National Institute for Health and Care Excellence

Final

Pelvic floor dysfunction: prevention and non-surgical management

[B] Risk factors for pelvic floor dysfunction

NICE guideline NG210

Evidence review underpinning recommendations 1.2.1 (and content of box 1 apart from co-existing long term conditions) to 1.2.3 as well as recommendations 1.3.2, 1.3.5 to 1.3.7 and 1 research recommendation in the NICE guideline

December 2021

Final

These evidence reviews were developed by the National Guideline Alliance which is a part of the Royal College of Obstetricians and Gynaecologists

Disclaimer

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or service users. The recommendations in this guideline are not mandatory and the guideline does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

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Summary of review questions covered in this chapter

This evidence review contains information on 2 review questions (covered by one protocol) relating to the risk factors for developing pelvic floor dysfunction.

- What are the non-obstetric risk factors (for example age, ethnicity and family history, diet [including caffeine and alcohol], weight, smoking, physical activity) for pelvic floor dysfunction?
- What are the obstetric risk factors for pelvic floor dysfunction?

Risk factors for pelvic floor dysfunction

Review questions

- What are the non-obstetric risk factors (for example age, ethnicity and family history, diet [including caffeine and alcohol], weight, smoking, physical activity) for pelvic floor dysfunction?
- What are the obstetric risk factors for pelvic floor dysfunction?

Introduction

It is recognised that many women develop symptoms of pelvic floor dysfunction during or after pregnancy and childbirth. These symptoms are often perceived by women as a normal consequence of childbirth and they may not seek help.

Currently there is no guidance on identifying those women at greatest risk so that they could be offered interventions to prevent development or progression of pelvic floor dysfunction in relation to pregnancy. Women identified to have risk factors before embarking on a pregnancy may benefit from making lifestyle changes that could improve symptoms or prevent them from developing them.

Other women may develop symptoms of pelvic floor dysfunction without being exposed to the risk factors associated with pregnancy and childbirth. There is also no current guidance regarding the women who are at greatest risk of pelvic floor dysfunction or the interventions that could reduce that risk. Women with risk factors would benefit from information on lifestyle changes and advice about other healthcare decisions that could prevent or reduce the symptoms of pelvic floor dysfunction.

Summary of the protocol

See Table 1 for a summary of the Population, Exposure, Confounders and Outcome (PECO) characteristics of this review.

Table 1: Summary of the protocol (PECO table)

Population	Women and young women (aged 12 years and older)
Exposure (risk factor)	Suggestive but not exhaustive risk factors include: **Non-Obstetric risk factors** • Age • Pre or post menopause • Ethnicity • Family history • Diet (including caffeine and alcohol intake) • Body weight and/or body mass index (BMI) • Smoking history • Physical activity levels (including high activity levels / elite athletes) • History of hormone therapy • History of physical & emotional abuse • Physical disabilities • Cognitive impairment • According to those who do not identify themselves as women, but who have female pelvic organs

	Obstetric risk factors • Number of children • Number of children delivered vaginally • Number of children delivered via caesarean section • Birth weight of first child • Maternal height • Development of pelvic floor dysfunction in pregnancy • Forceps birth • Ventouse birth • Length of 2nd stage of labour • Tears • Weight gain in pregnancy Risk factors not listed above, yet identified in the included publications to significantly increase or decrease the risk of pelvic floor dysfunction will be included.
Confounders	Any of those listed above
Outcome	Risk of developing the following symptoms associated with pelvic floor dysfunction: • urinary incontinence • emptying disorder of the bladder • emptying disorder of the bowel • faecal incontinence • sexual dysfunction • pelvic organ prolapse • pelvic pain As measured using odds ratio (OR), or hazard ratio (HR) adjusted from regression analysis.

BMI: body mass index; HR: Hazard ratio; OR: Odds ratio

For further details, see the review protocol in appendix A.

Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual. Methods specific to this review question are described in the review protocol in appendix A and the methods document (supplementary document 1).

Declarations of interest were recorded according to NICE's conflicts of interest policy.

Clinical evidence

Included studies

Women recruited in an obstetric setting

Fifteen studies were included for this review, 14 were prospective studies assessing risk factors for developing pelvic floor dysfunction (Bahl 2005, Blomquist 2019, Blomquist 2018, Durnea 2017, Durnea 2014, Fritel 2008, Guerby 2018, Handa 2019, Handa 2011, Harvey 2008, Rogers 2014, Serati 2008, Torrisi 2012, Urbankoa 2019) and 1 was a cross-sectional study (Bodner-Adler 2019). Studies by Blomquist 2019 and Blomquist 2018 and also Durnea 2017 and Durnea 2014 assessed risk factors for developing pelvic floor dysfunction with the

same group of women, but each paper reports different risk factors. Therefore, there was no double counting and all of these were included.

The following studies have been included, but only reported statistically significant results, insignificant risk factors were not reported: Durnea 2017, Guerby 2018, Harvey 2008, Serati 2008 and Urbankova 2019.

A study by Rogers 2014 reported risk factor data as standardised Beta. These data were reported in the evidence tables (appendix D) but could not be quality appraised using the GRADE approach (and are therefore not in appendix F).

The included studies are summarised in Table 2.

Women not recruited in a non-obstetric setting

Thirteen studies were included for this review, 2 were prospective studies (Bradley 2008 and Yuaso 2018) and 11 were case-control studies assessing risk factors for developing pelvic floor dysfunction (Amselem 2010, Badalian 2010, Bradley 2005, DeAraujo 2009, Ghandour 2017, Huang 2006, Islam 2016, Lawrence 2007, Megabiaw 2013, Uustal 2004 and Wu 2014).

Four studies were included which only reported statistically significant results, nonsignificant risk factors were not reported (Amselem 2010, Bradley 2008, Huang 2006, Uustal 2004).

The included studies are summarised in Table 3.

See the literature search strategy in appendix B and study selection flow chart in appendix C.

Excluded studies

Studies not included in this review are listed, and reasons for their exclusion are provided in appendix K.

Summary of studies included in the evidence review

Summaries of the studies that were included in this review are presented in Table 2 (women recruited in an obstetric setting) and Table 3 (women recruited in a non-obstetric setting).

Table 2: Summary of included studies: women recruited in an obstetric setting.

Study	Population	Study design	Risk factor	Symptom	Confounders
Bahl 2005 Prospective cohort study UK	N=393	Data collected immediately post birth, 6 weeks, 1 year and 3 years postpartum.	• Caesarean birth	Lower urinary tract • Urinary leakage • Difficulty holding urine • Frequency Anorectal • Pain on defecation • Constipation • Haemorrhoids • Flatus incontinence • Faecal incontinence Sexual • Pain on intercourse • Pain that prevented intercourse	Maternal age, parity, body mass index of >30 kg/m2, and infant birth weight of >4 kg
Blomquist 2018 Longitudinal cohort study USA	N=1528	Women were assessed a minimum of 5 years from the first time they gave birth and then annually	• Mode of birth (spontaneous, caesarean, operative vaginal) • Age at the first time they gave birth (<30, 30-34, >35) • Race (non-black, black) • Parity (1, 2, >3)	• Stress UI • Overactive bladder • Anal incontinence • Pelvic organ prolapse	Parity, age at the first time they gave birth, BMI and race

Study	Population	Study design	Risk factor	Symptom	Confounders
			• BMI (<25, 25-29, >30)		
Blomquist 2019 Longitudinal study USA	N=1143	Women recruited 5-10 years after first giving birth. Data collected annually for up to 9 years	• Pelvic muscle strength • BMI • Genital Hiatus	• Stress UI • Overactive bladder • Anal incontinence • Pelvic organ prolapse Note: all symptoms were reported for women following vaginal births and also caesarean births	Caesarean birth, BMI, genital hiatus and pelvic muscle strength
Bodner-Adler 2019 Cross sectional study Austria	N=200	PFD was assessed during pregnancy	• Age • BMI • Parity • Smoking • Multiple pregnancy • Family history.	• PFD (significantly bothered by bladder, bowel, pelvic organ prolapse or sexual function symptoms)	Mode of delivery, fetal weight, gestational age at study entry.
Durnea 2014 Prospective cohort Ireland	N=872	PFD was assessed at 15 weeks gestation and 1 year post birth	• Mode of birth (spontaneous vaginal birth, vacuum, forceps)	• Urinary frequency • Nocturia • Urinary urgency • UUI • SUI • Flatus incontinence • Faecal incontinence with diarrhoea • Obstructed defecation • Prolapse sensation • Vaginal laxity • Vaginal tightness/vaginismus • Dyspareunia	Maternal age, body mass index (BMI), education, smoking and marital status.
Durnea 2017	N=872	PFD was assessed at 15 weeks	• Dyspareunia pre-pregnancy	• SUI	Any risk factors that were p<0.1 were

Study	Population	Study design	Risk factor	Symptom	Confounders
Prospective cohort Ireland		gestation and 1 year post birth	• Elective caesarean section • Emergency caesarean section • Episiotomy • Faecal urgency pre-pregnancy • Flatus incontinence pre-pregnancy • Foetal head circumference • Forceps birth • High waist/height ratio • High hip circumference (>95cm) • High prolapse section score pre-pregnancy • High sexual dysfunction section score pre-pregnancy • IOL with amniotomy + oxytocin • IOL with prostaglandins • IOL with prostaglandins + oxytocin • Levator Ani Muscle ballooning • Levator Ani Muscle trauma • Perineal tear grade 3 • Poor social support • Recurrent UTIs • Smoker (current)	• UUI • Urinary urgency • Flatus incontinence • Faecal urgency • Vaginal laxity • Vaginal tightness/vaginismus • Dyspareunia • POP • Prolapse sensation • NB not all risk factors have results for each symptom	included. N=62 risk factors included PFD symptoms pre pregnancy, anthropometric measures of mother and baby, age, mode of birth, education, employment, smoking, alcohol consumption, income, drugs for induction of labour, exercise levels, tears etc.

Study	Population	Study design	Risk factor	Symptom	Confounders
			• Stress urinary incontinence pre-pregnancy • Urgency urinary incontinence pre-pregnancy • Urinary urgency pre-pregnancy • Vacuum birth • Vaginal laxity pre-pregnancy • Vigorous exercising • Waist circumference (> 90 centile)		
Fritel 2008 Quasi-randomised comparative study France	N=627	Questionnaire was mailed 4 years after women gave birth	• Maternity (restrictive / systematic episiotomy) • High school diploma (yes/no) • Age when giving birth (<30, >30) • Gestational age (<40, >40) • Epidural (yes/no) • Active second phase (<20, >20mins) • Mode of birth (Spontaneous, operative, caesarean) • Birth weight (<4000g, >4000g) • Postpartum pelvic floor exercises (yes/no)	• UI • Anal incontinence	Women's age, educational level, gestational age, epidural, time of pushing, mode of birth, birthweight, and postpartum pelvic floor exercises

Study	Population	Study design	Risk factor	Symptom	Confounders
Guerby 2018 Prospective observational cohort study France	N=111	Data collected during hospitalisation on day 2, and at 2 and 6 months postpartum	• Birth in the OP position without attempted rotation • Foetal head station (low or outlet)	• Anal incontinence	Not explicitly clear on the covariates in the multivariate logistic regression, but likely: age, BMI, parity, episiotomy, duration of labour, uterine scarring, foetal head station, birth weight and spontaneous birth
Handa 2019 Longitudinal cohort study US	N=453	Recruited 5 to 10 years after birth of their first child and followed annually	• No levator ani avulsion • Levator ani avulsion	• Prolapse on examination • Prolapse symptoms • SUI • Overactive bladder • Anal incontinence	Age, race, macrosomia, prolonged second stage of labour and forceps
Handa 2011 Longitudinal cohort study USA	N=1011	Women were recruited 5–10 years after birth of their first child	• All births caesarean before active labour • At least one caesarean birth and never reached complete cervical dilation • At least one caesarean birth after complete cervical dilation • At least one vaginal birth and no operatives • At least one vaginal birth and at least one operative	• SUI • Overactive bladder • Anal incontinence • Prolapse symptoms • Prolapse to or beyond the hymen on examination	Race, Maternal age, multiparty, obesity, smoking,
Harvey 2008	N=50	Women recruited preterm and completed follow-	• 100pg/mL decrease in serum relaxin measured between 24-28 weeks	• Subjective incontinence • Prolapse	Age, BMI, smoking status, level of overall physical activity, gestational age at

Study	Population	Study design	Risk factor	Symptom	Confounders
Nested observational cohort study Canada		up assessment 1-4 years post-partum	• Each 12 weeks of breastfeeding • Each higher level of physical activity (none, 1-3 times per week or 3 or more per week)	NB only significant results were reported, therefore there are not results for all risk factors for each symptom	birth, route of birth, oxytocin use, episiotomy, epidural, breast- feeding, birthweight, head circumference and length of first and second stage of labour
Rogers 2014 Prospective cohort USA	N=782	Women assessed during early and late pregnancy and then at 6 months postpartum	• Birth mode • Age • BMI • Non-Hispanic	• POPQ point Aa • POPQ point Ba • Female sexual function index	Age, BMI and weight gain as well as non-Hispanic White race/ethnicity
Serati 2008 Prospective cohort Italy	N=336	Women were recruited on labour ward and re-interviewed at 6 and 12 months	• Duration of the active second stage >1hr	• Urinary incontinence	Unclear
Torrisi 2012 Prospective study Italy	N=744	Women were interviewed 2-3 days and then 3 months postpartum	• Age • BMI before pregnancy • Coexisting factors • Previous UI • Previous AI • Mode of birth • Perineum intact	• Urinary incontinence • Anal incontinence	Age, family history, constipation, chronic cough, smoking, incontinence before and during continence, mode of birth, perineum intact, episiotomy.
Urbankova 2019	N=3648	Women were recruited on labour ward and follow-up	• Age • Height • BMI before pregnancy	• Urinary incontinence • Pelvic organ prolapse	Age (per additional year), BMI before

Study	Population	Study design	Risk factor	Symptom	Confounders
Prospective observational cohort study Czech Republic		happened at 6 weeks and 1 year after birth	• BMI increase • Duration of the first stage of labour		pregnancy, BMI increase

AI: Anal incontinence; BMI: Body mass index; IOL: induction of labour; N: Number; OP: occiput posterior; PFD: Pelvic floor dysfunction; POP: Pelvic organ prolapse; POPQ: Pelvic organ prolapse quantification system; SUI: Stress urinary incontinence; UI: Urinary incontinence; UUI: Urge urinary incontinence; UTI: Urinary tract infection.

Table 3: Summary of included studies: women recruited in a non-obstetric setting.

Study	Population	Study design	Risk factor	Symptom	Confounders
Amselem 2010 Cross-sectional study Spain	N=596	Women attending female outpatients gynaecological clinic	• Age • Constipation • Obstetric trauma	• Pelvic floor damage	Age, constipation and obstetric trauma
Badalian 2010 Cross-sectional study USA	N=2197	Women were interviewed as part of the National Health and Nutrition Examination Survey (NHANES)	• Vitamin D	• Pelvic floor disorders • UI	Age, BMI, parity, education, and race or ethnicity
Bradley 2008 Longitudinal study	N=270	Postmenopausal women were recruited and completed yearly questionnaires for 4 years	• BMI • Age • Coffee drinking	• Seeing or feeling a vaginal bulge • SUI • Urge UI • Overactive bladder symptoms • Obstructive bladder symptoms	Maximal vaginal descent, age, BMI, and time and for overactive bladder, obstructive bladder

Study	Population	Study design	Risk factor	Symptom	Confounders
USA				• Obstructive bowel symptoms • Bowel pain symptoms NB only significant results were reported, therefore there are not results for all risk factors for each symptom	symptoms also coffee drinking and exercise.
Bradley 2005 Cross-sectional study USA	N=297	Women who were enrolled in the Women's Health Initiative (WHI) Hormone Replacement Therapy Clinical Trial	• Age • Coffee drinking • BMI • Exercise • Smoking	• Difficulty emptying bladder • Feeling of incomplete bladder emptying • Weak urinary stream • Intermittent urinary stream • Vaginal or perineal splinting to defecate • Feeling of incomplete bowel movements • Urgency • Urge urinary leaking • Urinary urgency • Faecal urgency • Pelvic heaviness	Age, coffee drinking, BMI, exercise, smoking
De Araujo 2009 Cross-sectional study Brazil	N=377	Indigenous women living in Xingu Indian Park completed questionnaires and had physical exams carried out	• Vaginal birth • BMI >25 • Resting pressure • Maximum pressure	• Prolapse (defined as stage II and III of POP-Q) • Prolapse (defined as the presence of Ba point ≥0)	Age
Ghandour 2017 Cross-sectional study	N=900	Women recruited from the waiting areas of clinics completed a survey	• Smoking • Chronic cough • BMI	• Stress urinary incontinence • Urinary frequency/nocturia • Urinary urgency • Urgency urinary incontinence • Voiding difficulty • Pelvic organ prolapse	Smoking, chronic cough, BMI, hypertension and diabetes

Study	Population	Study design	Risk factor	Symptom	Confounders
Lebanon				• Obstructed defecation • Anal incontinence • Dyspareunia	
Huang 2006 Cross-sectional study USA	N=1348	Data from the White and Asian women who had completed the Reproductive Risks of Incontinence Study at Kaiser (RRISK) cohort study, data was collected by interview	• BMI • Hysterectomy • Frequent UTIs • Poor/fair health • Age • Oral oestrogen use • Birth of infant weighing more than 4000g • History of 3rd or 4th degree tear • Irritable bowel syndrome • Frequent constipation	• SUI • Urge UI • Anal incontinence	Data were adjusted for each symptom typical risk factors included: age, parity, BMI, hysterectomy, episiotomy, oral oestrogen, pudendal anaesthesia and infant birth weight.
Islam 2016 Cross-sectional study Bangladesh	N=1590	Women who took part in the Bangladesh Midlife Women's Health Study were interviewed	• Age • Years of education • Wealth • Parity	• UI • Faecal incontinence • POP • (One or more) Pelvic floor disorders	Unclear, 'potential and known risk factors for PFD'
Lawrence 2007 Cross-sectional study	N=3962	Women from the Kaiser Permanente Southern California membership health plan completed a questionnaire	• Obesity	• SUI • OAB • AI • Any PFD	Models were adjusted for various risk factors including: age, race/ethnicity, mode of birth, parity, hormone therapy use, menopause status, hysterectomy,

Study	Population	Study design	Risk factor	Symptom	Confounders
USA					smoking, caffeine use, history of depression, lung disease /asthma and neurological disease
Megaiaw 2013 Cross-sectional study Ethiopia	N=395	Women from the Dabat district in Ethiopia completed questionnaires and had physical exams carried out	• Age • Kebel (urban, highland rural, lowland rural) • Age at the last time they gave birth • Number of births • Hours of carry heavy objects/day • Prolonged labour	• Pelvic organ prolapse stage II–IV	Variables that were significant in univariate analysis, variables included: age, kebel, number of births, hours of carrying heavy objects
Uustal 2004 Cross-sectional study Sweden	N=1336	Women born in 1937 and 1957 were invited to participant by completing a postal questionnaire	• Anal sphincter rupture • Chronic bronchitis • Age • Feeling of pelvic heaviness • Obesity • Having had more than 2 children • Parity	• Flatus incontinence • Loose stool incontinence • Prolapse symptoms • Genital bulge • Digitation at defecation	Variables that were significant in univariate analysis, variables included: pelvic heaviness, bulge, digitation by defecation, sphincter rupture compared to no sphincter rupture, three or more births compared to one or two births and large tear at birth compared to no tear at birth
Wu 2014 Cross-sectional study	N=7924	As part of the National Health and Nutritional Examination Survey, women	• Age • Race • High school education • Poverty income ratio	• Pelvic floor disorders	Unclear, but likely to include age in decades, race, education, poverty status, BMI, comorbid

Study	Population	Study design	Risk factor	Symptom	Confounders
USA		were interviewed in their homes and had a physical exam	• BMI • Hysterectomy • Parity • Mode of birth		diseases, hysterectomy, parity, and mode of birth.
Yuaso 2018 Longitudinal population-based study Brazil	N=865	Women over 60 were interviewed in 2006 and again in 2010	• Dependence on instrumental activities on daily living • Dependence on basic activities on daily living • Polypharmacy • Falls	• Double incontinence	Sociodemographic, health status, life-style and functionality

AI: Anal incontinence; BMI: Body mass index; N: Number; OAB: Overactive bladder; PFD: Pelvic floor dysfunction; POP: Pelvic organ prolapse; POPQ: Pelvic organ prolapse quantification system; SUI: Stress urinary incontinence; UI: Urinary incontinence; UTI: Urinary tract infection.

See the full evidence tables in appendix D and the forest plots in appendix E.

Quality assessment of studies included in the evidence review

See the evidence profiles in appendix F.

Economic evidence

Included studies

A single economic search was undertaken for all topics included in the scope of this guideline but no economic studies were identified which were applicable to this review question. See the literature search strategy in appendix B and economic study selection flow chart in appendix G.

Excluded studies

Economic studies not included in this review are listed, and reasons for their exclusion are provided in appendix K.

Economic model

No economic modelling was undertaken for this review because it did not involve a comparison of competing courses of action.

Brief summary of evidence

Women recruited from an obstetric setting:

Age

- High quality evidence from 2 studies showed increasing age increased the risk of urinary incontinence/overactive bladder (UI/OAB), but low quality evidence from another study showed no association.
- High quality evidence from 1 study showed increasing age increased the risk of pelvic organ prolapse, but low quality evidence from another study showed no association.
- Low quality evidence showed no effect of age on the risk of anal incontinence (AI).
- Very low quality evidence from 1 study showed increasing age increased the risk of PFD.

Family history

- High quality evidence from 1 study showed a family history of pelvic floor dysfunction increased the risk of UI/OAB and AI.
- Low quality evidence from 1 study showed positive family history increased the risk of PFD.

Body weight

- High quality evidence indicated greater BMI increased the risk of OAB/UI but only when women were divided into high versus low BMI groups.
- Low quality evidence from 1 study showed BMI greater than 25 increased the risk of PFD.
- High quality evidence showed an increased risk of stress urinary incontinence (SUI) with higher body weight (measured as BMI greater than 30kg/m^2, and waist circumference).
- Low to high quality evidence from 2 studies showed higher body weight (measured as BMI greater than 30kg/m^2 and waist to height ratio) increased the risk of AI, however another low quality study showed no effect of BMI on risk of AI.

Active second phase of labour

- High quality evidence suggested having a second phase of labour greater than 1 hour increases the risk of UI.
- Low quality evidence indicated the second phase of labour lasting longer than 20 minutes as a risk factor was not associated with risk of UI/OAB.
- High quality evidence suggested having a second phase of labour greater than 20 minutes, increases the risk of AI.
- High quality evidence which assessed each additional minute of the second stage did not find an association with the risk of pelvic organ prolapse.

Mode of birth

- Low to high quality evidence indicated vaginal delivery was generally associated with an increased risk of symptoms of PFD when compared to Caesarean delivery.

Multiple pregnancy

- Low quality evidence from 1 study showed that women with multiple pregnancy were at increased risk of PFD compared to those with singleton pregnancy.

PFD symptoms pre-pregnancy

- High quality evidence suggested that symptoms of pelvic floor dysfunction (PFD) pre-pregnancy increased the risk of PFD symptoms post-pregnancy.

Women recruited from a non-obstetric setting:

Age

- Moderate to high quality evidence identified increasing age as a risk factor for OAB and UI.
- Moderate quality evidence showed an association between increasing age and the risk of urge UI.
- Low quality evidence showed an association between increasing age and the risk of SUI.
- High quality evidence identified increasing age as a risk factor for pelvic floor damage

  Low to moderate quality evidence showed inconsistent results about the association between age and AI
- High quality evidence identified increasing age as a risk factor for loose stool incontinence
- Moderate quality evidence showed an association between increasing age and the risk bowel pain symptoms.
- High quality evidence identified increasing age as a risk factor for incomplete bladder and bowel moments,
- High quality evidence identified increasing age as a risk factor for intermittent urinary stream,
- Moderate to high quality evidence identified increasing age as a risk factor for obstructive bladder symptoms.
- High quality evidence identified increasing age as a risk factor for weak urinary stream
- High quality evidence identified increasing age as a risk factor for any PFD symptom.
- Low quality evidence showed no association between age and POP,

Body mass index and obesity

- High quality evidence indicated an association between BMI and the risk of developing any PFD symptom.

- Moderate quality evidence showed an association between BMI and the risk of urge UI.
- Low to moderate quality evidence showed inconsistent results about the association between BMI and the risk of SUI.
- Moderate to high quality evidence showed an increased risk of OAB with obesity or increasing BMI.
- Moderate to high quality evidence showed an increased risk of AI with obesity or increasing BMI.
- High quality evidence indicated an association between greater BMI and obstructed defecation and dyspareunia,
- BMI or obesity was not associated with an increased risk of:
  - Nocturia (low quality evidence)
  - Difficulty emptying the bladder (moderate quality evidence)
  - POP (low to moderate quality evidence)

Chronic constipation

- High quality evidence identified constipation as a risk factor for developing pelvic floor damage.
- Moderate quality evidence identified constipation as a risk factor for AI.

Hysterectomy

- Moderate quality evidence indicated an association between having had a hysterectomy and the risk of SUI.
- High quality evidence indicated an association between having had a hysterectomy and the risk of any PFD symptom.

Parity

- High quality evidence suggested an association between parity and any pelvic floor symptom.
- High quality evidence from 2 studies indicated an association between higher parity and POP, but a further low quality study did not find an association between parity and POP.
- Parity was not associated with
  - AI (low quality evidence)
  - Genital bulge (moderate quality evidence)

Smoking

- Low to moderate quality evidence indicated an association between smoking and the risk of AI.
- Smoking was not associated with the risk of:
  - OAB (moderate quality evidence)
  - UI (low quality evidence)
  - SUI (low quality evidence)
  - Nocturia (low quality evidence)
  - Emptying disorders of the bladder (moderate quality evidence)
  - Dyspareunia (low quality evidence)
  - Obstructed defecation (low quality evidence)
  - POP (low quality evidence)

Chronic cough or bronchitis

- Moderate quality evidence indicated chronic cough was associated with increased risk of AI
- Low quality evidence indicated chronic cough was not associated with OAB.
- Moderate quality evidence indicated chronic cough was not associated with emptying disorders of the bladder.

3rd/4th degree tear/anal sphincter rupture

- Moderate quality evidence indicated a history of 3rd or 4th degree tear was associated with increased risk of AI.
- High quality evidence indicated a history of anal sphincter rupture was associated with increased risk of AI.

Exercise / physical activity

- Moderate quality evidence indicated that exercise more than once per week was associated with a reduced risk of developing urge UI.
- High quality evidence indicated that exercise more than once per week was associated with a reduced risk of developing AI.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

As pelvic floor dysfunction is a complex, multi-factorial process the committee agreed that the risk of developing the individual associated symptoms (urinary incontinence, emptying disorder of the bladder, emptying disorder of the bowel, faecal incontinence, sexual dysfunction, pelvic organ prolapse, pelvic pain) were the most appropriate critical outcomes for this prognostic review. The outcomes needed to be from an adjusted regression analysis (taking into account other risk factors), and could be measured using odds ratio (OR), risk ratios (RR) or hazard ratio (HR).

The quality of the evidence

The quality of the evidence for this review was assessed using GRADE and ranged from very low to high. In general, the evidence quality was downgraded due to imprecision of the effect estimates. In a few cases the evidence quality was downgraded for risk of bias due to poor reporting of confounders or due to the applicability of the study population.

No evidence was found for history of hormone therapy, history of physical & emotional abuse, physical disabilities, cognitive impairment or those who do not identify themselves as women, but who have female pelvic organs.

Benefits and harms

Even though the evidence was divided into non-obstetric and obstetric risk factors the committee noted that in clinical practice they would be divided into modifiable and non-modifiable factors so that risk management can be planned and agreed with the woman.

Modifiable factors:

The evidence indicated that physical activity contributed to protection against symptoms of pelvic floor dysfunction including urge urinary and anal incontinence. The committee agreed that it was important to encourage people to be physically active and acknowledged that

clinicians should follow the UK Chief Medical Officers' physical activity and other NICE guidelines: Physical activity: brief advice for adults in primary care and Physical activity: walking and cycling.

The evidence supported the committee's opinion that obesity was a risk factor in the development of symptoms of pelvic floor dysfunction, as it is associated with a rise in intra-abdominal pressure. Symptoms included pelvic organ prolapse, urinary incontinence, flatal and faecal incontinence. The committee were conscious that in their clinical experience very few women will have BMI that is lower than 25kg/m^2. Nonetheless, the committee agreed that prevention of and weight reduction in patients with obesity is a public health priority. They therefore recommended that advice on weight loss should be given from this threshold as this is likely to generate significant benefit to the overall well-being of the woman. The committee agreed to cross refer to the NICE guideline on managing obesity, and (if relevant) the NICE guideline on weight management before, during and after pregnancy.

Based on their expertise and the evidence presented, the committee recognised that chronic constipation increased the risk of pelvic floor dysfunction. In addition, the committee agreed that other conditions such as chronic cough; which also cause a rise in intra-abdominal pressure are likely to increase the risk of pelvic floor dysfunction. Smoking can cause a chronic cough and was also shown to increase the risk of anal incontinence. Due to the health consequences associated with tobacco use, the committee advised that clinicians should follow the NICE Stop Smoking Interventions and Services guideline as it provides applicable smoking cessation strategies and if relevant Smoking: stopping in pregnancy and after childbirth. Since the age of the guideline's population is 12 years and older the committee also thought that it was important to refer to Smoking prevention in schools and generally to how to reduce harm of smoking in Smoking: Harm reduction .

The committee agreed that in their experience women with a history of previous hysterectomy had an increased risk of developing pelvic floor dysfunction due to disruption of ligamentous support, and this was supported by the evidence presented.

Non-modifiable risk factors

Age

The evidence showed that the risk of pelvic floor dysfunction increases with age. Even though this is a factor that cannot be modified the committee agreed that it is important to highlight this so that women of all ages take preventative action such as pelvic floor muscle training (see evidence report F) to have increased muscle strength later in life.

Family history

There was evidence that a family history of PFD symptoms also increases the risk of developing overactive bladder, urinary incontinence and faecal incontinence. Even though the evidence came from an obstetric setting the committee thought that this can be generalised to a non-modifiable risk factor for all women rather than only for pregnant women.

Related to pregnancy

Pre-pregnancy and antenatal

The evidence suggested that a number of obstetric risk factors increased a woman's risk of pelvic floor dysfunction. This included, maternal age over 30 years, which increased the risk of developing overactive bladder, urinary incontinence and pelvic organ prolapse.

One study supported the committee opinion that post-partum pelvic floor training reduced the risk of urinary incontinence. The committee discussed that in their experience the most effective time to provide information about pelvic floor muscle training and its effect on symptoms is the antenatal period. This is as the post-natal period can often be a difficult time for new mothers to access services (see evidence report F for details of preventative pelvic floor muscle training).

Multi-parity was also reported to be a risk factor and this was consistent with the committee's experience and was therefore listed at a risk factor to take account of.

The evidence also suggested that pre-existing symptoms of pelvic floor dysfunction, including symptoms first experienced during pregnancy were associated with an increased risk of symptoms such as pelvic organ prolapse, overactive bladder, urinary incontinence, flatal and faecal incontinence getting worse or persisting. The committee discussed that the women should be informed that there is this risk and should be encouraged to try and prevent this from happening and if symptoms do occur make lifestyle changes where applicable and do pelvic floor muscle training to help with these symptoms.

There was evidence that multiple pregnancy (such as twin or triplet pregnancies) was a risk factor – however this came from a single low quality study. For this reason the committee made a research recommendation to investigate multiple pregnancy as a risk factor for pelvic floor dysfunction (see appendix L for details).

Related to labour

Based on the evidence, which was consistent with the committee's experience in clinical practice, it was acknowledged that operative vaginal birth and occiput posterior fetal position all increase the risk of developing symptoms of pelvic floor dysfunction. There was also evidence that a second stage labour of longer than an hour is a risk factor. However, the committee noted that the evidence was inconsistent with some studies showing an increased risk when labour was longer than 1 hour but others did not show higher risk when it was longer than 20 minutes. Based on their experience they decided to list this as a risk factor but they noted that there was a bit more uncertainty about this risk factor than the others. When making this recommendation the committee were conscious that in clinical practice, risk assessment and obtaining valid consent in regards to mode of birth during labour can be problematic. Therefore, the committee recommended that the risk of pelvic floor dysfunction should be explained to women when planning mode of birth antenatally. However, the committee were conscious that discussions about mode of birth should include benefits and risks that extend beyond pelvic floor function. Therefore, they also made a recommendation which cross-refers to the section on benefits and risks of caesarean and vaginal birth in the NICE guideline on caesarean birth.

See evidence report F for the evidence underpinning the committee's recommendations related to preventative pelvic floor muscle training for women with non-modifiable risk factors related to pregnancy.

Cost effectiveness and resource use

This review aimed to elicit important information about the epidemiology of pelvic floor dysfunction. It did not directly seek to compare the effectiveness of alternative courses of action although knowledge about non-obstetric and obstetric risk factors may have implications for the future management of women as well as providing useful information for patients and health care practitioners. Explaining risk factors to patients is general good practice and the recommendations are unlikely to markedly increase the length of consultations. The committee considered that behaviour and lifestyle modification as a result of advice on risk factors may result in "downstream" benefits and savings. Furthermore, a family history of pelvic floor dysfunction is used as a basis for a recommendation on preventative pelvic floor muscle training in pregnant women, as economic analysis

suggested it was cost-effective in groups of women at a higher risk of pelvic floor dysfunction (see evidence report F). It is not anticipated that the recommendations would lead to a significant increase in resource use and the recommendation may result in some savings and also support cost-effective prevention.

Other considerations

The committee agreed to cross refer to relevant the NICE guideline on constipation in children and young people: diagnosis and management because constipation was found to be a risk factor for pelvic floor dysfunction. They noted that there was no such guideline for adults but acknowledged that the management of constipation was outside the scope of the guideline.

