveal the abuse 2. Guarding and revealing within obstetric care a. seeking and attending obstetric care 2/12 women reported delay entry to prenatal care (PC) as a direct consequence of the abuse. Loss of medical insurance after leaving her job inhibited one woman form seeking PC. Fear that her partner would find her caused another participant to avoid seeking PC. A participant who used drugs during pregnancy avoided PC to prevent HCPs discovery of her drug use. Another participant frustrated by a physician's insensitive treatment after an abusive episode, stayed away from PC for several months. Other than the participant who was in hiding from her abuser, none of the women saw their partner as directly restricting their access to care. Several women did not want their	All interviews audiotaped and transcribed verbatim. The transcribed texts and audiotapes were stored in a locked file accessible to the principal investigator (PI) and her research adviser. Interviews conducted in private, safe place and lasted between 45 minutes and nearly 4 hours, most lasted approximately 2 hours. Each participant was offered a copy of the consent form, the PI's business card and a small card with local and national resources for abused women. Remuneration ($15 for the first interview and $20 for the second) was provided to defray any travel or child care costs Data analysis method: dimensional analysis, a grounded theory method. Though the research and analytic processes, field notes and theoretical memos used to provide a record of the PIs' analytical thinking. They also helped ensure the quality and credibility of data and provided an audit trail to substantiate the trustworthiness and

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						partners to attend PC appointment because they feared embarrassed by them or worried that they might reveal something stigmatising about them such as their use of drugs b. choice of providers One participant who had gone to a male obstetrician for both of her pregnancies speculated that she may "have been more open and available to speaking to a female than a male" Women became frustrated, disappointed and angered when HCPs provided what they perceived to be inadequate information on domestic abuse and substance abuse or did not screen for abuse, even when signs or symptoms of abuse were obvious. Often participants thought their concerns had been minimised or ignored. As a result a woman followed or rejected HCPs' advice depending on how that advice fit with her schema. Several participants criticised lay pregnancy books for failing to provide explicit information about domestic abuse, substance abuse or both	confirmabilty of the study No data on researchers/interviewers characteristics are reported (apart from her gender). This may have influenced women's willingness to disclose some information Unclear whether or how many women were currently living with the abusing partner. This may have influenced women's willingness to disclose/conceal some information Source of funding: National Institute for Nursing Research and Woodrow Wilson-Johnson & Johnson Dissertation Grant in Women's Health

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Unlike participants from clinics, most of the woman in the community considered their HCPs not particularly helpful, sensitive to or aware of the abuse occurring in their lives. This was consistent whether the participant's pregnancy was current, recent or longer than 10 years ago. c. abuse disclosure and screening HCPs' methodical and insensitive manner of screening for abuse did nothing to convince women that disclosing the abuse would be beneficial (women sometimes unable to identify they are being abused, particularly if emotional abuse only) Most of the community participants had pregnancies occurring within 10 years of their interviews only 1/7 recalled being screened for abuse by a prenatal HCP, even when presenting when obvious injuries and in 1 case disclosing the abuse. Participants interpreted HCPs' lack of abuse screening in the presence of injuries and cavalier treatment	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						of abuse disclosure as a lack of concern and professionalism. This perception influenced subsequent decisions about whether to reveal the abuse to any HCPs. Participants from the clinic frequently reported revealing the abuse at another time but the early or prenatal visit even though they had been screened at that time. This was related to being more comfortable with HCP, partner not being present, or because they needed help. Embarrassment was another reason for not disclosing the abuse or for avoiding care after being injured by a partner. 5/12 participants reported using drugs, alcohol or both during pregnancy to help them deal with the abuse. At times they avoided prenatal care or guarded their substance use to prevent HCPs finding out about their substance abuse. Fear of disappointing others, the potential for unknown consequences to herself, partner child or family and lack of awareness of the potential	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						harm to the unborn child were some of the reasons participants gave for concealing their substance abuse 3. Obstetric visits as an opportunity for positive interactions Several participants whose cultural or religious traditions varied from those of dominant US society perceived their minority status as making their situation more complex and contradictory and solutions more difficult. Overall they felt less understood by health professionals Women also complained that HCPs do not have time to care for them	
Quelopana et al. Health behavior in Mexican pregnant women with a history of violence. 2008. Western Journal of Nursing Research 30[8], 1005-	Case-control EL=3	To examine the association between violence, attitudes towards pregnancy, and initiation of prenatal care (PNC) in Mexican pregnant	235 pregnant women receiving their first prenatal visit at a university hospital No other socio-demographic characteristics reported in paper Cases were women who	Routine prenatal care	Perceived benefits and barriers to PNC	Violence reported by 35% of the women and included psychological (85%) and physical or sexual (65%) Perceived barriers to PNC: No significant differences between abused vs. non abused women regarding structural barriers, but perception of psychological barriers was highly associated	Recruitment: eligible women approached in the reception area of the prenatal clinic while waiting for their appointment and invited to participate. Only 2 women declined stating they were not feeling well at the time. Sampling: systematic sampling used with an interval of two. Researcher

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
1018[177]		women	reported an experience of violence whereas controls were women who did not report an experience of violence Country: Mexico			with an experience of violence (p<0.001). Abused vs. non abused women did not feel well about themselves (28 vs. 5, p<0.001), had more family problems (32 vs. 9, p<0.001), reported more problems with partner (35 vs. 7, p<0.001), felt more stressed (46 vs. 12 p<0.001), felt more depressed (49 vs. 14, p<0.001) and reported more personal problems (25 vs. 10, p=0.001) (all previous figures are %) When negative attitudes toward pregnancy increased, perceptions of barriers increased and women reported more experience with violence, perceived fewer benefits of PNC and were less educated	daily reviewed appointment list to identify women who were pursuing their first prenatal visit. Every other woman was invited to participate in the study Ethic and confidentiality: Informed consent taken prior to participation. Data treated with strict confidentially in congruence with legal requirement. Women assured that decision concerning participation would not affect their care and they could withdraw any time. Participants protected from harm by assuring a private interview in the absence of partners or other family members. Women who reported experience of violence were counselled and offered referral to social services or other resources available in the state Data collection: conducted from Sept 2005 to Feb 2006. Women interviewed in private room at the clinic prior to the visit. Standardised interviews administered which lasted

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
							approximately 30 minutes No data on characteristics of interviewers Two instruments previously used in the US were translated and modified for this study. Benefits of prenatal care, barriers to prenatal care and attitudes towards pregnancy were measured using the questionnaire Barriers, Motivators and Facilitators of Prenatal care Utilisation (BMFPNC 2003). Interpersonal violence measured using the Woman Abuse Screen (WAS, 2001) The modified version of the WAS was not piloted Source of funding: not stated
Dietz et al. Delayed entry into prenatal care: effect of physical violence. 1997. Obstetrics and Gynecology 90[2], 221-224[178]	Quantitative survey EL=3	To determine whether women who have experienced physical violence by their partner were more likely to	27 836 women surveyed in 1993-1994 in 9 states (Alabama, Alaska, Florida, Oklahoma, Michigan, South Carolina and West Virginia) The majority of	N.A	Socio-demographic variables associated with delay into prenatal care related to domestic violence:	Women who had experienced physical violence by their partner and delayed entry into prenatal care were more likely to be older, with 12 or more years of education, non-recipients of Social Nutrition Program for Women Infant and Children and not living in crowded housing. The	Authors analysed data from the Pregnancy Risk Assessment Monitoring System (PRAMS), initiated in 1988 to help conduct state-specific, population-based surveillance of selected maternal behaviours that occur before and during

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
		delay entry into prenatal care than were women who have not experienced physical violence, while assessing for confounders and effect modification	women were at least 20 years of age and had received at least 12 years of education. Almost 70% were married and 75% were white. More than 40% participated in the Social Nutrition Program for Women Infant and Children (WIC) during pregnancy and 12.1% lived in crowded housing. Average delay of prenatal care was 18.1%, 15% entered prenatal care in the second trimester, 2.3% in the third trimester and 0.8% received no prenatal care. Overall prevalence of physical violence among respondents was 4.7% Country: USA		Obtained from birth certificates: -age -education -race -marital status Obtained from the PRAMS questionnaire: -pregnancy intendedness -poverty Time of entry into prenatal care obtained from birth certificates. Early entry defined as beginning care during the first 3 months of pregnancy Data on physical violence came from 1 question in a modified 18-item life-events inventory on the PRAMS questionnaire. Women identified as having reported physical violence	association was greatest among women 35 years of age or older and women 25 to 34 years of age Non responders (25% of the sample) were more likely than responders to be young, less educated, black or of other race, unmarried and to have entered prenatal care late	pregnancy. The nine states were chosen because a high percentage of participants in the states responded (average response rate 75%), data were available for 1993-94 and these states had fully implemented PRAMS procedures. Each month a random, stratified, systematic sample of 100 to 200 new mothers was selected from birth certificates. Most respondents (96.9%) were emailed a 14-page questionnaire 2 to 6 months after delivery and up to 2 additional questionnaires were sent to non-responders. If non-response persisted telephone follow-up were conducted in all states except Alaska A small percentage of respondents (3.1%) were surveyed in the hospital after delivery and by email 2 to 6 months postpartum. The PRAMS questionnaires were linked to birth

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
					if they responded "yes" to the statement that "their husband or partner physically hurt" them during the 12 months before delivery Marital status: married or not at time of delivery Race: white. Black or other (Alaska natives, American Indians, Asian American or other groups) Poverty measured by household crowding (more than 1 person per room) and participation in the Social Nutrition Program for Women Infant and Children (WIC)		certificate data for analysis Women whose records were missing information on physical violence (1.3%) or entry into prenatal care (1.9%) were excluded from the study. Data missing from the selected maternal characteristics ranged from 0% for marital status to 3.7% for household crowding Source of funding: not stated

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Bell et al. Pregnant and parenting battered women speak out about their relationships and challenges. 2008. Journal of Aggression, Maltreatment and Trauma Vol.17[3], 318-335[179]	Retrospective descriptive cross sectional study EL=3	To find out how pregnant and parenting battered women participating in an innovating programme perceive their relationship and cope with the violence in their life.	Country: US From 2003 to 2005, the project served 190 pregnant women or parenting clients. Although the focus of the programme was on pregnant and parenting women, these statistics include three teen fathers who were experiencing abuse and attended support groups. Purposive sampling resulted in 62 pregnant women and parenting battered women who completed the survey. A convenience sample of 4 women participated in open ended interviews. Participants were given gift vouchers and personal care items for participation in	Data were gathered from a multi method case study evaluation of an innovative programme for pregnant and parenting women. The project began in February 2002 provided education and support services to battered women who were pregnant or postpartum, including an aftercare component offering case management, domestic violence and parenting education, and social support to mothers who have been in abusive situation. The survey included 23 yes/no/don't know question about women health status, 18 question about mothers health during delivery and birth 32 Likert scale	Challenge to antenatal care General health status of women General health status of newborn Perception and experience of non physical abuse Perception and experience of non physical abuse Perception and experience	The majority of the participants were Hispanic (55%), 15% were Anglo, 21% were African American, and 5% were identified as Others. 42% of clients were between the age of 14 and 19, 47% were between 20 and 34, and 6% were over 35 years of age. The highest portion of participants resided in a sheltered women (39%), with the smaller percentage of women who lived alone or with their child (19%), resided with the family members (16%), with the child father (14%) with friends (5%), or with family of their partner (3%) Challenge to antenatal care Reason for not attending to antenatal appointment: Did not have childcare (46%) No reliable transportation (41%) Lack of support and active prevention by abuser (21%) Providing childcare from partner (32%) General health status of women Majority were in good health, few reported smoking, drinking alcohol and taking other non prescription drugs. 2-8%	Funding: Not reported Very vague definition and description of the innovative program provided in the paper Low participants intake

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			the study.	questions to assess participants experience of both physical and non physical abuse 3 demographic questions The questionnaires include 4 open ended questions about concerns regarding their baby and their pregnancy, 4 Likert scale question about access to antenatal care. The data were analysed utilizing a 5 point likert- type scale ranging from 1 (never) 2 (rarely) 3 (sometimes) 4 (frequently) to 5 (constantly). Open ended interviews were conducted with 4 women focusing their experience and relationship with their partner/baby's father and its effect on their pregnancy. Each interview was audio taped and transcribed verbatim.		indicated that they didn't know about their health status. General health status of newborn Participants were asked about their baby's health immediately following birth and again at 2 months of age. Generally, mothers reported that their babies were born with no major complications and remained healthy into their second month. 11% reported that their babies experienced poor feeding/sucking at or during birthing. 11% reported that their babies experienced shakiness, colic or heart problem. One participant in open ended interview illustrated the effect of emotional abuse and physical abuse experienced during pregnancy; she had her baby two months early. Perception and experience of non physical abuse Large percentage of women reported non physically abusive strategies by their partners, such as yelling and screaming at her (75%), calling her names (67%) wanting to know her whereabouts at all times (56%), jealousy (66%),	

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						accusing her of having affair (85%) blaming her for her problems (63%), and trying to make her crazy (66%) Perception of physical abuse: Small percentage of women indicated that these behavior were not abusive (3% to 31%) 315 of the women indicated that being arrested for a drug offensive was not abuse, 25% were not sure if this was not abuse and 25% were not sure if this was abuse and 44% indicated it was abuse. Perception and experience of physical abuse: 64% had been pushed, shoved, or kicked by their partner. Over 40% had been threatened in some way, been forced to do something against their will, had object thrown at them or broken or had been kept from home leaving.	
Bacchus et al. Women's perceptions and experiences of routine enquiry for domestic violence in a maternity	Qualitative survey EL=3 (this is part of a bigger study, please refer to Mezey 2003)	To examine women's perceptions and experiences of routine enquiry for domestic violence in a maternity	10 women who experienced domestic violence in the last 12 months (including pregnancy), 6 women who experienced domestic violence in the last 12	Domestic violence in pregnancy screening questionnaire 145 midwives from 8 hospital teams, 10 community teams, specialist midwives and midwifery	1. Acceptability and impact of routine enquiry 2. Need for repeat enquiry about domestic violence 3. Perceptions of	At booking screening data were available for 718 out of 771 women who had participated in the study. Of these, 714 women (99%) said they found it acceptable to be asked about domestic violence by a midwife. At 34-weeks screen, all 86 women (100%) who were screened found it	Data collection method: semi-structured interviews conducted during the postpartum period (up to 14 months) Women either telephoned directly or sent a letter inviting them to participate in an interview on women's

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
service. 2002. BJOG: an International Journal of Obstetrics and Gynaecology 109[1], 9-16[45]		service	months, but not in pregnancy, and 16 women with no history of domestic violence Purposive sampling was used to select a sub-sample from a larger group of women who participated in a domestic violence in pregnancy screening study undertaken at Guy's and St Thomas' Hospitals in London Setting: Interviews conducted in women's homes and general practitioner's surgeries Country: UK	managers invited by letter to attend a training session, using a manual based training pack designed by the research team. On average each training session lasted 2 hours, although this varied with the number of individuals in each group. Of these, 116 midwives (80%) attended a training session, which provided information and educational materials about the prevalence and effects of domestic violence, how to administer the domestic violence screening instrument, and how to refer women to community resources. Training commenced in July 1998 and was completed in March 1999. The training schedule continued into the screening phase of the project,	midwives' responses 4. Who should enquire about domestic violence in pregnancy 5. Use of referral information provided 6. Time constraints 7. Importance of privacy and confidential consulting time 8. Factors that deter women from disclosing domestic violence	acceptable. At the postpartum screening, 139 of 140 women (99%) who were screened found it acceptable. In the semi-structured interviews there was no difference in views between women who had experienced domestic violence (DV) and those who had not (NDV). Very few women were offended by the questions or felt distressed by the study 1. Acceptability and impact of routine enquiry Some women had reservations about the questions, which they felt challenged their ability to care for their children (DV). The questions triggered painful memories for some women who had left violent relationships and were in the process of re-building their lives (DV) 2. Need for repeat enquiry about domestic violence One woman who was asked only at the booking appointment said that the violence started much later in her pregnancy, and although	views of their care during pregnancy Domestic violence defined as any adult experience of physical or sexual violence perpetrated by a current or former partner, or family member. These women were chosen in order to make comparisons between groups with regards to their experiences and perceptions of routine enquiry for domestic violence, and to compare the nature and pattern of domestic violence between the first two groups Interviews conducted by one of the authors (L.B.), arranged at a convenient time and place for the woman (i.e. doctors' surgeries or at home) and lasted between 2 and 3 hours. Every effort was made to ensure safety and confidentiality when arranging and conducting interviews. Women gave verbal consent after reading through a consent form. Interviews were tape recorded and transcribed,

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				due to staff rotation and turnover. Midwives required to assess women for domestic violence at the booking appointment and follow up at 34 weeks and once during the postpartum period (within 10 days). Interviews conducted in hospital and community antenatal clinics and women's homes. At the end of the interview, women were asked whether they found it acceptable to be asked about domestic violence by a midwife, and if not, whether there was another health professional they would find acceptable. Each interview took approximately five minutes although longer periods of time were required for women who		she had expected and wanted the midwife to ask her again, she was never given another opportunity to disclose (DV) Some women said they were apprehensive about divulging all the details of their relationship on their first meeting with the midwife. Repeated enquiry gave them the time they needed to develop a trusting relationship with their midwife (DV) The lack of continuity of care in midwifery practice meant that there were fewer opportunities to provide ongoing support for women experiencing violence (DV) 3. Perceptions of midwives' responses Some women commented that the midwife dealt with the domestic violence questions in a very perfunctory manner, moving on to a different topic altogether without any acknowledgement of what had just been disclosed (DV and NDV) Sometimes midwives did not respond at all and women did	or written down if the woman preferred All women received a £10 gift voucher in recognition of their time and assistance Interviews analysed using thematic content analysis. Initially the interviews were coded, which involved dissecting and labelling the data into meaningful parts, thus facilitating easy retrieval. Coding and re-coding continued until the data had been saturated, that is, until all incidents could be readily classified and a sufficient number of regularities had emerged from the data No data reported on the characteristics of members of the research team Source of funding: Economic and Social Research Council

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
				disclosed domestic violence For safety reasons midwives were told to only approach women to participate, if they could be seen alone, and without being overhead. Only female professional interpreters were used if women could not speak English. Women provided with information about the study and told that their care would not be affected in any way should they decide not to participate in the study		not know whether the midwife had any understanding of their situation. Because of the tendency for some women to blame themselves for the violence, this non-response was sometimes misinterpreted as confirmation that they were responsible for what was happening, reinforcing feelings of guilt and shame. 4. Who should enquire about domestic violence in pregnancy Health professionals not truly dedicated to addressing the issue of domestic violence as part of their practice (DV) Not the most important factor but older health professionals preferred to younger ones (NDV) 5. Use of referral information provided Not all women experiencing domestic violence were in a position to act immediately on the referral information given to them. Women may use the referral information and make decisions when they feel safe and confident enough to do so (DV)	

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						One woman made numerous, unsuccessful attempts to contact the local refuge (information given by midwife) when she needed to talk to someone 6. Time constraints The most common complaint was that there was insufficient time during appointments to discuss personal problems in general and that inhibited the effectiveness of routine enquiry. Some women experienced dissatisfaction with the standard of care provided and felt as if they were being treated like another case rather than a person with individual needs (DV) 7. Importance of privacy and confidential consulting time There was some anxiety amongst the women who had experienced domestic violence that their partner would find out that they had spoken to someone. Women said that they wanted positive reassurance that what they said would not be relayed to their partner and that they would	

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						have a safe, confidential environment in which to discuss the violence (DV) Most women, regardless of whether domestic violence was present, thought that the appointments were not long enough to make effective use of confidential time (DV & NDV) 8. Factors that deter women from disclosing domestic violence All sixteen women who experienced domestic violence said that in the absence of routine enquiry they would not voluntarily disclose violence to any health professional. The most commonly cited reasons for this were fear of being judged, embarrassment, shame, not knowing how to raise the subject, uncertainty about whether the health professional would be interested or equipped to deal with it, concerns about confidentiality, and fear that their children would be taken away (DV) Without the health professional taking the first step and asking	

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						directly about domestic violence, women were left to make all sorts of assumptions about their willingness and ability to address the issue (DV) There was also a perception amongst some women that the primary role of the midwife was to deal with the physical rather than the emotional wellbeing of the pregnant woman (DV)	
Price et al. Tackling domestic violence. An audit of professional practice. 2003. Practising Midwife 6[3], 15-18[180]	Quantitative survey (audit) EL=3	To evaluate the effectiveness of an educational programme and assess current practice and service provision in relation to the recommendations of the Confidential Enquiries into Maternal Deaths for maternity services in relation to domestic	126 hospital and community based midwives No other details reported Country: UK	Educational programme to support practitioners at the North Bristol NHS Trust (NBT)	Knowledge, attitudes and beliefs Education and training Screening	Knowledge, attitudes and beliefs 77% did not consider themselves to be knowledgeable about domestic violence 96.5% felt that domestic violence is not a "women's issue", 19% felt that women are sometimes responsible for the violence perpetrated against them 22% thought that domestic violence is an issue of the poor and socio-economically disadvantaged, 77% thought that certain ethnic groups view domestic violence as acceptable, 74% thought that women almost always return to violent relationships	Standards for the audit based on the key recommendations of the Confidential Enquiries into Maternal Deaths in the UK 1997-1999 an audit questionnaire was sent to all clinical areas within the maternity department. Midwifery managers asked to advise staff on the audit and encourage completion of an audit form. Auditors also reminded staff where ever possible. Questionnaires were anonymous and returned to a central file in the midwifery office. In addition to that obtained from questionnaire, further data was also collected by observation of resources and facilities within the