Recommendations supported by this evidence review

This evidence review supports recommendations 1.2.1, 1.2.2 and the following content of box 1:

Modifiable risk factors

- A body mass index (BMI) over 25 kg/m^2
- Smoking
- Lack of exercise
- Constipation
- Diabetes

Related to pregnancy:

- Being over 30 years when having a baby
- Having had any childrengiven birth before their current pregnancy

Related to labour:

- Assisted vaginal birth (forceps or vacuum)
- A vaginal birth when the baby is lying face up (occipito posterior)
- An active second stage of labour taking more than 1 hour
- Injury to the anal sphincter during birth.

The remaining content in box 1 of the guideline is supported by evidence report C

It also supports recommendations 1.3.2, 1.3.5 to 1.3.7 and 1 research recommendation.

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Appendices

Appendix A – Review protocol

Review protocol for review question: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

Table 4: Review protocol

ID	Field	Content
0.	PROSPERO registration number	CRD42019159848
1.	Review title	2.1 Non-obstetric risk factors 2.3 Obstetric risk factors
2.	Review question	2.1 What are the non-obstetric risk factors (for example age, ethnicity and family history, diet [including caffeine and alcohol], weight, smoking, physical activity) for pelvic floor dysfunction? 2.3 What are the obstetric risk factors for pelvic floor dysfunction
3.	Objective	The objective of these reviews is to determine what obstetric and non-obstetric factors may influence the risk for developing pelvic floor dysfunction. Identifying risk factors which are modifiable will provide valuable information for developing prevention strategies. Whilst identifying those factors which are not modifiable still provides information which is important for improving and targeting care.
4.	Searches	The following databases will be searched: • Cochrane Database of Systematic Reviews (CDSR) • Cochrane Central Register of Controlled Trials (CENTRAL) • MEDLINE & Medline in Process • Embase Searches will be restricted by: • Date: Limit to 1980 (see section 10 for justification) • Language or publication: English language only • Human studies Other searches:

ID	Field	Content
		• Inclusion lists of potentially relevant systematic reviews The full search strategies for MEDLINE database will be published in the final review. For each search, the principal database search strategy is quality assured by a second information scientist using an adaptation of the PRESS 2015 Guideline Evidence-Based Checklist.
5.	Condition or domain being studied	Development of the following symptoms will be addressed as long as they are associated with pelvic floor dysfunction: urinary incontinence, emptying disorders of the bladder, faecal incontinence, emptying disorders of the bowel, pelvic organ prolapse, sexual dysfunction and chronic pelvic pain syndromes.
6.	Population	Inclusion • Women and young women (aged 12 years and older) Exclusion • Men • Babies and children under 12 years
7.	Exposure (risk factors)	Suggestive but not exhaustive risk factors include: <u>Non-Obstetric risk factors</u> • Age • Pre or post menopause • Ethnicity • Family history • Diet (including caffeine and alcohol intake) • Body weight and/or BMI • Smoking history • Physical activity levels (including high activity levels / elite athletes) • History of hormone therapy • History of physical & emotional abuse • Women with physical disabilities • Women with cognitive impairment • According to those who do not identify themselves as women, but who have female pelvic organs <u>Obstetric risk factors</u> • Number of children

ID	Field	Content
		• Number of children delivered vaginally • Number of children delivered via caesarean section • Birth weight of first child • Maternal height • Development of pelvic floor dysfunction in pregnancy • Forceps birth • Ventouse birth • Length of 2nd stage of labour • Tears • Weight gain in pregnancy Risk factors not listed above, yet identified in the included publications to significantly increase or decrease the risk of pelvic floor dysfunction will be included.
8.	Comparator (confounders)	• Any of those factors listed above *Note: studies must make some adjustment for confounding factors in their analysis, and this will be accounted for in the GRADE analysis*
9.	Types of study to be included	Include published full text papers: • Systematic reviews of observational cohort studies • Prospective or retrospective comparative cohort studies • If cohort studies are unavailable to inform decision making, then case-control studies of at least 50 women in each arm will be considered for inclusion • Prospective study designs will be prioritised over retrospective study designs • Population-based studies and multicentre studies will be prioritised Univariate studies will only be included if no studies with multivariate analysis are identified Note: For further details, see the algorithm in appendix H, Developing NICE guidelines: the manual.
10.	Other exclusion criteria	• Conference abstracts will be excluded because these do not typically provide sufficient information to fully assess risk of bias • Only articles published after 1980 will be included. This was agreed by the committee as this is the date that the condition “pelvic floor dysfunction” was recognised to include agreed terminology on symptoms. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2815805/

ID	Field	Content
11.	Context	Studies which explicitly demonstrate a risk with being diagnosed with pelvic floor dysfunction will be prioritised for decision making in regards to recommendations, and these recommendations will apply to those receiving care in any healthcare settings (for example community, primary, secondary care). However, the context of recommendations is likely broader than just the health care setting itself. Women who are not currently accessing services may benefit from the recommendations in order to make lifestyle changes which could improve symptoms they are experiencing or prevent them from developing pelvic floor dysfunction. Specific recommendations for groups listed in the Equality Considerations section of the scope may be also be made as appropriate.
12.	Primary outcomes (critical outcomes)	Risk of developing the following symptoms associated with pelvic floor dysfunction: • urinary incontinence • emptying disorder of the bladder • emptying disorder of the bowel • faecal incontinence • sexual dysfunction • pelvic organ prolapse • pelvic pain As measured using odds ratio (OR), or hazard ratio (HR) adjusted from regression analysis. We do not anticipate studies on urinary incontinence, emptying disorders of the bladder or pelvic organ prolapse to explicitly state "*associated with pelvic floor dysfunction*" therefore this will be a pragmatic decision based on the description of the condition provided by the study authors. Some of these symptoms (for example urinary incontinence) are most often due to a failure in the pelvic floor and therefore unless the exclusion criteria states a different cause, these studies are likely to be included. However, for studies on faecal incontinence, emptying disorders of the bowel, sexual dysfunction and pelvic pain the causes are more numerous. As such for these symptoms, unless the study specifically states "*associated with pelvic floor dysfunction"* they will be excluded. If any ambiguity exists, at least two reviewers will make the final decision if to include or exclude the study.
13.	Secondary outcomes (important outcomes)	Not applicable
14.	Data extraction (selection and coding)	All references identified by the searches and from other sources will be uploaded into STAR and de-duplicated. Titles and abstracts of the retrieved citations will be screened to identify studies that potentially meet the inclusion criteria outlined in the review protocol. Duplicate screening will not be undertaken for this question.

ID	Field	Content
		Full versions of the selected studies will be obtained for assessment. Studies that fail to meet the inclusion criteria once the full version has been checked will be excluded at this stage. Each study excluded after checking the full version will be listed, along with the reason for its exclusion. A standardised form will be used to extract data from studies. One reviewer will extract relevant data into a standardised form, and this will be quality assessed by a senior reviewer. Information to be extracted from studies includes: study type, study dates, location of study, funding, inclusion and exclusion criteria, participant characteristics, and details of the risk factors and confounding factors within each publication.
15.	Risk of bias (quality) assessment	Quality assessment of individual studies will be performed using the following checklists: • ROBIS tool for systematic reviews • QUIPS checklist for prognostic factor studies The quality assessment will be performed by one reviewer and this will be quality assessed by a senior reviewer.
16.	Strategy for data synthesis	Depending on the availability of the evidence, the findings will be summarised narratively or quantitatively. Meta-analysis to combine the effect estimates (OR) across studies for an independent prognostic factor will be conducted only if there is sufficient number of studies, a consistent measure to assess this factor is used, and each study has adjusted for similar sets of confounders. Otherwise a narrative summary of the available results for each factor will be provided. <u>Heterogeneity</u> If meta-analysis is conducted heterogeneity will be assessed by visual examination of the forest plots to examine the magnitude and direction of effect and the I2 statistic (where I2 ≥50% indicates serious heterogeneity and I2 ≥80 indicates very serious heterogeneity). In the presence of heterogeneity sub-group analysis will be conducted: *(a) According to risk of bias of individual studies* *(b) According to socioeconomic status of population included* Exact subgroup analysis may vary depending on differences identified within included studies. If heterogeneity cannot be explained through subgroup analysis, then a random effects model will be used for meta-analysis. If heterogeneity remains above 80% reviewers will consider if meta-analysis is appropriate given the characteristics of included <u>Validity</u> The confidence in the findings across all available evidence will be evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group: http://www.gradeworkinggroup.org/
17.	Analysis of sub-groups	Stratification If data is available, and they are not identified as significant risk factors in themselves, separate analysis will also be conducted on: • Women with physical disabilities • Women with cognitive impairment

ID	Field	Content			
		• According to those who do not identify themselves as women, but who have female pelvic organs *Recommendations will apply to all those with pelvic floor dysfunction unless there is evidence of a difference in these stratified groups*			
18.	Type and method of review	☐	Intervention		
		☐	Diagnostic		
		☒	Prognostic		
		☐	Qualitative		
		☐	Epidemiologic		
		☐	Service Delivery		
		☐	Other (please specify)		
19.	Language	English			
20.	Country	England			
21.	Anticipated or actual start date	December 2019			
22.	Anticipated completion date	August 2021			
23.	Stage of review at time of this submission	**Review stage**		**Started**	**Completed**
		Preliminary searches		☐	☐
		Piloting of the study selection process		☐	☐
		Formal screening of search results against eligibility criteria		☐	☐
		Data extraction		☐	☐
		Risk of bias (quality) assessment		☐	☐
		Data analysis		☐	☐
24.	Named contact	**5a. Named contact** National Guideline Alliance			

ID	Field	Content
		5b Named contact e-mail PreventionofPOP@nice.org.uk **5e Organisational affiliation of the review** National Institute for Health and Care Excellence (NICE) and the National Guideline Alliance
25.	Review team members	NGA technical team
26.	Funding sources/sponsor	This systematic review is being completed by the National Guideline Alliance, which is funded by NICE and hosted by the Royal College of Obstetricians and Gynaecologists. NICE funds the National Guideline Alliance to develop guidelines for those working in the NHS, public health, and social care in England.
27.	Conflicts of interest	All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the minutes of the meeting. Declarations of interests will be published with the final guideline.
28.	Collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual. Members of the guideline committee are available on the NICE website: https://www.nice.org.uk/guidance/indevelopment/gid-ng10123/
29.	Other registration details	
30.	Reference/URL for published protocol	https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=159848
31.	Dissemination plans	NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as: • notifying registered stakeholders of publication • publicising the guideline through NICE's newsletter and alerts • issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE.
32.	Keywords	Non-obstetric risk factors Pelvic floor dysfunction

ID	Field	Content	
33.	Details of existing review of same topic by same authors	Not applicable	
34.	Current review status	☒	Ongoing
		☐	Completed but not published
		☐	Completed and published
		☐	Completed, published and being updated
		☐	Discontinued
35..	Additional information		
36.	Details of final publication	www.nice.org.uk	

BMI: body mass index; CDSR: Cochrane Database of Systematic Reviews; CENTRAL: Cochrane Central Register of Controlled Trials; GRADE: Grading of Recommendations Assessment, Development and Evaluation; NGA: National Guideline Alliance; NHS: National health service; NICE: National Institute for Health and Care Excellence; OR: odds ratio; QUIPS: quality in prognosis studies; ROBIS: risk of bias in systematic reviews RR: risk ratio.

Appendix B – Literature search strategies

Literature search strategies for review question: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

Clinical Search

Database(s): Medline & Embase (Multifile) – OVID interface
Embase Classic+Embase 1947 to 2019 November 19; **Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily** 1946 to November 19, 2019
Date of last search: 20 November 2019

Multifile database codes: emczd = Embase Classic+Embase; ppez= MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily

#	Searches
1	Pelvic Floor/ use ppez
2	Pelvic Floor Disorders/ use ppez
3	pelvis floor/ use emczd
4	pelvic floor disorder/ use emczd
5	(pelvi$ adj (floor$ or diaphragm$) adj3 (dysfunction$ or disorder$ or fail$ or impair$ or incompeten$ or insufficien$ or dyssynerg$ or symptom$ or laxity or change$ or care$ or health$ or wellbeing$ or well-being$ or prevent$ or rehabilitat$ or weak$ or hypertonic$ or overactiv$ or over activ$ or over-activ$)).tw.
6	(pelvi$ adj (dysfunction$ or disorder$ or fail$ or impair$ or incompeten$ or insufficien$ or dyssynerg$ or symptom$ or laxity or care$ or health$ or wellbeing$ or well-being$ or prevent$ or rehabilitat$ or weak$ or hypertonic$ or overactiv$ or over activ$ or over-activ$)).tw.
7	or/1-6
8	exp *Urinary Incontinence/ use ppez
9	*Urinary Bladder, Overactive/ use ppez
10	exp *urine incontinence/ use emczd
11	*overactive bladder/ use emczd
12	*bladder instability/ use emczd
13	((stress$ or mix$ or urg$ or urin$) adj5 incontinen$).ti.
14	(bladder$ adj5 (overactiv$ or over activ$ or over-activ$ or instabilit$ or hyper-reflex$ or hyperreflex$ or hyper reflex$ or incontinen$)).ti.
15	(detrusor$ adj5 (overactiv$ or over activ$ or over-activ$ or instabilit$ or hyper-reflex$ or hyperreflex$ or hyper reflex$)).ti.
16	((urgency adj2 frequency) or (frequency adj2 urgency)).ti.
17	((urin$ or bladder$) adj2 (urg$ or frequen$)).ti.
18	(SUI or OAB).ti.
19	or/8-18
20	exp *Pelvic Organ Prolapse/ use ppez
21	exp *pelvic organ prolapse/ use emczd
22	*Rectocele/ use ppez
23	*rectocele/ use emczd
24	(pelvic$ adj3 organ$ adj3 prolaps$).ti.
25	(urinary adj3 bladder adj3 prolaps$).ti.
26	((vagin$ or urogenital$ or genit$ or uter$ or viscer$ or anterior$ or posterior$ or apical or pelvi$ or vault$ or urethr$ or bladder$ or cervi$ or rectal or rectum) adj3 prolaps$).ti.
27	(splanchnoptos$ or visceroptos$).ti.
28	(hernia$ adj3 (pelvi$ or vagin$ or urogenital$ or uter$ or bladder$ or urethr$ or viscer$)).ti.
29	(urethroc?ele$ or enteroc?ele$ or sigmoidoc?ele$ or proctoc?ele$ or rectoc?ele$ or cystoc?ele$ or rectoenteroc?ele$ or cystourethroc?ele$).ti.
30	or/20-29
31	*Fecal Incontinence/ use ppez
32	*feces incontinence/ use emczd
33	((faecal or fecal or faeces or feces or fecally or faecally or anal or anally or stool or stools or bowel or double or defecat$ or defaecat$) adj5 (incontinence or incontinent or urge$ or leak or leaking or leakage or soiling or seeping or seepage or impacted or impaction)).ti.
34	or/31-33
35	Urinary Retention/ use ppez
36	urine retention/ use emczd
37	(urin$ adj3 (retention$ or retain$)).tw.
38	(voiding adj (disorder$ or dysfunction$ or problem$)).tw.

#	Searches
39	(empty$ adj disorder$ adj3 (bowel$ or bladder$ or vesical$ or stool$)).tw.
40	((urogeni$ or anorec$ or ano-rec$ or ano rec$) adj3 dysfunction$).tw.
41	defecation disorder/ use emczd
42	Fecal Impaction/ use ppez
43	Feces Impaction/ use emczd
44	((difficult$ or delay$ or irregular$ or infrequen$ or pain$) adj3 (defecat$ or defaecat$ or stool$ or faeces or feces or bowel movement$)).tw.
45	(obstruct$ adj3 (defecat$ or defaecat$)).tw.
46	((defecat$ or defaecat$ or evacuat$) adj3 (disorder$ or dysfunction$)).tw.
47	outlet$ dysfunction$ constipa$.tw.
48	(dys?ynerg$ adj (defecat$ or defaecat$)).tw.
49	(pelvi$ adj3 dyskines$).tw.
50	pelvi$ outlet$ obstruct$.tw.
51	anismus$.tw.
52	puborectal$ contract$.tw.
53	((rectal or rectum) adj3 urge$).tw.
54	or/35-53
55	female sexual dysfunction/ use emczd
56	(female adj sex$ adj (dysfunct$ or satisf$ or problem$ or symptom$ or arous$ or activit$ or disorder$)).tw.
57	(obstruct$ adj3 intercourse).tw.
58	(vagin$ adj3 laxity$).tw.
59	(vagin$ adj wind).tw.
60	Vaginismus/ use ppez
61	vaginism/ use emczd
62	vaginismus$.tw.
63	(vagin$ adj penetrat$ adj disorder$).tw.
64	or/55-63
65	Extraction, Obstetrical/ use ppez
66	Obstetrical Forceps/ use ppez
67	forceps delivery/ use emczd
68	obstetric forceps/ use emczd
69	instrumental delivery/ use emczd
70	forceps.tw.
71	Vacuum Extraction, Obstetrical/ use ppez
72	vacuum/ use emczd
73	vacuum extractor/ use emczd
74	vacuum extraction/ use emczd
75	(vacuum$ adj3 (extract$ or deliver$)).tw.
76	Episiotomy/ use ppez
77	episiotomy/ use emczd
78	episiotom$.tw.
79	Labor Stage, Second/ use ppez
80	labor stage 2/ use emczd
81	((second or 2nd) adj stage adj (duration or length)).tw.
82	((long$ or prolong$ or length) adj3 (second or 2nd) adj stage).tw.
83	((second or 2nd) adj stage adj3 (labor or labour or delivery)).tw.
84	Delivery, Obstetric/ae use ppez
85	Obstetric Labor Complications/ use ppez
86	Lacerations/ use ppez
87	Perineum/in use ppez
88	Vagina/in use ppez
89	Pelvic Floor/in use ppez
90	Anal Canal/in use ppez
91	*injury/ use emczd
92	obstetric delivery/ use emczd
93	labor complication/ use emczd
94	laceration/ use emczd
95	perineum injury/ use emczd
96	vaginal injury/ use emczd
97	muscle injury/ use emczd
98	anus injury/ use emczd
99	anus sphincter disorder/ use emczd
100	levator avulsion/ use emczd
101	avulsion injury/ use emczd
102	((perineal or perineum or perianal or pubovisceral or levator or vagin$ or sphincter$ or obstetric or degree or grade) adj3 (tear$ or laceration$ or damage$ or injur$)).tw.
103	(anal adj sphincter$ adj3 (tear$ or laceration$ or damage$ or injur$)).tw.
104	(instrument$ adj (extract$ or deliver$)).tw.
105	Gravidity/ use ppez

#	Searches
106	Parity/ use ppez
107	Parturition/ use ppez
108	parity/ use emczd
109	multipara/ use emczd
110	nullipara/ use emczd
111	primipara/ use emczd
112	multigravida/ use emczd
113	nulligravida/ use emczd
114	primigravida/ use emczd
115	(gravidity or parity or parturity or parturition$ or parous or multipara or multiparas or multiparae or multiparity or multiparous or multigravida$ or nullipara or nulliparas or nulliparae or nulliparity or nulliparous or nulligravida$ or primipara or primiparas or primiparae or primiparity or primiparous or primigravida$).tw.
116	(number adj2 (children or pregnan$ or birth$ or childbirth$)).tw.
117	Birth Weight/ use ppez
118	birth weight/ use emczd
119	Fetal Weight/ use ppez
120	fetus weight/ use emczd
121	((birth or newborn or fetal or foetal or fetus or foetus) adj weight$).tw.
122	Cesarean Section/ use ppez
123	cesarean section/ use emczd
124	(cesarean or caesarean).tw.
125	Delivery, Obstetric/ use ppez
126	vaginal delivery/ use emczd
127	(vagin$ adj3 (deliver$ or childbirth$)).tw.
128	(home adj (birth$ or deliver$)).tw.
129	((obstetric$ or non-obstetric$ or nonobstetric$) adj3 risk adj factor$).tw.
130	((obstetric$ or maternal$) adj (factor$ or characteristic$ or histor$)).tw.
131	Physical Abuse/ use ppez
132	Spouse Abuse/ use ppez
133	Intimate Partner Violence/ use ppez
134	Domestic Violence/ use ppez
135	physical abuse/ use emczd
136	emotional abuse/ use emczd
137	sexual abuse/ use emczd
138	domestic violence/ use emczd
139	partner violence/ use emczd
140	((physical$ or emotional$ or sexual$ or partner$) adj abuse$).tw.
141	(experience$ adj3 abus$).tw.
142	Smoking/ use ppez
143	Tobacco Smoking/ use ppez
144	exp smoking/ use emczd
145	"tobacco use"/ use emczd
146	(smoking or smoker$ or tobacco$).tw.
147	((substance or nicotine or tobacco or alcohol) adj abuse$).tw.
148	Ethnic Groups/ use ppez
149	ethnicity/ use emczd
150	ethnic group/ use emczd
151	ethnic difference/ use emczd
152	race/ use emczd
153	race difference/ use emczd
154	(ethnicity or ethnicities).tw.
155	((diverse$ or factor$ or role) adj3 (ethnic$ or racial)).tw.
156	((ethnic$ or racial$) adj (minorit$ or group$ or population$ or background$ or origin$ or variation$ or difference$ or disparit$)).tw.
157	exp Menopause/ use ppez
158	Climacteric/ use ppez
159	menopause/ use emczd
160	premenopause/ use emczd
161	postmenopause/ use emczd
162	(menopaus$ adj3 status).tw.
163	(menopausal$ or premenopausal$ or pre-menopausal$ or perimenopausal$ or peri-menopausal$ or postmenopausal$ or post-menopausal$ or menopause or premenopause or pre-menopause or perimenopause or peri-menopause or postmenopause or post-menopause or climacter$).tw.
164	*Hormone Replacement Therapy/ use ppez
165	*hormone substitution/ use emczd
166	(hormone adj therap$).tw.
167	Body Mass Index/ use ppez
168	Body Weight/ use ppez
169	body mass/ use emczd

#	Searches
170	body weight/ use emczd
171	(body adj mass adj index).tw.
172	BMI.tw.
173	(body adj weight).tw.
174	Education/ use ppez
175	Educational Status/ use ppez
176	education/ use emczd
177	educational status/ use emczd
178	(education adj3 (factor$ or status or level)).tw.
179	(low$ adj education$).tw.
180	exp Physical Endurance/ use ppez
181	exp endurance/ use emczd
182	Physical Exertion/ use ppez
183	physical activity/ use emczd
184	exp *Exercise/ use ppez
185	exp *exercise/ use emczd
186	physical activity.tw,kw.
187	Weight Lifting/ use ppez
188	weight lifting/ use emczd
189	((heavy or repetitive) adj3 lift$).tw.
190	((high impact or high-impact or low impact or low-impact) adj3 (exercise$ or activit$)).tw.
191	(elite adj3 (sports$ or athlete$ or level)).tw.
192	((female or women) adj2 athlet$).tw.
193	Sedentary Behavior/ use ppez
194	sedentary lifestyle/ use emczd
195	(sedentary adj5 (behavio?r$ or activ$ or lifestyle$ or life style$ or exercise$ or change$ or women or female$)).tw.
196	*Drinking/ use ppez
197	*drinking/ use emczd
198	*fluid intake/ use emczd
199	((fluid$ or water$ or liquid$) adj3 (intake$ or consum$)).tw.
200	Coffee/ use ppez
201	coffee/ use emczd
202	Tea/ use ppez
203	tea/ use emczd
204	Caffeine/ use ppez
205	caffeine/ use emczd
206	((tea$ or coffee$ or caffein$) adj3 (intake$ or consum$)).tw.
207	Carbonated Beverages/ use ppez
208	carbonated beverage/ use emczd
209	caffeinated beverage/ use emczd
210	((carbonat$ or caffein$ or noncaffein$ or non-caffein$ or decaffein$ or de-caffein$ or artificial$ sweeten$ or irritat$) adj2 (drink$ or beverage$ or soda)).tw.
211	(energy adj drink$).tw.
212	Alcohol Drinking/ use ppez
213	alcohol consumption/ use emczd
214	drinking behavior/ use emczd
215	(alcohol$ adj3 (intake$ or consum$)).tw.
216	*Dietary Fiber/ use ppez
217	*dietary fiber/ use emczd
218	((fibre or fiber) adj3 (supplement$ or intake$ or consum$)).tw.
219	((high-fibre or high-fiber or high fibre or high fiber or fibre-rich or fiber-rich or fibre rich or fiber rich) adj diet$).tw.
220	Sugar/ use ppez
221	sugar/ use emczd
222	((sugar or sugary or sweetener$) adj3 (intake$ or consum$)).tw.
223	*Diet/ use ppez
224	*diet/ use emczd
225	(diet$ adj intake$).tw.
226	Age Factors/ use ppez
227	age/ use emczd
228	((increas$ or old$ or advanc$ or high$) adj4 (age or aged)).tw.
229	family history/ use emczd
230	((family or familial) adj (histor$ or risk or incidence)).tw.
231	(genetic$ adj (risk$ or influence$ or factor$ or predisposition$ or pre-disposition$ or predetermin$ or pre-determin$ or association$ or susceptib$)).tw.
232	((maternal$ or mother$ or pregnan$) adj3 (height$ or weight$)).tw.
233	(maternal adj age).tw.
234	(physical adj disab$).tw.
235	(cognitiv$ adj impair$).tw.
236	*Obesity/ use ppez

#	Searches
237	*obesity/ use emczd
238	*Hysterectomy/ use ppez
239	*hysterectomy/ use emczd
240	*sexual behavior/ use ppez
241	sexual practice/ use emczd
242	Transgender Persons/ use ppez
243	exp transgender/ use emczd
244	Gender Dysphoria/ use ppez
245	gender dysphoria/ use emczd
246	(transgender$ or trans-gender$).tw.
247	(gender$ adj dysphor$).tw.
248	or/65-247
249	Risk Factors/ use ppez
250	risk factor/ use emczd
251	risk?.ti.
252	risk factor?.ab.
253	or/249-252
254	7 or 19 or 30 or 34 or 54 or 64
255	248 and 253 and 254
256	(constipation and risk).m_titl.
257	254 and 256
258	255 or 257
259	limit 258 to english language
260	limit 259 to yr="1980 -Current" [General Exclusions filter applied]

Database(s): Cochrane Library – Wiley interface
Cochrane Database of Systematic Reviews, Issue 11 of 12, November 2019; **Cochrane Central Register of Controlled Trials**, Issue 11 of 12, November 2019
Date of last search: 20 November 2019

#	Searches
#1	MeSH descriptor: [Pelvic Floor] this term only
#2	MeSH descriptor: [Pelvic Floor Disorders] this term only
#3	((pelvi* NEXT (floor* or diaphragm*) NEAR/3 (dysfunction* or disorder* or fail* or impair* or incompeten* or insufficien* or dyssynerg* or symptom* or laxity or change* or care* or health* or wellbeing* or well-being* or prevent* or rehabilitat* or weak* or hypertonic* or overactiv* or over activ* or over-activ*))):ti,ab,kw
#4	((pelvi* NEXT (dysfunction* or disorder* or fail* or impair* or incompeten* or insufficien* or dyssynerg* or symptom* or laxity or care* or health* or wellbeing* or well-being* or prevent* or rehabilitat* or weak* or hypertonic* or overactiv* or over activ* or over-activ*))):ti,ab,kw
#5	MeSH descriptor: [Urinary Incontinence] explode all trees
#6	MeSH descriptor: [Urinary Bladder, Overactive] this term only
#7	(((stress* or mix* or urg* or urin*) NEAR/5 incontinen*)):ti,ab,kw
#8	(((bladder* NEAR/5 (overactiv* or over activ* or over-activ* or instabilit* or hyper-reflex* or hyperreflex* or hyper reflex* or incontinen*)))):ti,ab,kw
#9	(((detrusor* NEAR/5 (overactiv* or over activ* or over-activ* or instabilit* or hyper-reflex* or hyperreflex* or hyper reflex*)))):ti,ab,kw
#10	(((((urgency NEAR/2 frequency) or (frequency NEAR/2 urgency)))):ti,ab,kw
#11	(((((urin* or bladder*) NEAR/2 (urg* or frequen*)))):ti,ab,kw
#12	(((SUI or OAB))):ti,ab,kw
#13	MeSH descriptor: [Pelvic Organ Prolapse] explode all trees
#14	MeSH descriptor: [Rectocele] this term only
#15	(((pelvic* NEAR/3 organ* NEAR/3 prolaps*))):ti,ab,kw
#16	(((urinary NEAR/3 bladder NEAR/3 prolaps*))):ti,ab,kw
#17	(((((vagin* or urogenital* or genit* or uter* or viscer* or anterior* or posterior* or apical or pelvi* or vault* or urethr* or bladder* or cervi* or rectal or rectum) NEAR/3 prolaps*))):ti,ab,kw
#18	(((splanchnoptos* or visceroptos*))):ti,ab,kw
#19	(((hernia* NEAR/3 (pelvi* or vagin* or urogenital* or uter* or bladder* or urethr* or viscer*)))):ti,ab,kw
#20	(((urethroc?ele* or enteroc?ele* or sigmoidoc?ele* or proctoc?ele* or rectoc?ele* or cystoc?ele* or rectoenteroc?ele* or cystourethroc?ele*))):ti,ab,kw
#21	MeSH descriptor: [Fecal Incontinence] this term only
#22	(((((faecal or fecal or faeces or feces or fecally or faecally or anal or anally or stool or stools or bowel or double or defecat* or defaecat*) NEAR/5 (incontinence or incontinent or urge* or leak or leaking or leakage or soiling or seeping or seepage or impacted or impaction)))):ti,ab,kw
#23	MeSH descriptor: [Urinary Retention] this term only
#24	(((urin* NEAR/3 (retention* or retain*)))):ti,ab,kw
#25	(((voiding NEXT (disorder* or dysfunction* or problem*)))):ti,ab,kw
#26	(((empty* NEXT disorder* NEAR/3 (bowel* or bladder* or vesical* or stool*)))):ti,ab,kw
#27	(((((urogeni* or anorec* or ano-rec* or ano rec*) NEAR/3 dysfunction*))):ti,ab,kw
#28	MeSH descriptor: [Fecal Impaction] this term only

#	Searches
#29	((((difficult* or delay* or irregular* or infrequen* or pain*) NEAR/3 (defecat* or defaecat* or stool* or faecal or fecal or faeces or feces or fecally or faecally or bowel movement*))):ti,ab,kw
#30	(((obstruct* NEAR/3 (defecat* or defaecat*))):ti,ab,kw
#31	((((defecat* or defaecat* or evacuat*) NEAR/3 (disorder* or dysfunction*))):ti,ab,kw
#32	((outlet* dysfunction* constipa*)):ti,ab,kw
#33	(((dys?ynerg* NEXT (defecat* or defaecat*))):ti,ab,kw
#34	(((pelvi* NEAR/3 dyskines*))):ti,ab,kw
#35	((pelvi* outlet* obstruct*)):ti,ab,kw
#36	((anismus*)):ti,ab,kw
#37	((puborectal* contract*)):ti,ab,kw
#38	((((rectal or rectum) NEAR/3 urge*))):ti,ab,kw
#39	(((female NEXT sex* NEXT (dysfunct* or satisf* or problem* or symptom* or arous* or activit* or disorder*))):ti,ab,kw
#40	(((obstruct* NEAR/3 intercourse))):ti,ab,kw
#41	(((vagin* NEAR/3 laxity*))):ti,ab,kw
#42	(((vagin* NEXT wind))):ti,ab,kw
#43	MeSH descriptor: [Vaginismus] this term only
#44	((vaginismus*)):ti,ab,kw
#45	(((vagin* NEXT penetrat* NEXT disorder*))):ti,ab,kw
#46	{or #1-#45}
#47	((risk NEXT factor*)):ti
#48	#46 AND #47

Database(s): Database of Abstracts of Reviews of Effects (DARE); HTA Database – CRD interface

Date of last search: 20 November 2019

#	Searches
1	MeSH DESCRIPTOR Pelvic Floor IN DARE,HTA
2	MeSH DESCRIPTOR Pelvic Floor Disorders IN DARE,HTA
3	((pelvi* NEXT (floor* or diaphragm*) NEAR3 (dysfunction* or disorder* or fail* or impair* or incompeten* or insufficien* or dyssynerg* or symptom* or laxity or change* or care* or health* or wellbeing* or well-being* or prevent* or rehabilitat* or weak* or hypertonic* or overactiv* or over activ* or over-activ*))) IN DARE, HTA
4	((pelvi* NEXT (dysfunction* or disorder* or fail* or impair* or incompeten* or insufficien* or dyssynerg* or symptom* or laxity or care* or health* or wellbeing* or well-being* or prevent* or rehabilitat* or weak* or hypertonic* or overactiv* or over activ* or over-activ*))) IN DARE, HTA
5	MeSH DESCRIPTOR Urinary Incontinence EXPLODE ALL TREES IN DARE,HTA
6	MeSH DESCRIPTOR Urinary Bladder, Overactive IN DARE,HTA
7	(((stress* or mix* or urg* or urin*) NEAR5 incontinen*)) IN DARE, HTA
8	((bladder* NEAR5 (overactiv* or over activ* or over-activ* or instabilit* or hyper-reflex* or hyperreflex* or hyper reflex* or incontinen*))) IN DARE, HTA
9	((detrusor* NEAR5 (overactiv* or over activ* or over-activ* or instabilit* or hyper-reflex* or hyperreflex* or hyper reflex*))) IN DARE, HTA
10	(((urgency NEAR2 frequency) or (frequency NEAR2 urgency))) IN DARE, HTA
11	(((urin* or bladder*) NEAR2 (urg* or frequen*))) IN DARE, HTA
12	((SUI or OAB)) IN DARE, HTA
13	MeSH DESCRIPTOR Pelvic Organ Prolapse EXPLODE ALL TREES IN DARE,HTA
14	MeSH DESCRIPTOR Rectocele IN DARE,HTA
15	((pelvic* NEAR3 organ* NEAR3 prolaps*)) IN DARE, HTA
16	((urinary NEAR3 bladder NEAR3 prolaps*)) IN DARE, HTA
17	(((vagin* or urogenital* or genit* or uter* or viscer* or anterior* or posterior* or apical or pelvi* or vault* or urethr* or bladder* or cervi* or rectal or rectum) NEAR3 prolaps*)) IN DARE, HTA
18	((splanchnoptos* or visceroptos*)) IN DARE, HTA
19	((hernia* NEAR3 (pelvi* or vagin* or urogenital* or uter* or bladder* or urethr* or viscer*))) IN DARE, HTA
20	((urethroc?ele* or enteroc?ele* or sigmoidoc?ele* or proctoc?ele* or rectoc?ele* or cystoc?ele* or rectoenteroc?ele* or cystourethroc?ele*)) IN DARE, HTA
21	MeSH DESCRIPTOR Fecal Incontinence IN DARE,HTA
22	(((faecal or fecal or faeces or feces or fecally or faecally or anal or anally or stool or stools or bowel or double or defecat* or defaecat*) NEAR5 (incontinence or incontinent or urge* or leak or leaking or leakage or soiling or seeping or seepage or impacted or impaction))) IN DARE, HTA
23	MeSH DESCRIPTOR Urinary Retention IN DARE,HTA
24	((urin* NEAR3 (retention* or retain*))) IN DARE, HTA
25	((voiding NEXT (disorder* or dysfunction* or problem*))) IN DARE, HTA
26	((empty* NEXT disorder* NEAR3 (bowel* or bladder* or vesical* or stool*))) IN DARE, HTA
27	(((urogeni* or anorec* or ano-rec* or ano rec*) NEAR3 dysfunction*)) IN DARE, HTA
28	MeSH DESCRIPTOR Fecal Impaction IN DARE,HTA
29	(((difficult* or delay* or irregular* or infrequen* or pain*) NEAR3 (defecat* or defaecat* or stool* or faecal or fecal or faeces or feces or fecally or faecally or bowel movement*))) IN DARE, HTA
30	((obstruct* NEAR3 (defecat* or defaecat*))) IN DARE, HTA
31	(((defecat* or defaecat* or evacuat*) NEAR3 (disorder* or dysfunction*))) IN DARE, HTA

#	Searches
32	(((outlet* NEXT dysfunction* NEXT constipa*))) IN DARE, HTA
33	((dys?ynerg* NEXT (defecat* or defaecat*))) IN DARE, HTA
34	((pelvi* NEAR3 dyskines*)) IN DARE, HTA
35	((pelvi* NEXT outlet* NEXT obstruct*)) IN DARE, HTA
36	((anismus*)) IN DARE, HTA
37	((puborectal* NEXT contract*)) IN DARE, HTA
38	(((rectal or rectum) NEAR3 urge*)) IN DARE, HTA
39	((female NEXT sex* NEXT (dysfunct* or satisf* or problem* or symptom* or arous* or activit* or disorder*))) IN DARE, HTA
40	((obstruct* NEAR3 intercourse)) IN DARE, HTA
41	((vagin* NEAR3 laxity*)) IN DARE, HTA
42	((vagin* NEXT wind)) IN DARE, HTA
43	MeSH DESCRIPTOR Vaginismus IN DARE,HTA
44	((vaginismus*)) IN DARE, HTA
45	((vagin* NEXT penetrat* NEXT disorder*)) IN DARE, HTA
46	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45
47	MeSH DESCRIPTOR Risk Factors IN DARE,HTA
48	(risk*):TI OR (risk NEXT factor*) IN DARE, HTA
49	#47 OR #48
50	#46 AND #49

Economic Search

One global search was conducted for economic evidence across the guideline.