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		abuse in pregnancy , with particular attention to knowledge, attitude and beliefs, education, training and support and screening in clinical practice				Education and training: 77% stated they would need more support to introduce routine screening into their practice, primarily citing training and education as a priority Screening: A significant number of audit responders (14.3%) did not believe it was the role of the health professional to screen at all, with an even larger number (38.9%) feeling that routine screening should not occur within professional practice. When screening was voluntary, only 10% of practitioners actually do screen routinely, with 73% only if concerned of suspicious and 17% not at all. Only a small number of hospital midwives screen routinely, with the majority of those who screen being community-based midwives. Training appears to double the incidence of practitioners screening as a matter of routine Hospital midwives believe	clinical areas and policies and guidelines Moderate response rate (50/4%) Questionnaire not piloted Source of funding: not stated

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						screening for domestic violence should be carried out by a professional who has an ongoing relationship with the woman i.e. a community midwife	
Cann et al. Domestic violence: a comparative survey of levels of detection, knowledge, and attitudes in healthcare workers. 2001. Public Health 115[2], 89-95[181]	Quantitative survey EL=3	To compare the knowledge, attitudes, responses and levels of detection of domestic violence among a variety of health care workers in different specialities	685 healthcare workers from primary care, community mental health and obstetrics and gynaecology (O&G) 511 (76%) female 236 (35%) doctors 371 (55%) nurses Within primary care: principal general practitioners, general practitioner registrars and practice counsellors Within community mental health: all psychiatrists, psychologists, psychiatric nurses and occupational	N.A	Knowledge, attitudes and professional responses to the issue of domestic violence	HCPs, obstetrics and gynaecology: 91% would personally welcome training on domestic violence 64% felt uncomfortable about asking direct questions about domestic violence 74% felt that if they asked every woman (relevant to their practice) if she had been abused they will offend a lot of their patients 21% felt that they had not got time to ask women about domestic violence within initial assessment interview/normal contact time 17% (12 to 22%) felt "direct" questioning would be valuable with all pregnant women HCPs (obstetrics and gynaecology, primary care, community mental health):	Overall response rate was moderate 54% (54% primary care, 48% community mental health, 56% O&G). Anonymity of respondents precluded comparison with non-respondents Data collection: self administered questionnaire. Questionnaire designed by the authors after reviewing literature and consultation with Oxfordshire Multi-agency Groups on Domestic Violence and relevant specialists. The primary care questionnaire was piloted on a group of health visitors. Questions were asked about violence perpetrated on women by men but the existence of male victims was acknowledged in the covering letter. Some questions were modified to be relevant to each speciality but the majority of questions were identical

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			therapists (there's a single Mental health Trust for the whole county) In O&G: all staff with patient contact from 1 trust Country: UK (Oxfordshire)			1% thinks domestic violence usually stops during pregnancy 12% does not know whether domestic violence usually stops during pregnancy	across specialities Questionnaire not piloted for O&G or mental health practitioners Outcomes not explicitly related to pregnant women were not extracted from the paper. Not all outcomes reported for O&G refer necessarily to pregnant women Source of funding: not stated
Scobie J and McGuire M. Professional issues. The silent enemy: domestic violence in pregnancy. British Journal of Midwifery 1999; 7:(4)259-62.[182]	Questionnaire survey [EL=3]	To explore the midwives' knowledge and attitude to domestic violence and assess whether midwives felt prepared to deal with the subject of domestic violence in pregnancy	Country: UK (Scotland) 100 midwives from 2 maternity units were randomly selected for a questionnaire survey consisting of mainly close ended Likert-style statements	Two midwifery units providing maternity services in Scotland	Experience & Exposure Knowledge & further education Attitudes towards service provision	Response Rate: 67% (67/100) All responses were from grade E, F and G midwives Experience & Exposure: Provided care for a victim of domestic violence in the past year: 41.8% (28/67) 78.6% (22/28) of these had asked the women about the incident Average number of women experiencing domestic abuse seen each year by a midwife: 2.82 (range: 1-10) Knowledge of Domestic Violence during pregnancy:	This study was completed in part fulfilment of Masters Midwifery Degree at The University of Glasgow Small sample size and limited questioning techniques

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						rated as inadequate: 93.8% (63/67) Reasons: Lack of available information, education and protocol 4.5 %(3/67) indicated that their midwifery education contained some information on domestic violence even that was minimal 58.8% attended some form of further education on the subject (including introduction to counselling skills) and 57.7% of these agreed that further education assisted them in dealing with women 97% (65/67) agreed to the need of further training on identification of, approach and support to women experiencing domestic abuse Agreed/Strongly agreed that midwives are reluctant to ask women about domestic violence: 59.7% (40/67) Disagreed/Strongly disagreed that enquiring about domestic violence being a part of ANC at booking: 55.2% (37/67) 49% (33/67) agreed that midwives should take the lead	

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						role in care: (others social services or GPs). On further probe a consensus was for a 'combined efforts of all the services with no one in the lead role' 85.9% indicated that a protocol (containing referral procedure and telephone number of other agencies) would be beneficial	
Jeanjot et al. Domestic violence during pregnancy: survey of patients and healthcare providers. 2008. Journal of Women's Health 17[4], 557-567[37]	Quantitative survey EL=3	To evaluate health care providers' (HCPs) attitude toward domestic violence by assessing their habits and the barriers toward screening for domestic violence.	56 HCPs of the department of obstetrics (15 gynaecologists, 27 midwives, 10 social workers, 3 neonatal nurses and 1 psychiatrist) Country: Belgium	N.A	HCPs' screening attitude, past experiences and barriers to systematic screening of domestic violence	1. Attitudes towards systematic screening of domestic violence: 4/56 HCPs interviewed (2 social workers, 1 gynaecologist, 1 midwife) systematically screened pregnant women for domestic violence. 52/56 answered they asked questions of their patient only when they suspected that domestic violence might exist, either because the patient's attitude (72%), when bruises were observed (100%) or when a patient complained of recurrent somatic symptoms (63%). The subject of domestic violence is most often discussed when the patient is alone (85%), using direct questions (85%) or indirect questions (85%). Some HCPs interviewed their patients in the presence of their companion (37%) or asked him	56 auto questionnaires from 2 series randomly distributed to HCP of the department of obstetrics and collected anonymously. Questionnaires designed by investigators and pre-tested on a different sample of clinicians. There were 2 questionnaires; in each the prevalence of domestic violence was evaluated. A few questions varied. -questionnaire 1: HCPs asked to describe type of violence encountered and their practices regarding screening -questionnaire 2: evaluated barriers to systematic screening of domestic violence

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						questions (26%) 2. Past experiences of systematic screening of domestic violence: 96% of the HCPs had cared for pregnant women who had been victims of domestic violence, most often psychological (56% or verbal (52%) but also physical (37%), sexual (15%), financial (23%) or combinations of these (37%). In most cases the victims mentioned their situation only after the HCPs asked specific questions about abuse (59%) or after they had been injured and needed medical assistance (48%). Sometimes abused women testified spontaneously (26%) or though a friend or relative (7%) 3. Barriers to systematic screening of domestic violence: -language and cultural barriers (79%) -fact that patient is always accompanied by her partner (62%) -it is time consuming (24%) -felt uncomfortable when asking questions about domestic violence (45%) -felt insufficiently trained to	All questions used closed-ended answers but HCPs could add comments. It is unclear whether the outcomes include any comments but it does not seem to be the case Among 56 HCPs who participated in the study 27 answered questionnaire 1 (48%) and 29 answered questionnaire 2 (52%). It is unclear on what basis this was decided Questionnaire sample not provided in the paper Outcomes are just reported in a descriptive manner, no analysis was performed Source of funding: not stated

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						deal with this situation (10%) -uninformed on how to manage the problem (35%) -lack information about resources to which the patient can be referred (28%) -2 HCPs denied that the problem might even exist among their patients	
Hindin. Intimate partner violence screening practices of certified nurse-midwives. 2006. Journal of Midwifery and Women's Health 51[3], 216-221[38]	Qualitative survey EL=3	To assess the intimate partner violence-screening practices of certified nurse - midwives (CNM) during prenatal care	8 CNMs, members of the American College of Nurse-Midwives (ACNM) who lived and practiced in the Midwest, all employed and in full-time clinical practice, female, Caucasian, age range from 30 to 56 years, mean 41 years. Clinical practice experience ranged from 6 months to 32 years, mean 8.6 years. 6 CNMs educated at masters' degree level, 2 at postmaster's certificate level. 7 had received domestic violence education, 1 had not. 3 worked in	N.A	-Screening patterns -Midwives understanding of universal screening (theme 1: We should screen everyone) -Clues to detect abusive relationships (theme 2: Honestly, just a gut reaction) -Relationship with women (theme 3: Relationship with women) -Domestic violence health promotion activities the	Screening practices: 1 midwife reported screening sometimes, 7 reported not screening during the second and third trimesters Midwives understanding of universal screening: Why screening not done consistently (1 midwife): "tired", "having a bad day" "have too many patients" "just gloss over it" "just routinely asking questions more than would like to admit" "screen well but I am not perfect" Clues to detect abusive relationships: Clues are present but screening not done (1 midwife): "too scared to deal with it, especially another culture… (describing a woman with physical signs of	Recruitment: 100 recruitment letters mailed on May/2004 to midwives in a Midwestern state with 4 midwives responding to this initial recruitment effort. A second mailing of 50 letters sent a month later with a response of 1 midwife. The additional 3 midwives in the study recruited by network sampling and referred by other midwives in the study Approach: the naturalistic inquiry approach of Lincoln and Guba Data collection: interviews with open ended questions and a two-page written demographic survey. The researcher developed the survey and interview questions. Questions and the order in which they were planned prior to the

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			private practice, 5 in public clinics, all reported working with 13 different cultural groups of women Country: USA		midwives were engaged in with their clients (theme 4: Planting seeds/health promotion) -Challenges of responding to a positive disclosure for domestic violence in health care systems and lack of outcome data on screening practices (theme 5: Lost in the maze)	abuse in a Navajo reservation) Relationship with women: no barriers reported Domestic violence health promotion activities the midwives were engaged in with their clients: Some women do not even know the meaning of "emotional abuse" Challenges of responding to a positive disclosure for domestic violence in health care systems and lack of outcome data on screening practices: Lack of knowledge about the outcomes for women (one midwife) "cannot say love doing screening…do fear the moment I get positive results, then I have to do something about it, not that I don't want to do something about it but just because the system not set to up to be streamline process.." One midwife: Client denied abuse, but then admitted it. Practical/structural circumstances "late Friday afternoon" "rest of support	interviews. Midwives given as much time as needed to respond each question. Audiotapes of the interviews transcribed verbatim and stored on a floppy disk Data analysis involved 5 steps: 1. Reading each case and initial development of categories 2. Categorical aggregation 3. Identification of patterns across cases 4. Development of themes 5. Composite descriptions of the screening patterns of the midwives No data on the researcher's characteristics Data collected by one method only and no explanation provided for no triangulation Source of funding: not stated