Database(s): NHS Economic Evaluation Database (NHS EED); HTA Database – CRD interface

Date of last search: 3 February 2021

#	Searches
1	MeSH DESCRIPTOR Pelvic Floor IN NHSEED,HTA
2	MeSH DESCRIPTOR Pelvic Floor Disorders IN NHSEED,HTA
3	MeSH DESCRIPTOR Urinary Bladder, Overactive IN NHSEED,HTA
4	(((pelvi* NEXT (floor* or diaphragm*) NEAR3 (dysfunction* or disorder* or fail* or impair* or incompeten* or insufficien* or dyssynerg* or symptom* or laxity or change* or care* or health* or wellbeing* or well-being* or prevent* or rehabilitat* or weak* or hypertonic* or overactiv* or over activ* or over-activ*)))) IN NHSEED, HTA
5	MeSH DESCRIPTOR Urinary Incontinence EXPLODE ALL TREES IN NHSEED,HTA
6	MeSH DESCRIPTOR Urinary Bladder, Overactive IN NHSEED,HTA
7	((((stress* or mix* or urg* or urin*) NEAR5 incontinen*))) IN NHSEED, HTA
8	(((bladder* NEAR5 (overactiv* or over activ* or over-activ* or instabilit* or hyper-reflex* or hyperreflex* or hyper reflex* or incontinen*)))) IN NHSEED, HTA
9	(((detrusor* NEAR5 (overactiv* or over activ* or over-activ* or instabilit* or hyper-reflex* or hyperreflex* or hyper reflex*)))) IN NHSEED, HTA
10	((((urgency NEAR2 frequency) or (frequency NEAR2 urgency)))) IN NHSEED, HTA
11	((((urin* or bladder*) NEAR2 (urg* or frequen*)))) IN NHSEED, HTA
12	(((SUI or OAB))) IN NHSEED, HTA
13	MeSH DESCRIPTOR Pelvic Organ Prolapse EXPLODE ALL TREES IN NHSEED,HTA
14	MeSH DESCRIPTOR Rectocele IN NHSEED,HTA
15	(((pelvic* NEAR3 organ* NEAR3 prolaps*))) IN NHSEED, HTA
16	(((urinary NEAR3 bladder NEAR3 prolaps*))) IN NHSEED, HTA
17	((((vagin* or urogenital* or genit* or uter* or viscer* or anterior* or posterior* or apical or pelvi* or vault* or urethr* or bladder* or cervi* or rectal or rectum) NEAR3 prolaps*))) IN NHSEED, HTA
18	(((splanchnoptos* or visceroptos*))) IN NHSEED, HTA
19	(((hernia* NEAR3 (pelvi* or vagin* or urogenital* or uter* or bladder* or urethr* or viscer*)))) IN NHSEED, HTA
20	(((urethroc?ele* or enteroc?ele* or sigmoidoc?ele* or proctoc?ele* or rectoc?ele* or cystoc?ele* or rectoenteroc?ele* or cystourethroc?ele*))) IN NHSEED, HTA
21	MeSH DESCRIPTOR Fecal Incontinence IN NHSEED,HTA
22	((((faecal or fecal or faeces or feces or fecally or faecally or anal or anally or stool or stools or bowel or double or defecat* or defaecat*) NEAR5 (incontinence or incontinent or urge* or leak or leaking or leakage or soiling or seeping or seepage or impacted or impaction)))) IN NHSEED, HTA
23	MeSH DESCRIPTOR Urinary Retention IN NHSEED,HTA
24	(((urin* NEAR3 (retention* or retain*)))) IN NHSEED, HTA
25	(((voiding NEXT (disorder* or dysfunction* or problem*)))) IN NHSEED, HTA
26	(((empty* NEXT disorder* NEAR3 (bowel* or bladder* or vesical* or stool*)))) IN NHSEED, HTA
27	((((urogeni* or anorec* or ano-rec* or ano rec*) NEAR3 dysfunction*))) IN NHSEED, HTA
28	MeSH DESCRIPTOR Fecal Impaction IN NHSEED,HTA

#	Searches
29	((((difficult* or delay* or irregular* or infrequen* or pain*) NEAR3 (defecat* or defaecat* or stool* or faecal or fecal or faeces or feces or fecally or faecally or bowel movement*)))) IN NHSEED, HTA
30	(((obstruct* NEAR3 (defecat* or defaecat*)))) IN NHSEED, HTA
31	((((defecat* or defaecat* or evacuat*) NEAR3 (disorder* or dysfunction*)))) IN NHSEED, HTA
32	((((outlet* NEXT dysfunction* NEXT constipa*)))) IN NHSEED, HTA
33	(((dys?ynerg* NEXT (defecat* or defaecat*)))) IN NHSEED, HTA
34	(((pelvi* NEAR3 dyskines*))) IN NHSEED, HTA
35	(((pelvi* NEXT outlet* NEXT obstruct*))) IN NHSEED, HTA
36	(((anismus*))) IN NHSEED, HTA
37	(((puborectal* NEXT contract*))) IN NHSEED, HTA
38	((((rectal or rectum) NEAR3 urge*))) IN NHSEED, HTA
39	(((female NEXT sex* NEXT (dysfunct* or satisf* or problem* or symptom* or arous* or activit* or disorder*)))) IN NHSEED, HTA
40	(((obstruct* NEAR3 intercourse))) IN NHSEED, HTA
41	(((vagin* NEAR3 laxity*))) IN NHSEED, HTA
42	(((vagin* NEXT wind))) IN NHSEED, HTA
43	MeSH DESCRIPTOR Vaginismus IN NHSEED,HTA
44	(((vaginismus*))) IN NHSEED, HTA
45	(((vagin* NEXT penetrat* NEXT disorder*))) IN NHSEED, HTA
46	(#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45) IN NHSEED, HTA

Database(s): Medline & Embase (Multifile) – OVID interface
Embase Classic+Embase 1947 to 2021 February 01; **Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily** 1946 to February 01, 2021
Date of last search: 3 February 2021

Multifile database codes: emczd = Embase Classic+Embase; ppez= MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily

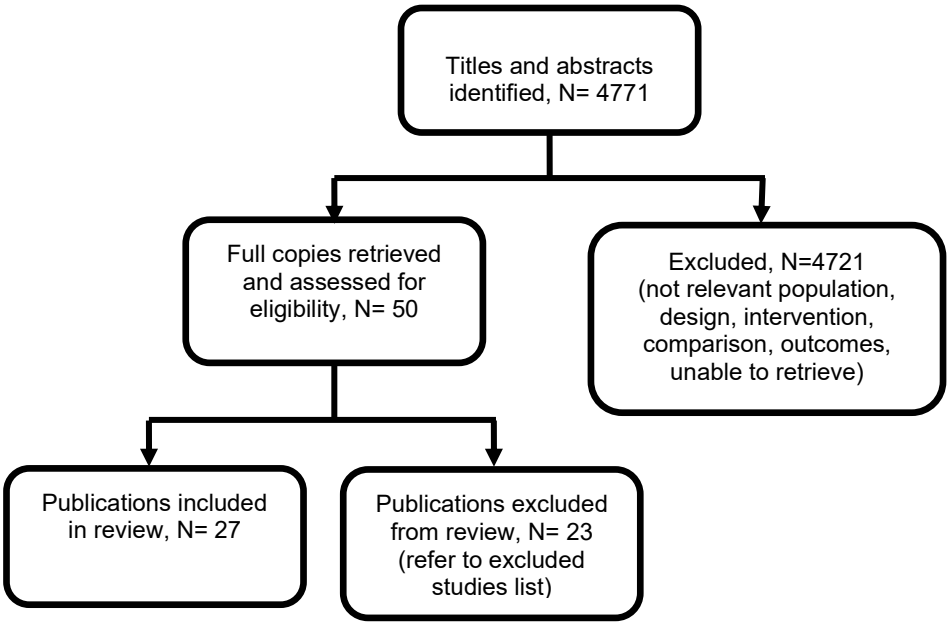
#	Searches
1	Pelvic Floor/ use ppez
2	Pelvic Floor Disorders/ use ppez
3	pelvis floor/ use emczd
4	pelvic floor disorder/ use emczd
5	(pelvi$ adj (floor$ or diaphragm$) adj3 (dysfunction$ or disorder$ or fail$ or impair$ or incompeten$ or insufficien$ or dyssynerg$ or symptom$ or laxity or change$ or care$ or health$ or wellbeing$ or well-being$ or prevent$ or rehabilitat$ or weak$ or hypertonic$ or overactiv$ or over activ$ or over-activ$)).tw.
6	(pelvi$ adj (dysfunction$ or disorder$ or fail$ or impair$ or incompeten$ or insufficien$ or dyssynerg$ or symptom$ or laxity or care$ or health$ or wellbeing$ or well-being$ or prevent$ or rehabilitat$ or weak$ or hypertonic$ or overactiv$ or over activ$ or over-activ$)).tw.
7	or/1-6
8	exp *Urinary Incontinence/ use ppez
9	*Urinary Bladder, Overactive/ use ppez
10	exp *urine incontinence/ use emczd
11	*overactive bladder/ use emczd
12	*bladder instability/ use emczd
13	((stress$ or mix$ or urg$ or urin$) adj5 incontinen$).ti.
14	(bladder$ adj5 (overactiv$ or over activ$ or over-activ$ or instabilit$ or hyper-reflex$ or hyperreflex$ or hyper reflex$ or incontinen$)).ti.
15	(detrusor$ adj5 (overactiv$ or over activ$ or over-activ$ or instabilit$ or hyper-reflex$ or hyperreflex$ or hyper reflex$)).ti.
16	((urgency adj2 frequency) or (frequency adj2 urgency)).ti.
17	((urin$ or bladder$) adj2 (urg$ or frequen$)).ti.
18	(SUI or OAB).ti.
19	or/8-18
20	exp *Pelvic Organ Prolapse/ use ppez
21	exp *pelvic organ prolapse/ use emczd
22	*Rectocele/ use ppez
23	*rectocele/ use emczd
24	(pelvic$ adj3 organ$ adj3 prolaps$).ti.
25	(urinary adj3 bladder adj3 prolaps$).ti.
26	((vagin$ or urogenital$ or genit$ or uter$ or viscer$ or anterior$ or posterior$ or apical or pelvi$ or vault$ or urethr$ or bladder$ or cervi$ or rectal or rectum) adj3 prolaps$).ti.
27	(splanchnoptos$ or visceroptos$).ti.
28	(hernia$ adj3 (pelvi$ or vagin$ or urogenital$ or uter$ or bladder$ or urethr$ or viscer$)).ti.

#	Searches
29	(urethroc?ele$ or enteroc?ele$ or sigmoidoc?ele$ or proctoc?ele$ or rectoc?ele$ or cystoc?ele$ or rectoenteroc?ele$ or cystourethroc?ele$).ti.
30	or/20-29
31	*Fecal Incontinence/ use ppez
32	*feces incontinence/ use emczd
33	((faecal or fecal or faeces or feces or fecally or faecally or anal or anally or stool or stools or bowel or double or defecat$ or defaecat$) adj5 (incontinence or incontinent or urge$ or leak or leaking or leakage or soiling or seeping or seepage or impacted or impaction)).ti.
34	or/31-33
35	Urinary Retention/ use ppez
36	urine retention/ use emczd
37	(urin$ adj3 (retention$ or retain$)).tw.
38	(voiding adj (disorder$ or dysfunction$ or problem$)).tw.
39	(empty$ adj disorder$ adj3 (bowel$ or bladder$ or vesical$ or stool$)).tw.
40	((urogeni$ or anorec$ or ano-rec$ or ano rec$) adj3 dysfunction$).tw.
41	defecation disorder/ use emczd
42	Fecal Impaction/ use ppez
43	Feces Impaction/ use emczd
44	((difficult$ or delay$ or irregular$ or infrequen$ or pain$) adj3 (defecat$ or defaecat$ or stool$ or faeces or feces or bowel movement$)).tw.
45	(obstruct$ adj3 (defecat$ or defaecat$)).tw.
46	((defecat$ or defaecat$ or evacuat$) adj3 (disorder$ or dysfunction$)).tw.
47	outlet$ dysfunction$ constipa$.tw.
48	(dys?ynerg$ adj (defecat$ or defaecat$)).tw.
49	(pelvi$ adj3 dyskines$).tw.
50	pelvi$ outlet$ obstruct$.tw.
51	anismus$.tw.
52	puborectal$ contract$.tw.
53	((rectal or rectum) adj3 urge$).tw.
54	or/35-53
55	female sexual dysfunction/ use emczd
56	(female adj sex$ adj (dysfunct$ or satisf$ or problem$ or symptom$ or arous$ or activit$ or disorder$)).tw.
57	(obstruct$ adj3 intercourse).tw.
58	(vagin$ adj3 laxity$).tw.
59	(vagin$ adj wind).tw.
60	Vaginismus/ use ppez
61	vaginism/ use emczd
62	vaginismus$.tw.
63	(vagin$ adj penetrat$ adj disorder$).tw.
64	or/55-63
65	7 or 19 or 30 or 34 or 54 or 64
66	Economics/ use ppez
67	Value of life/ use ppez
68	exp "Costs and Cost Analysis"/ use ppez
69	exp Economics, Hospital/ use ppez
70	exp Economics, Medical/ use ppez
71	Economics, Nursing/ use ppez
72	Economics, Pharmaceutical/ use ppez
73	exp "Fees and Charges"/ use ppez
74	exp Budgets/ use ppez
75	health economics/ use emczd
76	exp economic evaluation/ use emczd
77	exp health care cost/ use emczd
78	exp fee/ use emczd
79	budget/ use emczd
80	funding/ use emczd
81	budget*.ti,ab.
82	cost*.ti.
83	(economic* or pharmaco?economic*).ti.
84	(price* or pricing*).ti,ab.
85	(cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
86	(financ* or fee or fees).ti,ab.
87	(value adj2 (money or monetary)).ti,ab.
88	or/66-87
89	65 and 88
90	limit 89 to english language

Appendix C – Clinical evidence study selection

Study selection for: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

Figure 1: Study selection flow chart



Appendix D –Evidence tables

Evidence tables for review question: Risk factors for pelvic floor dysfunction

Table 5: Evidence tables: women recruited in the obstetric period (note in the evidence table the wording 'delivery' is used whenever it reflected the wording in the study, elsewhere 'birth' in the evidence review is used in accordance with NICE writing style)

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Full citation Bahl,R., Strachan,B., Murphy,D.J., Pelvic floor morbidity at 3 years after instrumental delivery and cesarean delivery in the second stage of labor and the impact of a subsequent delivery, American Journal of Obstetrics & Gynecology, 192, 789-794, 2005 **Ref Id** 51537 **Country/ies where the study was carried out** UK **Study type** Prospective cohort study **Aim of the study** To compare pelvic floor symptoms at three years following instrumental delivery and caesarean	**Sample size** N=393 women **Characteristics** <u>Data n/N (%) at baseline</u> Primiparous: Instrument delivery 144/184 (78%); caesarean delivery 165/209 (78.9%) Maternal age >35 years: Instrument delivery 25/184 (13.6%); caesarean delivery 19/209 (9.1%) Non-white: Instrument delivery 13/184 (7.1%); caesarean delivery 10/209 (5.0%) BMI >30: Instrument delivery 13/184 (7.1%); caesarean delivery 31/209 (14.8%) Infant birth weight >4.0kg: Instrument delivery 27/184 (14.7%);	**Interventions** Risk factor: Instrumental vaginal delivery or caesarean delivery The decision to conduct an instrumental vaginal delivery in an operating room was made if a rotational mid-cavity delivery was to be undertaken or if mild relative cephalopelvic disproportion was anticipated. The delivery was conducted in an operating room to allow rapid recourse to caesarean delivery if necessary.	**Details** Data were taken from hospital records and an interview with the mother (focusing on labour and delivery and her views for future pregnancies). Further data were collected by postal questionnaires at 6 weeks and 1 year postpartum. Information about lower urinary tract, ano-rectal, and sexual symptoms were collected at 3 years using a questionnaire that was based on a previously validated and addressed post-natal pelvic floor symptoms. Univariable analyses were performed using logistic regression, followed by multivariable analyses that were adjusted for potential confounding factors. Statistical significance was defined a priori as a probability value of <.05; factors that fit this criterion and for	**Results** **Risk factor: Caesarean delivery** Symptom (A comparison between women who reported either ''occasional'' or ''more than occasional'' symptoms versus no symptoms): (N=133 women in instrument delivery group vs n=150 in caesarean delivery group) <u>Lower urinary tract</u> Urinary leakage: AOR 2.04 (1.23, 3.33) Difficulty holding urine: AOR 1.03 (0.97, 1.09) Frequency: AOR 1.67 (0.95, 2.92) <u>Anorectal</u> Pain on defecation: AOR 1.17 (0.45, 2.12) Constipation: AOR 1.02 (0.64, 1.75) Haemorrhoids: AOR 1.72 (1.03, 2.87) Flatus incontinence: AOR 1.21 (0.70, 2.11)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Moderate risk of bias (72%) completed all parts of the 3 year study, no reasons were given for those who dropped out) Prognostic factor measurement - Low risk of bias (good description of risk factor, measured appropriately) Outcome measurement - Low risk of bias (outcome measures valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
section in the second stage of labour and to assess the impact of a subsequent delivery. **Study dates** Recruitment between February 1999 to February 2000 **Source of funding** None reported	caesarean delivery 56/209 (26.8%) **Inclusion criteria** • Women at ≥37 weeks gestation with a live, singleton, cephalic pregnancy • the women had to have been fully dilated • underwent caesarean delivery or instrumental vaginal delivery in an operating room. **Exclusion criteria** None reported		which there was biologically plausible potential for confounding were explored in the models. Maternal age, parity, body mass index of >30 kg/m2, and infant birth weight of >4 kg were included in the final models.	Faecal incontinence: AOR 1.65 (0.60, 4.88) Sexual Pain on intercourse: AOR 1.01 (0.58, 1.73) Pain that prevented intercourse: AOR 1.40 (0.69, 2.85) The instrumental delivery group was the reference group and the caesarean delivery group the comparison group	
Full citation Blomquist, J. L., Munoz, A., Carroll, M., Handa, V. L., Association of Delivery Mode With Pelvic Floor Disorders After Childbirth, Jama, 320, 2438-2447, 2018 **Ref Id** 1151130	**Sample size** N=1528 women enrolled n=778 caesarean birth n=565 spontaneous vaginal delivery n=185 operational vaginal birth **Characteristics** Age at first delivery (n, %) <30: Caesarean birth 296/778 (38.1); Spontaneous vaginal birth	**Interventions** Risk factor: • Type of delivery. Each delivery was classified as a caesarean birth, a spontaneous vaginal birth, or an operative vaginal birth (for example delivery with the use of	**Details** Incidence of 4 pelvic floor disorders a minimum of 5 years from first delivery was assessed annually: stress urinary incontinence (SUI), overactive bladder (OAB), anal incontinence (AI), and pelvic organ prolapse (POP). The Epidemiology of Prolapse and Incontinence Questionnaire (EPIQ) and a physical examination	**Results** Stress urinary incontinence **Delivery mode** Reference: Spontaneous delivery Caesarean: AHR 0.46 (0.32, 0.67) Operative vaginal: AHR 1.07 (0.65, 1.78) **Age at first delivery** Reference: <30 30-34: AHR 0.80 (0.53, 1.21)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (minimum of 1360/1528 (89%) reported on each symptom) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately)

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Country/ies where the study was carried out USA **Study type** Longitudinal cohort study **Aim of the study** To describe the incidence of pelvic floor disorders after childbirth and to identify maternal and obstetrical characteristics associated with patterns of incidence in the first 1 to 2 decades after childbirth. **Study dates** Recruitment between October 2008 and December 2013 **Source of funding** Funded by grants R01HD082070 and R01HD056275 from Eunice Kennedy Shriver National Institute of Child Health and Human Development.	237/565 (42.0); Operative vaginal birth 60/185 (32.4) 30-34: Caesarean birth 263/778 (33.8); Spontaneous vaginal birth 185/565 (32.7); Operative vaginal birth 79/185 (42.7) ≥35: Caesarean birth 219/778 (28.2); Spontaneous vaginal birth 143/565 (25.3); Operative vaginal birth 46/185 (24.9) <u>Primary race/ethnicity (n, %)</u> White: Caesarean birth 596/778 (76.6); Spontaneous vaginal birth 462/565 (81.8); Operative vaginal birth 157/185 (84.9) Black: Caesarean birth 139/778 (17.9); Spontaneous vaginal birth 77/565 (13.6); Operative vaginal birth 18/185 (9.7) Asian: Caesarean birth 15/778 (1.9); Spontaneous vaginal birth 15/565 (2.7); Operative vaginal birth 8/185 (4.3) Other: Caesarean birth 28/778 (3.6); Spontaneous vaginal birth 11/565 (2.0); Operative vaginal birth 2/185 (1.1) <u>Deliveries at enrolment (n, %)</u> 1: Caesarean birth 252/778 (32.4); Spontaneous vaginal birth	forceps, vacuum-assisted vaginal delivery. The caesarean birth group included women who delivered only by caesarean birth, the spontaneous vaginal birth group was composed of women who experienced at least 1 spontaneous vaginal birth but no operative vaginal deliveries, and the operative vaginal birth group included women who had at least 1 operative vaginal delivery. • Age at first delivery • Race • Parity • BMI • Genital hiatus	(gynaecologic, height, and weight information) was used to the annual assessments. Covariates that were included in the multivariable analysis were parity, age at first delivery, BMI and race. Parity was self-reported. Age at first delivery was categorized by the following approximate tertiles: younger than 30 years, 30 to 34 years, and 35 years or older. Body mass index (BMI; calculated as weight in kilograms divided by height in meters squared) was measured at each annual follow-up visit and categorized for analyses as less than 25 (normal weight or reference), 25 to 29 (overweight), or greater than or equal to 30 (obese). Participants' race/ethnicity (categorized as American Indian or Alaska Native, Asian, black or African American, Native Hawaiian or other Pacific Islander, white, or other) was self-reported. For analysis, race/ethnicity was dichotomized as black vs nonblack; Asian women and women who indicated	≥35: AHR 0.96 (0.62, 1.48) **Race** Reference: nonblack Black: AHR 0.86 (0.52, 1.42) **Parity** Reference: 1 2: AHR 0.82 (0.54, 1.23) ≥3: AHR 1.13 (0.67, 1.88) **BMI** Reference: <25 25-29: AHR 1.32 (0.87, 2.00) ≥30: AHR 1.97 (1.29, 3.01) **BMI Genital hiatus size (cm)** (NB: Genital hiatus size was not included in the multivariable analysis because this variable is likely to be in causal pathway of delivery mode.) Reference: ≤2.5 3: HR 1.84 (1.19, 2.83) ≥3.5: HR 2.31 (1.57, 3.40) <u>Overactive bladder</u> **Delivery mode** Reference: Spontaneous delivery Caesarean: AHR 0.51 (0.34, 0.76) Operative vaginal: AHR 1.07 (0.63, 1.84) **Age at first delivery** Reference: <30 30-34: AHR 1.10 (0.70, 1.73) ≥35: AHR 1.20 (0.74, 1.94)	Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
	137/565 (24.3); Operative vaginal birth 47/185 (25.4) 2: Caesarean birth 423/778 (54.4); Spontaneous vaginal birth 324/565 (57.4); Operative vaginal birth 104/185 (56.2) ≥: Caesarean birth 103/778 (13.2); Spontaneous vaginal birth 104/565 (18.4); Operative vaginal birth 34/185 (18.4) <u>BMI at enrolment (n, %)</u> <25: Caesarean birth 303/778 (39.0); Spontaneous vaginal birth 283/565 (50.1); Operative vaginal birth 110/185 (59.5) 26-29: Caesarean birth 206/778 (26.5); Spontaneous vaginal birth 176/565 (31.1); Operative vaginal birth 51/185 (27.6) ≥30: Caesarean birth 269/778 (34.6); Spontaneous vaginal birth 106/565 (18.7); Operative vaginal birth 24/185 (13.0) <u>Genital hiatus size at enrolment (n, %)</u> ≤2.5: Caesarean birth 624/778 (80.2); Spontaneous vaginal birth 216/565 (38.2); Operative vaginal birth 69/185 (37.3) 3: Caesarean birth 114/778 (14.7); Spontaneous vaginal birth		“other” accounted for only 5.2% of the study population and were therefore included with the largest racial category to minimize misclassification in statistical inferences.	**Race** Reference: nonblack Black: AHR 1.08 (0.62, 1.87) **Parity** Reference: 1 2: AHR 0.88 (0.57, 1.36) ≥3: AHR 0.56 (0.29, 1.08) **BMI** Reference: <25 25-29: AHR 0.76 (0.48, 1.21) ≥30: AHR 1.41 (0.72, 1.81) **BMI Genital hiatus size (cm)** (NB: Genital hiatus size was not included in the multivariable analysis because this variable is likely to be in causal pathway of delivery mode.) Reference: ≤2.5 3: HR 1.01 (0.59, 1.73) ≥3.5: HR 2.09 (1.41, 3.11) <u>Anal incontinence</u> **Delivery mode** Reference: Spontaneous delivery Caesarean: AHR 0.72 (0.51, 1.02) Operative vaginal: AHR 1.75 (1.14, 2.68) **Age at first delivery** Reference: <30 30-34: AHR 1.03 (0.71, 1.49) ≥35: AHR 1.36 (0.92, 2.01) **Race** Reference: nonblack	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
	132/565 (23.4); Operative vaginal birth 37/185 (20.0) ≥3.5: Caesarean birth 40/778 (5.1); Spontaneous vaginal birth 217/565 (38.4); Operative vaginal birth 79/185 (42.7) <u>PFD symptoms (n, %)</u> Stress urinary incontinence: Caesarean birth 101/778 (13.0); Spontaneous vaginal birth 149/565 (26.4); Operative vaginal birth 56/185 (30.3) Overactive bladder: Caesarean birth 81/778 (10.4); Spontaneous vaginal birth 89/565 (15.8); Operative vaginal birth 45/185 (24.3) Anal incontinence: Caesarean birth 148/778 (19.0); Spontaneous vaginal birth 129/565 (22.8); Operative vaginal birth 58/185 (31.4) Pelvic organ prolapse: Caesarean birth 39/778 (5.0); Spontaneous vaginal birth 94/565 (16.7); Operative vaginal birth 56/185 (30.3) **Inclusion criteria** Women recruited from a community hospital 5-10 years after their first delivery (index birth)			Black: AHR 0.42 (0.24, 0.73) **Parity** Reference: 1 2: AHR 1.37 (0.93, 2.02) ≥3: AHR 1.12 (0.65, 1.91) **BMI** Reference: <25 25-29: AHR 1.37 (0.94, 1.99) ≥30: AHR 2.24 (1.53, 3.20) **BMI Genital hiatus size (cm)** (NB: Genital hiatus size was not included in the multivariable analysis because this variable is likely to be in causal pathway of delivery mode.) Reference: ≤2.5 3: HR 1.65 (1.13, 2.41) ≥3.5: HR 1.60 (1.12, 2.27) <u>Pelvic organ prolapse</u> **Delivery mode** Reference: Spontaneous delivery Caesarean: AHR 0.28 (0.19, 0.42) Operative vaginal: AHR 1.88 (1.28, 2.78) **Age at first delivery** Reference: <30 30-34: AHR 0.94 (0.64, 1.37) ≥35: AHR 1.33 (0.88, 2.01) **Race** Reference: nonblack Black: AHR 0.99 (0.60, 1.65)	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
	Exclusion criteria • maternal age younger than 15 or older than 50 years • delivery at less than 37 weeks' gestation • placenta previa • multiple gestation • known foetal congenital anomaly • stillbirth • prior myomectomy abruption			**Parity** Reference: 1 2: AHR 2.07 (1.31, 3.30) ≥3: AHR 2.08 (1.19, 3.64) **BMI** Reference: <25 25-29: AHR 1.11 (0.76, 1.63) ≥30: AHR 1.50 (0.99, 2.26) **BMI Genital hiatus size (cm)** (NB: Genital hiatus size was not included in the multivariable analysis because this variable is likely to be in causal pathway of delivery mode.)	
Full citation Blomquist, J. L., Carroll, M., Munoz, A., Handa, V. L., Pelvic floor muscle strength and the incidence of pelvic floor disorders after vaginal and cesarean delivery, American Journal of Obstetrics and Gynecology, 2019 **Ref Id** 1145556 **Country/ies where the study was carried out** USA **Study type** Longitudinal study	**Sample size** N=1143 **Characteristics** **Age at first delivery (years) (n, %)** <30: peak pressure <20cm H2O 125 (35.7); peak pressure ≥20cm H2O 308 (38.8) 30 to <35: peak pressure <20cm H2O 124 (35.7); peak pressure ≥20cm H2O 275 (34.7) ≥30: peak pressure <20cm H2O 101 (28.9); peak pressure ≥20cm H2O 210 (26.5) **Delivery group at entry (n, %)**	**Interventions** Risk factors: Pelvic muscle strength: (<20 cm H2O) vs ≤20 cm H2O. Measured using the Peritron perineometer. Participants were instructed to squeeze the pelvic floor muscles as if they were trying to hold in flatus. BMI: <25kg/m2 vs 25 to <35kg/m2 vs ≥35 kg/m2 Genital hiatus: ≤2.5cm vs 3cm vs ≥3.5cm. The genital hiatus in the distance in centimetres from the middle of the external urethral meatus to the posterior midline	**Details** Participants were seen at the research site for a baseline visit and annually thereafter for up to 9 years. Questionnaires, physical exam and Pelvic Organ Prolapse Quantification (POP-Q) exam. SUI, OAB, and AI were assessed using the Epidemiology of Prolapse and In- continence Questionnaire (EPIQ) Covariates multivariate models adjusted for all variables (Caesarean delivery, BMI, genital hiatus and pelvic muscle strength)	**Results** <u>Stress urinary incontinence (Caesarean deliveries only)</u> **Pelvic muscle strength** Reference: ≥20cm H2O <20cm H2O: AHR 1.37 (0.71, 2.63) **Body mass index** Reference: <25kg/m2 25 to <35kg/m2: AHR 1.54 (0.71, 3.33) ≥35kg/m2: AHR 2.36 (1.16, 4.81) **Genital hiatus** Reference: ≤2.5cm 3cm: AHR 1.55 (0.80, 2.78) ≥3.5cm: AHR 1.22 (0.50, 3.26)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (1143/1529 (75%) completed the study, reasons for non-participation given (missed 2nd visit, latex allergy, declined or other) Prognostic factor measurement - Low risk of bias (some description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described)

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Aim of the study To investigate the association between pelvic floor muscle strength and the incidence of pelvic floor disorders, and to identify maternal and obstetrical characteristics that modify the association. **Study dates** Recruitment between October 2008 and December 2013 **Source of funding** Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01HD082070 and R01HD056275)	Caesarean only: peak pressure <20cm H2O 107 (30.6); peak pressure ≥20cm H2O 448 (56.5) Vaginal: peak pressure <20cm H2O 243 (69.4); peak pressure ≥20cm H2O 345 (43.5) **BMI at enrolment (kg/m2) (n, %)** <25 peak pressure <20cm H2O 183 (52.3); peak pressure ≥20cm H2O 361 (45.5) 25 to <30: peak pressure <20cm H2O 97 (27.7); peak pressure ≥20cm H2O 231 (29.1) ≥30: peak pressure <20cm H2O 70 (20.0); peak pressure ≥20cm H2O 201 (25.3) **Genital hiatus at enrolment (cm) (n, %)** <25 peak pressure <20cm H2O 156 (44.6); peak pressure ≥20cm H2O 503 (63.4) 25 to <30: peak pressure <20cm H2O 69 (19.7); peak pressure ≥20cm H2O 152 (19.2) ≥30: peak pressure <20cm H2O 125 (35.7); peak pressure ≥20cm H2O 138 (17.4) **Inclusion criteria**	hymen, measured during the Valsalva manoeuver		<u>Stress urinary incontinence (Vaginal deliveries)</u> **Pelvic muscle strength** Reference: ≥20cm H2O <20cm H2O: AHR 1.16 (0.74, 1.81) **Body mass index** Reference: <25kg/m2 25 to <35kg/m2: AHR 1.33 (0.80, 2.23) ≥35kg/m2: AHR 1.72 (0.98, 3.01) **Genital hiatus** Reference: ≤2.5cm 3cm: AHR 1.45 (0.76, 2.74) ≥3.5cm: AHR 1.62 (0.92, 2.83) <u>Overactive bladder (Caesarean deliveries only)</u> **Pelvic muscle strength** Reference: ≥20cm H2O <20cm H2O: AHR 1.79 (0.91, 3.52) **Body mass index** Reference: <25kg/m2 25 to <35kg/m2: AHR 1.03 (0.42, 2.49) ≥35kg/m2: AHR 2.12 (0.99, 4.54) **Genital hiatus** Reference: ≤2.5cm 3cm: AHR 0.57 (0.20, 1.62) ≥3.5cm: AHR 1.36 (0.55, 3.38)	Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
	Women 5-10 years after their first delivery, recruited from a community hospital **Exclusion criteria** • maternal age <15 or >50 years • delivery at <37 weeks' gestation • placenta previa • multiple gestation • known foetal congenital anomaly • stillbirth • prior myomectomy • abruption • Women reporting a latex allergy were excluded, as the tubing used for the pelvic muscle strength test contains latex.			<u>Overactive bladder (Vaginal deliveries)</u> **Pelvic muscle strength** Reference: ≥20cm H2O <20cm H2O: AHR 1.27 (0.78, 2.05) **Body mass index** Reference: <25kg/m2 25 to <35kg/m2: AHR 0.72 (0.41, 1.27) ≥35kg/m2: AHR 0.65 (0.32, 1.32) **Genital hiatus** Reference: ≤2.5cm 3cm: AHR 0.95 (0.45, 1.99) ≥3.5cm: AHR 1.62 (0.91, 2.89) <u>Anal incontinence (Caesarean deliveries only)</u> **Pelvic muscle strength** Reference: ≥20cm H2O <20cm H2O: AHR 0.93 (0.49, 1.78) **Body mass index** Reference: <25kg/m2 25 to <35kg/m2: AHR 1.72 (0.86, 3.44) ≥35kg/m2: AHR 2.84 (1.50, 5.36) **Genital hiatus** Reference: ≤2.5cm 3cm: AHR 2.03 (1.18, 3.48) ≥3.5cm: AHR 0.96 (0.37, 2.46)	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
				Anal incontinence (Vaginal deliveries) **Pelvic muscle strength** Reference: ≥20cm H2O <20cm H2O: AHR 1.23 (0.81, 1.86) **Body mass index** Reference: <25kg/m2 25 to <35kg/m2: AHR 1.12 (0.70, 1.79) ≥35kg/m2: AHR 1.11 (0.63, 1.96) **Genital hiatus** Reference: ≤2.5cm 3cm: AHR 1.12 (0.63, 1.98) ≥3.5cm: AHR 1.13 (0.69, 1.85) Pelvic organ prolapse (Caesarean deliveries only) **Pelvic muscle strength** Reference: ≥20cm H2O <20cm H2O: AHR 0.74 (0.29, 1.92) **Body mass index** Reference: <25kg/m2 25 to <35kg/m2: AHR 1.08 (0.43, 2.74) ≥35kg/m2: AHR 1.25 (0.53, 2.98) **Genital hiatus** Reference: ≤2.5cm 3cm: AHR 2.78 (1.20, 6.42) ≥3.5cm: AHR 6.12 (2.56, 14.6)	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
				Pelvic organ prolapse (Vaginal deliveries) **Pelvic muscle strength** Reference: ≥20cm H2O <20cm H2O: AHR 1.43 (0.99, 2.07) **Body mass index** Reference: <25kg/m2 25 to <35kg/m2: AHR 0.87 (0.56, 1.33) ≥35kg/m2: AHR 0.84 (0.51, 1.37) **Genital hiatus** Reference: ≤2.5cm 3cm: AHR 3.37 (1.47, 7.71) ≥3.5cm: AHR 9.67 (4.67, 20.10)	
Full citation Bodner-Adler, B., Kimberger, O., Laml, T., Halpern, K., Beitl, C., Umek, W., Bodner, K., Prevalence and risk factors for pelvic floor disorders during early and late pregnancy in a cohort of Austrian women, Archives of Gynecology and Obstetrics, 300, 1325-1330, 2019 **Ref Id** 1152493 **Country/ies where the study was carried out**	**Sample size** N=209 women consented to take part; N=200 were included **Characteristics** **Continuous variables [mean(SD)]:** Age (years) 32 (± 5.7), current BMI (kg/m2) 28 (± 7.2), BMI before pregnancy 25 (± 7.7) parity 1 (± 1.2), Fetal weight 3174 (± 617.4), Gestational age (at recruitment time) 26 (± 12.6) **Dichotomous variables [N (%)]:** Smoking 36 (18%), Family history of PFD 51 (26%), Multiple	**Interventions** **Risk factors** Age, BMI, parity, smoking, multiple pregnancy and family history. **Outcomes** PFD was measured using the modified German pelvic floor questionnaire. This is a self-administered, validated questionnaire for the assessment of pelvic floor disorders, their risk factors and their impact of quality of life during pregnancy and postpartum period which integrates bladder, bowel and sexual function, pelvic organ prolapse, severity,	**Details** Women completed the questionnaire either during their first or last visit at the outpatient clinic and afterwards they were classified into two groups: patients with one or more PFDs (n = 96/200) (= significant psychological strain in at least one pelvic floor domain) and patients without any pelvic floor complaints (n = 104/200). Clinical information, including obstetrical and neonatal data were obtained from the hospital database.	**Results** Risk factors for PFD (from multiple regression; OR [95% CI]) *recalculated point estimate from the CIs as they are wrong in the paper (missing the 1st digit in some cases)*: **Age** (under 35 versus 35 or over) OR 1.014 [0.955–1.077] **BMI** (under versus over 25) OR 1.073 [1.013–1.143] **Smoking** (yes versus no) OR 1.140 [0.461–2.860] **Parity** (per unit increase) OR 1.175 [0.905–1.569] **Multiple pregnancy** (yes versus no) OR 2.978 [2.011–4.240]	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias Prognostic factor measurement - moderate risk of bias (good description of risk factors (see Metz 2017 paper), but a cross sectional design) Outcome measurement - High risk of bias (outcome measure valid and described, but a cross sectional design with no follow-up - unclear

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Austria **Study type** Cross-sectional study **Aim of the study** To evaluate the prevalence of PFDs and risk factors for PFD in a cohort of pregnant Austrian women. **Study dates** 2018-2019 **Source of funding** No funding received.	pregnancy 22 (11%), Spontaneous vaginal delivery 97 (49%), Vaginal-operative 14 (7%), Cesarean section 89 (44%) **Inclusion criteria** Age over 18 years, first or third trimester of pregnancy with planned delivery at a single Austrian hospital. **Exclusion criteria** Inability to complete the questionnaire due to language problems.	bothersomeness and condition-specific quality of life in women with urinary incontinence (UI) and/or POP.	Multiple logistic regression analysis was conducted to define the impact of different variables on PFDs.	**Family history** (yes versus no) OR 2.235 [2.044–4.260]	whether PFD persisted beyond pregnancy. Some were assessed in early pregnancy and some in late preganancy) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Moderate risk of bias (appropriately conducted, but point estimates of ORs are outside the 95% CIs had to recalculate with assumptions) Overall rating: High risk of bias
Full citation Durnea, C. M., Khashan, A. S., Kenny, L. C., Tabirca, S. S., O'Reilly, B. A., The role of prepregnancy pelvic floor dysfunction in postnatal pelvic morbidity in primiparous women, International Urogynecology Journal and Pelvic Floor Dysfunction, 25, 1363-1374, 2014 **Ref Id** 972343 **Country/ies where the study was carried out**	**Sample size** N=872 **Characteristics** N=872 Age (Mean, SD): 30.5 (4.2) BMI (Mean, SD): 25.0 (4.1) Education years (n, %): ≤12 years: 101 (12) > 12 years: 771 (88) Smoking (n, %): Non-smokers: 661 (75.8) Smokers: 211 (24.2)	**Interventions** **Risk factors:** Mode of delivery - Spontaneous vaginal delivery, vacuum delivery, forceps delivery. Reference standard: Caesarean section	**Details** Australian pelvic floor questionnaire was used to assess PFD at recruitment, 15 weeks gestation, and 1-year post delivery. Log-linear binomial regression was used to estimate the relative risk (RR) of having de novo or worsening postnatal symptoms in relation to mode of delivery. RR were adjusted for maternal age, body mass index (BMI), education, smoking and marital status.	**Results** **Risk of de novo PFD or PFD worsened postnatally (Reference standard: Caesarean section)** Urinary frequency **Delivery mode** Spontaneous vaginal delivery: ARR 1.1 (0.64, 2.02) Vacuum: ARR 1.3 (0.7, 2.47) Forceps: ARR 1.9 (0.98, 3.64) Nocturina **Delivery mode** Spontaneous vaginal delivery: ARR 1.3 (0.51, 3.08)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Moderate risk of bias (minimum of 872/1484 (59%) completed all three questionnaires / did not have a second pregnancy within the year of follow-up) Prognostic factor measurement - Moderate risk of bias (limited description of risk factors and how measured) Outcome measurement - Low risk of bias (outcome

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Ireland **Study type** Prospective cohort study, nested within the larger study **Aim of the study** To investigate the correlation between the prepregnancy and postnatal PFD in premenopausal primiparous women, by assessing all four types of PFD: urinary, faecal, prolapse and sexual dysfunctions. To investigate the persistence rate of prepregnancy pathology postnatally, its relationship with mode of delivery (MOD) and the association among all four types of PFD. **Study dates** Recruitment between February 2008 and March 2011 **Source of funding** Health Research Board of Ireland (grant reference CSA 2007/2). The study was supported by	**Inclusion criteria** • Nulliparous in their first ongoing pregnancy • Singleton foetus • Gestational age <15 weeks (Data from Durnea et al. An insight into pelvic floor status in nulliparous women, 2014) **Exclusion criteria** Pre-existing risk factors for pregnancy complications, for example • diabetes • hypertension • three or more terminations or miscarriages • previous cervical knife cone biopsy (Data from Durnea et al. An insight into pelvic floor status in nulliparous women, 2014)			Vacuum: ARR 1 (0.36, 2.86) Forceps: ARR 2 (0.75, 5.46) <u>Urinary urgency</u> **Delivery mode** Spontaneous vaginal delivery: ARR 1.6 (1.1, 2.3) Vacuum: ARR 1.3 (0.86, 1.99) Forceps: ARR 1.9 (1.21, 2.92) <u>Urinary urgency incontinence</u> **Delivery mode** Spontaneous vaginal delivery: ARR 1.8 (1.2, 2.64) Vacuum: ARR 1.5 (0.97, 2.35) Forceps: ARR 1.9 (1.16, 3.04) <u>Stress urinary incontinence</u> **Delivery mode** Spontaneous vaginal delivery: ARR 1.9 (1.36, 2.68) Vacuum: ARR 1.6 (1.09, 2.34) Forceps: ARR 2 (1.3, 2.95) <u>Flatus incontinence</u> **Delivery mode** Spontaneous vaginal delivery: ARR 1.4 (0.97, 2.01)	measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Continence Foundation Ireland and INFANT Research Centre, UCC. This work was funded in part by Science Foundation Ireland.				Vacuum: ARR 1.1 (0.69, 1.63) Forceps: ARR 1.7 (1.06, 2.61) <u>Faecal incontinence with diarrhoea</u> **Delivery mode** Spontaneous vaginal delivery: ARR 0.9 (0.4, 1.86) Vacuum: ARR 1.5 (0.71, 3.24) Forceps: ARR 1.7 (0.69, 4.12) <u>Obstructed defecation</u> **Delivery mode** Spontaneous vaginal delivery: ARR 1.3 (0.55, 3.24) Vacuum: ARR 1.4 (0.52, 3.56) Forceps: ARR 0.5 (0.11, 2.47) <u>Prolapse sesation</u> **Delivery mode** Spontaneous vaginal delivery: ARR 4.4 (1.62, 11.8) Vacuum: ARR 2.8 (0.96, 8.46) Forceps: ARR 4.9 (1.68, 14.05) <u>Vaginal laxity</u> **Delivery mode** Spontaneous vaginal delivery: ARR 4.5 (2.45, 8.12) Vacuum: ARR 3.7 (1.98, 7.1)	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
				Forceps: ARR 4.7 (2.41, 9.2) <u>Vaginal tightness/vaginismus</u> **Delivery mode** Spontaneous vaginal delivery: ARR 0.9 (0.58, 1.37) Vacuum: ARR 1.2 (0.75, 1.86) Forceps: ARR 0.8 (0.46, 1.57) <u>Dyspareunia</u> **Delivery mode** Spontaneous vaginal delivery: ARR 0.9 (0.63, 1.28) Vacuum: ARR 0.9 (0.63, 1.4) Forceps: ARR 1.3 (0.84, 2.03) ARR: adjusted relative risk	
Full citation Durnea, C. M., Khashan, A. S., Kenny, L. C., Durnea, U. A., Dornan, J. C., O'Sullivan, S. M., O'Reilly, B. A., What is to blame for postnatal pelvic floor dysfunction in primiparous women-Pre-pregnancy or intrapartum risk factors?, European Journal of Obstetrics Gynecology and	**Sample size** N=872 **Characteristics** See Durnea 2014 **Inclusion criteria** See Durnea 2014 **Exclusion criteria**	**Interventions** **Risk factors** See Durnea 2014	**Details** Any risk factors with a p-value <0.1 was included in a stepwise ordinal logistic regression, where p<0.05 was considered statistically significant	**Results** <u>Stress urinary incontinence</u> Recurrent UTIs: OR 2.2 (1.43, 3.32) High waist/height ratio: OR 168.4 (12.86, 2205.8) Poor social support: OR 1.5 (1.03, 2.06) Stress UI pre-pregnancy: OR 15.9 (5.67, 44.59) Vacuum delivery: OR 0.6 (0.43, 0.87)	**Limitations** See Durnea 2014

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Reproductive Biology, 214, 36-43, 2017 **Ref Id** 651489 **Country/ies where the study was carried out** Ireland **Study type** Prospective cohort study **Aim of the study** To define the group of patients at higher risk of PFD. To clarify the natural history of PFD, by investigating the role of pre-pregnancy and labor related risk factors in the development of postnatal PFD in primiparous women **Study dates** See Durnea 2014 **Source of funding** See Durnea 2014	See Durnea 2014			Elective caesarean section: OR 0.5 (0.27, 0.87) Emergency caesarean section: OR 0.3 (0.19, 0.6) IOL with prostaglandins + oxytocin: OR 1.5 (1.02, 2.21) <u>Urgency urinary incontinence</u> Urinary urgency pre-pregnancy: OR 10 (2.54, 39.12) Stress urinary incontinence pre-pregnancy: OR 1.6 (1.04, 2.55) Urgency urinary incontinence pre-pregnancy: OR 6 (1.62, 22.04) Foetal head circumference: OR 1.2 (1.01, 1.3) <u>Urinary urgency</u> High hip circumference (>95cm): OR 1.6 (1.04, 2.54) Urgency urinary incontinence pre-pregnancy: OR 3.2 (1.04, 9.95) Stress urinary incontinence pre-pregnancy: OR 2 (1.4, 2.99) Urinary urgency pre-pregnancy: OR 17.6 (5.05, 61.57) Forceps delivery: OR 1.8 (1.15, 2.91)	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
				IOL with prostaglandins: OR 1.6 (1.05, 2.3) <u>Flatus incontinence</u> High hip circumference (>95cm): OR 1.4 (1.03, 2.03) Flatus incontinence pre-pregnancy: OR 7.3 (3.69, 14.28) IOL with amniotomy + oxytocin: OR 2.3 (1.03, 4.91) <u>Faecal urgency</u> High waist/height ratio: OR 22.6 (2.02, 254.26) Faecal urgency pre-pregnancy: OR 30 (5.7, 157.59) Flatus incontinence pre-pregnancy: OR 6.4 (2.05, 19.83) <u>Vaginal laxity</u> Poor social support: OR 3.8 (1.58, 8.99) Vaginal laxity pre-pregnancy: OR 5 (2.51, 9.79) Perineal tear grade 3: OR 2.4 (1.01, 5.64) <u>Vaginal tightness/vaginismus</u> Smoker (current): OR 2.2 (1.08, 4.68) High waist/height ratio: OR 0.003 (0.00001, 0.15) High sexual dysfunction section score pre-	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
				pregnancy: OR 1.4 (1.29, 1.61) Vigorous exercising: OR 3.1 (1.19, 7.84) <u>Dyspareunia</u> Smoker (current): OR 4.6 (1.41, 14.8) High hip circumference (>95cm): OR 0.02 (0.001, 0.42) Dyspareunia pre-pregnancy: OR 5.7(1.42, 22.92) Flatus incontinence pre-pregnancy: OR 4.2 (1.19, 14.87) Faecal urgency pre-pregnancy: OR 1.7 (1.20, 2.38) Perineal tear grade 3: OR 2.6 (1.03, 6.57) <u>Pelvic Organ Prolapse</u> Recurrent UTIs: OR 4.4 (1.2, 16.47) Waist circumference (>90 centile): OR 1.1 (1.04, 1.15) Urinary urgency pre-pregnancy: OR 3.3 (1.23, 8.57) Dyspareunia pre-pregnancy: OR 9.9 (1.33, 73.25) Episiotomy: OR 4 (1.38, 11.32) Levator Ani Muscle ballooning: OR 3.1 (1.16, 8.21)	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
				Prolapse sensation Recurrent UTIs: OR 17.3 (3.85, 77.45) High prolapse section score pre-pregnancy: OR 2.1 (1.24, 3.41) Levator Ani Muscle trauma: OR 15.6 (4.09, 59.28)	
Full citation Fritel,X., Schaal,J.P., Fauconnier,A., Bertrand,V., Levet,C., Pigne,A., Pelvic floor disorders 4 years after first delivery: a comparative study of restrictive versus systematic episiotomy, BJOG: An International Journal of Obstetrics and Gynaecology, 115, 247-252, 2008 **Ref Id** 109935 **Country/ies where the study was carried out** France **Study type** Quasi-randomised comparative study **Aim of the study**	**Sample size** N=627 **Characteristics** Age, years (mead SD): Restrictive episiotomy 27.1 (4.7); Routine episiotomy 29.3 (4.5) BMI, kg/m2 (mean, SD): Restrictive episiotomy 21.5 (3.1); Routine episiotomy 21.4 (3.0) UI before pregnancy (n, %): Restrictive episiotomy yes 17 (6), no 283 (94); Routine episiotomy yes 16 (5), no 282 (95) UI during pregnancy (n, %): Restrictive episiotomy yes 65 (21), no 283 (79); Routine episiotomy yes 68 (23), no 230 (77) Gestational age, week (mean, SD): Restrictive episiotomy 40.2 (1.2); Routine episiotomy 39.6 (0.9)	**Interventions** Risk factors: • Maternity: Hospital A - strongly recommended against episiotomy - restrictive episiotomy vs Hospital B - strongly recommended episiotomy for first delivery - routine or systematic episiotomy • High school diploma: yes/no • Age at delivery (years): ±30 • Gestational age (weeks): ±40 • Epidural: yes/no • Active second phase (minutes): ±20 • Mode of delivery: Spontaneous, operative, caesarean	**Details** Information about pelvic floor disorders was obtained from a questionnaire mailed 4 years after delivery. Questionnaire included information about educational level, postpartum pelvic floor exercises, subsequent deliveries and urinary symptoms during the preceding 4 weeks. If 'yes' to urinary symptoms, further questions were asked including anal incontinence. Factors retained for the multivariable analysis were those that differed significantly between the two hospitals, even if they were not significantly associated with incontinence: women's age, educational level, gestational age, epidural, time of pushing, mode of delivery, birthweight, and	**Results** Urinary incontinence (adjusted OR, 95% CI) **Maternity** Reference: restrictive episiotomy (1) Systematic episiotomy: OR 1.21 (0.80, 1.83) **High school diploma** Reference: No (1) Yes: OR 0.74 (0.49, 1.10) **Age at delivery (years)** Reference: <30 (1) ≥30: OR 2.13 (1.46, 3.13) **Gestational age (weeks)** Reference: <40 (1) ≥40: OR 1.51 (1.03, 2.22) **Epidural** Reference: No (1) Yes: OR 0.88 (0.52, 1.49) **Active second phase (minute)** Reference: <20 (1) ≥20: OR 1.00 (0.54, 1.85) **Mode of delivery**	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (627/774 (81%) responded to questionnaire) Prognostic factor measurement - Low risk of bias (some description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
To compare two policies for episiotomy: restrictive and systematic **Study dates** 1996 **Source of funding** No funding received	**Inclusion criteria** • Nulliparous women • Given birth in 1996 • Term infant of 37–41 weeks • Singleton live born child • Infant in cephalic presentation • Up-to-date mail address in 2000 **Exclusion criteria** None reported	• Birth weight (g): ±4000 • Postpartum pelvic floor exercises: yes/no	postpartum pelvic floor exercises	Reference: Spontaneous (1) Operative: OR 1.08 (0.73, 1.61) Caesarean: OR 0.63 (0.29, 1.34) **Birth weight** Reference: <4000g (1) ≥4000g: OR 0.74 (0.26, 2.07) **Postpartum pelvic floor exercises** Reference: No (1) Yes: OR 2.12 (1.45, 3.10) <u>Anal incontinence (adjusted OR, 95% CI)</u> **Maternity** Reference: restrictive episiotomy (1) Systematic episiotomy: OR 1.84 (1.05, 3.22) **High school diploma** Reference: No (1) Yes: OR 0.80 (0.47, 1.35) **Age at delivery (years)** Reference: <30 (1) ≥30: OR 1.31 (0.79, 2.17) **Gestational age (weeks)** Reference: <40 (1) ≥40: OR 0.98 (0.60, 1.61) **Epidural** Reference: No (1) Yes: OR 0.47 (0.24, 0.91)	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
				Active second phase (minute) Reference: <20 (1) ≥20: OR 2.17 (1.07, 4.43) **Mode of delivery** Reference: Spontaneous (1) Operative: OR 1.13 (0.67, 1.92) Caesarean: OR 1.22 (0.49, 3.00) **Birth weight** Reference: <4000g (1) ≥4000g: OR 0.34 (0.04, 2.74) **Postpartum pelvic floor exercises** Reference: No (1) Yes: OR 1.43 (0.86, 2.36)	
Full citation Guerby, P., Parant, O., Chantalat, E., Vayssiere, C., Vidal, F., Operative vaginal delivery in case of persistent occiput posterior position after manual rotation failure: a 6-month follow-up on pelvic floor function, Archives of Gynecology and Obstetrics, 298, 111-120, 2018 **Ref Id** 973409	**Sample size** N=111 enrolled n=58 in the instrumental rotation group n=53 in the occiput posterior group **Characteristics** Age, years (mean, SD): Occiput posterior position 29.7 (4.8); Instrumental rotation 28.8 (4.7) BMI (median, IQR): Occiput posterior position 22.2 (20-25.1); Instrumental rotation 22.6 (19.9-25.6)	**Interventions** Risk factors: Assisted delivery in OP position without attempt of instrumental rotation (OP group) compared to attempted instrumental rotation (IR group) Foetal head station: Station was defined by the level of the leading bony point of the foetal head in centimetres at or below the level of maternal ischial spines (0 and + 1 = midpelvic; + 2 and +3=low; + 4 and +5=outlet)	**Details** Data were collected during hospitalisation in the postpartum period on day 2, and at 2 and 6 months postpartum. Questionnaires were on quality of life, pain, anal continence and urinary function. The Wexner scale was used to define anal incontinence, the International Consultation on Incontinence Questionnaire (ICIQ-FLUTS) was used to assess lower urinary tract symptoms and Pain was assessed using the	**Results** **Anal incontinence** Delivery in the OP position without attempted rotation: OR 8.51 (2.14–33.79) Foetal head station (low or outlet): OR 0.51 (0.27, 0.98)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (55/58 (95%) in IR group and 50/53 (94%) completed 6 months follow up, no reasons were given for those who dropped out) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Country/ies where the study was carried out France **Study type** Non-randomised prospective observational cohort study **Aim of the study** To prospectively compare the short- and long-term perineal consequences (at 6 months postpartum) and short-term neonatal consequences of instrumental rotation (IR) to those induced by assisted delivery (AD) in the occiput posterior (OP) position, in case of manual rotation failure **Study dates** September 2015 and October 2016 **Source of funding** No funding was received	BMI >30 (n, %): Occiput posterior position 7 (13.2); Instrumental rotation 5 (8.6) Parity (median, IQR): Occiput posterior position 0 (0-1); Instrumental rotation 0 (0-1) **Inclusion criteria** • age ≥ 18 • single pregnancy in cephalic presentation in persistent OP position • manual rotation failure • vaginal delivery • assisted by Thierry's spatulas • either after attempted IR or after AD in OP • informed written consent **Exclusion criteria** • Medical termination of pregnancy • stillbirth • poor understanding of French language.		Standardised Numerical Scale. Sexual health, we assessed by the period of resumption of sexual intercourse and the presence of dyspareunia. Factors with a significance level of less than 0.20 were included in a multivariate logistic regression analysis. Not explicitly clear on the covariates in the multivariate logistic regression, but likely: age, BMI, parity, episiotomy, duration of labour, uterine scarring, foetal head station, birth weight and spontaneous delivery		measure valid and described) Study confounding - Moderate risk of bias (appropriate confounders used in some of the analysis, but paper not very clear what was used in all analysis) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias
Full citation Handa, V. L., Blomquist, J. L., Knoepp, L. R., Hoskey, K. A.,	**Sample size** N = 1011 enrolled	**Interventions** Risk factors:	**Details** Symptoms of pelvic floor disorders were assessed using the Epidemiology of Prolapse and	**Results** **Stress urinary incontinence**	**Limitations** QUIPS Quality Appraisal tool

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
McDermott, K. C., Munoz, A., Pelvic floor disorders 5-10 years after vaginal or cesarean childbirth, Obstetrics and Gynecology, 118, 777-784, 2011 **Ref Id** 690753 **Country/ies where the study was carried out** USA **Study type** Longitudinal cohort study **Aim of the study** To estimate differences in pelvic floor disorders by mode of delivery. **Study dates** Recruitment began in 2008, and was ongoing. **Source of funding** None reported	**Characteristics** **Age at enrolment (years, median, IQR)** All births caesarean before active labour (n=192): 40.0 (36.1-43.6) At least one caesarean delivery and never reached complete cervical dilation (n=228): 38.3 (34.6-42.1) At least one caesarean delivery after complete cervical dilation (n=140): 40.3 (36.9-43.6) At least one vaginal birth and no operatives (n=325): 39.3 (35.7-42.8) At least one vaginal birth and at least one operative (n=126): 40.8 (36.6-43.4 **Race (n/%)** All births caesarean before active labour (n=192): White 154 (80); African American 32 (17); Other 6 (3) At least one caesarean delivery and never reached complete cervical dilation (n=228): White 164 (72); African American 48 (21); Other 16 (7) At least one caesarean delivery after complete cervical dilation (n=140): White 129 (92); African American 5 (4); Other 6 (4)	• All births caesarean, before active labour: comprised women who had delivered all their children by unlaboured caesarean (reference group) • All caesarean births before complete cervical dilation: caesare an delivery after the onset of active labour but before complete cervical dilation • at least one caesarean delivery after complete cervical dilation • no operative vaginal births or spontaneous vaginal birth • at least one operative vaginal birth Each eligible delivery was classified as either a vaginal birth or caesarean birth. Caesarean births were further classified as either unlaboured caesarean deliveries or laboured caesarean	Incontinence Questionnaire. A gynaecologic examination was also performed to assess pelvic organ support using the Pelvic Organ Prolapse Quantification examination system. Confounds included: • African American race (Race was self-reported) • maternal age at the time of first delivery, adjusted for those older than 35 at delivery • Multiparity • obesity (determined at study enrolment. Obesity was defined as a BMI of 30 or greater.) • cigarette smoking. Cigarette smoking was classified as “never” or “ever” based on whether a woman had smoked at least 100 cigarettes in her life.	All births caesarean before active labour (n=192): 1 (reference) At least one caesarean delivery and never reached complete cervical dilation (n=228): OR 0.88 (0.40, 1.91) At least one caesarean delivery after complete cervical dilation (n=140): OR 1.30 (0.57, 2.95) At least one vaginal birth and no operatives (n=325): OR 2.87 (1.49, 5.52) At least one vaginal birth and at least one operative (n=126): OR 4.45 (2.14, 9.27) **Overactive bladder** All births caesarean before active labour (n=192): 1 (reference) At least one caesarean delivery and never reached complete cervical dilation (n=228): OR 0.74 (0.32, 1.73) At least one caesarean delivery after complete cervical dilation (n=140): OR 1.17 (0.47, 2.91) At least one vaginal birth and no operatives (n=325): OR 1.66 (0.80, 3.48) At least one vaginal birth and at least one operative	Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias, (data reported on all n=1011) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
	At least one vaginal birth and no operatives (n=325): White 275 (85); African American 40 (12); Other 10 (3) At least one vaginal birth and at least one operative (n=126): White 108 (86); African American 12 (10); Other 6 (5) **Maternal age older than 35y at first delivery (n, %)** All births caesarean before active labour (n=192): 64 (33) At least one caesarean delivery and never reached complete cervical dilation (n=228): 52 (23) At least one caesarean delivery after complete cervical dilation (n=140): 45 (32) At least one vaginal birth and no operatives (n=325): 86 (26) At least one vaginal birth and at least one operative (n=126): 36 (29) **Multiparous at enrolment (n, %)** All births caesarean before active labour (n=192): 131 (68) At least one caesarean delivery and never reached complete cervical dilation (n=228): 157 (69) At least one caesarean delivery after complete	deliveries. Unlaboured caesarean delivery was defined as caesarean delivery performed before the onset of active labour defined as regular contractions with cervical dilation of 3 cm or greater. It was hypothesized that the harm to the pelvic floor increased across these groups. A woman's group was determined by considering all of her deliveries; women were placed in the group corresponding to the delivery that was likely to cause the most harm to the pelvic floor. For instance, any woman with an operative delivery was placed in that group regardless of her other delivery types. In 96%, the first birth was the birth most likely to cause the most harm to the pelvic floor.		(n=126): OR 4.89 (2.23, 10.74) **Anal incontinence** All births caesarean before active labour (n=192): 1 (reference) At least one caesarean delivery and never reached complete cervical dilation (n=228): OR 1.12 (0.55, 2.29) At least one caesarean delivery after complete cervical dilation (n=140): OR 1.48 (0.70, 3.11) At least one vaginal birth and no operatives (n=325): OR 1.62 (0.85, 3.10) At least one vaginal birth and at least one operative (n=126): OR 2.22 (1.06, 4.64) **Prolapse symptoms** All births caesarean before active labour (n=192): 1 (reference) At least one caesarean delivery and never reached complete cervical dilation (n=228): OR 0.72 (0.12, 4.42) At least one caesarean delivery after complete cervical dilation (n=140): OR 0.99 (0.16, 6.13) At least one vaginal birth and no operatives	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
	cervical dilation (n=140): 99 (71) At least one vaginal birth and no operatives (n=325): 249 (77) At least one vaginal birth and at least one operative (n=126): 90 (71) **BMI 30 kg/m2 or greater at enrolment (n, %)** All births caesarean before active labour (n=192): 65 (34) At least one caesarean delivery and never reached complete cervical dilation (n=228): 85 (37) At least one caesarean delivery after complete cervical dilation (n=140): 35 (25) At least one vaginal birth and no operatives (n=325): 59 (18) At least one vaginal birth and at least one operative (n=126): 15 (12) **Smoking ever (n, %)** All births caesarean before active labour (n=192): 78 (41) At least one caesarean delivery and never reached complete cervical dilation (n=228): 68 (30) At least one caesarean delivery after complete cervical dilation (n=140): 46 (33)			(n=325): OR 2.80 (0.73, 10.81) At least one vaginal birth and at least one operative (n=126): OR 6.83 (1.68, 27.80) **Prolapse to or beyond the hymen on examination** All births caesarean before active labour (n=192): 1 (reference) At least one caesarean delivery and never reached complete cervical dilation (n=228): OR 0.53 (0.13, 2.27) At least one caesarean delivery after complete cervical dilation (n=140): OR 0.73 (0.17, 3.13) At least one vaginal birth and no operatives (n=325): OR 5.64 (2.16, 14.70) At least one vaginal birth and at least one operative (n=126): OR 7.50 (2.70, 20.87)	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
	At least one vaginal birth and no operatives (n=325): 94 (29) At least one vaginal birth and at least one operative (n=126): 38 (30) **Inclusion criteria** Women who had given birth to their first child (index birth) at Greater Baltimore Medical Centre 5–10 years before enrolment **Exclusion criteria** Exclusion criteria (applied to the index birth) included: • maternal age younger than 15 or older than 50 years • delivery at less than 37 weeks of gestation • placenta previa • multiple gestation • known foetal congenital anomaly • stillbirth • prior myomectomy • and abruption Women who developed these events during				