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						staff gone home", language difficulties "my Spanish gets a little shakier" "all the people who translate for me are gone"	
Chamberlain et al. Physicians' screening practices for female partner abuse during prenatal visits. 2000. Maternal and Child Health Journal 4[2], 141-148[183]	Quantitative survey EL=3	To investigate screening practices for partner abuse among primary care physicians providing prenatal care in Alaska, to determine whether physicians' screening practices varied between the first prenatal visit and follow-up prenatal visits, to examine how physician characteristics may influence physicians' prenatal screening practices and to explore	157 physicians in the specialities of family practice, general practice, obstetrics-gynaecology and internal medicine licensed to practise in the state of Alaska, engaged clinical practice and seeing female patients older than 16 years Mean age: 42.9 years 66.2% male Mean number of years in practice 14.9 52.2% had not had any training on domestic violence in past 2 years Country: USA	Routine prenatal care	Perceived barriers to screening for domestic abuse	Perceived barriers to screening for domestic abuse Respondents who disagreed with the statement that physicians have a responsibility to address female partner abuse were twice as likely to never screen at first prenatal visits compared to physicians who agreed with the statement (p=0.004). The same association was observed for follow-up prenatal visits (p=0.003). there were no significant differences between physicians having screened at first or follow up visits and the following perceived barriers: time constraint, feeling uncomfortable about screening for abuse and a physician's belief that they can help a patient Physicians' estimates of abuse and physician's belief that they have a responsibility to address abuse were the only variables independently associated with both screening at first and follow-up visits	Data collection: A questionnaire mailed 3 times to participants with postcard reminded after first mailing Questionnaire designed by authors based on review of the literature and semi-structured qualitative interviews with 30 HCPs (including 10 physicians) practising in Alaska, The Alaska Network of Domestic Violence and Sexual Assault and regional domestic violence shelters and advocacy programmes review the survey questionnaire and made recommendations. Pilot testing was conducted with 8 physicians followed by a focus group of physicians who discussed strategies to enhance participation Four perceived barriers to screening were identified and assessed using a 5-point Likert scale. Three barriers used a scale

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		the relationship between hypothesised barriers to screening for abuse and physicians' prenatal screening practices				Of the 383 primary care physicians licensed to practice in Alaska 305 (80%) responded to the survey. 8 did not meet eligibility criteria (n=297) and analysis was limited to physicians who provided prenatal care at both first and follow-up visits (n=157). A comparison of all survey respondents to non-respondents revealed that O&G and general practice physicians were more likely to respond that internal medicine or family practice physicians (p=0.022). the median number of years in practice was 15.0 for respondents compared with 18.5 for survey non-respondents	ranging from strongly disagree to strongly agree (belief that can help a victim of abuse, level of comfort with screening, and a feeling of responsibility) and one use a scale ranging from not important to very important (time constraints) Source of funding: the Johns Hopkins School of Hygiene and Public Health, the federal Maternal and Child Heath Bureau, the State of Alaska Department of Health and Social Services
Stenson et al. Midwives' experiences of routine antenatal questioning relating to men's violence against women. 2005. Midwifery 21[4], 311-321[184]	Qualitative survey EL=3	To describe the experiences gained by antenatal-care midwives who had routinely question pregnant women about men's violence against women. To describe	21 midwives, aged 42 to 62 years (median 54 years), had been midwives for 8 to 39 years (median 26 years) and had been working at antenatal clinics in the county for 0.5 to 26 years (median 12 years) Country: Sweden	Routine questioning program: Standardised questions about current and past subjection to emotional, physical, and sexual violence (derived from the Abuse Assessment Screen, Parker and McFarlane 1991) included as a component of the regular psychosocial assessment of all	1. Aspirations and obstacles and how they influence procedures -aspirations and feelings of failure and frustration -obstacles and difficulties -current procedures and	1. Aspirations and obstacles and how they influence procedures -aspirations and feelings of failure and frustration: Not all midwives accorded the assessment the same priority as more established duties in antenatal care. The need to concentrate on the task, to seize opportunities and make progress was emphasize by many participants	Recruitment: All midwives (n=28) at the 7 antenatal clinics in a city of 180 000 inhabitants in south-central Sweden invited to participate. Together they cared for more than 2000 women annually. Groups composed of midwives from different clinics in order to elicit a wide range of opinions Question guide: designed by authors, consisting on open ended questions.

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		their thoughts and feelings about the task, persisting obstacles and possible solutions and aids in routine questioning		pregnant women who registered at antenatal clinics in the region. Before routine screening introduced midwives had received at least one day's educations about men's' violence against women. At the start of the programme a midwife with special knowledge of the subject provided training, including ways of questioning and how to intervene when a woman revealed abuse and requested help	thoughts about improvement 2. Presence of the partner and influence on practice -the presence of the partner -ambivalence to men's presence -ways to facilitate assessment 3. Midwives, perceptions of their role in abuse questioning	-obstacles and difficulties: It was felt more sensitive to question women whom the midwife knew, partly because of the expectation that as they knew each other, there ought to be no secrets to disclose. Similar feeling also prevented some midwives from repeating the assessment later in pregnancy It was felt more sensitive to assess pregnant than non-pregnant women as violence during pregnancy is taboo, pregnancy is supposed to be a hopeful time in a woman's life The most serious difficulties in routine assessment were lack of time, oversight, many competing duties, language difficulties and a preconceived notion about who might or might not be a victim Possible influence on caregivers of personal experience of violence not spontaneously raised in group, but discussed on initiative of moderator. Many a tough midwife can act professionally in spite of personal experiences, but there might	Guide was discussed with colleagues experienced in focus groups technique and piloted at antenatal clinic in another town in the region where routine determination violence is practised Method of data collection: focus groups led by same moderator and observer, both midwives with knowledge of the subject, more or less known to the participants, but not involved in setting up the questioning. Discussions were audiotaped and transcribed verbatim. To facilitate transcription the observed made notes during the meeting on what was said by whom, but names were masked in the transcription Data analysis: using qualitative content analysis, following an inductive approach. To enhance credibility a senior researcher unfamiliar with the subject and who had not participated in data collection took part in elaborating and testing the categories. Two of the

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						be difficulties in an acute phase -current procedures and thoughts about improvement Midwives neither have time for, nor knowledge of, counselling (therefore they highlighted the importance of contact with organizations providing support) If it was felt that a woman was keeping her distance some midwives avoided asking Some midwives admitted that sometimes during busy periods they gave questions of violence less priority As the women carry their records documentation of abuse could pose a serious safety problem in antenatal care 2. Presence of the partner and influence on practice -the presence of the partner: this was the most frequently mentioned reason why women were not assessed	authors then critically the coherence of each category several times as well as its separateness from other categories. When the content of a category was not coherent, the analysis was restarted until the ultimate categories were identified Data collected by one method only and no explanation provided for no triangulation Source of funding: the Crime Victim Compensation and Support Authority, Umea, Sweden

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						-ambivalence to men's presence When a midwife gets to know man and did not think of him as violent, it felt as disloyalty to ask about violence when he was not present 3. Midwives' perceptions of their role in abuse questioning: Frustration when a woman would not accept the help she was offered or worried about the future of the women no longer in antenatal care	
Edin et al. Violence against pregnant women will remain hidden as long as no direct questions are asked. 2002. Midwifery 18[4], 268-278[39]	Qualitative and quantitative survey EL=3	To find out whether the issue of violence was addressed in the antenatal care programme in the county of Vasterbotten and if so, how. To assess the knowledge, attitudes and routines among midwives concerning	-Interviews: 5 midwives who had been working in antenatal care clinics for an average of 17 years (range 6 to 28.5 years) -Questionnaire: 51 midwives of all 36 antenatal clinic in the county (including previous 5 midwives)	Routine prenatal care	Knowledge, attitudes, routines and experiences regarding abuse Outcomes from the interviews were grouped into two categories: 1. The midwife with the sensitive ear 2. You cannot easily tell from the outside	Interviews 1. The midwife with the sensitive ear -Non attendance of pregnant women to antenatal clinic: midwives recognised this as potential warning sign and identified numerous psychosocial motives for its occurrence together with fears concerning the coming delivery or aversion to a gynaecological examination because of previous traumatic experiences -It has become more burdensome to be pregnant: midwives recognised that more	Data collection: -questionnaire designed on the basis of the original research questions and the results of the interviews. Form modified after a pilot test with one midwife (inadequate piloting). The form comprised multiple-choice questions and invited free comments Questionnaire posted to all midwives, who were invited to return it in pre-addressed, pre-paid envelopes. Non-respondents were sent a reminder within 1 to 2

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		violence, to discover whether they considered abuse to be a rare phenomenon or not and to what extent they had personal experience of meeting abused pregnant women	Country: Sweden			pressure is put on the woman because her employer, partner, family and social life make heavy demands on her. In families where husband unemployed and finances strained pregnant woman may not be able to afford to stay away from home even if she wants to. Moreover, many women seem to be alone with no other person besides her their partner to rely on during pregnancy -the midwife tries to create a comprehensive picture of the woman: questions about psychological disorders ad previous pregnancies or abortions considered somewhat taboo. Midwives noted that many of the pre-printed multiple choice options in the antenatal care form left out important issues ad t they considered them to be poorly designed and in need of reformulation -the midwife tries to conduct a dialogue: sometimes the pregnant woman simply did not want the midwife to interfere and it was not possible to get close to her	months. Response rate was 82% (42/51 midwives at 31/36 clinics) after one written reminder -interviews conducted by one of the authors and carried out semi-structured open ended interviews. Interview guide constructed based on the research questions and comprised the topic to be covered along with written questions Data analysis: Questionnaire: Free comments typed, linked to numeric analysis and supplemented with a written content analysis informed by the first steps in Grounded Theory analysis Interviews: Both data collection and analysis informed by the "Grounded Theory developed by Glasser and Strauss. Neither during the analysis process nor after the theoretical coding where the two main categories emerged was