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
	subsequent pregnancies were not excluded.				
Full citation Handa, V. L., Blomquist, J. L., Roem, J., Munoz, A., Dietz, H. P., Pelvic Floor Disorders After Obstetric Avulsion of the Levator Ani Muscle, Female pelvic medicine & reconstructive surgery, 25, 3-7, 2019 **Ref Id** 1152256 **Country/ies where the study was carried out** US **Study type** Longitudinal cohort study **Aim of the study** To estimate the cumulative incidence of prolapse and other pelvic floor disorders (PFDs), comparing vaginally parous women with and without levator avulsion **Study dates** May 2015 to April 2017	**Sample size** N=453 **Characteristics** No levator ani avulsion n=387; No levator ani avulsion n=66 Age at ultrasound, years (median, IQR): No levator ani avulsion 42.9 (39.5, 47.2); Levator ani avulsion 45.9 (42.4, 48.9) Race (n, %): White: No levator ani avulsion 324 (84); Levator ani avulsion 60 (91) Black: No levator ani avulsion 47 (12); Levator ani avulsion 3 (5) Other: No levator ani avulsion 16 (4); Levator ani avulsion 3 (5) Any vaginal delivery with macrosomia (>4kg) (n, %): No levator ani avulsion 51 (13); Levator ani avulsion 17 (26) Any vaginal delivery with second stage >2hr (n, %): No levator ani avulsion 94 (24); Levator ani avulsion 36 (55)	**Interventions** Risk factor: No levator ani avulsion vs levator ani avulsion - measured by tomographic ultrasound image, diagnosis based on if there was a discontinuity between the levator muscle and the inferior pubis ramus at the plane of minimal hiatal dimension and for at least 5 mm above that level	**Details** Pelvic organ prolapse was assessed annually using the Pelvic Organ Prolapse Quantification Examination. The Epidemiology of Prolapse and Incontinence Questionnaire was used to identify stress urinary incontinence, overactive bladder, anal incontinence, and prolapse symptoms Confounders adjusted for included age, race, macrosomia, prolonged second stage of labour and forceps	**Results** **Prolapse on examination** Reference: No levator ani avulsion Levator ani avulsion: OR 3.9 (2.1, 7.1) **Prolapse symptoms** Reference: No levator ani avulsion Levator ani avulsion: OR 2.9 (1.4, 6.1) **Stress urinary incontinence** Reference: No levator ani avulsion Levator ani avulsion: OR 0.8 (0.4, 1.5) **Overactive bladder** Reference: No levator ani avulsion Levator ani avulsion: OR 1.7 (0.9, 3.2) **Anal incontinence** Reference: No levator ani avulsion Levator ani avulsion: OR 1.1 (0.6, 2.0)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (453/454 completed the study visit) Prognostic factor measurement - Low risk of bias (description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Source of funding Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01HD082070 and R01HD056275).	Any forceps delivery (n, %): No levator ani avulsion 32 (8); Levator ani avulsion 30 (45) **Inclusion criteria** At least one vaginal birth **Exclusion criteria** None reported				
Full citation Harvey,M.A., Johnston,S.L., Davies,G.A., Mid-trimester serum relaxin concentrations and post-partum pelvic floor dysfunction, Acta Obstetricia et Gynecologica Scandinavica, 87, 1315-1321, 2008 **Ref Id** 223731 **Country/ies where the study was carried out** Canada **Study type** Nested observational cohort study **Aim of the study** To compare mid-trimester serum relaxin	**Sample size** N=50 women completed enrolment **Characteristics** Age, years (mean, SD): 31 (5.5) Time since delivery (mean, SD): 653 days (267) BMI (mean, SD): 28 (6.8) Race - Caucasian (n, %): 50 (100%) Smoking status (n, %): No: 35 (70) Ex: 7 (14) <10/day: 3 (6) >10/day: 5 (10) **Inclusion criteria** Nulliparous mid-trimester women of all parity with singleton foetuses of	**Interventions** Risk factor: Serum relaxin concentrations measured at 24 to 28 weeks	**Details** Women recruited from a preterm study looking at relaxin levels and pre term birth. Women were invited to complete the follow up assessment 1-4 years post-partum. The women completed the Urogenital Distress Inventory (UDI-6), performed a cough stress test, and a gynaecological examination to stage prolapse using the Pelvic Organ Prolapse Quantification system (POPQ). The multivariate logistic regressions adjust for age, BMI, smoking status, level of overall physical activity, gestational age at birth, route of delivery, oxytocin use, episiotomy, epidural, breastfeeding, birthweight, head circumference and length of first and second stage of labour	**Results** Subjective incontinence **100pg/mL decrease in serum relaxin measured between 24-28 weeks** OR 1.85 (1.07, 3.22) (NB: change in serum relaxin, duration of breastfeeding and overall level of activity were used in the logistic regression) **Each 12 weeks of breastfeeding** AOR 0.66 (0.45, 0.98) **Each higher level of physical activity (none, 1-3 times per week or 3 or more per week)** AOR 0.29 (0.01, 0.87) Prolapse **100pg/mL decrease in serum relaxin measured between 24-28 weeks** OR 1.35 (1.01, 1.69) (NB: change in serum relaxin was the strongest predictor and was	**Limitations** QUIPS Quality Appraisal tool Study participation - Moderate risk of bias (whole population Caucasian, not representative) Study attrition - Low risk of bias (50/50 (100%) completed data) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
concentration (SRC) in primiparous women with or without pelvic floor dysfunction (PFD: stress urinary incontinence (SUI), genital prolapse). **Study dates** February 2003 and March 2004 **Source of funding** None reported	gestational age confirmed by ultrasound **Exclusion criteria** None reported			therefore used in the logistic regression).	
Full citation Rogers, R. G., Leeman, L. M., Borders, N., Qualls, C., Fullilove, A. M., Teaf, D., Hall, R. J., Bedrick, E., Albers, L. L., Contribution of the second stage of labour to pelvic floor dysfunction: a prospective cohort comparison of nulliparous women, BJOG: An International Journal of Obstetrics & Gynaecology, 121, 1145-53; discussion 1154, 2014 **Ref Id** 430740 **Country/ies where the study was carried out** USA	**Sample size** N=782 enrolled 474/672 women gave data at 6 months postpartum (138/224 with caesarean delivery and 336/448 with vaginal birth) **Characteristics** Age, years (mean, SD): Vaginal birth 23.9 (4.9); caesarean delivery 26.6 (6.1) BMI, kg/m2 (mean, SD): Vaginal birth 24.6 (5.3); caesarean delivery 27.1 (6.3) Race Non-Hispanic white (n, %): Vaginal birth 193 (43);	**Interventions** Risk factor: Vaginal or caesarean birth Vagina birth included women who underwent episiotomy and operative delivery. The Caesarean delivery included elective and those who had not entered the second stage of labour who went on to have a caesarean.	**Details** Physical exam (including the Pelvic Floor Quantification Exams (POPQ)) and pelvic floor functional data were assessed during early and late pregnancy and at 6 months postpartum. Transperineal ultrasound (US) was collected at 6 months A stepwise regression multivariate analysis was performed which included variables found to be different at baseline between groups as well as known predictors of outcomes. Variables that were different between groups were Age, BMI and weight gain as well as	**Results** **Data given as: Risk Factor, standardized Beta (see below), Adjusted P** (Standardized betas are equivalent to ORs since exponentiated standardized beta is related to the odds ratios as a function of the ratio of standard deviations of the outcome to predictor variables.) POPQ point Aa Delivery mode: -0.14, 0.004 Age (years): -0.02, 0.66 BMI (kg/m2): -0.13, 0.007 Non-Hispanic white: -0.06, 0.19 POPQ point Ba	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Moderate risk of bias (474/672 (71%) completed 6 months follow up, no reasons were given for those who dropped out) Prognostic factor measurement - Low risk of bias (some description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Study type Prospective cohort **Aim of the study** To compare six month postpartum pelvic floor function and anatomical changes between women who delivered by caesarean (CD group) prior to the second stage of labour to those who delivered vaginally (VB group) in order to better define the contributions of the second stage to pelvic floor dysfunction **Study dates** Recruitment December 2006 to January 2011 **Source of funding** Supported by NICHD 1R01HD049819-01A2 and National Center for Research Resources and the National Center for Advancing Translational Sciences of the National Institutes of Health through Grant Number 8UL1TR000041	caesarean delivery 79 (35) Hispanic (n, %): Vaginal birth 201 (45); caesarean delivery 104 (46) Native American (n, %): Vaginal birth 26 (6); caesarean delivery 25 (11) Other (n, %): Vaginal birth 28 (6); caesarean delivery 14 (6) **Inclusion criteria** • age ≥ 18 years of age • ability to read either English or Spanish • singleton gestation • absence of serious medical problems • gestational age of </= 36 weeks • no late second trimester pregnancy losses **Exclusion criteria** None given, other than foetal malpresentation was not an indication for exclusion		non- Hispanic White race/ethnicity	Delivery mode: -0.14, 0.004 Age (years): -0.04, 0.47 BMI (kg/m2): -0.13, 0.006 Non-Hispanic white: -0.06, 0.19 <u>Female sexual function index</u> Delivery mode: -0.16, 0.002 Age (years): -0.05, 0.37 BMI (kg/m2): -0.11, 0.004 Non-Hispanic white: -0.05, 0.33	confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Full citation Serati,M., Salvatore,S., Khullar,V., Uccella,S., Bertelli,E., Ghezzi,F., Bolis,P., Prospective study to assess risk factors for pelvic floor dysfunction after delivery, Acta Obstetricia et Gynecologica Scandinavica, 87, 313-318, 2008 **Ref Id** 134189 **Country/ies where the study was carried out** Italy **Study type** Prospective cohort **Aim of the study** To assess the incidence and the evolution of de novo postpartum urinary, anal and sexual disorders in a population of parous women. To define the role of single obstetric risk factors on the development of pelvic floor dysfunction. **Study dates**	**Sample size** N=336 **Characteristics** Age (median, range): 33 (18-44) Primiparous: 201/336 (59.9%) Multiparous: 135/336 (40.1%) Duration of active second stage labour >1hr: 40/336 (11.9%) **Inclusion criteria** • Any parity • Any age • Any gestational week at delivery **Exclusion criteria** • Presence of urinary, anal or sexual symptoms prior to delivery • Delivery via caesarean section • Twin pregnancy • Difficulties in communication	**Interventions** Risk factors: • Primiparous • Episiotomy • Kristeller manoeuvre • Foetal weight >4000g • Induced labour • Duration of labour (min) • Epidural analgesia • Duration of active second stage >60 min	**Details** On admission to labour, women answered questions about urinary, anal and sexual function during hospitalisation, and at 6 and 12 months after delivery via a telephone interview conducted by a trained urogynecologist. An adapted International Consultation on Incontinence Questionnaire (ICIQ) was used. Data regarding how the labour started, spontaneous or induced labour, and mode of delivery were also collected. Multivariable logistic regression analyses were used to assess the effect of the obstetric risk factors on urinary, anal and sexual dysfunction and to determine the interaction of covariates.	**Results** **Urinary incontinence** Duration of the active second stage >1hr: OR 2.19 (1.07–4.48) **Anal incontinence** Foetal weight at birth, duration of labour and of the second stage, maternal age, episiotomy, degree of perineal tears and epidural analgesia all not significant. **Sexual dysfunction** Episiotomy, perineal tears, parity, foetal weight, labour induction, duration of labour, lactation and use of epidural analgesia were not significantly associated with dyspareunia	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (336/383 (88%) responded to all questionnaires) Prognostic factor measurement - Low risk of bias (some description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
Recruited between July and December 2004 **Source of funding** None reported	(poor Italian language)				
Full citation Torrisi, G., Minini, G., Bernasconi, F., Perrone, A., Trezza, G., Guardabasso, V., Ettore, G., A prospective study of pelvic floor dysfunctions related to delivery, European Journal of Obstetrics, Gynecology, & Reproductive BiologyEur J Obstet Gynecol Reprod Biol, 160, 110-5, 2012 **Ref Id** 653305 **Country/ies where the study was carried out** Italy **Study type** Prospective study **Aim of the study** To estimate the prevalence and impact on quality of life of urinary incontinence (UI) and anal incontinence (AI) three	**Sample size** N=960 women enrolled N=744 assessed at 3 months **Characteristics** Age (years, mean SD): 29.8 (5.6) Pre-pregnancy BMI (kg/m2, mean SD): 23.9 (4.5) **Inclusion criteria** Nulliparous, at term delivery **Exclusion criteria** • Previous pelvic surgery • History of recurrent urinary tract infections • Women with known	**Interventions** <u>Risk factors:</u> Age: <25, 25-30, 30-35, >35 years BMI before pregnancy: <24, 24-30, >30 Coexisting factors: Chronic cough, smoking, constipation, family history Urinary incontinence: before pregnancy, during pregnancy Mode of delivery: vaginal, caesarean Perineum intact: yes/no	**Details** Women were evaluated at 2-3 days post-partum and at a 3 month follow-up. The evaluation included baseline characteristics, the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) to assess urinary incontinence, the Wexner's Continence Grading Scale to assess anal incontinence and four questions to evaluate the impact of delivery on sexual activity and the King's Health Questionnaire for women with UI. The risk of developing a particular outcome was assessed for each risk factor. Any significant variables identified were then considered for a final model of multivariate analysis with logistic regression. These included: Age, family history, constipation, chronic cough, smoking, incontinence before and	**Results** <u>Urinary incontinence</u> **Age** Reference: <25 years 25-30 years: OR 1.12 (0.56, 2.22) 30-35 years: OR 0.80 (0.40, 1.62) >35 years: OR 1.72 (0.80, 3.71) **BMI before pregnancy** Reference: <24 years 24-30: OR 0.87 (0.50, 1.54) >30: OR 2.68 (1.14, 6.32) **Coexisting factors** Reference: none Chronic cough: OR 1.63 (0.54, 4.88) Smoking: OR 1.29 (0.69, 2.41) Constipation: OR 1.85 (0.90, 3.81) Family history: OR 2.41 (1.26, 4.59) **Urinary incontinence** Reference: no Before pregnancy: OR 3.45 (1.31, 9.13) During pregnancy: OR 3.78 (2.35, 6.07)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (minimum of 744/960 (71%) completed the 3 month follow-up) Prognostic factor measurement - Low risk of bias (good description of risk factors and how measured) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
months after first delivery; to identify risk factors involved in UI or AI; to evaluate possible changes in sexual behaviour and anatomical modifications of pelvic floor after childbirth. **Study dates** Recruited between April to September 2005 **Source of funding** None reported	malformations of their urinary tract • Pre-conceptional hypertension • Diabetes • Connective tissue disorders • Neurological or cardiological diseases Pre-pregnancy incontinence was not an exclusion criterion, but these women were excluded from relevant analyses		during continence, mode of delivery, perineum intact, episiotomy.	**Mode of delivery** Reference: Caesarean Vaginal: OR 5.85 (2.10, 16.29) **Perineum** Reference: not intact Intact: OR 1.46 (0.57, 3.72) <u>Anal incontinence</u> **Age** Reference: <25 years 25-30 years: OR 0.49 (0.19, 1.27) 30-35 years: OR 0.64 (0.26, 1.55) >35 years: OR 1.15 (0.44, 3.02) **BMI before pregnancy** Reference: <24 years 24-30: OR 0.88 (0.42, 1.81) >30: OR 1.58 (0.53, 4.67) **Coexisting factors** Reference: none Chronic cough: OR 2.32 (0.64, 8.48) Smoking: OR 1.29 (0.59, 2.84) Constipation: OR 0.88 (0.31, 2.55) Family history: OR 2.16 (1.00, 4.66) **Urinary incontinence** Reference: no Before pregnancy: OR 1.59 (0.63, 3.99)	

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
				During pregnancy: OR 2.15 (1.06, 4.37) **Mode of delivery** Reference: Caesarean Vaginal: OR 0.82 (0.26, 2.59) **Perineum** Reference: not intact Intact: OR 0.70 (0.22, 2.19)	
Full citation Urbankova, I., Grohregin, K., Hanacek, J., Krcmar, M., Feyereisl, J., Deprest, J., Krofta, L., The effect of the first vaginal birth on pelvic floor anatomy and dysfunction, International Urogynecology Journal., 2019 **Ref Id** 1107302 **Country/ies where the study was carried out** Czech Republic **Study type** Prospective observational cohort study **Aim of the study** To determine maternal and pregnancy-related	**Sample size** N=3648 enrolled n=1359 completed all study visits and 987 were evaluable. **Characteristics** Age, years (mean, SD): 30.5 (3.4) Height, cm (mean, SD): 169.2 (6.1) BMI before pregnancy (mean, SD): 21.9 (3.0) BMI at the delivery (mean, SD): 27.0 (3.5) BMI at increase (mean, SD): 5.1 (1.7) Duration of the first stage of labour (mean, SD; hh:mm): 6:52 (04.07)	**Interventions** <u>Risk factors:</u> Age (per additional year of age) Height (per additional cm) BMI before pregnancy BMI at delivery BMI increase Duration of the first stage of labour (per additional minute) Duration of second stage of labour (per additional minute) Foetal weight (per additional gram) Use of analgesics other than epidural)	**Details** Women were recruited on the labour suite. study visits were arranged at 6 weeks and 1 year after birth. At the visits in additional to specific symptom questions, the International Consultation on Incontinence Questionnaire (ICIQ-SF) and Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ12) were completed. An anatomical assessment was performed using the pelvic organ prolapse score (POP-Q) and stage and pelvic floor muscle strength assessment by the Oxford scale. Variables with $p < 0.250$ were taken into account for multivariate regression analysis, using a forward elimination of covariates according to the lack of	**Results** <u>Urinary Incontinence</u> **Age (per additional year of age)** OR 1.088 (1.044, 1.134) **Height (per additional cm)** OR 0.976 (0.837, 0.988) **BMI before pregnancy** OR 1.081 (1.035, 1.130) **BMI increase** OR 0.902 (0.828, 0.979) <u>Pelvic organ prolapse</u> **Age (per additional year of age)** OR 1.082 (1.024, 1.144) **Duration of the first stage of labour (per additional minute)** OR 0.999 (0.098, 1.00)	**Limitations** QUIPS Quality Appraisal tool Study participation - Moderate risk of bias (target population exclusive Caucasian, so not representative of general population) Study attrition - Moderate risk of bias (987/1359 (72%) completed 6 months follow up, no reasons were given for those who dropped out) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated)

Study details	Participants	Risk factor	Methods	Symptoms and results	Comments
risk factors for pelvic floor dysfunction (PFD), including urinary incontinence (UI), urgency, anal incontinence (AI), pelvic organ prolapse (POP) and levator ani muscle (LAM) avulsion. **Study dates** Recruitment between May 2011 and July 2013 **Source of funding** Supported from the Institute for the Care of Mother and Child.	**Inclusion criteria** All women admitted to the labour suit during study period **Exclusion criteria** • being a minor • not speaking fluent Czech • being non-Caucasian • post-hoc women who became pregnant during follow-up		significance. These were: Age (per additional year), BMI before pregnancy, BMI increase		Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

AHR: adjusted hazard ratio; AOR: adjusted odds ratio; ARR: adjusted risk ratio; BMI: body mass index; CI: confidence interval; HR: hazard ratio; ICIQ-FLUTS: International Consultation on Incontinence Questionnaire; IQR: inter-quartile range; OR: odds ratio; OP: occiput posterior; POP-Q: Pelvic Organ Prolapse Quantification; QUIPS: Quality In Prognosis Studies; RR: risk ratio; SD: standard deviation; UDI-6: Urogenital Distress Inventory; UI: urinary incontinence; UTI: urinary tract infection

Table 6: Evidence tables: women not recruited in the obstetric period (note in the evidence table the wording 'delivery' is used whenever it reflected the wording in the study, elsewhere 'birth' in the evidence review is used in accordance with NICE writing style)

Study details	Participants	Interventions	Methods	Outcomes	Comments
Full citation Amselem, C., Puigdollers, A., Azpiroz, F., Sala, C., Videla, S., Fernandez-Fraga, X., Whorwell, P., Malagelada, J. R., Constipation: a potential cause of pelvic floor damage?,	**Sample size** N=596 **Characteristics** Age (mean, SD, Range): 42 (13) [18-79] Child birth:	**Interventions** **Pelvic floor damage criteria,** the presence of three of more of the following: (i) urinary or (ii) anal incontinence, (iii) cystocele, defined as descent of the urinary bladder with protrusion	**Details** Women were recruited from female outpatients who consecutively attended the gynaecological clinic. Patients were studied systematically for the presence of a variety of parameters related to	**Results** **Pelvic floor damage** Age: OR 1.05 (1.03 to 1.08) Constipation: OR 2.35 (1.27 to 4.34) Obstetric trauma: OR 1.37 (0.72 to 2.62)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (whole population attending clinic, including >86% going for check-ups)

Study details	Participants	Interventions	Methods	Outcomes	Comments
Neurogastroenterology & MotilityNeurogastroenterol Motil, 22, 150-3, e48, 2010 **Ref Id** 1151316 **Country/ies where the study was carried out** Spain **Study type** Cross-sectional study **Aim of the study** To determine whether constipation is associated with pelvic floor dysfunction **Study dates** Not reported **Source of funding** Spanish Ministry of´ Education (Direccio´n General de Investigacio´n, SAF 2006-03907). Ciberehd is funded by the Instituto de Salud Carlos III.	No vaginal deliveries: 27% 1 vaginal delivery: 21% 2 vaginal deliveries: 36% 3 vaginal deliveries: 11% 4 vaginal deliveries: 4% **Inclusion criteria** Not reported **Exclusion criteria** • Pregnant • Less than 6 months postpartum • Severe co-existent disease • Under 18 years of age	into the anterior vaginal wall; (iv) hysterocele, defined as descent of the uterus into the vagina; (v) rectocele, defined as a flaccid rectovaginal wall with rectal protrusion into the vaginal lumen; (vi) rectal prolapse, defined as eversion and exteriorization of the rectal wall through the anal verge; criteria (iii)–(v) were considered positive if fulfilling at least stage I criteria of the pelvic organ prolapse quantification system **Constipation criteria,** the presence of three of more of the following: the regular occurrence (25% of the time or more) of (i) straining, (ii) sensation of anal blockage during defecation, (iii) digital facilitation of defecation, (iv) sensation of incomplete evacuation, (v) passage of hard stools, (vi) occurrence of fewer than three bowel movements per week and (vii) the regular use of laxatives, enemas or suppositories. **Obstetric trauma criteria,** the presence of at least two of the following: (i) weight of newborn over 3500 g, (ii) history of dystocia (including forceps, 3rd–	pelvic floor damage, constipation and obstetric trauma. Covariates included: age, constipation and obstetric trauma.		Study attrition - Low risk of bias (100% completed data collection) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
		4th degree tears) and (iii) three or more labours, provided that birth weight was over 2.500 g in any case.			
Full citation Badalian, S. S., Rosenbaum, P. F., Vitamin D and pelvic floor disorders in women: Results from the national health and nutrition examination survey, Obstetrics and gynecology, 115, 795-803, 2010 **Ref Id** 1153261 **Country/ies where the study was carried out** USA **Study type** Cross-sectional study **Aim of the study** To estimate the prevalence of vitamin D insufficiency or deficiency in women with pelvic floor disorders, and to evaluate possible associations between vitamin D levels and these disorders.	**Sample size** N=2197 **Characteristics** Age (mean, 95% CI): 47.9 (46.4 – 49.6) years Race: approximately 72% reporting non-Hispanic white race Education: more than half reporting at least some college BMI: about 35% had a BMI of 30 or above Weighted prevalence data for education, race, BMI and Parity available from the paper. **Inclusion criteria** None reported **Exclusion criteria** None reported	**Interventions** Risk factors: Vitamin D levels: per 5-unit increase; less than 30 / 30 or more (ng/ml)	**Details** Data was taken from the National Health and Nutrition Examination Survey (NHANES) where women are interviewed in their homes. Urinary incontinence was based on the responses to frequency and amount of leakage. Women with a score of 3 or higher were considered to be incontinent, and those with scores lower than 3 were classified as continent. Faecal incontinence was defined as at least monthly leakage of solid, liquid, or mucous stool, also based on responses to a combination of type and frequency of symptom questions. POP was considered positive if individuals answered yes to the question, “Do you experience bulging or something falling out you can see or feel in the vaginal area?” Pelvic floor disorder was the presence of one or more of UI, FI or POP.	**Results** **Pelvic Floor Disorders** Vitamin D (ng/ml) per 5 unit increase: Women aged 20 years or older: OR 0.94 (0.88 to 0.99) Women aged 50 years or older: OR 0.92 (0.85 to 0.99) Vitamin D levels (ng/ml): Less than 30: Reference More than 30: Women aged 20 years or older: OR 0.75 (0.54 to 1.04) Women aged 50 years or older: OR 0.79 (0.56 to 1.14) **Urinary incontinence** Vitamin D (ng/ml) per 5 unit increase: Women aged 20 years or older: 0.94 (0.85 to 1.04) Women aged 50 years or older: 0.92 (0.81 to 1.03) Vitamin D levels (ng/ml): Less than 30: Reference More than 30: Women aged 20 years or older: 0.70 (0.45 to 1.08) Women aged 50 years or older: 0.55 (0.34 to 0.91)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Moderate risk of bias (2197/3440 (64%) who were invited completed all data) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
Study dates 2005 to 2006 **Source of funding** Not reported			Covariables in all models include age in years, body mass index (five categories), parity (continuous), education (four categories), and race or ethnicity (four categories).		
Full citation Bradley, C. S., Zimmerman, M. B., Wang, Q., Nygaard, I. E., Women's Health, Initiative, Vaginal descent and pelvic floor symptoms in postmenopausal women: a longitudinal study, Obstetrics & GynecologyObstet Gynecol, 111, 1148-53, 2008 **Ref Id** 1153249 **Country/ies where the study was carried out** USA **Study type** Longitudinal study **Aim of the study** To determine whether vaginal descent	**Sample size** N=270 were enrolled n=260 completed the questionnaire and n=260 completed the examinations in year 1 n=259 completed the questionnaire and n=242 completed the examinations in year 2 n=249 completed the questionnaire and n=212 completed the examinations in year 3 n=208 completed the questionnaire and n=86 completed the examinations in year 4 **Characteristics** Age (mean SD): 68 (5) years BMI (mean SD): 30 (6) kg/m2 Parity (median, range): 4 (0-12)	**Interventions** Risk factors included: Age, BMI, exercise (at least weekly), coffee drinking and current smoking	**Details** Women completed a questionnaire (modified pelvic floor distress inventory) and had a pelvic examination with Pelvic organ prolapse quantification (POP-Q) at yearly visits over 4 years. Covariates included in the model: maximal vaginal descent, age, BMI, and time	**Results** <u>Seeing or feeling a vaginal bulge</u> BMI: OR 0.86 (0.76, 0.97) <u>Stress urinary incontinence</u> BMI: OR 1.1 (1.0, 1.1) Age (5yr interval): OR 1.3 (1.0, 1.6) <u>Urge urinary incontinence</u> BMI: OR 1.1 (1.0, 1.1) Age (5yr interval): OR 1.4 (1.1, 1.7) <u>Overactive bladder symptoms</u> BMI: OR 1.1 (1.0, 1.1) Age (5yr interval): OR 1.4 (1.1, 1.7) <u>Obstructive bladder symptoms</u> Age: OR 1.8 (1.3, 2.3) Coffee drinking: OR 4.0 (1.3, 12.0) <u>Obstructive bowel symptoms</u> Age: OR 1.3 (1.0, 1.6)	**Limitations** QUIPS Quality Appraisal tool Study participation - High risk of bias (majority of the population already had some level of POP) Study attrition - High risk of bias (86/260 (33%) completed all parts of the 4 year study, no reasons were given for those who dropped out) Prognostic factor measurement - Low risk of bias (some description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Moderate risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
progression was associated with pelvic floor symptoms in the same women when followed over time. **Study dates** Not reported **Source of funding** Supported by grants R01 HD41131 (I.E.N.), K24 HD42469 (I.E.N.), and K23 HD047654 (C.S.B.) from the National Institute of Child Health and Human Development. The Women's Health Initiative study was funded by the National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services (Iowa site N01WH32102).	Current smoking (n, %): 21 (8.1%) Coffee drinker (at least one cup daily; n, %): 207 (79.6%) Exercise (at least weekly; n, %): 118 (45.5%) Baseline POP-Q stage (n, %): 0: 5 (1.9%) I: 90 (34.6%) II: 160 (61.5 %) III: 5 (1.9%) IV: 0 **Inclusion criteria** Postmenopausal women with a uterus **Exclusion criteria** None reported			<u>Bowel pain symptoms</u> Age: OR 1.8 (1.1, 2.9) NB: Only covariates with significant results were reported.	
Full citation Bradley,C.S., Kennedy,C.M., Nygaard,I.E., Pelvic floor symptoms and lifestyle factors in older women, Journal of Women's Health, 14, 128-135, 2005 **Ref Id** 143975	**Sample size** N=297 **Characteristics** Age (mean, SD, range), years: 68.2 (5.6) [57 to 84] BMI (mean, SD, range), kg/m^2: 30.2 (6.4) [16.3 to 55.6] Vaginal parity: median 3, range (0 to 12)	**Interventions** **Risk factors:** Age: categorising into four groups (approximating quartiles). Body mass index (BMI): categorising into four groups (approximating quartiles). Smoking: categorised into current smokers and non-smokers.	**Details** Women with an intact uterus who were enrolled in the Women's Health Initiative (WHI) Hormone Replacement Therapy Clinical Trial were invited to take part in this study. Women were originally recruited to the WHI study 4-6 years before this study.	**Results** <u>Difficulty emptying bladder</u> **Age** (highest quartile vs lowest quartile): OR 3.3 (0.9 to 12.2) **Coffee drinking:** OR 8.6 (1.4 to 55.0) <u>Feeling of incomplete bladder emptying</u>	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (297/337 (88%) approached took part reported on each symptom)

Study details	Participants	Interventions	Methods	Outcomes	Comments
Country/ies where the study was carried out USA **Study type** Cross-sectional study **Aim of the study** To measure the prevalence of pelvic floor symptoms in noncare-seeking older women and the association between symptoms and lifestyle factors. **Study dates** Not reported **Source of funding** The Women's Health Initiative study is funded by the National Heart, Lung and Blood Institute, U.S. Department of Health and Human Services.	Nulliparous: 20/297 (6.7%) History of one or more caesarean deliveries: 20/297 (6.7%) Race: 'almost exclusively Caucasian) **Inclusion criteria** None reported **Exclusion criteria** None reported	Coffee drinking: categorised as coffee drinkers vs. noncoffee drinkers. Exercise: Not clearly reported - likely to be categorised as exercise weekly vs no exercise weekly	A questionnaire using modified symptom items from the Pelvic Floor Distress Inventory (PFDI), a validated, condition specific, quality of life instrument for women with pelvic floor disorders. The following risk factors were used in the data adjustments: Age, BMI, Exercise, Coffee Drinking and Smoking	**Age** (highest quartile vs lowest quartile): OR 3.4 (1.3 to 9.2) <u>Weak urinary stream</u> **Age** (highest quartile vs lowest quartile): OR 6.4 (2.0 to 20.0) **Coffee drinking:** OR 5.3 (1.5 to 19.0) <u>Intermittent urinary stream</u> **Age** (highest quartile vs lowest quartile): OR 4.0 (1.6 to 10.4) **BMI** (highest quartile vs lowest quartile): OR 0.8 (0.3 to 1.9) <u>Vaginal or perineal splinting to defecate</u> **Age** (highest quartile vs lowest quartile): OR 2.2 (1.0 to 4.8) <u>Feeling of incomplete bowel movements</u> **Age** (highest quartile vs lowest quartile): OR 2.7 (1.2 to 5.9) <u>Urgency</u> **BMI** (highest quartile vs lowest quartile): OR 1.8 (0.8 to 4.0) <u>Urge urinary leaking</u> **BMI** (highest quartile vs lowest quartile): OR 2.2 (1.0 to 4.8) <u>Urinary urgency</u>	Prognostic factor measurement - Low risk of bias (some description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
				Exercise (≥ weekly): OR 0.6 (0.4 to 1.0) Faecal urgency **Exercise** (≥ weekly): OR 0.3 (0.2 to 0.8) **Smoking:** OR 2.9 (0.7 to 11.7) Pelvic heaviness **Smoking:** OR 5.4 (1.0 to 30.0)	
Full citation De Araujo, M. P., Cristina Takano, C., Girao, M. J. B. C., Sartori, M. G. F., Pelvic floor disorders among indigenous women living in Xingu Indian Park, Brazil, International Urogynecology Journal, 20, 1079-1084, 2009 **Ref Id** 690526 **Country/ies where the study was carried out** Brazil **Study type** Cross-Sectional Study **Aim of the study** To evaluate the prevalence of pelvic floor	**Sample size** N=377 **Characteristics** Age (mean, SD, range): 31 (15) [12-77] years BMI (mean, SD, range): 23.3 (4.0) [17.4 to 43.3] mg/cm^2 Pregnancies (mean, SD, range): 4.7 (3.6) [0-18] Abortion (mean, SD, range): 0.7 (1.1) [0 to 8] Parity (mean, SD, range): 1.3 (2.4) [0 to 16] Delivery: Squatting position delivery (mean, SD, range): 4.0 (3.0) [0 to 16] (90.6% of all deliveries)	**Interventions** **Risk factors:** Vaginal delivery Age BMI <25 Resting and maximum pressure: A perineometry was performed if the digital muscle testing reflected a correct contraction and no straining. A digital precision perineometer was used to measure pressure at rest and maximum pressure at contraction.	**Details** 54 villages in XIP that were accessed by land or water with consent from all participants and leaders of the tribal community. PFDs was identified with the help of the indigenous health agent and using the Portuguese version of the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) Pelvic organ prolapse (POP) was diagnosed based on the pelvic organ prolapse quantification system (POP-Q). Pelvic floor muscle function was assessed in a crook lying position. Data were adjusted for age.	**Results** **Prolapse (defined as stage II and III of POP-Q)** Vaginal delivery: OR 11.26 (5.69 to 22.29) BMI >25: OR 1.05 (0.60 to 1.82) Resting pressure: OR 0.99 (0.97 to 1.01) Maximum pressure: OR 0.99 (0.97 to 1.01) **Prolapse (defined as the presence of Ba point ≥0)** Vaginal delivery: OR 9.40 (2.81 to 31.42) BMI >25: OR 1.33 (0.79 to 2.24) Resting pressure: OR 0.96 (0.94 to 0.98) Maximum pressure: OR 0.99 (0.97 to 1.02)	**Limitations** QUIPS Quality Appraisal tool Study participation - Moderate risk of bias (Indigenous women, not representative) Study attrition - Low risk of bias (completed data for all women) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Moderate risk of bias (only age incorporated for the adjustment of data) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
disorders and to identify risk factors correlated with genital prolapse among indigenous women living in Xingu Indian Park (XIP) **Study dates** Not reported **Source of funding** None reported	Vaginal delivery at hospital (mean, SD, range): 0.3 (0.6) [0 to 5] (7.5% of all deliveries) Caesarean section (mean, SD, range): 0.08 (0.4) [0 to 3] (1.9% of all deliveries) **Inclusion criteria** Non-virgin indigenous women **Exclusion criteria** None reported				
Full citation Ghandour, L., Minassian, V., Al-Badr, A., Abou Ghaida, R., Geagea, S., Bazi, T., Prevalence and degree of bother of pelvic floor disorder symptoms among women from primary care and specialty clinics in Lebanon: an exploratory study, International Urogynecology Journal, 28, 105-118, 2017 **Ref Id** 653154 **Country/ies where the study was carried out**	**Sample size** N=900 **Characteristics** **Total number of women N=900** **Age (years) (n, %)** <40: 387 (43.3) 40 – 59: 353 (39.5) ≥60: 153 (17.1) **Smoking (n, %)** No: 572 (64.8) Yes: 310 (35.2) **Chronic cough (n, %)** No: 786 (89.1) Yes: 96 (10.9) **Diabetes (n, %)** No: 788 (89.3) Yes: 94 (10.7)	**Interventions** Risk factors: Smoking: Yes/No Chronic cough: Yes/No BMI: >25kg/m^2 / <25kg/m^2	**Details** A convenience sample of women recruited from the waiting areas of clinics in a large University Medical Centre in Beirut, Lebanon. Clinics included primary care and speciality clinics. Clinics not included were obstetrics and gynaecology, urology and ophthalmology. Women completed a self-filled questionnaire. The questionnaire included a validated Arabic version of the global PFBQ and questions on demographics, comorbidities and health-care seeking behaviours related to PFD.	**Results** <u>Stress urinary incontinence</u> **Smoking:** OR 1.00 (0.66 to 1.51) **Chronic cough:** OR 0.71 (0.38 to 1.30) **BMI >25 kg/m^2:** OR 1.28 (0.82 to 1.99)* <u>Urinary frequency/nocturia</u> **Smoking:** OR 0.96 (0.64 to 1.43) **Chronic cough:** OR 0.89 (0.50 to 1.60) **BMI >25 kg/m^2:** OR 1.91 (0.24 to 4.19)* <u>Urinary urgency</u> **Smoking:** OR 1.22 (0.81 to 1.83)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (900/1220 (73.7%) of the women approached completed the survey) Prognostic factor measurement - Low risk of bias (some description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate

Study details	Participants	Interventions	Methods	Outcomes	Comments
Lebanon **Study type** Cross-sectional study **Aim of the study** To explore the prevalence of various PFD symptoms and the degree of bother of these symptoms, and to assess health-care seeking behaviour in a convenience sample of Lebanese women. **Study dates** November 2014 and February 2015 **Source of funding** None reported	**Hypertension (n, %)** No: 765 (86.7) Yes: 117 (13.3) **Lifting/physical activity in daily life/occupation (n, %)** No: 147 (18.8) Light: 336 (43.0) Moderate: 264 (33.8) Heavy: 35 (4.5) **Number of vaginal deliveries (n, %)** None: 192 (29.7) One or two: 213 (33.0) Three or more: 241 (37.3) **Number of caesarean deliveries (n, %)** None: 506 (78.2) One or two: 71 (11.0) Three or more: 70 (10.8) **History of hysterectomy (n, %)** No: 735 (84.6) Yes: 134 (15.4) **History of pelvic floor/incontinence surgery (n, %)** No: 748 (86.2) Yes: 120 (13.8) **BMI (kg/m2) (n, %)** <18: 16 (2.5) 18 – 24.9: 307 (47.2) 25 – 29.9: 250 (38.5) ≥30: 77 911.9)		Two models were reported, the first adjusted for all comorbidities (smoking, chronic cough, diabetes, hypertension and BMI >25kg/m^2). The second model adjusted for all comorbidities and for age, education and vaginal parity. Data reported here is from the second model.	**Chronic cough:** OR 1.15 (0.64 to 2.06) **BMI >25 kg/m^2:** OR 1.44 (0.93 to 2.22)* <u>Urgency urinary incontinence</u> **Smoking:** OR 0.93 (0.59 to 1.47) **Chronic cough:** OR 1.25 (0.67 to 2.34)* **BMI >25 kg/m^2:** OR 2.41 (1.47 to 3.94) <u>Voiding difficulty</u> **Smoking:** OR 1.27 (0.83 to 1.93) **Chronic cough:** OR 1.56 (0.87 to 2.79)* **BMI >25 kg/m^2:** OR 1.39 (0.89 to 2.16)* <u>Pelvic organ prolapse</u> **Smoking:** OR 1.41 (0.89 to 2.23) **Chronic cough:** OR 0.78 (0.39 to 1.56) **BMI >25 kg/m^2:** OR 1.53 (0.91 to 2.57)* <u>Obstructed defecation</u> **Smoking:** OR 1.13 (0.77 to 1.65) **Chronic cough:** OR 1.00 (0.58 to 1.75) **BMI >25 kg/m^2:** OR 1.59 (1.05 to 2.39) <u>Anal incontinence</u> **Smoking:** OR 1.58 (1.07 to 2.33)	confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
	Inclusion criteria None reported **Exclusion criteria** Pregnant women			**Chronic cough:** OR 1.61 (0.91 to 2.83)* **BMI >25 kg/m²:** OR 2.29 (1.51 to 3.49) Dyspareunia **Smoking:** OR 0.85 (0.59 to 1.23) **Chronic cough:** OR 0.85 (0.50 to 1.47) **BMI >25 kg/m²:** OR 2.52 (1.70 to 3.74) *If the model did not adjust for age, education and vaginal parity, these are now significant	
Full citation Huang,A.J., Thom,D.H., Kanaya,A.M., Wassel-Fyr,C.L., van den Eeden,S.K., Ragins,A.I., Subak,L.L., Brown,J.S., Urinary incontinence and pelvic floor dysfunction in Asian-American women, American Journal of Obstetrics and Gynecology, 195, 1331-1337, 2006 **Ref Id** 109968 **Country/ies where the study was carried out** USA	**Sample size** N=1348 Asian: n=345 White: n=1003 **Characteristics** **Age:** (Mean, SD): Asian 53.2 (7.4); White 58.0 (9.1) **Education:** High school or less: Asian 52/345 (15.1); White 186/1003 (18.6) Some college: Asian 127/345 (36.8); White 426/1003 (42.5) College graduate: Asian 113/345 (32.8); White 237/1003 (23.6)	**Interventions** **Risk factors:** BMI 25kg/m2 or greater Hysterectomy: Yes/No Frequent UTIs: 1 or more per year/ No Health: Poor/Fair Age: (per 10 years) Oral oestrogen use: Yes/No Birth of infant weighing more than 400g: Yes/No	**Details** Data was taken from the Reproductive Risks of Incontinence Study at Kaiser (RRISK) cohort, a population-based cohort of women enrolled in the Kaiser Permanente Medical Care Program of Northern California. Data was taken from the women who had been enrolled in Kaiser since 18yrs old and were now age between 40-69 on January 1st 1999. Women completed self-reported questionnaires and in-person interviews. Urinary incontinence was defined using validated UI questions along with the	**Results** Stress UI Asian women (adjusted for age, parity, BMI, hysterectomy and episiotomy) **BMI 25 kg/m2 or greater:** OR 5.10 (1.82 to 14.31) **Hysterectomy:** OR 2.79 (1.03 to 7.54) White women (adjusted for age, BMI and use of pudendal anaesthesia) **BMI 25 kg/m2 or greater:** OR 1.84 (1.21 to 2.78) **Frequent UTIs:** OR 1.80 (1.05 to 3.10) **Poor/fair health:** OR 2.60 (1.43 to 4.72) Urge UI	**Limitations** QUIPS Quality Appraisal tool Study participation - Moderate risk of bias (data on only White and Asian populations) Study attrition - Unclear risk of bias (sub-analysis of a main data set) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Moderate risk of bias (unclear for all symptoms

Study details	Participants	Interventions	Methods	Outcomes	Comments
Study type Cross-sectional study **Aim of the study** To describe the prevalence, risk factors, and impact of urinary incontinence and other pelvic floor disorders among Asian-American women. **Study dates** 1999 **Source of funding** National Institute of Diabetes and Digestive and Kidney Diseases Grant R01-DK53335 as well as the Office of Research on Women's Health Specialized Center of Research Grant P50 DK044538.	Graduate school: Asian 53/345 (15.4); White 153/1003 (15.3) **Income** Less than $40,000/y: Asian 51/345 (14.8); White 225/1003 (224) $40,000 to $59,999: Asian 47/345 (13.6); White 204/1003 (20.3) $60,000 to $79,999: Asian 63/345 (18.3); White 194/1003 (19.3) $80,000 to $99,999: Asian 55/345 (15.9); White 116/1003 (11.6) $100,000 or more per year: Asian 92/345 (26.7); White 187/1003 (18.6) **Occupation** Employed for pay: Asian 255/345 (73.9); White 573/1003 (57.1) Retired, student, homemaker: Asian 72/345 (20.9); White 389/1003 (38.8) Unemployed/other: Asian 18/345 (5.2); White 39/1003 (3.9) **Parity** (mean, SD): Asian 1.9 (1.5); White 2.1 (1.5) **BMI, kg/m2** (mean, SD): Asian 25.8 (4.8); White 28.0 (6.7) **Medical history**		incontinence impact questionnaire. Pelvic organ prolapse symptoms were defined as a feeling of bulging, pressure, or protrusion from the vagina or as a visible bulging or protrusion from the vagina in the past 12 months. Faecal incontinence was defined as accidental leakage of stool or soiling. Flatal incontinence was defined as the unexpected or embarrassing loss of control of gas at least once per week in the past 12 months. Anal incontinence was defined as either monthly faecal incontinence or weekly flatal incontinence. Data were adjusted for each outcome, typical risk factors included: age, parity, BMI, hysterectomy, episiotomy, oral oestrogen, pudendal anaesthesia and infant birth weight.	Asian women (adjusted for age, parity and oral oestrogen use) **BMI 25 kg/m2**: OR 3.35 (1.22 to 9.18) White women (adjusted for age, parity, BMI, oral oestrogen use and infant birth weight) **BMI 25 kg/m2 or greater:** OR 1.71 (1.04 to 2.82) **Age (per 10 y):** OR 1.79 (1.34 to 2.40) **Oral oestrogen use:** OR 1.82 (1.12 to 2.93) **Birth of infant weighing more than 4000 g:** OR 3.06 (1.67 to 5.62) Anal Incontinence Asian women (adjusted for age, parity and oral oestrogen use) **Age (per 10 y)**: OR 1.87 (1.26 to 2.79) **History of third-or fourth-degree tear:** OR 2.41 (1.14 to 5.10) White women (adjusted for age, parity, BMI, oral oestrogen use and infant birth weight) **Age (per 10 y):** OR 1.36 (1.14 to 1.61) **Irritable bowel syndrome:** OR 3.21, (2.10 to 4.89) **Frequent constipation:** OR 2.09 (1.39 to 3.16)	what confounders were incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Moderate risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
	1 or more UTIs per year: Asian 31/345 (9.0); White 131/1003 (13.2) Diabetes mellitus: Asian 38/345 (11.0); White 50/1003 (5.0) Chronic obstructive pulmonary disease: Asian 13/345 (3.8); White 64/1003 (6.4) Constipation: Asian 32/345 (9.3); White 133/1003 (13.3) Irritable bowel syndrome: Asian 13/345 (3.8); White 125/1003 (12.5) Colorectal surgery: Asian 9/345 (2.6); White 43/1003 (4.3) Current oral oestrogen use: Asian 75/345 (21.7); White 360/1003 (35.9) **Current habits** Smoking: Asian 19/345 (5.5); White 86/1003 (8.6) Alcohol (weekly): Asian 35/345 (10.1); White 376/1003 (37.5) **Reproductive history** Hysterectomy: Asian 48/345 (13.9); White 224/1003 (22.3) Augmented labour: Asian 70/345 (20.3); White 124/1003 (12.4) Pudendal anaesthesia: Asian 67/345 (19.4); White 140/1003 (13.4) Use of forceps: Asian 236/345 (68.4); White 646/1003 (64.4)				

Study details	Participants	Interventions	Methods	Outcomes	Comments
	Episiotomy: Asian 215/345 (62.3); White 642/1003 (64.0) Third- or fourth-degree tears: Asian 47/345 (13.6); White 81/1003 (8.1) Ever birth weight 4000 g or more: Asian 29/345 (8.4); White 150/1003 (15.0) **Inclusion criteria** Not reported **Exclusion criteria** Not reported				
Full citation Islam, R. M., Bell, R. J., Billah, B., Hossain, M. B., Davis, S. R., The prevalence of symptomatic pelvic floor disorders in women in Bangladesh, Climacteric, 19, 558-564, 2016 **Ref Id** 651184 **Country/ies where the study was carried out** Bangladesh **Study type**	**Sample size** N=1590 **Characteristics** **Place of residence** Urban: 416/1590 (26.2) Rural: 1174/1590 (73.8) **Age (years)**: 42.3 (8.1) 30–39: 653/1590 (41.1) 40–49: 591/1590 (37.2) 50–59: 346/1590 (21.7) **Menopause status** Premenopause: 944/1590 (59.3) Perimenopause: 133/1590 (8.4)	**Interventions** Risk factors: Age: 30-39, 40-49 and 50-59 years Years of education: Secondary and above, primary, illiterate Wealth: (quintile) highest, fourth, middle, second, lowest Parity: Two children or less, Three children or more	**Details** The Bangladesh Midlife Women's Health Study (BMWHS) aimed to understand the knowledge, awareness and uptake of cervical cancer and breast cancer screening to investigate why the uptake of screening has been low. Secondary outcomes to the study were the prevalence of, and risk factors for, UI, FI and POP. A district from each of the seven divisions of Bangladesh were selected at random from the 32 districts. Participants were	**Results** <u>Urinary incontinence</u> **Age Years:** 30-39: Reference 40-49: OR 1.85 (1.19 to 2.88) 50-59: OR 3.40 (2.10 to 5.51) **Years of education:** Secondary and above: Reference Primary: OR 1.55 (0.92 to 2.60) Illiterate: OR 1.06 (0.61 to 1.86) **Wealth quintile** Highest: Reference	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (1590/1700 (94%) agreed to participate) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Moderate risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
Cross-sectional study **Aim of the study** To investigate the prevalence of, and risk factors for, pelvic floor disorders (PFDs) in women in Bangladesh **Study dates** September 2013 to March 2014 **Source of funding** The study was supported by philanthropic donations to the Women's Health Research Program, Monash University.	Postmenopause: 513/1590 (32.3) **Marital status** Married: 1413/1590 (88.9) Widow, divorced or separated: 177/1590 (11.1) **Years of education** Secondary and above: 601.1590 (37.8) Primary: 349/1590 (22.0) Illiterate: 640/1590 (40.2) **Occupation** Household duties: 1498/1590 (92.3) Work outside the home: 122/1590 (5.8) **Religion** Islam: 1467/1590 (92.3) Hindu: 122/1590 (7.7) **Wealth quintile** Highest: 318/1590 (20.0) Fourth: 318/1590 (20.0) Middle: 323/1590 (20.3) Second: 313/1590 (19.7) Lowest: 318/1590 (20.0) **Body mass index category (kg/m2)** Underweight (< 17.5): 86/1588 (5.4) Normal weight (17.5–23): 626/1588 (39.4) Overweight (23.00–28): 609/1588 (38.4) Obese (≥28.00): 267/1588 (16.8)		randomly recruited based on the Population and Housing Census. Women who were willing to take part were interviewed by women interviewers. The presence and type of UI were assessed by the Questionnaire for Urinary Incontinence Diagnosis (QUID), POP was assessed using the Pelvic Organ Prolapse Distress Inventory-6 (POPDI-6), and Faecal Incontinence was assessed using the Colorectal-Anal Distress Inventory-8 (CRADI-8). Unclear what the risk factors were used in the multivariable logistic regression beyond: 'potential and known risk factors for PFD'	Fourth: OR 1.62 (0.88 to 2.96) Middle: OR 2.11 (1.10 to 4.09) Second: OR 2.24 (1.15 to 4.39) Lowest: OR 2.57 (1.24 to 5.29) **Parity** Two children or less: Reference Three children or more: OR 1.99 (1.31 to 3.04) <u>Faecal incontinence</u> **Age Years:** 30-39: Reference 40-49: OR 0.73 (0.29 to 1.85) 50-59: OR 1.38 (0.67 to 3.56) **Years of education:** Secondary and above: Reference Primary: OR 2.60 (0.73 to 9.31) Illiterate: OR 1.65 (0.40 to 6.81) **Wealth quintile** Highest: Reference Fourth: OR 1.96 (0.46 to 8.38) Middle: OR 2.84 (0.60 to 13.44) Second: OR 4.22 (0.87 to 20.37) Lowest: OR 5.74 (1.14 to 28.86) **Parity**	(unclear what risk factors were incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
	Parity Two children or less: 559/1567 Three children or more: 1008/1567 (64.3) **Hysterectomy** Yes: 89/1216 (7.3) No: 1127/1216 (92.7) **Inclusion criteria** None reported **Exclusion criteria** None reported			Two children or less: Reference Three children or more: OR 0.78 (0.35 to 1.73) <u>Pelvic organ prolapse</u> **Age Years:** 30-39: Reference 40-49: OR 1.26 (0.84 to 1.88) 50-59: OR 1.45 (0.92 to 2.26) **Years of education:** Secondary and above: Reference Primary: OR 0.99 (0.61 to 1.60) Illiterate: OR 0.87 (0.55 to 1.39) **Wealth quintile** Highest: Reference Fourth: OR 1.36 (0.76 to 2.44) Middle: OR 2.46 (1.35 to 4.49) Second: OR 2.22 (1.19 to 4.14) Lowest: OR 2.17 (1.13 to 4.16) **Parity** Two children or less: Reference Three children or more: OR 1.48 (1.02 to 2.16) <u>One or more pelvic floor disorders</u> **Age Years:** 30-39: Reference	

Study details	Participants	Interventions	Methods	Outcomes	Comments
				40-49: OR 1.46 (1.02 to 2.08) 50-59: OR 2.39 (1.59 to 3.58) **Years of education:** Secondary and above: Reference Primary: OR 1.34 (0.85 to 2.11) Illiterate: OR 1.01 (0.63 to 1.61) **Wealth quintile** Highest: Reference Fourth: OR 1.63 (0.97 to 2.73) Middle: OR 3.05 (1.72 to 5.41) Second: OR 2.49 (1.39 to 4.47) Lowest: OR 3.13 (1.68 to 5.86) **Parity** Two children or less: Reference Three children or more: OR 1.61 (1.14 to 2.27)	
Full citation Lawrence,J.M., Lukacz,E.S., Liu,I.L., Nager,C.W., Luber,K.M., Pelvic floor disorders, diabetes, and obesity in women: Findings from the Kaiser Permanente continence associated risk epidemiology study,	**Sample size** N=3962 **Characteristics** **Age** (mean, SD): 56.6 (15.8) **Race** n/N (%)**:** Non-Hispanic white: 2444/3962 (61.7)	**Interventions** **Risk factors** Obesity: ≥30kg/m^2	**Details** Women were recruited from the Kaiser Permanente Southern California membership health plan from four age strata (25-39, 40-54, 55-69 and 70-84 yrs.). The Epidemiology of Prolapse and Incontinence Questionnaire (EPIQ)	**Results** **SUI** (Adjusted for age, race/ethnicity, mode of delivery, parity, hormone therapy use, menopause status, hysterectomy, smoking, caffeine use, history of depression, lung disease /asthma and neurological disease) Non-obese and nondiabetic: Reference	**Limitations** QUIPS Quality Appraisal tool Study participation - Moderate risk of bias (Women who had a health care plan were invited to participate, so not representative of whole population) Study attrition - Moderate risk of bias (3962/12000

Study details	Participants	Interventions	Methods	Outcomes	Comments
Diabetes Care, 30, 2536-2541, 2007 **Ref Id** 143961 **Country/ies where the study was carried out** USA **Study type** Cross-sectional study **Aim of the study** To evaluate the relative importance of the associations between diabetes and obesity in their contributions to PFDs **Study dates** April 2004 through January 2005 **Source of funding** This study was funded by R01 HD41113. Analyses were funded by Kaiser Permanente Direct Community Benefit funds.	Hispanic: 760/3962 (19.2) Black: 382/3962 (8.2) Asian/Pacific Islander: 323/3962 (8.2) Other/Unknown: 53/3962 (1.3) **BMI** (mean, SD): 27.8 (6.2) **Mode of delivery** n/N (%): Nulliparous: 755/3962 (19.1) Any vaginal birth: 2837/3962 (71.6) Caesarean births only: 370/3962 (9.3) **Parity** (mean, SD): 2.1 (1.6) **Postmenopausal** n/N (%): 2611/3962 (66.0) **Inclusion criteria** None reported **Exclusion criteria** None reported		was used to assess the prevalence of PFD. Models were adjusted for various risk factors including: age, race/ethnicity, mode of delivery, parity, hormone therapy use, menopause status, hysterectomy, smoking, caffeine use, history of depression, lung disease /asthma and neurological disease	Obese and nondiabetic: OR 2.62 (2.09 to 3.30) **OAB** (Adjusted for age, race/ethnicity, mode of delivery, parity, hysterectomy and lung disease /asthma) Non-obese and nondiabetic: Reference Obese and nondiabetic: OR 2.93 (2.33 to 3.68) **AI** (Adjusted for age, race/ethnicity, mode of delivery, parity, hormone therapy use, menopause status and history of depression) Non-obese and nondiabetic: Reference Obese and nondiabetic: OR 1.45 (1.20 to 1.76) **Any PFD** (Adjusted for age, race/ethnicity, mode of delivery, parity, hormone therapy use, menopause status, hysterectomy and history of depression) Non-obese and nondiabetic: Reference Obese and nondiabetic: OR 1.83 (1.54 to 2.18) (NB data for non-obese and diabetic women and obese and diabetic women not extracted as not relevant to this research question)	(33%) returned the surveys) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
Full citation Megabiaw, B., Adefris, M., Rortveit, G., Degu, G., Muleta, M., Blystad, A., Kiserud, T., Melese, T., Kebede, Y., Pelvic floor disorders among women in Dabat district, northwest Ethiopia: a pilot study, International Urogynecology Journal, 24, 1135-43, 2013 **Ref Id** 541545 **Country/ies where the study was carried out** Ethiopia **Study type** Cross-sectional study **Aim of the study** To estimate the prevalence of pelvic floor disorders (urinary incontinence, faecal incontinence, symptomatic pelvic organ prolapse and anatomical prolapse) in an Ethiopian con- text. **Study dates** Not reported	**Sample size** N=395 **Characteristics** **Age** (median, range): 35.0 (16 to 80) **Educational status (n/N, %)** Unable to read and write: 283/395 (71.6) Read and write only: 10/395 (2.5) Grades 1–8: 38/395 (9.6) Grades 9–12: 44/395 (11.1) College level: 20/395 (5.1) **Occupational status (n/N, %)** Housewife: 310/395 (78.5) Farmer: 22/395 (5.6) Government employee: 20/395 (5.1) Daily labourer: 10/395 (2.5) Trader: 14/395 (3.5) Student: 6/395 (1.5) Other: 13/395 (3.3) **Hours carrying heavy objects/day (n/N, %)** ≤1: 52/395 (17.7) 2–4: 102/395 (34.7) ≥5: 140/395 (47.6) **BMI (kg/m^2) (n/N, %)** <18.5: 76/395 (27.5)	**Interventions** **Risk factors:** Age: 15-24 yrs, 25 to 34 yrs, 35-49 yrs, 50+ Kebele: Urban, highland rural, lowland rural Age at last delivery: <20, 20-25, 25+ Number of deliveries: ≤1, 2-4, 5+ Hours of carrying heavy objects/day: ≤1, 2-4, 5+ Prolonged labour (≥2 days): yes, no	**Details** Women from three difference climatic and sociocultural settings (one semi-urban, one highland rural and one lowland rural) in the Dabat district, northwest Ethiopia were randomly invited to participate. Data was collected by a female nurse in a face-to-face interview in the participants' home and included a pelvic exam. The interview covered socio-demographic factors, obstetric and gynaecological history, urinary incontinence, faecal incontinence and prolapse symptoms. Urinary incontinence was assessed by a questionnaire adapted to the current context from the Norwegian EPINCONT questionnaire. Severity of urinary incontinence was graded according to the severity index (mild, moderate or severe), which is the frequency of leakage multiplied by amount of urine per leak. Faecal incontinence was assessed by asking the woman whether she had experienced involuntary leakage of stool (faecal	**Results** **Pelvic organ prolapse stage II to IV** Age 15-24 yrs: Reference 25 to 34 yrs: OR 0.68 (0.26 to 1.78) 35-49 yrs: OR 0.56 (0.18 to 1.80) 50+: OR 0.51 (0.15 to 1.77) Kebele Urban: Reference Highland rural: OR 2.30 (1.14 to 4.62) Lowland rural: OR 0.54 (0.27 to 1.07) Age at last delivery <20: Reference 20-25: OR 1.02 (0.27 to 3.94) 25+: OR 2.03 (0.41 to 10.20) Number of deliveries: ≤1: Reference 2-4: OR 10.6 (0.29 to 3.85) 5+: OR 1.96 (0.46 to 8.40) Hours of carrying heavy objects/day ≤1: Reference 2-4: OR 1.71 (0.81 to 3.60) 5+: OR 2.13 (1.03 to 4.40) Prolonged labour (≥2 days)	**Limitations** QUIPS Quality Appraisal tool Study participation - Moderate risk of bias (not representative to UK scenario) Study attrition - Low risk of bias (395/405 (98%) of women approached, took part) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Moderate risk of bias (unclear exact confounders incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
Source of funding Western Norway Regional Health Authority and the Nordic Urogynecological Association.	18.5–25: 194/395 (67.6) >25: 14/395 (4.9) **Inclusion criteria** None reported **Exclusion criteria** None reported		matter) during the last 1 year. Symptomatic pelvic organ prolapse was assessed by two questions: Do you have a (1) feeling of bulging/pressure or something seems to be coming down through the vagina? or (2) visible mass protruding via the vagina? If a woman had experienced one or both of these problems in the last 1 year, she was considered as having symptoms of pelvic organ prolapse. Pelvic examination for each woman were held at the nearby health post/centre. The simplified Pelvic Organ Prolapse Quantification (S-POPQ) staging system was applied. All factors with a p value <0.2 in the bivariate logistic regression were entered into the multivariate model. Unclear which were p<0.2, but likely to include: age, kebel, number of deliveries, hours of carrying heavy objects.	No: Reference Yes: OR 1.77 (1.01 to 3.08)	
Full citation	**Sample size** N=1336	**Interventions** Risk factors	**Details**	**Results**	**Limitations**

Study details	Participants	Interventions	Methods	Outcomes	Comments
Uustal Fornell, E., Wingren, G., Kjolhede, P., Factors associated with pelvic floor dysfunction with emphasis on urinary and faecal incontinence and genital prolapse: an epidemiological study, Acta Obstetricia et Gynecologica Scandinavica, 83, 383-9, 2004 **Ref Id** 692323 **Country/ies where the study was carried out** Sweden **Study type** Epidemiological cross-sectional study **Aim of the study** To describe a general population of women with regard to factors associated with urinary and faecal incontinence and genital prolapse symptoms. **Study dates** 1997	**Characteristics** Age: 65% of the 40 yr old women and 69% of the 60 yr old women participated (total n=1336) Child delivery: Nulliparous: 12% Vaginal delivery: 83% Caesarean section only: 5% Anal sphincter injury: 24/1336 (2%) Anti-urinary incontinence surgery: 16/1336 (1%) Genital prolapse surgery: 23/1336 (2%) **Inclusion criteria** Women randomly identified from those born in 1937 and 1957 from Ostergotland in south-east Sweden **Exclusion criteria** Women with previous surgery for urinary incontinence or genital prolapse were excluded from the calculations.	Anal sphincter rupture Chronic bronchitis Age Feeling of pelvic heaviness Obesity Pelvic heaviness remained associated with parity Having had more than two children Parity	1000 women born in 1937 and 1000 women born in 1957 were selected randomly from the population records from a county in south-east Sweden. The selected women comprise 39% of all women in the respective age group. The 2000 women received a postal questionnaire with 85 questions concerning medical and obstetric history, height and weight, sexual history and prolapse symptoms as well as urinary and faecal incontinence defined for flatus, liquid stools or solid stools. Several questions required answers only by women with symptoms. Incontinent women were asked how often and in which situations leakage occurred. Clinically significant incontinence for urine and flatus was defined as leakage weekly or more often. Clinically significant incontinence for loose or solid stools was defined as leakage a few times per month or more often. Genital prolapse was indicated by pelvic heaviness, the sensation of something bulging	**Flatus incontinence (data adjusted for: pelvic heaviness, bulge, digitation by defecation)** Anal sphincter rupture: OR 7.7 (2.1 to 27.9) Chronic bronchitis: OR 6.5 (1.1 to 38.1) Age: OR 2.0 (1.2 to 2.3) Feeling of pelvic heaviness: OR 2.0 (CI 1.0 to 4.0) **Loose stool incontinence: (data adjusted for: pelvic heaviness, digitation by defecation)** Pelvic heaviness: OR 5.0 (3.0 to 8.7) Age: OR 2.2 (1.3 to 3.7) Obesity: OR 3.0 (1.0 to 3.4). **Prolapse symptoms: (sphincter rupture compared to no sphincter rupture, three or more births compared to one or two births and large tear at delivery compared to no tear at delivery)** Pelvic heaviness remained associated with parity: OR 1.8 (1.0 to 3.2) Having had more than two children: OR 1.5 (1.0 to 2.1) Anal sphincter rupture: OR 3.1 (1.2 to 7.5).	QUIPS Quality Appraisal tool Study participation - Low risk of bias (randomly selected from whole population in a region) Study attrition - Low risk of bias (67% response rate, drop out analysis conducted and prevalence of urinary incontinence deemed similar) Prognostic factor measurement - Moderate risk of bias (some description of risk factors) Outcome measurement - Moderate risk of bias (some description of outcome measurements) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
Source of funding A grant from the county of Ostergotland (Folkhalsoanslaget) and by Linkoping University Hospital.			genitally and digitation of the perineum or vagina by defecation. Variables that were significant in univariate analysis, were included in the stepwise multiple regression analysis. Variables included: pelvic heaviness, bulge, digitation by defecation, sphincter rupture compared to no sphincter rupture, three or more births compared to one or two births and large tear at delivery compared to no tear at delivery.	**Genital bulge: (data adjusted for: three or more births compared to one or two births)** Parity: OR 7.4 (1.0 to 54.2) Having had more than two children: OR 1.9 (1.0 to 3.6) **Digitation at defecation: (data adjusted for: sphincter rupture compared to no sphincter rupture, large tear at delivery compared to no tear at delivery)** Anal sphincter rupture: OR 3.0 (1.2 to 7.4) NB study only reports significant associations.	
Full citation Wu, J. M., Vaughan, C. P., Goode, P. S., Redden, D. T., Burgio, K. L., Richter, H. E., Markland, A. D., Prevalence and trends of symptomatic pelvic floor disorders in U.S. women, Obstetrics and gynecology, 123, 141-148, 2014 **Ref Id** 1152534	**Sample size** N=7924 **Characteristics** **N=7924** **Age (y)** 20–29: 1128 30–39: 1117 40–49: 1318 50–59: 1085 60–69: 1193 70–79:805 80 or older: 496 **Race or ethnicity**	**Interventions** **Risk factors** Age: categorised in 10 year increments, increase per decade Race: Non-Hispanic white compared with all other racial and ethnic groups Education: More than a high school education Income: Higher poverty income ratio BMI: Less than 25 (reference), 25.0 to 29.9, 30.0 or greater Hysterectomy: Yes/No Parity: 0 (reference), 1, 2, 3, 4 or greater	**Details** As part of the National Health and Nutritional Examination Survey, women were interviewed in their homes and had a physical examination. A trained interviewer asked questions about UI and faecal incontinence among women aged 20 years and over. Questions on POP were assessed with questions on the reproductive health questionnaire. UI was defined using the validated two-item	**Results** Pelvic Floor Dysfunction **Age (decade):** OR 1.2 (1.2 to 1.3) **Non-Hispanic white compared with all other racial and ethnic groups:** OR 1.3 (1.1 to 1.5) **More than a high school education:** OR 0.9 (0.9 to 1.0) **Higher poverty income ratio:** OR 0.9 (0.9 to 1.0)	**Limitations** QUIPS Quality Appraisal tool Study participation - Low risk of bias (target population appropriate) Study attrition - Low risk of bias (7924/8368 (95%) of the women interviewed provided useable data) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome