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						-the spouse is invited: especially complicated with immigrant when the spouse acts as interpreter because there is no way of knowing whether or not the translation is correct. The spouse may also be unwilling to accept an outside translator. Authorised translators seen as expensive and "our boss complains if the translation bills get too high". 2. You cannot easily tell from the outside -difficult to disclose: midwives mentioned abuse regarded as taboo, the abused woman feels ashamed, blames herself, thinks that the abuse is her fault and consequently finds it hard to talk about. Abused women could not be expected to reveal their condition just to anyone. Difficult to know whether a suspicion arising from interpreting potential signs and symptoms was well founded because "it's not easy to tell from the outside". Abused woman may face obstacles if she wants to escape from her spouse. If she has no help from family or	any convincing evidence found for the need to carry out additional interviews Preliminary analysis and results were presented to the midwives for comments and none had any objections The interviewer is a midwife with a pre-understanding of the subject matter which facilitated comprehension of what the midwives described but could have introduced unwanted bias as well Authors commented that most of what the midwives said seemed to reflect their theoretical knowledge rather than their actual experience as this was limited Source of funding: County Council of Vasterbotten, Sweden

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						friends he may be her only support and anything is better than nothing. If she leaves him she will never feel secure. Because he can show up at any time and beat her and she can never be certain of getting custody of the children -must get to know her and have strong reason before asking: abuse seen as a very sensitive issue. Midwives argued they needed very strong reasons and good contact with the pregnant woman before they could actually bring up the issue of abuse. Otherwise they might not be told the truth or the woman might not return -support the woman: important to guarantee privacy. It was easy for the midwife to get emotionally upset on behalf of the woman and abandon her professional attitude by stepping in and giving her active help -the support should be easily accessible: none of the midwives were aware of any guidelines at the antenatal care clinics that would be helpful in meeting pregnant women	

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						exposed to violence. The only basic guidance available to midwives was the law, which they found difficult to interpret. Questionnaire -recognised signs of abuse: most midwives had suspected abuse in cases where it could not be confirmed (32 "yes", 3 "no", 6 "unsure"). Some women tried to maintain the appearance the "everything is all right", others missed visits, were in secure, rejected advances and were always in a hurry. Women expressed various fears: fear of physical examinations, fear of taking of specimens, the coming birth and worries about the wellbeing of the baby -certain groups or not: many midwives believed that there were no reasons to be specifically suspicious of abuse within particular groups in society (15 "yes", 21 "no", 4 "maybe") apart from women from "risk groups" (those with social difficulties, addicted to drugs/alcohol, immigrants) -guided by circumstances: the presence of a partner or	

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						relative during the appointment can be a hindrance to asking about violence -to pose the question to everyone: some midwives were ambivalent about screening, one concern being whether it would be possible to get honest responses. Questions about abuse may pose a threat to the personal integrity of the woman and need to be put in a proper context. There might be a problem if the midwife were pressed for time when the woman decided to make personal and sensitive disclosures. Lack of training in this area and not knowing what to do after a positive disclosure of abuse were themes also raised by the midwives -lack of assessment routines and intervention plans: none of the midwives were aware of any clinical routines aimed at revealing abuse. Most midwives (7 aware, 29 unaware, 5 unsure) did not know if any verbal instructions existed within the organisation of antenatal care regarding	

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						interventions once abuse had been confirmed. The 7 midwives who knew about such a strategy did not mention a specific plan within antenatal care. 2 midwives declared that they lacked support from other HCPs when they had to deal with troublesome situations like domestic violence	
Ortiz et al. Existence of staff barriers to partner violence screening and screening practices in military prenatal settings. 2005. JOGNN - Journal of Obstetric, Gynecologic, and Neonatal Nursing 34[1], 63-69[53]	Quantitative survey EL=3	To identify from a provider's perspective the existence of staff barriers and the frequency of partner violence screening	Department of Defence physicians (birth military and civilian) and family nurses practitioners who currently maintained a professional licensure and performed or assisted in assessments of prenatal patients at the two participating hospitals 74 HCPs: 55 physicians (MDs) and 19 advanced practice nurses (APNs) 2/3 < 40 years old	Routine prenatal care	Barriers to screening for partner violence	Barriers to screening for partner violence (% participants): -uncomfortable screening for violence MDs:7 APNs: 26 -lack of confidence in legal system MDs: 27 APNs: 53 -discomfort in educating patients MDs:33 APNs: 53 -inadequate referral services MDs: 36	Data collection: 26-item questionnaire containing one open-ended and numerous closed ended questions. The open-ended question obtained staff comments pertinent to barriers not listed in the forced-choice responses The questionnaire was created by staff of the Children's Hospital Medical Centre in Cincinnati, based on responses from 310 of 547 paediatric practitioners with appreciable practices on the staff of the Medical Centre. Questionnaire not validated by its authors, but researchers of the present study obtained estimates of content-related validity (CVI). All questions were considered as relevant by

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			60% male More than 50% had been practising prenatal care for at least 5 years. 74% had received training in partner violence screening, with 61% receiving less than 4 hours in length Setting: 2 US Army Community Hospitals (3 family practice clinic and 1 O&G clinic in one, 1 family practice clinic and 1 O&G clinic in the other one) The two hospitals are representative of small and large obstetrical services, with 250 to more than 1000 outpatients per month. Staffing in clinics providing prenatal care ranged from 18 to 60			APNs: 42 -discomfort in assessing danger MDs: 44 APNs: 63 -lack of support staff MDs: 56 APNs: 58 -lack of protocols MDs: 64 APNs: 53 -lack of education in screening MDs: 71 APNs: 74 -lack of time for screening MDs: 75 APNs: 95	the four raters (prenatal primary care providers with partner violence screening experience) resulting in 100% CVI Questionnaire mailed directly to co-investigators (appointed health care providers) at the two hospitals. Participating staff received and completed the questionnaires at work without assistance or coercion. Co-investigators collected and returned them to the principal investigators in bulk envelopes. Co-investigators contacted weekly by principal investigator to assess progress Response rate: 74/80 was 92% of all HCPs who performed antenatal care at the 2 hospitals Data analysis: details not reported, instead study results were reported in this section Source of funding: not stated

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			Country: USA				
Taylor P, Zaichkin J, Pilkey D et al. Prenatal screening for substance use and violence: findings from physician focus groups. Maternal and Child Health Journal 2007; 11:(3)241-7. [185]	Qualitative study consisting of interviews and focus groups. [EL=3]	To identify effective strategies for influencing and improving physician screening and referral of pregnant women for violence and substance abuse	Country: USA (Washington State) Participants: Physician providing obstetric care. All participants were obstetric care providers. Half of them were also family physicians. Participants were from large urban settings as well as solo practitioners from rural areas		Current screening behaviours: Physician attitudes Screening practice Use of other office staff Barriers to effective screening Use of screening tools Education materials and training: General suggestions Formats Training suggestions Ineffective strategies Strategies with mixed reviews	Current screening behaviours: Physician attitudes: Physicians felt that screening for domestic violence is their responsibility. Is "part of being a good doctor", "Prevents poor outcomes and averts complications". Is "worth it even if you only help one patient". Does not compromise the doctor-client relationship. Does not put the provider in a position of policeman instead of doctor. Screening practice Most physicians screened their patients only once unless the patient had a history of substance use or violence Use of other office staff Physicians voiced that screening is more effective if both physicians and office staff ask the questions. Office staff plays a large role in the screening process.	Obstetric providers were selected using systematic sampling of the Washington State Integrated Provider Network Database. This comprehensive list of providers maintained by the Washington Department of Social and Health Services (DSHS). A systematic sample was selected (to provide geographic diversity across the state and to avoid double representation from same practice) after the list was sorted geographically by perinatal region, zip code, city and street name. Separate samples were selected for the semi-structured interviews and for each of the focus group. Sample characteristics: Individualized semi-structured telephone interviews (lasted for 60-90 minutes) were conducted with 8 physicians recruited from systematic sample of

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						The patient is sometimes more likely to talk to the nurse about these issues Barriers to effective screening Physicians found it relatively easy to screen for alcohol and cigarettes. Physicians found it more difficult to screen for drugs and domestic violence, because these patients are reportedly more difficult to identify, to influence behavioural change, and to refer. Physicians perceived the presence of family members during prenatal visits and patients' fear of reprisal from Child Protective Services and or family members as barriers to effective screening Physicians were often unsure of where to refer patients Patient privacy issues limit the physician's ability to check up on whether patients have acted on a referral. Education materials and training: General suggestions Information and materials for physician education should	30 physicians common themes were identified and guided the development of the focus group protocol. Two in-person and two telephone focus group were held consisted of 28 out of 38 randomly selected physicians. The focus group lasted for 60-90 minutes and focused on three major areas; Physician opinion and attitudes about substance use and domestic violence screening and intervention for pregnant women Physician awareness of existing DOH materials about screening Barriers and effective strategies for communication and education of physicians on screening. After each session, audio or videotapes and extensive field notes were analyzed to identify dominant themes and key points. This work was screened by the Washington State Institutional Review Board (IRB) and was classified as "public health practice" and

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						save time, provide access to intervention and resources, help providers avoid legal risk, encourage and support provider efforts to educate patients about the issues, be created by people who "think like doctors", include "state-of-the-art" information that is specific, rather than general, be short (one page) and scientific looking, put all key points on one page, include "tables and flow charts that appeal to people with scientific training". Formats Website of reliable and updated information on intervention and referral resources, downloadable into a PDA "Screening and intervention kit" that includes relevant screening and referral information for physicians and education materials to stimulate interest and reinforce medical advice for patients Website for physicians dedicated to screening issues. Training suggestions	not research Funded by State General Funds provided to the Washington State Department of Health.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						Include all office staff in training programs. Ensure practical training that takes into account the realities of day-to-day medical practice. Provide well-prepared, dynamic trainers who understand how screening fits into medical practice. Utilize existing regional perinatal system to provide physician education. Develop DOH alliances with pharmaceutical companies to promote and co-sponsor educational sessions in physician offices. Enlist hospital education departments as hosts for DOH training as a way to reach a maximum number of physicians at hospital-based trainings. Provide lunchtime education programs. Ineffective strategies: Email alerts Legislative mandate Direct mailings/ flyers Telephone conferences Strategies with mixed reviews: A DOH perinatal newsletter Direct mail	

Q2. What aspects of service organisation and delivery improve contact with antenatal services throughout pregnancy for women experiencing domestic abuse?