Study details	Participants	Interventions	Methods	Outcomes	Comments
Country/ies where the study was carried out USA **Study type** Cross-sectional study **Aim of the study** To estimate the overall prevalence and trends of symptomatic pelvic floor disorders in U.S. women from 2005 to 2010 and to assess factors associated with these disorders **Study dates** Health surveys were conducted in 2005-2006, 2007-2008 and 2009-2010 **Source of funding** None reported	Hispanic, Mexican, America: 1267 Hispanic, other: 662 Non-Hispanic white: 3475 Non-Hispanic black: 1445 Other, including multiracial: 293 **Education** Less than high school: 1960 High school:1675 More than high school: 3941 **Poverty income ratio** Less than 1: 2181 1–2: 2059 Greater than 2: 2902 **BMI (kg/m2)** Less than 25.0: 2181 25.0–29.9: 2059 30.0 or greater: 2902 **Hysterectomy** No: 4621 Yes: 1717 **Parity** 0: 1018 1: 784 2: 1450 3: 1416 4 or greater: 2462 **Inclusion criteria** None reported **Exclusion criteria**	Mode of delivery: Never pregnant (reference), vaginal delivery only, caesarean delivery only)	incontinence severity index. The Faecal Incontinence Severity Index, was used to define faecal incontinence. Women were asked about prolapse using the previously validated question, “Do you see or feel a bulge in the vaginal area.” From the responses for individual pelvic floor disorders, a combined disorders variable was created. This was defined as the presence of at least one positive response for moderate-to-severe UI, monthly faecal incontinence, or prolapse. Unclear exactly what risk factors the data were adjusted for, but likely to include age in decades, race, education, poverty status, BMI, comorbid diseases, hysterectomy, parity, and mode of delivery.	**BMI (kg/m2):** Less than 25.0: (Reference) 25.0–29.9: OR 1.3 (1.1 to 1.6) 30.0 or greater: OR 1.6 (1.3 to 2.0) **Hysterectomy:** OR 1.5 (1.3 to 1.7) **Parity** 0: Reference 1: OR 1.6 (1.2 to 2.1) 2: OR 1.5 (1.1 to 2.0) 3: OR 1.8 (1.3 to 2.5) 4 or greater: OR 2.0 (1.5 to 2.6) **Mode of delivery** Never pregnant: Reference Vaginal delivery only: OR 1.1 (0.8 to 1.5) Caesarean delivery only: OR 0.8 (0.6 to 1.2)	measure valid and described) Study confounding - Moderate risk of bias (unclear exactly what confounders were incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
	None reported				
Full citation Yuaso, D. R., Santos, J. L. F., Castro, R. A., Duarte, Y. A. O., Girao, M. J. B. C., Berghmans, B., Tamanini, J. T. N., Female double incontinence: prevalence, incidence, and risk factors from the SABE (Health, Wellbeing and Aging) study, International urogynecology journal, 29, 265-272, 2018 **Ref Id** 1151658 **Country/ies where the study was carried out** Brazil **Study type** Longitudinal population-based study **Aim of the study** To estimate the prevalence and incidence rates of self-reported double incontinence among elderly women in Brazil, and to determine associated risk factors	**Sample size** N=1413 individuals included in 2006 (n=865 women and n=548 men) n=811 women contacted in 2010 for interview. n=588 interviewed. n=565 included in final sample. **Characteristics** Age (years): mean 74.6 (SD 9.5) range: 65-90 **Inclusion criteria** None reported **Exclusion criteria** None reported	**Interventions** Risk factors: Functional performance (IADL and BADL): Functional performance was obtained from the difficulty referred to when performing one or more basic activities of daily living (BADL) and instrumental activities of daily living (IADL) Falls: Did you fall within the last 12 months? Never fell, Yes, more than 1 year ago and Yes, during the last year. Polypharmacy: Could you show me the medicines you are currently using or taking? None, 1 to 3, and 4 or more medicines	**Details** Women who were taking part in the SABE (Health, Wellbeing and Aging) study were interviewed in 2006 and re-interviewed in 2010. UI was assessed using the validated Portuguese version of the International Consultation on Incontinence Questionnaire - Urinary Incontinence Short Form (ICIQ-UI SF) Faecal incontinence (FI) was evaluated using a standardized question: 'In the last 12 months, have you lost control of a bowel movement or faeces?' (yes, no, no answer, I don't know). To study the possible influence of such a variable on FI, the no answer and the I do not know answer categories were not considered and were subsequently considered as lost values. The definition of double incontinence (DI) in this study was the presence of UI with a final ICIQ-UI SF score greater than or equal to 3, and concomitantly that the patient gave a positive answer to the question about IF.	**Results** <u>Double Incontinence</u> **Dependence on instrumental activities on daily living** 0: Reference 1-2: Adjusted RRI 1.85 (0.79, 4.32) 3+: Adjusted RRI 2.46 (0.88, 6.97) **Dependence on basic activities on daily living** 0: Reference 1-2: Adjusted RRI 1.29 (0.60, 2.79) 3+: Adjusted RRI 1.32 (0.40, 5.04) **Polypharmacy** No medicine: Reference 1 to 3 medicines: Adjusted RRI 0.67 (0.21, 2.18) 4+ medicines: Adjusted RRI 1.42 (0.40, 5.04) **Falls** Never fell: Reference More than 1 year ago: Adjusted RRI 1.04 (0.41, 2.62) During the last year: Adjusted RRI 2.22 (0.97, 5.08)	**Limitations** QUIPS Quality Appraisal tool Study participation - Moderate risk of bias (target population seems appropriate, but very limited participant characteristics reported) Study attrition - Moderate risk of bias (565/811 (70%) completed 4 year follow up, no reasons were given for those who dropped out) Prognostic factor measurement - Low risk of bias (good description of risk factors, measured appropriately) Outcome measurement - Low risk of bias (outcome measure valid and described) Study confounding - Low risk of bias (appropriate confounders measured and incorporated) Statistical analysis and reporting - Low risk of bias (appropriately conducted) Overall rating: Low risk of bias

Study details	Participants	Interventions	Methods	Outcomes	Comments
Study dates Study started in 2000, women were interviewed in 2006 and again in 2010 **Source of funding** None reported			The multivariate analysis included the sociodemographic, health status, life-style and functionality covariates		

AHR: adjusted hazard ratio; AOR: adjusted odds ratio; ARR: adjusted risk ratio; BADL: basic activities of daily living; BMI: body mass index; CI: confidence interval; HR: hazard ratio; IADL: instrumental activities of daily living; ICIQ-FLUTS: International Consultation on Incontinence Questionnaire; IQR: inter-quartile range; OR: odds ratio; OP: occiput posterior; PFD: pelvic floor dysfunction; PFDI: Pelvic Floor Distress Inventory; POP-Q: Pelvic Organ Prolapse Quantification; QUIPS: Quality In Prognosis Studies; RR: risk ratio; RRI: SD: standard deviation; UDI-6: Urogenital Distress Inventory; UI: urinary incontinence; UTI: urinary tract infection

Appendix E – Forest plots

Forest plots for review question: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

No meta-analysis was conducted for this review question and so there are no forest plots.

Appendix F – GRADE tables

GRADE tables for review question: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

Women recruited in an obstetric setting.

Data presented as odds ratios (ORs) for the covariate category presented first relative to that presented second. For example, for "Age at birth" in Table 7 the odds of developing UI or OAB are 2.14 times higher for women aged > 30 relative to women aged < 30 years.

Table 7: Clinical evidence profile for risk factors for developing UI or OAB

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Age at birth (follow-up 4 years) - >30 years vs <30 years										
1 Fritel 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	627	OR 2.14 (1.47 to 3.1)	HIGH	CRITICAL
Age (continuous) (follow-up 1 year) - per additional year of age vs standard										
1 Urbankova 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	3648	OR 1.08 (1.04 to 1.13)	HIGH	CRITICAL
Age (<25) vs Age (25-30)										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 1.12 (0.56 to 2.22)	LOW	CRITICAL
Age (<25) vs Age (30-35)										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 0.8 (0.4 to 1.59)	LOW	CRITICAL
Age (<25) vs Age >35										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	744	OR 1.72 (0.8 to 3.69)	MODERATE	CRITICAL
Active second phase (follow-up 1 year) - >1hr vs <1hr										
1 Serati 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	336	OR 2.19 (1.07 to 4.48)	MODERATE	CRITICAL
Active second phase (follow-up 4 years) - >20 mins vs < 20 mins										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 1 (0.54 to 1.84)	LOW	CRITICAL
Birth weight (follow-up 4 years) - >4000g vs <4000g										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 0.74 (0.26 to 2.11)	LOW	CRITICAL
BMI increases (follow-up 1 year) - BMI increases vs BMI does not increase										
1 Urbankova 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	987	OR 0.9 (0.83 to 0.98)	HIGH	CRITICAL
BMI before pregnancy (follow-up 1 year) - high vs low										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Urbankova 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	987	OR 1.08 (1.03 to 1.13)	HIGH	CRITICAL
BMI before pregnancy - <24 vs >24-30										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 0.87 (0.5 to 1.51)	LOW	CRITICAL
BMI before pregnancy - <24 vs >30										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	744	OR 2.68 (1.14 to 6.3)	MODERATE	CRITICAL
Height (follow-up 1 year) - per additional cm										
1 Urbankova 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	987	OR 0.98 (0.84 to 1.14)	HIGH	CRITICAL
Physical activity (follow-up 1-4 years) - increased PA vs no PA										
1 Harvey 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	50	OR 0.29 (0.01 to 8.41)	LOW	CRITICAL
Pelvic floor exercises (follow-up 4 years) - yes vs no										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	627	OR 2.12 (1.45 to 3.1)	HIGH	CRITICAL
Gestational age (follow-up 4 years) - >40 weeks vs <40 weeks										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	627	OR 1.51 (1.03 to 2.21)	MODERATE	CRITICAL
Mode of birth - Operative vs spontaneous (follow-up 4 years)										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 1.08 (0.73 to 1.6)	LOW	CRITICAL
Mode of birth – Caesarean vs spontaneous (follow-up 4 years)										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 0.63 (0.29 to 1.37)	LOW	CRITICAL
Mode of birth - Caesarean + not reached dilation vs caesarean no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 0.74 (0.32 to 1.71)	LOW	CRITICAL
Mode of birth - Caesarean + reached dilation vs caesarean no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 1.17 (0.47 to 2.91)	LOW	CRITICAL
Mode of birth - Vaginal + no operatives vs caesarean no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 1.17 (0.47 to 2.91)	LOW	CRITICAL
Mode of birth - Vaginal + operative(s) vs caesarean no labour										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1011	OR 4.89 (2.23 to 10.72)	HIGH	CRITICAL
Mode of birth - vaginal vs caesarean										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	744	OR 5.85 (2.1 to 16.3)	HIGH	CRITICAL
Coexisting factors - Chronic cough										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 1.63 (0.54 to 4.92)	LOW	CRITICAL
Coexisting factors – Smoking vs no coexisting factors										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 1.29 (0.69 to 2.41)	LOW	CRITICAL
Coexisting factors – Constipation vs no coexisting factors										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	744	OR 1.85 (0.9 to 3.8)	MODERATE	CRITICAL
Coexisting factors - Family history vs no coexisting factors										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	744	OR 2.41 (1.26 to 4.61)	HIGH	CRITICAL
Perineum intact - Perineum intact yes vs no										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 1.46 (0.57 to 3.74)	LOW	CRITICAL
Previous UI - Before pregnancy vs no previous UI										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	744	OR 3.45 (1.31 to 9.09)	HIGH	CRITICAL
Previous UI - During pregnancy vs no previous UI										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	744	OR 3.78 (2.35 to 6.08)	HIGH	CRITICAL
Pre-pregnancy urinary urgency - yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 10 (2.54 to 39.37)	HIGH	CRITICAL
Pre-pregnancy SUI - yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 1.6 (1.04 to 2.46)	MODERATE	CRITICAL
Pre-pregnancy urgency UI - yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 6 (1.62 to 22.22)	HIGH	CRITICAL
Foetal head circumference >35cm – yes vs no										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 1.2 (1.01 to 1.3)	MODERATE	CRITICAL
Levator ani avulsion - yes vs no										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1011	OR 1.7 (0.9 to 3.21)	MODERATE	CRITICAL
Restrictive episiotomy – yes vs no										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	627	OR 1.21 (0.8 to 1.83)	MODERATE	CRITICAL
Highschool diploma – yes vs no										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	627	OR 0.74 (0.49 to 1.10)	MODERATE	CRITICAL
Epidural – yes vs no										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 0.88 (0.52 to 1.49)	LOW	CRITICAL
100pg/mL decrease in serum relaxin measured between 24-28 weeks										
1 Harvey 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	50	OR 1.85 (1.07 to 3.22)	MODERATE	CRITICAL
Each 12 weeks of breastfeeding										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Harvey 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	50	OR 0.66 (0.45 to 0.98)	MODERATE	CRITICAL

BMI: body mass index; CI: confidence interval; OAB: overactive bladder; OR: odds ratio; PA: physical activity; UI: urinary incontinence
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 8 Clinical evidence profile for risk factors for developing SUI

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Mode of birth - Vacuum birth vs natural vaginal										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 0.6 (0.43 to 0.84)	MODERATE	CRITICAL
Mode of birth - Elective caesarean vs natural vaginal										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 0.5 (0.27 to 0.93)	MODERATE	CRITICAL
Mode of birth - Emergency caesarean vs natural vaginal										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 0.3 (0.19 to 0.47) -	HIGH	CRITICAL
Mode of birth - Caesarean + not reached dilation vs caesarean + no labour										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 0.88 (0.4 to 1.94)	LOW	CRITICAL
Mode of birth - Caesarean + reached dilation vs caesarean + no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 1.3 (0.57 to 2.97)	LOW	CRITICAL
Mode of birth - Vaginal + no operatives vs caesarean + no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1011	OR 2.87 (1.49 to 5.53)	HIGH	CRITICAL
Mode of birth - Vaginal + operative(s) vs caesarean + no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1011	OR 4.45 (2.14 to 9.25)	HIGH	CRITICAL
Pre-pregnancy SUI – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 15.9 (5.67 to 44.59)	HIGH	CRITICAL
Recurrent UTIs – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 2.2 (1.43 to 3.38)	HIGH	CRITICAL
Waist/height ratio -- high vs low (threshold not specified)										

Quality assessment								Effect	Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**No of patients**	**Relative (95% CI)**		
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 168.39 (12.86 to 2205.16)	HIGH	CRITICAL
Levator ani avulsion yes vs no										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 0.8 (0.4 to 1.6)	LOW	CRITICAL
Poor social support – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 1.5 (1.03 to 2.06)	MODERATE	CRITICAL
Induction of labour with prostaglandins and oxytocin – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 1.5 (1.02 to 2.21)	HIGH	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio; SUI: stress urinary incontinence; UTI: urinary tract infection
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 9 Clinical evidence profile for risk factors for developing POP

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Age (continuous) (follow-up 1 year) – per additional year										
1 Urbankova 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	987	OR 1.08 (1.02 to 1.14)	HIGH	CRITICAL
Duration of labour (second stage) (follow-up 1 year) – per extra minute										
1 Urbankova 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	987	OR 0.99 (0.98 to 1)	HIGH	CRITICAL
Episiotomy – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 4 (1.38 to 11.59)	HIGH	CRITICAL
Mode of birth - Caesarean + not reached dilation										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 0.72 (0.12 to 4.32)	LOW	CRITICAL
Mode of birth - Caesarean + reached dilation vs caesarean + no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 0.99 (0.16 to 6.13)	LOW	CRITICAL
Mode of birth - Vaginal + no operatives vs caesarean + no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 2.8 (0.73 to 10.74)	LOW	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Mode of birth - Vaginal + operative(s) vs caesarean + no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1011	OR 6.83 (1.68 to 27.77)	HIGH	CRITICAL
Pre-pregnancy dyspareunia – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 9.9 (1.33 to 73.69)	HIGH	CRITICAL
Pre-pregnancy urinary urgency – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 3.3 (1.23 to 8.85)	MODERATE	CRITICAL
Recurrent UTIs – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 4.4 (1.2 to 16.13)	MODERATE	CRITICAL
Waist circumference - >90th centile vs <90th centile										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 1.1 (1.04 to 1.16)	HIGH	CRITICAL
Levator ani avulsion – yes vs no										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1011	OR 2.9 (1.4 to 6.01)	HIGH	CRITICAL
Levator ani muscle ballooning										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 3.1 (1.16 to 8.21)	MODERATE	CRITICAL
100pg/mL decrease in serum relaxin measured between 24-28 weeks										
1 Harvey 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	50	OR 1.35 (1.01 to 1.69)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio; POP: pelvic organ prolapse
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 10 Clinical evidence profile for risk factors for developing AI

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Age at birth (follow-up 4 years) - >30 vs <30 years										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 1.31 (0.79 to 2.17)	LOW	CRITICAL
Age <25 - Age 25-30										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 0.49 (0.19 to 1.26)	LOW	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Age <25 - Age 30-35										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 0.64 (0.26 to 1.58)	LOW	CRITICAL
Age <25 - Age >35										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 1.15 (0.44 to 3.01)	LOW	CRITICAL
Active second phase (follow-up 4 years) - >20 mins vs <20 mins										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	627	OR 2.17 (1.07 to 4.4)	MODERATE	CRITICAL
Birth weight (follow-up 4 years) - >4000g vs <4000g										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 0.34 (0.04 to 2.89)	LOW	CRITICAL
BMI before pregnancy <24 - >24-30										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 0.88 (0.42 to 1.84)	LOW	CRITICAL
BMI before pregnancy <24 - >30										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 1.58 (0.53 to 4.71)	LOW	CRITICAL
Coexisting factors - Chronic cough vs no coexisting factors										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 2.32 (0.64 to 8.41)	LOW	CRITICAL
Coexisting factors – Smoking vs no coexisting factors										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 1.29 (0.59 to 2.82)	LOW	CRITICAL
Coexisting factors – Constipation vs no coexisting factors										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 0.88 (0.31 to 2.5)	LOW	CRITICAL
Coexisting factors - Family history vs no coexisting factors										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	744	OR 2.16 (1 to 4.67)	MODERATE	CRITICAL
Gestational age - Gestational age (follow-up 4 years) - >40 weeks vs <40 weeks										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 0.98 (0.6 to 1.6)	LOW	CRITICAL
Mode of birth – Operative vs spontaneous (follow-up 4 years)										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 1.13 (0.67 to 1.91)	LOW	CRITICAL
Mode of birth – Caesarean vs spontaneous (follow-up 4 years)										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 1.22 (0.49 to 3.04)	LOW	CRITICAL
Mode of birth - Caesarean + not reached dilation vs Caesarean + no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 1.12 (0.55 to 2.28)	LOW	CRITICAL
Mode of birth - Caesarean + reached dilation vs Caesarean + no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 1.48 (0.7 to 3.13)	LOW	CRITICAL
Mode of birth - Vaginal + no operatives vs Caesarean + no labour										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1011	OR 1.62 (0.85 to 3.09)	MODERATE	CRITICAL
Mode of birth - Vaginal + operative(s) vs Caesarean + no labour										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1011	OR 2.22 (1.06 to 4.65)	MODERATE	CRITICAL
Mode of birth – vaginal vs caesarean										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 0.82 (0.26 to 2.59)	LOW	CRITICAL
Perineum intact – yes vs no										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 0.7 (0.22 to 2.23)	LOW	CRITICAL
Pre-pregnancy faecal urgency – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 30 (5.7 to 157.89)	HIGH	CRITICAL
Pre-pregnancy flatus incontinence – yes vs no										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 6.4 (2.05 to 19.98) -	HIGH	CRITICAL
Previous AI - Before pregnancy – yes vs no										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	744	OR 1.59 (0.63 to 4.01)	LOW	CRITICAL
Previous AI - During pregnancy – yes vs no										
1 Torrisi 2012	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	744	OR 2.15 (1.06 to 4.36)	MODERATE	CRITICAL
Waist/height ratio - high vs low										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 22.6 (2.02 to 252.84)	HIGH	CRITICAL
Levator ani avulsion – yes vs no										
1 Handa 2011	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1011	OR 1.1 (0.6 to 2.02)	LOW	CRITICAL
Pelvic floor exercises (follow-up 4 years) – yes vs no										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	627	OR 1.43 (0.86 to 2.38)	MODERATE	CRITICAL
Mode of birth (follow-up 3 years) - immediate caesarean vs caesarean after failed instrument										
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	283	OR 1.65 (0.6 to 4.54)	LOW	CRITICAL
Hip circumference - >95cm vs 0-95cm										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 1.4 (1.03 to 1.9)	MODERATE	CRITICAL
Induction of labour with amniotomy + oxytocin - yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 2.3 (1.03 to 4.91)	MODERATE	CRITICAL
Restrictive episiotomy – yes vs no										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	627	OR 1.84 (1.05 to 3.22)	MODERATE	CRITICAL
High school diploma – yes vs no										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	627	OR 0.80 (0.47 to 1.35)	LOW	CRITICAL
Epidural – yes vs no										
1 Fritel 2008	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	627	OR 0.47 (0.24 to 0.91)	MODERATE	CRITICAL
Birth in the OP position without attempted rotation – yes vs no										
1 Guerby 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	111	OR 8.51 (2.14 to 33.79)	HIGH	CRITICAL
Foetal head station – low vs outlet										
1 Guerby 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	111	OR 0.51 (0.27 to 0.98)	MODERATE	CRITICAL

AI: anal incontinence; BMI: body mass index; CI: confidence interval; OR: odds ratio; PA: physical activity; UTI: urinary tract infection
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 11 Clinical evidence profile for risk factors for developing urinary leakage

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Mode of birth (follow-up 3 years) – immediate caesarean vs caesarean after failed instrument										
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	283	OR 2.04 (1.25 to 3.33)	HIGH	CRITICAL

CI: confidence interval; OR: odds ratio

Table 12 Clinical evidence profile for risk factors for developing difficulty holding urine

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Mode of birth (follow-up 3 years) - immediate caesarean vs caesarean after failed instrument										
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	283	OR 1.03 (0.97 to 1.09)	HIGH	CRITICAL

CI: confidence interval; OR: odds ratio

Table 13 Clinical evidence profile for risk factors for developing increased frequency of urination

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Mode of birth (follow-up 3 years) - immediate caesarean vs caesarean after failed instrument										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	283	OR 1.67 (0.95 to 2.94)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 1 MID

Table 14 Clinical evidence profile for risk factors for developing pain on defecation

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Mode of birth (follow-up 3 years) - immediate caesarean vs caesarean after failed instrument										
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	283	OR 1.17 (0.45 to 3.04)	LOW	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs

Table 15 Clinical evidence profile for risk factors for developing constipation

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Mode of birth (follow-up 3 years) - immediate caesarean vs caesarean after failed instrument										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	283	OR 1.02 (0.64 to 1.63)	LOW	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs

Table 16 Clinical evidence profile for risk factors for developing haemorrhoids

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Mode of birth (follow-up 3 years) - immediate caesarean vs caesarean after failed instrument										
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	283	OR 1.72 (1.03 to 2.87)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 1 MID

Table 17 Clinical evidence profile for risk factors for developing pain on intercourse

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Mode of birth (follow-up 3 years) - immediate caesarean vs caesarean after failed instrument										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	283	OR 1.01 (0.58 to 1.76)	LOW	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs

Table 18 Clinical evidence profile for risk factors for developing urinary urgency

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Hip circumference - >95cm vs 0-95cm										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	OR 1.6 (1.04 to 2.46)	MODERATE	CRITICAL
Pre-pregnancy urgency UI – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	OR 3.2 (1.04 to 9.85)	MODERATE	CRITICAL
Pre-pregnancy SUI – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 2 (1.4 to 2.86)	HIGH	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**No of patients**	**Relative (95% CI)**		
Pre-pregnancy urinary urgency – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 17.6 (5.05 to 61.34)	HIGH	CRITICAL
Mode of birth – forceps vs vaginal										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	OR 1.8 (1.15 to 2.82)	MODERATE	CRITICAL
Induction of labour with prostaglandins – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	OR 1.6 (1.05 to 2.3)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio; SUI: stress urinary incontinence
1 95% CI crosses 1 MID

Table 19 Clinical evidence profile for risk factors for developing flatus incontinence

Quality assessment								Effect	Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**No of patients**	**Relative (95% CI)**		
Mode of birth (follow-up 3 years) - immediate caesarean vs caesarean after failed instrument										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	283	OR 1.21 (0.7 to 2.09)	LOW	CRITICAL
Pre-pregnancy flatus incontinence- yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 7.3 (3.69 to 14.44)	HIGH	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs

Table 20 Clinical evidence profile for risk factors for developing vaginal laxity

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Pre-pregnancy vaginal laxity- yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 5 (2.51 to 9.96)	HIGH	CRITICAL
Perineal tear- yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	OR 2.4 (1.01 to 5.7)	MODERATE	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**No of patients**	**Relative (95% CI)**		
Poor social support – yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 3.8 (1.58 to 8.99)	HIGH	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 1 MID

Table 21 Clinical evidence profile for risk factors for developing vaginal tightness

Quality assessment								Effect	Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**No of patients**	**Relative (95% CI)**		
Smoker - current vs non										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	OR 2.2 (1.08 to 4.48)	MODERATE	CRITICAL
Waist/height ratio - high vs low										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 0.003 (0.00001 to 0.15)	HIGH	CRITICAL
Pre-pregnancy high sexual dysfunction score - yes vs no										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 1.4 (1.29 to 1.52)	HIGH	CRITICAL
Vigorous exercising - yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	OR 3.1 (1.19 to 8.08)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 1 MID

Table 22 Clinical evidence profile for risk factors for developing dyspareunia

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Smoker - current vs non										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 4.6 (1.41 to 15.01)	HIGH	CRITICAL
Hip circumference - high vs low										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 0.02 (0.001 to 0.42)	HIGH	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Pre-pregnancy dyspareunia - yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	OR 5.71 (1.42 to 22.96)	HIGH	CRITICAL
Pre-pregnancy flatus incontinence - yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 4.2 (1.19 to 14.82)	MODERATE	CRITICAL
Pre-pregnancy faecal urgency - yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 1.7 (1.2 to 2.41)	MODERATE	CRITICAL
Perineal tear - yes vs no										
1 Durnea 2017	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	OR 2.6 (1.03 to 6.56)	MODERATE	CRITICAL
Mode of birth (follow-up 3 years) - immediate caesarean vs caesarean after failed instrument										
1 Bahl 2005	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	283	OR 1.4 (0.69 to 2.84)	LOW	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 23 Clinical evidence profile for risk factors for developing pelvic floor dysfunction during pregnancy

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Age (under 35 versus 35 and over)										
1 Bodner-Adler 2019	Cross-sectional study	Very serious risk of bias[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	200	OR 1.014 [0.955–1.077]	VERY LOW	CRITICAL
BMI (under 25 versus 25 and over)										
1 Bodner-Adler 2019	Cross-sectional study	Very serious risk of bias[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	200	OR 1.073 [1.013–1.143]	LOW	CRITICAL
Smoking (yes versus no)										
1 Bodner-Adler 2019	Cross-sectional study	Very serious risk of bias[1]	no serious inconsistency	no serious indirectness	very serious imprecision[3]	none	200	OR 1.140 [0.461–2.860]	VERY LOW	CRITICAL
Parity (per additional pregancy)										
1 Bodner-Adler 2019	Cross-sectional study	Very serious risk of bias[1]	no serious inconsistency	no serious indirectness	serious[2]	none	200	OR 1.175 [0.905–1.569]	VERY LOW	CRITICAL
Multiple pregnancy - yes vs no										
1 Bodner-Adler 2019	Cross-sectional study	Very serious risk of bias[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	200	OR 2.978 [2.011–4.240]	LOW	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Family history - yes vs no										
1 Bodner-Adler 2019	Cross-sectional study	Very serious risk of bias[1]	no serious inconsistency	no serious indirectness	s no serious imprecision	none	872	OR 2.235 [2.044–4.260]	LOW	CRITICAL

CI: confidence interval; OR: odds ratio
1 High risk of bias in QUIPs quality appraisal
2 95% CI crosses 2 MIDs
3 95% CI crosses 1 MID

Women recruited in an obstetric setting. Data presented as Hazard Ratios

Data presented as hazard ratios (HRs) for the covariate category presented first relative to that presented second. For example, for "Birth-Caesarian" in Table 24 the chance of a women developing SUI at any given time after Caesarian birth is 0.63 times the chance after spontaneous birth.