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
Liebschutz J, Battaglia T, Finley E et al. Disclosing intimate partner violence to health care clinicians - what a difference the setting makes: a qualitative study. BMC Public Health 2008; 8:229. [44]	Ethnographic interviews [EL=3]	To analyse risks and benefits of disclosing intimate partner violence (IPV) to clinicians across specialities.	Country: USA (Eastern Massachusetts) Settings: Community based counselling or shelter programmes. Participant 27 women (12 Black, 10 Latina and 5 White) IPV survivors recruited through referrals by local shelter staff (14) or through a flier sent to all domestic violence programmes (13). Eligible participants were female, aged 18 to 64, English speaking, with a history of an abusive intimate partner relationship with in the past 3 years. Study duration: From October 1996 to November 2000. Methodology: Open ended in-depth interviews (1-2 hour long) were conducted by 1 of 2 authors	Qualitative study about the experiences of women survivors of IPV in different health care settings. No particular intervention was studied.	Each encounter related to abuse was coded according to three characteristics, outcome, speciality and attribute. Outcome described by 3 mutually exclusive types; Disclosure: women reported the abuse to the clinician. Discovery: no explicit disclosure by the women but perception that her clinician knew about the abuse. Non-disclosure: women concealed/ denied the abuse. Speciality: Each encounter was coded for its speciality: Emergency Department (ED), Obstetrical or Gynaecological	Age ranged from 18-56 years. Median Age: 31 years 23 women had at least 1 child. Total number of encounters: 185 Number of encounters per women: 3-12 Median number of encounter: 7 Number of encounters related to abuse: 59 representing 25 women. Emergency Department (ED) 17/59, Obstetrical or Gynaecological Care (OB/GYN) 19/59 Primary Care: 23/59 Disclosure: 35/59 (59%) Discovery: 7/59 (12%) Non-disclosure: 17/59 (29%) Beneficial Encounters:	Study Population is all women experiencing IPV not necessarily pregnant women. No sub-group analysis for pregnant women reported. Recall bias due to self report. Study population is only those women who used community resources and could not be generalized to all women experiencing IPV. The study is based on the data collected for a previous study which examined the patient-provider relationships in IPV survivors funded by Harvard Pilgrim health

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			(GPs) using an interview guide. Women were asked to describe their encounters with clinicians both related and unrelated to abuse after the onset of the abuse. Women were asked to provide information about perceived barriers to care and abusive relationship over the past 3 years. Interviews were audio-taped, transcribed verbatim, reviewed for accuracy. Common themes were identified and coded. NUD*ST® qualitative research software was used for data organization and coding. Single patient clinician relationships, labelled as 'encounters' were first categorized into related to abuse and unrelated to abuse. Each encounter related to abuse further coded according to three characteristics, outcome, speciality		Care (OB?GYN) Primary Care (PC) Others Attribute: Based on woman's level of satisfaction each encounter was labelled as; Beneficial: women reported receiving help or information she found useful. Harmful: worsening of abuse e.g. injury to self or child. Un-helpful. Negative reports without any actual harm.	25/35 (71%) of disclosure, 4/7 (57%) of discoveries, 6/17 (35%) were beneficial. Setting of care and disclosure: Primary Care: All 14/14 disclosures were beneficial. OB/GYN: 9/12 (75%) disclosure were beneficial. Emergency Dept. 2/9 (22%) disclosures were beneficial. There were no harmful disclosures reported in any speciality. Rest were unhelpful. Consequences of Unhelpful disclosures: Women reported feeling endangered, leaving their providers, dissatisfaction, encouraged for "extreme solutions" (without sufficient information like police number, shelter house), lack of emotional connection and effective	Foundation and Boston City Hospital Fund for Excellence.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
			and attribute.			communication with clinicians. Benefits of Disclosure: Women reported direct changes in the circumstances (leaving abusive spouse, entering detoxification programme or filing a police report), or changes over a period of time with the support (shift in self esteem, perception of the violent relationship, or awareness of alternatives, eventually empowering her). Some women reported a positive change in their attitude towards healthcare in general after disclosure. Potential Benefits and Problems without disclosures: Women reported being upset with by health care providers who they felt should have recognized the IPV and this leads to avoidance of health care. Several women reported benefit when the clinician did not	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention	Outcomes	Findings	Comments
						insist upon disclosure but discussed IPV, conveyed their concerns and offered options for interventions without forcing women to take actions.	

Q.3. What additional consultation and/or support should be provided to women experiencing domestic abuse in order to improve pregnancy outcomes? (Additional here means over and above that described in the NICE Antenatal care guideline.)

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
Joseph et al. Reducing psychosocial and behavioral pregnancy risk factors: results of a randomized clinical trial among high-risk pregnant African American women. 2009. American Journal of Public Health 99[6], 1053-1061[186]	Randomised Control Trial EL=1-	To evaluate the benefits of an integrated behavioural and psychosocial intervention delivered during routine antenatal care	Country: US A randomized control trial was conducted between 2001 and 2003 collaborating with 6 antenatal care sites in Washington DC, serving predominately African American population. Women were approached while they were waiting for routine antenatal care appointments and invited to immediately complete a 10 minute audio computer-assisted self interview to assess their eligibility for the study. African American women who were 18 years or older and <28 week pregnant with at least one of the four risk factors of interest (cigarette smoking, second-hand smoke exposure, depression and intimate partner violence (IPV)) were eligible to participate in the study. About 9 days after completing screening interview, a baseline telephone interview was conducted with women in order to	The behavioural intervention: Tailored counselling sessions conducted in antenatal clinic 8 antenatal sessions were required to deliver the complete intervention but 4 sessions were considered adequate on the basis of the amount of material that could be covered in that number of sessions. Individualised counselling provided a tailored approach to the multiple risk reported by each women. Intervention sessions were occurred immediately before or after antenatal care. Participants were presented with material during intervention sessions. In the each session the interventionist (pregnancy adviser) and participants developed a plan for homework designed to reinforce the intervention in the woman's real life circumstances. All pregnancy advisers received 3 weeks intensive training in addition to ongoing supervision. A single pregnancy advisor was assigned to each clinic to provide consistency of care for	Behavioural change (cigarette smoking, second-hand smoke exposure, depression and IPV) accruing during pregnancy at: Baseline First follow up (second trimester) Second follow up (third trimester)	No significant differences in characteristics (age, education, employment, marriage, obstetric history, gestational age, socioeconomic status) were found between the intervention and the control group. Distribution of eligible women by risk factors: IVP n=336 (32%) Active smoking n=198 Passive smoking n=755 Depression n=463 The distribution of baseline risk of all women included in the study for depression in combination with IPV was 13.8% (n=38). Significant covariates were smoking and IPV risk at screening. Behavioural changes accruing during pregnancy: Number of risks did not differ between the intervention and usual care groups at baseline, the second trimester, or the third trimester. In the intervention group, 81% of participants provided follow up data, as compared with 82%	Funding: the study was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development and the National Centre on Minority Health and Health Disparities, National Institutes of Health

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
			gather more detailed information. At the conclusion of the interview each eligible woman was randomised to the intervention or control group. 1070 women with base line data were randomised to intervention group(n=529) and the usual care group (n=541). Follow up data collection interviews were conducted during second and third trimesters of pregnancy (22-26 and 34-38 weeks).After exclusion of women who identified themselves as non African American Lation and women who completed their pregnancy before baseline interview , there were n=521 women in intervention and n=523 in the usual care group.	participating women. Validated instruments assessing cigarette smoking, second hand smoke exposure, depression and IPV were used for screening base-line and follow-ups telephone assessments.		in the usual care group. The mean number of intervention sessions attended by women in the intervention group was 3.9. 16.4% of these women did not attend the intervention session. More than half (53.9%) attended at least 4 sessions. The distribution of the risk did not differ significantly between two groups at either first or second following assessment. IPV with no other risk factor n=28 IPV in combination with passive smoking n=70 IPV in combination with passive and active smoking and depression n=38 IPV in combination with depression n=38 Women in the intervention group more frequently resolved some or all of their risks than did women in the usual care group (odds ratio=1.61; 95% CI = 1.08 to 2.39; p=0.021).	
Curry et al. Nurse case management for pregnant women experiencing or at risk for abuse. 2006. JOGNN - Journal of Obstetric,	Randomized controlled trial EL=1	To determine whether individualized nursing case management can decrease stress among pregnant women at risk for	Country: US Setting: Two antenatal clinics in the Pacific Northwest (clinic A) and rural Midwest (clinic B). Each site had a three member research team	Intervention: Individualized NCM to provide support and information and maintaining an ongoing contact. This allowed the intervention to be tailored for each woman based on her individual needs.	Contact between NCM and participants Nurse case management Activities	Women at clinic A were significantly older with more education and income and were more likely to be non-white. There was no significant site difference in marital status. Contact between NCM and	Purposive inclusion of adolescents in the study sample No blinding Funding: not

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
Gynecologic, and Neonatal Nursing 35[2], 181-192[187]		or in abusive relationships	consisting of an investigator, a research nurse responsible for recruiting participants and a nurse case manager (NCM). 1,000 women who spoke English and were 13 to 23 weeks pregnant at time were recruited for the study. Each site enrolled 500 women over a two year period (2001-2003). All participants completed the initial research assessment (T1) prior to 23 weeks and a 2nd assessment (T2) between 32 weeks and delivery. T1 assessment included demographic information, three questions from Abused Assessment Screen (AAS) and the Prenatal (antenatal) Psychological Profile (PPP). At the completion of the T1 women were randomized to one of two groups, n=501 to control group and n=499 to treatment group. At T2, the ASS and PPP were repeated. The research nurse in private setting orally administrated the assessment.	All women in the intervention and control group (n=1000) were classified as high risk or low risk. High risk was assigned based on a positive response to at least one of the three AAS questions or had a score >24 on the PPP stress scale. Based on this criteria n=106 women in the intervention group and n=101 in control group screened high risk at T1. At T2 n=18 intervention group women and n= 9 control group women converted from low risk to high risk. The majority (74%) was high risk because of abuse; the rest were high risk because of high PPP stress score without abuse disclosure. All participants in the intervention group were offered an abuse video and 24/7 access to the Connection NCM (Nurse Case Manager). Additionally, participants at risk for, or in abusive relationships, received individualized nursing care management throughout the pregnancy. The 11 minute video was developed to increase participants' awareness of abuse as a health issue. The video was offered in the antenatal clinic at the time	Stress scores	participants: The nursing care management group received an average of 22 contacts per case, most (80%) by telephone. Face to face contacts occurred at the antenatal clinic; only 2% failed to show up and most of these appointments were successfully rescheduled. The most difficult women to contact were those with greatest needs and the ones who ultimately received the most intensive case management. The mean number of contacts was 22.43. A total of 55 contacts were made to agencies on behalf of participants, involving housing, food resource, educational programs and domestic violence services. Nurse case management Activities: The most frequent nursing care management activity was providing support (38%), this included providing emotional support and responding to concerns regarding pregnancy, family members and work. Assessing needs (32%) was the 2nd most frequent nursing care management activity,	reported

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				when participants were completely alone. Fewer than 30% watched the video, the biggest reason mentioned from women for declining was "lack of time". Women were offered a bright refrigerator magnet with Connections logo, the 24/7 telephone number, and a letter explaining the NCM service. Neither the magnet nor the letter mentioned abuse. At least one call made to all women at low risk (n=393) to remind them of the services and all women at high risk (n=106) were called until contact was made with NCM. All case managed women (intervention group) received an initial, comprehensive assessment to develop an individualized care plan based on needs they identified. All women reporting IPV (n=97) were further assessed with Danger assessment (DA). All women were offered a card with telephone numbers for local and national domestic violence resources. Abused women in the control group did not receive any other information except for 10 women who had high Danger Assessment score. The research nurse provided these		including evaluating basic living needs (e.g. food, housing available social support and personal safety.) The remaining activities were providing the education (12%), monitoring (9%) coordinating (7%) and coaching (2%).The most common activity within coaching was discussing personal safety plan. Stress scores: Total stress score of high risk case managed participants in intervention group significantly decreased from T1 to T2 (from mean 22.91 [4.58 SD] to 19.6 [4.13]).The total stress score of high risk control group women was also significantly decreased (from mean 24.22 [4.72 SD] to 21.73 [4.81]). For both groups only the item related to pregnancy stress increased between T1 and T2. The stress score for primiparous and multiparous women were compared at T1 and T2. For both groups total scores and all items score except for pregnancy stress, were significantly lower at T2. Primiparous had higher work related stress and whereas multiparous had higher stress score on family and feeling overloaded item. No significant difference between	

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				women immediate safety planning and offered contact with clinic social worker. Intervention participants with high DA score were also quickly connected to the NCM to initiate ongoing case management. A total of 130 women in the intervention group were actively case managed. The case managed women received an initial comprehensive assessment to develop an individualized care plan based on needs they identified.		adolescents and adults in their total stress score. Very few women who had disclosed abuse within the past year or during the pregnancy wanted to focus on leaving the abusive relationship. Most women accepted the safety planning as something they might use in the future not during their pregnancy. Participants appreciated a non-judgmental approach with respect to their choice to stay.	
McFarlane et al. An evaluation of interventions to decrease intimate partner violence to pregnant women. 2000. Public Health Nursing 17[6], 443-451[188]	Quasi-randomized non controlled trial EL=2	To evaluate the differential effectiveness of three levels of intervention, Brief, Counselling, and Outreach.	Country: US To evaluate the differential effectiveness of three levels of intervention, Brief, Counselling, and Outreach, a longitudinal study with repeated evaluation interviews at 2-, 6-, 12-, and 18-months post delivery was completed at two urban public health prenatal clinics. The participants were 329 pregnant, physically abused Hispanic women. Both physical abuse and women's use of community resources were measured. Women who reported abuse in the year prior or	Three treatments: Brief, Counselling, and Outreach Participants in the study were randomised to one of three above interventions. 1) Brief intervention (available for analysis at 18 months: n=94): Consisted of brochure and a wallet sized resource card that included phone numbers of local agencies to assist with domestic violence including the police and local aid. Information about planning for personal safety was also included on the card. No counselling, advocacy, education, or other services were offered to women in brief intervention group.	Severity of abuse Use of community resources	96% of the abused women who entered into the study were Hispanic and about 90% indicated that they were Spanish Speaking. This study's report included only data about Hispanic women. There were no significant differences among the intervention groups regarding the age, education, gestational age, number of children, number of times per month the women saw her intimate partner, nor the women score on the SVAWS dimension. Severity of abuse: Threat of violence scores showed a significant decrease from entry to 2-months post	No blinding Flaw in randomisation procedure Self report measure of violence Funding: the research was supported in part by a cooperative agreement, from the National Centre for Injury Prevention & Control, Centre for Disease control and Prevention and by Houston Department of

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
			during pregnancy by their male partner were referred to a bilingual project counsellor on-site at the clinic. The bilingual counsellor administered a consent form and asked questions about socio-demographic status, a community resource use and severity of violence by utilizing the Community Resources and the Severity of Violence Against Women Scale (SVAWS). These assessments were repeated by interviews at 2-, 6-, 12-, and 18-months post delivery.	2) The counselling intervention (available for analysis at 18 months: n=73): consisted of unlimited access to counselling service of a female, bilingual Spanish speaking, professional counsellor with expertise in domestic violence. The counsellor was located within the maternity clinic and available by appointment, "drop in" meeting and also accessible by telephone and pager. 3) The outreach intervention (available for analysis at 18 months: n=92): consisted of the same unlimited access to the professional counsellor plus the services of a "mentor mother". The role of mentor mother, (a non professional bilingual Spanish speaking) was to offer support, education, referral and assistance in accessing community resources trough personal visit and telephone contacts with abused women. The mentors received special training in how to assist abused pregnant women. The SVAWS (the Severity of Violence Against Women		delivery regardless of intervention group. For the analysis of the 2-month follow up scores, physical violence scores were significantly lower ($p<0.05$) at outreach group than those of the counselling only group (adjusted means=34.7 and 39.5, respectively) but not those of brief intervention group (adjusted mean=38.2). No significant differences among groups at 6, 12, and 18 months were reported. There were also no differences among the intervention groups on the threats dimensions score. Use of community resources: 305 of women reported use of community resources at entry into the study. The proportion of women who had used resources decreased over time to 19% at 2 months follow-up, 11% at 6 months, 15% at 12 months and 7% at 18 months. Over time use of community resources decreased in all three intervention groups. Use of community resource was correlated with severity of violence.	Health and Human Services.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
				Scale) is a 46 item instrument designed to measure threats of violence, acts of violence. The Community resource Assessment was designed by the researcher to determine the women's use of the 10 different types of community resources to help end the abuse.		Loss to follow up for various reasons was 21%.	
McFarlane et al. Resource use by abused women following an intervention program: associated severity of abuse and reports of abuse ending. 1997. Public Health Nursing 14[4], 244-250[189]	Prospective Cohort study EL=2-	To examine the relationship between severity of abuse and use of community resources following an intervention program in a primary care setting	Country: USA Using an ethnically stratified design, 199 women physically or sexually abused by their male partner in the year prior to or during their pregnancy were included in the study. These women were divided into 2 groups; 132 women in the intervention group and 67 women in the comparison group. The comparison group was composed of abused women who were given a wallet-sized card listing community resources for violence including law enforcement, shelter, legal aid, and crisis counselling. The intervention group was composed of pregnant abused women who received 3 counselling sessions evenly spaced throughout pregnancy. The session	Intervention programme: 3 counselling sessions in an antenatal clinic setting. To avoid contamination between the intervention and the comparison groups, data collection began by first recruiting women into comparison group. All women were screened for abuse using the Abuse Screen assessment tool, if women answered yes to 4 specific questions in the 6 item Abuse Screen tool, they were invited to the study. Each women in the intervention group was administered the Relationship Inventory, Index of Spousal Abuse (ISA), and Severity of Violence against Women scales (SVAWS) by the investigators. The instruments were re-administered 6 month and 1 year after completion of their pregnancy. Abuse Screen consisted of five questions to determine abuse status and perpetrator within a	Resource used Severity of abuse Report of the abuse ending	The comparison group consisted of 67 women; 22 African American, 21 Hispanic and 24 Caucasian. The intervention group consisted of 132 women: 48 African American, 45 Hispanic, and 39 Caucasian. The groups differed at the entry visit on resource use ($\chi 2$ =4.40, df =1, p=0.036) with 45% of the intervention group and 61% of the comparison group using resource within previous year. Analysis attempted to control this by using pre-test scores as a covariate in post test analyses. Resource used: A lower level of Hispanic women used the police and resources as compared to African American and Caucasian women. Women who used the police at 6 months were older than non-	Unequal group size Self reported outcomes Pre-intervention differences between intervention and comparison group Funding: The study was supported by grant from the National Centre for Injury Prevention& control, Centre for Disease Control and Prevention, Atlanta,GA.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
			stressed how to access essential community resources offering emergency shelter, legal protection/ restraining orders, law enforcement, and counselling for woman, abuser and children. The intervention focused on offering options to the woman and assisting her in making a safety plan. Several instruments were used to determine the severity of abuse and the use of resources among these women.	defined period. Index of Spouse Abuse (ISA) is a 30 item, self-report scale designed to measure the severity of physical and non physical abuse imposed on a woman by her male partner. The Severity of Violence against Women Scale (SVAWS) is a 46-item questionnaire designed to measure behaviours that threaten physical violence and actual physical violence.		users (23.5 vs. 21.1, t=2.17, p=0.031). At 12 months, users of the police had a higher level of education (11.3 vs. 10.2 years, t=2.125, p=0.035). Those who used other resources at 6 months and 12 months tended to have more education. A small percentage of legally married women as compared to unmarried couple, tended to use resources at 6 months (13.6% vs. 39.4%, $\chi 2$ =11.3, df=4, p=0.023) and 12 months (11.4% vs. 36.8%, $\chi 2$ =12.68, df=4, p=0.013). Differences in term of police use were found only at 12 months (2.3% vs.17.4%, $\chi 2$ =10.49 df=4, p=0.033) There was a relationship between the use of police and the use of other resources. At 6 months, all 30 women who used the police also reported using other resources. No difference in reported resource use at 6 months between intervention and comparison groups (p=0.233). At 12 month there was a significant difference (p=0.012) between the groups, with the comparison group more likely to use resource. There was no significant difference in police use at 6 months (p=0.761), there was no difference at 12 months	

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						between the intervention and comparison groups (p=0.70) Report of the abuse ending: At 6 months after delivery, 109 (54.8%) of the women indicated the abuse had ended; at 12 months 140 (70.7%) reported abuse had ended. At 6 month after delivery abuse ending was not related to use of resources (p=.928) but it was related to use of the police ($\chi 2$ =8.75, df=1, p=0.003). At 12 months, abuse ending was not related to use of resources (p=0.326) or use of police (p=0.076).	
McFarlane et al. use of counseling by abused pregnant Hispanic women 1999. Journal of Women Health and Gender-Based Medicine 8[4], 541-546[190]	prospective, descriptive study EL=3	To determine if there are characteristics of abused women that are associated with the women's use of the services of counselling to help end the abuse	Country: US Study conducted on 216 abused pregnant Hispanic women receiving antenatal care in 3 urban public health clinics in the south western United States, over a 12 month period. Women who were abused by their intimate male partner were offered unlimited access to the services of a bilingual English/Spanish-speaking counsellor experienced in abuse whose office was	Unlimited access to a female, bilingual English/Spanish-speaking professional counsellor experienced in domestic violence whose office was located in the public health clinic. The women could make an appointment with the counsellor or drop in for unscheduled meetings. They could also reach counsellor via telephone and pager. The counsellor provided supportive counselling and education and referral to services to help with ending the abuse. The counsellor asked each woman questions	Baseline demographic characteristics Severity of violence experienced before entry to the study Use of community resources Number of self initiated visits to counsellor	Socio- demographic details of women in the study: Age: range from 15 to 42 years with mean age of 24.0 years (SD=5.4) Education: From no formal education to 4 years of college with mean of 8.2 years Employment: 20% of the women were in full time or part time employment(SD=3.2) Children: 66% of the women had one or more children living with them. Gestational age at entry: varied from 3 to 37 weeks, with a	Funding: the study was supported by grant from the National Centre for Injury Prevention& control, Centre for Disease Control and Prevention, Atlanta, GA

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			located in the public health clinic. Baseline demographic characteristics, severity of abuse experienced by the women, and the women's previous use of community resources were assessed. Analyses were conducted to examine associations between baseline characteristics and the number of visits the abused women made to the counsellor.	about her socio-demographic status and verbally administered the Severity of Violence Against Women Scale (SVAWS). The questionnaire was available in both English and Spanish. The SVAWS is a 46 item questionnaire designed to measure threat of physical violence, physical violence and sexual abuse.		mean of 17.0 weeks (SD=7.03). Number of self initiated visits to counsellor: Number of self initiated visits to counsellor : Varied from 1 to 8, with a mean of 2.21. 96 women (44%) visited the counsellor once 82 women (38%) visited 2 or 3 times 38 women (18%) visited four or more times. The number of children the abused women had was significantly related to the number of visit the women made to counsellor (F=5.77, df=2, p=0.004). Those women who had made 4 or more visits to the counsellor had significantly more children than those who made 2 or 3 visits (p=0.002). No statistically significant association was found between the number of visits to the counsellor and any other characteristic, severity of violence score and use of community resource, other than police. Women who had used the police most during the previous 12 months made the fewest number of visits to the counsellor compared with	

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						8% of the women who had 4 or more visit to counsellor (p< 0.05).	
McFarlane et al. Safety behaviors of abused women after an intervention during pregnancy. 1998. JOGNN - Journal of Obstetric, Gynecologic, and Neonatal Nursing 27[1], 64-69[191]	Prospective, ethnically stratified cohort study EL=2-	To evaluate an intervention protocol, administered during pregnancy, for increasing safety-seeking behaviours of abused women	Country: US The participants were 132 pregnant women recruited from public antenatal clinics that reported physical or sexual abuse prior or during the present pregnancy. Women were screened for abuse using the Abuse Screen assessment tool (the assessment was a part of routine nursing care). If women answered yes to 4 specific questions in the 6 item scale, they were invited to the study and then each women was administered a Safety Assessment which was offered in English and Spanish. After completion of the Safety Assessment, the women received an intervention protocol. Each woman received the intervention three times during pregnancy. After completion of their pregnancies, women were interviewed again at 2, 6, and 12 months to assess their use of safety behaviours.	Intervention: Three education, advocacy, and community referral sessions that included information on safety behaviours. Adoption of safety behaviours by abused women was measured before the intervention, twice during pregnancy, and at 2, 6, and 12 months after completion of the pregnancy. Women's safety behaviour was determined by a 15 item safety assessment questionnaire. Each behaviour was recorded as yes, no, or not applicable. Behaviours were assessed by asking the woman if she had ever: hidden money, hidden house and car keys, established a code with family, asked neighbour to call police if violence begin. Women were asked about availability of: social security numbers, rent and utility receipts, birth certificate, bank account numbers, marriage license, insurance policies and number, valuable jewellery, hidden bag with extra clothing and important phone numbers. Each private session was	Adoption of safety behaviours	From 132 women who were abused: 36.4% (n=48) were black, 34.1% (n=45) were Hispanic and 29.5% (n=39) were white. All women had income below poverty level and were ages 14- 42 years, with a mean of 23.5 (SD=5.78), 30.3% were adolescents and 31.8% were pregnant for first time. Adoption of safety behaviours: Repeated measures analysis of variance showed significant change across was noted in the adoption of each safety behaviour (p<0.0001). All behaviours demonstrated a significant change from visit 1 (entry) to visit 2 (during pregnancy) except for removing weapons which the change was not significant until visit 4 (2 month after the delivery). The safety behaviours changes across time from visit 1 (entry) to visit 6 was significant (F=150.655; df=5,645; p<0.001). Furthermore, the adoption of safety behaviours occurred across all ethnic groups. A correlation analysis showed	Funding: The study was supported by grant from the National Centre for Injury Prevention& control, Centre for Disease Control and Prevention, Atlanta,GA.

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				conducted in a private room in the antenatal clinic. Components of safety behaviour were reviewed with each woman and women were given information and strategies for staying safe. Apart from a safety plan, the women were offered a list of community resources, including, emergencies shelter, legal aid, law enforcement, counselling and a support group for themselves and their children. As a part of intervention, the investigator offered to assist with telephone calls to social services and to act as an advocate for woman.		no difference in the proportion of applicable safety behaviours adopted by women with a parity of 1 compared to women with parity greater than 1. Age was positively related to the proportion of behaviours reported at visit 1 (r=0.18 p=0.019) and at visit 2 (r=0.21; p=0.008).	
Marchant et al. Addressing domestic violence through maternity services: policy and practice. 2001. Midwifery 17[3], 164-170[192]	Retrospective survey study EL=3	To explore policies and practices in maternity units that aim to identify, assess and support women experiencing domestic violence.	Country: UK A postal survey, conducted between June and October 1999, of all NHS Trusts in England and Wales that provided maternity services. A total of 211 maternity units in England and Wales were sent a questionnaire. The overall response rate was 87% (n=183).	After piloting, questionnaires were sent by post to maternity units in England and Wales. A letter to the head of midwifery explaining aim of the survey accompanied each questionnaire. They were asked to forward the questionnaire to the most appropriate midwife with responsibility or expertise in domestic violence issue. The questionnaire focused on provision of information, strategies for referral, liaison with other disciplines and opportunities for Training. Respondents were also asked to comment on	Use of written policies and agreed practices for identifying and referring women experiencing domestic violence, such as: Availability of information Relationship between polices and recommendations	57% (103) of units had no written policy or agreed practice for identifying women experiencing domestic violence. 12% (n=22) of units had written policies and a further 30% (n=54) had some form of agreed practice. 57% (n=104) of units displayed material about domestic violence in places where women receive maternity care. Relationship between polices and recommendations: Having a written policy or agreed practice was	Funding: the study was supported by the BMA Rose Dawkins Fellowship and the Department of Health research and Policy Programme grant to the NPEU.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
				written policies and agreed common practice which did not include written documentation.	Identifying women at risk Offering women an appointment without their partner.	statistically significantly associated with implementation of three of the four recommendation (Routinely question all women on domestic violence, offering women an appointment without partner, participating in internal or local study and training day and displaying material about domestic violence). Asking routine questions of all women, approached significance (p=0.064) for the trusts with written policies compared to trusts with no agreed policies or practices (p=0.0007). On the other hand Trusts with written policies were significantly more likely than Trusts with no policies or practices to routinely questioning all women about domestic violence. 12% of units (21/183) routinely screened for domestic violence by asking specific question about domestic violence. Offering women an appointment without their partner: Fewer than half of maternity units (n= 88, 49%) routinely offered women an	

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
						appointment without their partner, Only three units had undertaken audit on their domestic violence practices. Where women were identified as experiencing domestic violence, over two thirds of units would notify women's GP (127/183) and health visitor (136/183), while over half would notify the supervisor of midwives (107/183), consultant obstetrician (110/183), social worker (110/183) and the child protection team (100/183). Fewer than one quarter would notify police (33/183) or community paediatrician (13/183) while 5% (9/183) notified none of these. 87% (n=155) of the trusts recorded information about disclosure of violence in hospital record.	

Q4. What additional information should be provided to women experiencing domestic abuse in order to improve pregnancy outcomes? (Additional here means over and above that described in the NICE Antenatal care guideline.)

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McFarlane et al. Safety behaviors of abused women after an intervention during pregnancy. 1998. JOGNN - Journal of Obstetric, Gynecologic, and Neonatal Nursing 27[1], 64-69[191]	Prospective, ethnically stratified cohort study EL=2-	To evaluate an intervention protocol, administered during pregnancy, for increasing safety-seeking behaviours of abused women	Country: US The participants were 132 pregnant women recruited from public antenatal clinics that reported physical or sexual abuse prior or during the present pregnancy. Women were screened for abuse using the Abuse Screen assessment tool (the assessment was a part of routine nursing care). If women answered yes to 4 specific questions in the 6 item scale, they were invited to the study and then each women was administered a Safety Assessment which was offered in English and Spanish. After completion of the Safety Assessment, the women received an intervention protocol. Each woman received the intervention three times during pregnancy. After completion of their pregnancies, women were interviewed again at 2, 6, and 12 months to assess their use of safety behaviours.	Intervention: Three education, advocacy, and community referral sessions that included information on safety behaviours. Adoption of safety behaviours by abused women was measured before the intervention, twice during pregnancy, and at 2, 6, and 12 months after completion of the pregnancy. Women's safety behaviour was determined by a 15 item safety assessment questionnaire. Each behaviour was recorded as yes, no, or not applicable. Behaviours were assessed by asking the woman if she had ever: hidden money, hidden house and car keys, established a code with family, asked neighbour to call police if violence begin. Women were asked about availability of: social security numbers, rent and utility receipts, birth certificate, bank account numbers, marriage license, insurance policies and number, valuable jewellery, hidden bag with extra clothing and important phone numbers. Each private session was conducted in a private room in	Adoption of safety behaviours	From 132 women who were abused: 36.4% (n=48) were black, 34.1% (n=45) were Hispanic and 29.5% (n=39) were white. All women had income below poverty level and were ages 14- 42 years, with a mean of 23.5 (SD=5.78), 30.3% were adolescents and 31.8% were pregnant for first time. Adoption of safety behaviours: Repeated measures analysis of variance showed significant change across was noted in the adoption of each safety behaviour ($p<0.0001$). All behaviours demonstrated a significant change from visit 1 (entry) to visit 2 (during pregnancy) except for removing weapons which the change was not significant until visit 4 (2 month after the delivery). The safety behaviours changes across time from visit 1 (entry) to visit 6 was significant ($F=150.655$; $df=5,645$; $p<0.001$). Furthermore, the adoption of safety behaviours occurred across all ethnic groups. A correlation analysis showed no difference in the proportion	Funding: The study was supported by grant from the National Centre for Injury Prevention& control, Centre for Disease Control and Prevention, Atlanta, GA.

Reference	Study type and evidence level	Aim of study	Population and setting	Service intervention / survey details	Outcomes	Findings	Comments
				the antenatal clinic. Components of safety behaviour were reviewed with each woman and women were given information and strategies for staying safe. Apart from a safety plan, the women were offered a list of community resources, including, emergencies shelter, legal aid, law enforcement, counselling and a support group for themselves and their children. As a part of intervention, the investigator offered to assist with telephone calls to social services and to act as an advocate for the woman.		of applicable safety behaviours adopted by women with a parity of 1 compared to women with parity greater than 1. Age was positively related to the proportion of behaviours reported at visit 1 (r=0.18 p=0.019) and at visit 2 (r=0.21; p=0.008).	