Table 24 Clinical evidence profile for risk factors for developing SUI

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Operative (follow-up minimum 5 years) - operative vs spontaneous										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 1.07 (0.66 to 1.75)	LOW	CRITICAL
Birth - Caesarean (follow-up minimum 5 years) - caesarean vs spontaneous										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 0.46 (0.32 to 0.67)	HIGH	CRITICAL
Age at first birth - 30-34 (follow-up minimum 5 years) - 30-34 years vs <30 years										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1360	HR 0.8 (0.54 to 1.19)	MODERATE	CRITICAL
Age at first birth - >35 (follow-up minimum 5 years) - >35 years vs <30 years										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 0.96 (0.62 to 1.48)	LOW	CRITICAL
Race - Black (follow-up minimum 5 years) - black vs non black										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 0.86 (0.52 to 1.43)	LOW	CRITICAL
Parity - 2 (follow-up minimum 5 years) - 2 vs 1										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1360	HR 0.82 (0.54 to 1.24)	MODERATE	CRITICAL
Parity - >3 (follow-up minimum 5 years) - >3 vs 1										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 1.13 (0.66 to 1.91)	LOW	CRITICAL
BMI - 25-29 (follow-up minimum 5 years) - 25-29 vs <25										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1360	HR 1.32 (0.88 to 2.00)	MODERATE	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
BMI - >30 (follow-up minimum 5 years) - >30 vs <25										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 1.97 (1.28 to 3.04)	HIGH	CRITICAL
BMI - 25-35 (follow-up up to 9 years) - 25-35 vs <25										
2 Blomquist 2018, Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1143	HR 1.39 (0.91 to 2.14)	MODERATE	CRITICAL
BMI - >35 (follow-up up to 9 years) - >35 vs <25										
1 Blomquist 2018, Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1143	HR 1.94 (1.25 to 3.03)	HIGH	CRITICAL
BMI Genital hiatus size – 3 vs ≤2.5										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1360	HR 1.84 (1.19 to 2.83)	MODERATE	CRITICAL
BMI Genital hiatus size – ≥3.5 vs ≤2.5										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 2.31 (1.57 to 3.40)	HIGH	CRITICAL
Genital hiatus size – 3 vs ≤2.5										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Blomquist 2018, Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1143	HR 1.50 (0.94 to 2.38)	MODERATE	CRITICAL
Genital hiatus size – ≥3.5 vs ≤2.5										
1 Blomquist 2018, Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1143	HR 1.49 (0.93 to 2.41)	MODERATE	CRITICAL

BMI: body mass index; CI: confidence interval; HR: hazard ratio; SUI: stress urinary incontinence
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 25 Clinical evidence profile for risk factors for developing OAB

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Operative (follow-up minimum 5 years) - operative vs spontaneous										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 1.07 (0.63 to 1.82)	LOW	CRITICAL
Birth - Caesarean (follow-up minimum 5 years) - caesarean vs spontaneous										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 0.51 (0.34 to 0.77)	HIGH	CRITICAL
Age at first birth - 30-34 (follow-up minimum 5 years) - 30-34 years vs <30 years										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 1.1 (0.7 to 1.73)	LOW	CRITICAL
Age at first birth - >35 (follow-up minimum 5 years) - >35 years vs <30 years										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 1.2 (0.73 to 1.95)	LOW	CRITICAL
Race - Black (follow-up minimum 5 years) - black vs non black										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 1.08 (0.63 to 1.88)	LOW	CRITICAL
Parity - 2 (follow-up minimum 5 years) - 2 vs 1										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 0.88 (0.57 to 1.35)	LOW	CRITICAL
Parity - >3 (follow-up minimum 5 years) - >3 vs 1										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1360	HR 0.56 (0.29 to 1.09)	MODERATE	CRITICAL
BMI - 25-29 (follow-up minimum 5 years) - 25-29 vs <25										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1360	HR 0.76 (0.49 to 1.2)	MODERATE	CRITICAL
BMI - >30 (follow-up minimum 5 years) - >30 vs <25										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 1.4 (0.72 to 2.74)	LOW	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
BMI - 25-35 (follow-up up to 9 years) - >30 vs <25										
1 Blomquist 2018, Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1143	HR 0.8 (0.49 to 1.29)	LOW	CRITICAL
BMI - >35 (follow-up up to 9 years) - >35 vs <25										
1 Blomquist 2019	prospective cohort	no serious risk of bias	very serious[3]	no serious indirectness	very serious[1]	none	1143	HR 1.12 (0.67 to 1.88)	VERY LOW	CRITICAL
BMI Genital hiatus size – 3 vs ≤2.5										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 1.01 (0.59 to 1.73	LOW	CRITICAL
BMI Genital hiatus size – ≥3.5 vs ≤2.5										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 2.09 (1.41 to 3.11)	HIGH	CRITICAL
Genital hiatus size – 3 vs ≤2.5										
1 Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1143	HR 0.8 (0.44 to 1.47)	LOW	CRITICAL
Genital hiatus size – ≥3.5 vs ≤2.5										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1143	HR 1.54 (0.95 to 2.51)	MODERATE	CRITICAL

BMI: body mass index; CI: confidence interval; HR: hazard ratio; OAB: overactive bladder
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID
3 Individual results varied from suggesting positive association to suggesting a negative association

Table 26 Clinical evidence profile for risk factors for developing AI

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Operative (follow-up minimum 5 years) - operative vs spontaneous										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1360	HR 1.75 (1.14 to 2.69)	MODERATE	CRITICAL
Birth - Caesarean (follow-up minimum 5 years) - caesarean vs spontaneous										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1360	HR 0.72 (0.51 to 1.02)	MODERATE	CRITICAL
Age at first birth - 30-34 (follow-up minimum 5 years) - 30-34 years vs <30 years										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[2]	none	1360	HR 1.03 (0.71 to 1.5)	LOW	CRITICAL
Age at first birth - >35 (follow-up minimum 5 years) - >35 years vs <30 years										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1360	HR 1.36 (0.92 to 2.02)	MODERATE	CRITICAL
Race - Black (follow-up minimum 5 years) - Black vs non Black										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 0.42 (0.24 to 0.74)	HIGH	CRITICAL
Parity - 2 (follow-up minimum 5 years) - 2 vs 1										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1360	HR 1.36 (0.92 to 2.02)	MODERATE	CRITICAL
Parity - >3 (follow-up minimum 5 years) - >3 vs 1										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[2]	none	1360	HR 1.12 (0.64 to 1.93)	LOW	CRITICAL
BMI - 25-29 (follow-up minimum 5 years) - 25-29 vs <25										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1360	HR 1.36 (0.94 to 1.98)	MODERATE	CRITICAL
BMI - >30 (follow-up minimum 5 years) - >30 vs <25										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 2.25 (1.55 to 3.26)	HIGH	CRITICAL
BMI - 25-35 (follow-up up to 9 years) - 25-35 vs <25										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1143	HR 1.28 (0.87 to 1.89)	MODERATE	CRITICAL
BMI - >35 (follow-up up to 9 years) - >35 vs <25										
1 Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1143	HR 1.66 (1.09 to 2.55)	MODERATE	CRITICAL
BMI Genital hiatus size – 3 vs ≤2.5										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1360	HR 1.65 (1.13 to 2.41)	MODERATE	CRITICAL
BMI Genital hiatus size – ≥3.5 vs ≤2.5										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1360	HR 1.60 (1.12 to 2.27)	MODERATE	CRITICAL
Genital hiatus size – 3 vs ≤2.5										
1 Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1143	HR 1.53 (1.03 to 2.28)	MODERATE	CRITICAL
Genital hiatus size – ≥3.5 vs ≤2.5										
1 Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[2]	none	1143	HR 1.09 (0.70 to 1.69)	LOW	CRITICAL

AI: anal incontinence; BMI: body mass index; CI: confidence interval; HR: hazard ratio; OAB: overactive bladder
1 95% CI crosses 1 MID
2 95% CI crosses 2 MIDs

Table 27 Clinical evidence profile for risk factors for developing POP

Quality assessment								Effect	Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**No of patients**	**Relative (95% CI)**		
Birth - Operative (follow-up minimum 5 years) - operative vs spontaneous										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 1.88 (1.27 to 2.78)	HIGH	CRITICAL
Birth - Caesarean (follow-up minimum 5 years) - caesarean vs spontaneous										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 0.27 (0.18 to 0.4)	HIGH	CRITICAL
Age at first birth - 30-34 (follow-up minimum 5 years) - 30-34 years vs <30 years										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 0.94 (0.64 to 1.39)	LOW	CRITICAL
Age at first birth - >35 (follow-up minimum 5 years) - >35 years vs <30 years										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1360	HR 1.34 (0.89 to 2.02)	MODERATE	CRITICAL
Race - Black (follow-up minimum 5 years) - Black vs non Black										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 0.99 (0.59 to 1.65)	LOW	CRITICAL
Parity - 2 (follow-up minimum 5 years) - 2 vs 1										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1360	HR 2.08 (1.32 to 3.26)	HIGH	CRITICAL
Parity - >3 (follow-up minimum 5 years) - >3 vs 1										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1360	HR 2.08 (1.2 to 3.59)	MODERATE	CRITICAL
BMI - 25-29 (follow-up minimum 5 years) - 25-29 vs <25										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1360	HR 1.11 (0.76 to 1.6)	LOW	CRITICAL
BMI - >30 (follow-up minimum 5 years) - >30 vs <25										
1 Blomquist 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1360	HR 1.51 (1 to 2.27)	MODERATE	CRITICAL
BMI - 25-35 (follow-up up to 9 years) - 25-35 vs <25										
1 Blomquist 2018, Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1143	HR 0.9 (0.61 to 1.34)	LOW	CRITICAL
BMI - >35 (follow-up up to 9 years) - >35 vs <25										
1 Blomquist 2018, Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1143	HR 0.93 (0.61 to 1.42)	LOW	CRITICAL
Genital hiatus size –3 vs ≤2.5										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Blomquist 2018, Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1143	HR 3.06 (1.70 to 5.53)	HIGH	CRITICAL
Genital hiatus size – ≥3.5 vs ≤2.5										
1 Blomquist 2018, Blomquist 2019	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1143	HR 8.01 (4.58 to 14.01)	HIGH	CRITICAL

BMI: body mass index; CI: confidence interval; HR: hazard ratio; POP: pelvic organ prolapse
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Women recruited in an obstetric setting. Data presented as Risk Ratios

Data presented as risk ratios (RRs) for the covariate category presented first relative to that presented second. For example, for "Birth - Forceps" in Table 28 the risk of developing urinary frequency after forceps delivery is 1.9 times higher than that after Caesarian birth.

Table 28 Clinical evidence profile for risk factors for developing Urinary frequency

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 1.1 (0.64 to 1.89)	LOW	CRITICAL

Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 1.3 (0.7 to 2.41)	LOW	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	RR 1.9 (0.98 to 3.68)	MODERATE	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 29 Clinical evidence profile for risk factors for developing Nocturina

Quality assessment								Effect	Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**No of patients**	**Relative (95% CI)**		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 1.3 (0.51 to 3.31)	LOW	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 1 (0.36 to 2.78)	LOW	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 2 (0.75 to 5.33)	LOW	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 2 MIDs

Table 30 Clinical evidence profile for risk factors for developing urinary urgency

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 1.6 (1.1 to 2.33)	MODERATE	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 1.3 (0.86 to 1.97)	MODERATE	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 1.9 (1.21 to 2.98)	MODERATE	CRITICAL

CI: confidence interval; RR: risk ratio

1 95% CI crosses 1 MID

Table 31 Clinical evidence profile for risk factors for developing urinary urgency incontinence

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 1.8 (1.2 to 2.7)	MODERATE	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 1.5 (0.97 to 2.32)	MODERATE	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 1.9 (1.16 to 3.11)	MODERATE	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 1 MID

Table 32 Clinical evidence profile for risk factors for developing SUI

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	RR 1.9 (1.36 to 2.65)	HIGH	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 1.6 (1.09 to 2.35)	MODERATE	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	RR 2 (1.3 to 3.08)	HIGH	CRITICAL

CI: confidence interval; RR: risk ratio; SUI: stress urinary incontinence
1 95% CI crosses 1 MID

Table 33 Clinical evidence profile for risk factors for developing Flatus incontinence

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 1.4 (0.97 to 2.02)	MODERATE	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[2]	none	872	RR 1.1 (0.69 to 1.75)	LOW	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 1.7 (1.06 to 2.73)	MODERATE	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 1 MID
2 95% CI crosses 2 MIDs

Table 34 Clinical evidence profile for risk factors for developing Faecal incontinence

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 0.9 (0.4 to 2.02)	LOW	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 1.5 (0.71 to 3.17)	LOW	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 1.7 (0.69 to 4.19)	LOW	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 2 MIDs

Table 35 Clinical evidence profile for risk factors for developing obstructed defecation

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 1.3 (0.55 to 3.07)	LOW	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 1.4 (0.52 to 3.77)	LOW	CRITICAL

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 0.5 (0.11 to 2.27)	LOW	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 2 MIDs

Table 36 Clinical evidence profile for risk factors for developing prolapse sensation

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	RR 4.4 (1.62 to 11.95)	HIGH	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	872	RR 2.8 (0.95 to 8.25)	MODERATE	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	RR 4.9 (1.68 to 14.29)	HIGH	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 1 MID

Table 37 Clinical evidence profile for risk factors for developing vaginal laxity

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	RR 4.5 (2.45 to 8.27)	HIGH	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	RR 3.7 (1.98 to 6.91)	HIGH	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	872	RR 4.7 (2.41 to 9.17)	HIGH	CRITICAL

CI: confidence interval; RR: risk ratio

Table 38 Clinical evidence profile for risk factors for developing vaginal tightness

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 0.9 (0.58 to 1.4)	LOW	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 1.2 (0.75 to 1.92)	LOW	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 0.8 (0.46 to 1.39)	LOW	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 2 MIDs

Table 39 Clinical evidence profile for risk factors for developing Dyspareunia

Quality assessment								Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients	Relative (95% CI)		
Birth - Spontaneous (follow-up 1 year) - spontaneous vs caesarean section										

1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 0.9 (0.63 to 1.29)	LOW	CRITICAL
Birth - Vacuum (follow-up 1 year) - vacuum vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	872	RR 0.9 (0.63 to 1.29)	LOW	CRITICAL
Birth - Forceps (follow-up 1 year) - forceps vs caesarean section										
1 Durnea 2014	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	872	RR 1.3 (0.84 to 2.01)	MODERATE	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Women recruited in a non-obstetric setting. Data presented as Odds Ratios

Table 40 Clinical evidence profile for risk factors for developing OAB

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (5 yr interval) – Age										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	270	OR 1.4 (1.1 to 1.78)	LOW	CRITICAL
BMI (<25kg/m2) - BMI (>25kg/m2)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	900	OR 1.44 (0.93 to 2.23)	MODERATE	CRITICAL
BMI – BMI										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	270	OR 1.1 (1 to 1.21)	MODERATE	CRITICAL
Chronic cough (no) - Chronic cough (yes)										
1 Ghandour 2007	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[3]	none	900	OR 1.15 (0.64 to 2.07)	LOW	CRITICAL
Smoking (no) - Smoking (yes)										
1 Ghandour 2007	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	900	OR 1.22 (0.81 to 1.84)	MODERATE	CRITICAL
Non-obese - Obese										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Lawrence 2007	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	3962	OR 2.93 (2.33 to 3.68)	HIGH	CRITICAL

CI: confidence interval; OAB: overactive bladder; OR: odds ratio
1 Evidence downgraded by 1 level due the majority of the population already having POP.
2 95% CI crosses 1 MID
3 95% CI crosses 2 MIDs

Table 41 Clinical evidence profile for risk factors for developing UI

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (30-39 years) - Age (40-49 years)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 1.85 (1.19 to 2.88)	MODERATE	CRITICAL
Age (30-39 years) - Age (50-59 years)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1590	OR 3.4 (2.1 to 5.5)	HIGH	CRITICAL
BMI (<25kg/m2) - BMI (>25kg/m2)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	900	OR 2.41 (1.47 to 3.95)	HIGH	CRITICAL
Chronic cough (no) - Chronic cough (yes)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	900	OR 1.25 (0.67 to 2.33)	LOW	CRITICAL
Parity (two children of less) - Parity (three children or more)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	None	1590	OR 1.99 (1.31 to 3.02)	HIGH	CRITICAL
Smoking (no) - Smoking (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	900	OR 0.93 (0.59 to 1.47)	LOW	CRITICAL
Vitamin D (per 5 unit increase) - Vitamin D - women aged 20 years or older										
1 Badalian 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	2197	OR 0.94 (0.85 to 1.04)	HIGH	CRITICAL
Vitamin D (per 5 unit increase) - Vitamin D - women aged 50 years or older										
1 Badalian 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	2197	OR 0.92 (0.81 to 1.04)	HIGH	CRITICAL
Vitamin D (less than 30ng/ml) - Vitamin D (more than 30 ng/ml) - women aged 20 years or older										
1 Badalian 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	2197	OR 0.7 (0.45 to 1.09)	MODERATE	CRITICAL
Vitamin D (less than 30ng/ml) - Vitamin D (more than 30 ng/ml) - women aged 50 years or older										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Badalian 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	2197	OR 0.55 (0.34 to 0.89)	MODERATE	CRITICAL
Wealth (highest quintile) - Wealth (fourth quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 1.62 (0.88 to 2.98)	MODERATE	CRITICAL
Wealth (highest quintile) - Wealth (third quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1590	OR 2.11 (1.1 to 4.05)	HIGH	CRITICAL
Wealth (highest quintile) - Wealth (second quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 2.24 (1.15 to 4.36)	MODERATE	CRITICAL
Wealth (highest quintile) - Wealth (lowest quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 2.57 (1.24 to 5.33)	MODERATE	CRITICAL
Years of education (secondary and above) - Years of education (primary)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 1.55 (0.92 to 2.61)	MODERATE	CRITICAL
Years of education (secondary and above) - Years of education (illiterate)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 1.06 (0.61 to 1.84)	LOW	CRITICAL

CI: confidence interval; OR: odds ratio; UI: urinary incontinence
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 42 Clinical evidence profile for risk factors for developing urge UI

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (5 year interval) - Age										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	serious[3]	none	270	OR 1.4 (1.1 to 1.78)	LOW	CRITICAL
Age (per 10 years) - Age (per 10 years) - White women										
1 Huang 2006	cross-sectional	serious[2]	no serious inconsistency	no serious indirectness	no serious imprecision	none	1348	OR 1.79 (1.34 to 2.39)	MODERATE	CRITICAL
Birth of infant weighting less than 4000g - Birth of infant weighing more than 4000g - White women										
1 Huang 2006	cross-sectional	serious[2]	no serious inconsistency	no serious indirectness	no serious imprecision	none	1348	OR 3.06 (1.67 to 5.61)	MODERATE	CRITICAL
BMI (<25kg/m2) - BMI (>25kg/m2) - White women										
1 Huang 2006	cross-sectional	serious[2]	no serious inconsistency	no serious indirectness	serious[2]	none	1348	OR 1.71 (1.04 to 2.81)	LOW	CRITICAL
BMI (<25kg/m2) - BMI (>25kg/m2) - Asian women										
1 Huang 2006	cross-sectional	serious[2]	no serious inconsistency	no serious indirectness	serious[3]	none	1348	OR 3.35 (1.22 to 9.2)	LOW	CRITICAL
BMI (lowest quartile) - BMI (highest quartile)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	297	OR 2.2 (1 to 4.84)	MODERATE	CRITICAL

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
BMI – BMI										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	270	OR 1.1 (1 to 1.21)	MODERATE	CRITICAL
Exercise (more than once a week) - Exercise (less than once a week)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	297	OR 0.6 (0.4 to 0.9)	MODERATE	CRITICAL
Oral oestrogen use (no) - Oral oestrogen use (yes) - White women										
1 Huang 2006	cross-sectional	serious[2]	no serious inconsistency	no serious indirectness	serious[3]	none	1348	OR 1.82 (1.12 to 2.96)	LOW	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio; UI: urinary incontinence
1 Evidence downgraded by 1 level due the majority of the population already having POP
2 Evidence downgraded by 1 level due poor reporting of confounders and restricted (Asian and White only) race included
3 95% CI crosses 1 MID

Table 43 Clinical evidence profile for risk factors for developing SUI

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (5 yr interval) - Age										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	270	OR 1.3 (1 to 1.69)	LOW	CRITICAL

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
BMI (<25kg/m2) - BMI (>25kg/m2)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	900	OR 1.28 (0.82 to 2)	MODERATE	CRITICAL
BMI (<25kg/m2) - BMI (>25kg/m2) - White women										
1 Huang 2006	cross-sectional	serious[3]	no serious inconsistency	no serious indirectness	serious[2]	none	1348	OR 1.84 (1.21 to 2.8)	LOW	CRITICAL
BMI (<25kg/m2) - BMI (>25kg/m2) - Asian women										
1 Huang 2006	cross-sectional	serious[3]	no serious inconsistency	no serious indirectness	no serious imprecision	none	1348	OR 5.1 (1.82 to 14.29)	MODERATE	CRITICAL
BMI – BMI										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	270	OR 1.1 (1 to 1.21)	MODERATE	CRITICAL
Chronic cough (no) - Chronic cough (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[4]	none	900	OR 0.71 (0.38 to 1.33)	LOW	CRITICAL
Hysterectomy (no) - Hysterectomy (yes) - Asian women										
1 Huang 2006	cross-sectional	serious[3]	no serious inconsistency	no serious indirectness	serious[2]	none	1348	OR 2.79 (1.03 to 7.56)	LOW	CRITICAL
Fair health - Poor health - White women										
1 Huang 2006	cross-sectional	serious[3]	no serious inconsistency	no serious indirectness	no serious imprecision	none	1348	OR 2.6 (1.43 to 4.73)	MODERATE	CRITICAL

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Frequent UTIs (no) - Frequent UTIs (yes) - White women										
1 Huang 2006	cross-sectional	serious[3]	no serious inconsistency	no serious indirectness	serious[2]	none	1348	OR 1.8 (1.05 to 3.09)	LOW	CRITICAL
Non-obese – Obese										
1 Lawrence 2007	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	3962	OR 2.62 (2.09 to 3.28)	HIGH	CRITICAL
Smoking (no) - Smoking (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[4]	none	900	OR 1 (0.66 to 1.52)	LOW	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio; SUI:stress urinary incontinence
1 Evidence downgraded by 1 level due the majority of the population already having POP
2 95% CI crosses 1 MID
3 Evidence downgraded by 1 level due poor reporting of confounders and restricted (Asian and White only) race included
4 95% CI crosses 2 MIDs

Table 44 Clinical evidence profile for risk factors for developing urinary frequency / nocturia

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
BMI (<25kg/m2) - BMI (>25kg/m2)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	900	OR 1.91 (0.24 to 15.2)	LOW	CRITICAL

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Chronic cough (no) - Chronic cough (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	900	OR 0.89 (0.5 to 1.58)	LOW	CRITICAL
Smoking (no) - Smoking (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	900	OR 0.96 (0.64 to 1.44)	LOW	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs

Table 45 Clinical evidence profile for risk factors for developing difficulty emptying the bladder

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (lowest quartile) - Age (highest quartile)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	297	OR 3.3 (0.9 to 12.1)	MODERATE	CRITICAL
BMI (<25kg/m2) - BMI (>25kg/m2)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	900	OR 1.39 (0.89 to 2.17)	MODERATE	CRITICAL
Chronic cough (no) - Chronic cough (yes)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	900	OR 1.56 (0.87 to 2.8)	MODERATE	CRITICAL
Coffee drinking (no) - Coffee drinking (yes)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	297	OR 8.6 (1.4 to 52.83)	HIGH	CRITICAL
Smoking (no) - Smoking (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	900	OR 1.27 (0.83 to 1.94)	MODERATE	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio
1 95% CI crosses 1 MID

Table 46 Clinical evidence profile for risk factors for developing intermittent urinary stream

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (lowest quartile) - Age (highest quartile)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	297	OR 4 (1.6 to 10)	HIGH	CRITICAL
BMI (lowest quartile) - BMI (highest quartile)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	297	OR 0.8 (0.3 to 2.13)	LOW	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio

1 95% CI crosses 2 MIDs

Table 47 Clinical evidence profile for risk factors for developing weak urinary stream

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (lowest quartile) - Age (highest quartile)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	297	OR 6.4 (2 to 20.48)	HIGH	CRITICAL
Coffee drinking (no) - Coffee drinking (yes)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	297	OR 5.3 (1.5 to 18.73)	HIGH	CRITICAL

CI: confidence interval; OR: odds ratio

Table 48 Clinical evidence profile for risk factors for developing feeling of incomplete bladder movements

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (lowest quartile) - Age (highest quartile)										
1 Bradely 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	297	OR 3.4 (1.3 to 8.89)	HIGH	CRITICAL

CI: confidence interval; OR: odds ratio

Table 49 Clinical evidence profile for risk factors for developing dyspareunia

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
BMI (<25kg/m2) - BMI (>25kg/m2)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	900	OR 2.52 (1.7 to 3.74)	HIGH	CRITICAL
Chronic cough (no) - Chronic cough (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	900	OR 0.85 (0.5 to 1.44)	LOW	CRITICAL
Smoking (no) - Smoking (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	900	OR 0.85 (0.59 to 1.22)	MODERATE	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 50 Clinical evidence profile for risk factors for developing pelvic floor damage

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age - Age										
1 Amselem 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	596	OR 1.05 (1.03 to 1.07)	HIGH	CRITICAL
Constipation (no) - Constipation (yes)										
1 Amselem 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	596	OR 2.35 (1.27 to 4.35)	HIGH	CRITICAL
Obstetric trauma (no) - Obstetric trauma (yes)										
1 Amselem 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	596	OR 1.37 (0.72 to 2.61)	LOW	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs

Table 51 Clinical evidence profile for risk factors for developing anal incontinence

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (30-39 years) - Age (40-49 years)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 0.73 (0.29 to 1.84)	LOW	CRITICAL
Age (30-39 years) - Age (50-59 years)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 1.38 (0.67 to 2.84)	LOW	CRITICAL
Age (per 10 years) - Age (per 10 years) - White women										
1 Huang 2006	cross-sectional	serious[2]	no serious inconsistency	no serious indirectness	no serious imprecision	none	1348	OR 1.87 (1.26 to 2.77)	MODERATE	CRITICAL
Age (per 10 years) - Age (per 10 years) - Asian women										
1 Huang 2006	cross-sectional	serious[2]	no serious inconsistency	no serious indirectness	serious[3]	none	1348	OR 1.36 (1.14 to 1.62)	LOW	CRITICAL
BMI (<25kg/m2) - BMI (>25kg/m2)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	900	OR 2.29 (1.51 to 3.47)	HIGH	CRITICAL
Chronic cough (no) - Chronic cough (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	900	OR 1.61 (0.91 to 2.85)	MODERATE	CRITICAL
Exercise (at least weekly) - Exercise (less than weekly)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	297	OR 0.3 (0.2 to 0.45)	HIGH	CRITICAL
Frequent constipation (no) - Frequent constipation (yes) - White women										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Huang 2006	cross-sectional	serious[2]	no serious inconsistency	no serious indirectness	no serious imprecision	none	1348	OR 2.09 (1.39 to 3.14)	MODERATE	CRITICAL
History of third- or forth-degree tears (no) - Asian women - History of third- or forth-degree tears (yes)										
1 Huang 2006	cross-sectional	serious[2]	no serious inconsistency	no serious indirectness	serious[3]	none	1348	OR 2.41 (1.14 to 5.09)	LOW	CRITICAL
Non-obese - Obese										
1 Lawrence 2007	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	3962	OR 1.45 (1.2 to 1.75)	MODERATE	CRITICAL
Parity (two children of less) - Parity (three children or more)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 0.78 (0.35 to 1.74)	LOW	CRITICAL
Smoking (no) - Smoking (yes)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	297	OR 2.90 (0.70 to 12.01)	LOW	CRITICAL
Smoking (no) - Smoking (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	900	OR 1.58 (1.07 to 2.40)	MODERATE	CRITICAL
Wealth (highest quintile) - Wealth (fourth quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 1.96 (0.46 to 8.35)	LOW	CRITICAL

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Wealth (highest quintile) - Wealth (third quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 2.84 (0.6 to 13.44)	LOW	CRITICAL
Wealth (highest quintile) - Wealth (second quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	1590	OR 4.22 (0.87 to 20.47)	MODERATE	CRITICAL
Wealth (highest quintile) - Wealth (lowest quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	1590	OR 5.74 (1.14 to 28.9)	MODERATE	CRITICAL
Years of education (secondary and above) - Years of education (primary)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 2.6 (0.73 to 9.26)	LOW	CRITICAL
Years of education (secondary and above) - Years of education (illiterate)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 1.65 (0.4 to 6.81)	LOW	CRITICAL
Age (40 years) - Age (60 years)										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	1336	OR 2 (1.2 to 3.33)	MODERATE	CRITICAL
Anal sphincter rupture (no) - Anal sphincter rupture (yes)										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1336	OR 7.7 (2.1 to 28.23)	HIGH	CRITICAL
Chronic bronchitis (no) - Chronic bronchitis (yes)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	1336	OR 6.5 (1.1 to 38.41)	MODERATE	CRITICAL
No feeling of pelvic heaviness - Feeling of pelvic heaviness										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[3]	none	1336	OR 2 (1 to 4)	MODERATE	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs
2 Evidence downgraded by 1 level due poor reporting of confounders and restricted (Asian and White only) race included
3 95% CI crosses 1 MID

Table 52 Clinical evidence profile for risk factors for developing loose stool incontinence

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (40 y rs) - Age (60 years)										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1336	OR 2.2 (1.3 to 3.72)	HIGH	CRITICAL
No feeling of pelvic heaviness - Feeling of pelvic heaviness										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1336	OR 5 (3 to 8.33)	HIGH	CRITICAL
Obesity<30 kg/m2 - Obesity >30kg/m2										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1336	OR 3 (1 to 9)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio

1 95% CI crosses 1 MID

Table 53 Clinical evidence profile for risk factors for developing obstructed defecation

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
BMI (<25kg/m2) - BMI (>25kg/m2)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	900	OR 1.59 (1.05 to 2.41)	MODERATE	CRITICAL
Chronic cough (no) - Chronic cough (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	900	OR 1 (0.58 to 1.72)	LOW	CRITICAL
Smoking (no) - Smoking (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	900	OR 1.13 (0.77 to 1.66)	LOW	CRITICAL
Age (lowest quartile) - Age (highest quartile)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	297	OR 2.2 (1 to 4.84)	MODERATE	CRITICAL
Anal sphincter rupture (no) - Anal sphincter rupture (yes)										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1336	OR 3 (1.2 to 7.5)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Table 54 Clinical evidence profile for risk factors for developing incomplete bowel movements

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (lowest quartile) - Age (highest quartile)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	297	OR 2.7 (1.2 to 6.07)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 1 MID

Table 55 Clinical evidence profile for risk factors for developing POP

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (15 to 24 years) - Age (25 to 34 years)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	395	OR 0.68 (0.26 to 1.78)	LOW	CRITICAL
Age (15 to 24 years) - Age (35-49 years)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	395	OR 0.56 (0.18 to 1.74)	LOW	CRITICAL
Age (15 to 24 years) - Age (50+ years)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	395	OR 0.51 (0.15 to 1.73)	LOW	CRITICAL

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (30-39 years) - Age (40-49 years)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 1.26 (0.84 to 1.89)	MODERATE	CRITICAL
Age (30-39 years) - Age (50-59 years)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 1.45 (0.92 to 2.29)	MODERATE	CRITICAL
Age at last birth (<20years) - Age at last birth (20-25years)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	395	OR 1.02 (0.27 to 3.85)	LOW	CRITICAL
Age at last birth (<20years) - Age at last birth (25+years)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	395	OR 2.03 (0.41 to 10.05)	LOW	CRITICAL
Anal sphincter rupture (no) - Anal sphincter rupture (yes)										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1336	OR 3.1 (1.2 to 8.01)	MODERATE	CRITICAL
BMI										
1 Bradley 2008	prospective cohort	serious[3]	no serious inconsistency	no serious indirectness	serious[2]	none	270	OR 0.86 (0.76 to 0.97)	LOW	CRITICAL
BMI (<25kg/m2) - BMI (>25kg/m2)										
1	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	377	OR 1.05 (0.60 to 1.84)	LOW	CRITICAL

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
De Araujo 2009										
BMI (<25kg/m2) - BMI (>25kg/m2)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	900	OR 1.53 (0.91 to 2.57)	MODERATE	CRITICAL
Chronic cough (no) - Chronic cough (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	900	OR 0.78 (0.39 to 1.56)	LOW	CRITICAL
Having had more than two children - Having had more than two children										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1336	OR 1.5 (1 to 2.25)	MODERATE	CRITICAL
Hours of carrying heavy objects/day (<=1) - Hours carrying heavy obejcts/day (2-4)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	395	OR 1.71 (0.81 to 3.61)	MODERATE	CRITICAL
Hours of carrying heavy objects/day (<=1) - Hours carrying heavy obejcts/day (5+)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	395	OR 2.13 (1.03 to 4.4)	MODERATE	CRITICAL
Kebele (urban) - Kebele (highland rural)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	395	OR 2.3 (1.14 to 4.64)	MODERATE	CRITICAL
Kebele (urban) - Kebele (lowland rural)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	395	OR 0.54 (0.27 to 1.08)	MODERATE	CRITICAL
Maximum pressure - Maximum pressure										
1 De Araujo 2009	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	377	OR 0.99 (0.97 to 1.01)	HIGH	CRITICAL
Number of births (<=1) - Number of births (2 to 4)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	395	OR 1.06 (0.29 to 3.87)	LOW	CRITICAL
Number of births (<=1) - Number of births (5+)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	395	OR 1.96 (0.46 to 8.35)	LOW	CRITICAL
No vaginal birth - At least one vaginal birth										
1 De Araujo 2009	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	377	OR 11.26 (5.69 to 22.28)	HIGH	CRITICAL
Parity (two children or less) - Parity (three children or more)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 1.48 (1.02 to 2.15)	MODERATE	CRITICAL
Prolonged labour (no, >= 2 days) - Prolonged labour (yes, >=2days)										
1 Megabiaw 2013	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	395	OR 1.77 (1.01 to 3.1)	MODERATE	CRITICAL
Pelvic heaviness										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1336	OR 1.8 (1 to 3.24)	MODERATE	CRITICAL
Resting pressure - Resting pressure										
1 De Araujo 2009	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	377	OR 0.99 (0.97 to 1.01)	HIGH	CRITICAL
Smoking (no) - Smoking (yes)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	297	OR 5.40 (1.00 to 29.16)	MODERATE	CRITICAL
Smoking (no) - Smoking (yes)										
1 Ghandour 2017	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	900	OR 1.41 (0.89 to 2.23)	MODERATE	CRITICAL
Wealth (highest quintile) - Wealth (fourth quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 1.36 (0.76 to 2.43)	LOW	CRITICAL
Wealth (highest quintile) - Wealth (third quintile)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1590	OR 2.46 (1.35 to 4.48)	HIGH	CRITICAL
Wealth (highest quintile) - Wealth (second quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 2.22 (1.19 to 4.14)	MODERATE	CRITICAL
Wealth (highest quintile) - Wealth (lowest quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	1590	OR 2.17 (1.13 to 4.17)	MODERATE	CRITICAL
Years of education (secondary and above) - Years of education (primary)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 0.99 (0.61 to 1.61)	LOW	CRITICAL
Years of education (secondary and above) - Years of education (illiterate)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	1590	OR 0.87 (0.55 to 1.38)	LOW	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio; POP: pelvic organ prolapse
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID
3 Evidence downgraded by 1 level due the majority of the population already having POP

Table 56 Clinical evidence profile for risk factors for developing genital bulge

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		

Having had more than two children - Having had more than two children										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1336	OR 1.9 (1 to 3.61)	MODERATE	CRITICAL
Parity – Parity										
1 Uustal 2004	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1336	OR 7.4 (1 to 54.76)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio
1 95% CI crosses 1 MID

Table 57 Clinical evidence profile for risk factors for developing POP (measured as Ba point >0)

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**		**Relative (95% CI)**		
BMI <25kg/m2 - BMI >25kg/m2										
1 De Araujo 2009	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	377	OR 1.33 (0.79 to 2.24)	LOW	CRITICAL
Maximum pressure - Maximum pressure										
1 De Araujo 2009	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	377	OR 0.99 (0.97 to 1.01)	HIGH	CRITICAL
No vaginal birth - Vaginal birth										
1 De Araujo 2009	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	377	OR 9.4 (2.81 to 31.44)	HIGH	CRITICAL
Resting pressure - Resting pressure										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 De Araujo 2009	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	377	OR 0.96 (0.94 to 0.98)	HIGH	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio; POP: pelvic organ prolapse
1 95% CI crosses 2 MIDs

Table 58 Clinical evidence profile for risk factors for developing any PFD symptom

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age (per decade) - Age										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	7924	OR 1.2 (1.11 to 1.3)	MODERATE	CRITICAL
Age (30-39 years) - Age (40-49 years)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1590	OR 1.46 (1.02 to 2.09)	MODERATE	CRITICAL
Age (30-39 years) - Age (50-59 years)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1590	OR 2.39 (1.59 to 3.59)	HIGH	CRITICAL
BMI (<25kg/m2) - BMI (25.0-29.9 kg/m2)										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	7924	OR 1.3 (1.1 to 1.54)	MODERATE	CRITICAL
BMI (<25kg/m2) - BMI (>30.0 kg/m2)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	7924	OR 1.6 (1.3 to 1.97)	HIGH	CRITICAL
Education (more than highschool) - Education (less than highschool)										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	7924	OR 0.9 (0.81 to 1)	HIGH	CRITICAL
Hysterectomy (no) - Hysterectomy (yes)										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	7924	OR 1.5 (1.3 to 1.73)	HIGH	CRITICAL
Mode of birth (never pregnant) - Vaginal birth only										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	7924	OR 1.1 (0.8 to 1.51)	MODERATE	CRITICAL
Mode of birth (never pregnant) - Caesarean birth only										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	7924	OR 0.8 (0.6 to 1.07)	MODERATE	CRITICAL
Non-obese - Obese										
1 Lawrence 2007	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	3962	OR 1.83 (1.54 to 2.17)	HIGH	CRITICAL
Parity (0) - Parity (1)										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	7924	OR 1.6 (1.2 to 2.13)	MODERATE	CRITICAL
Parity (0) - Parity (2)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	7924	OR 1.5 (1.1 to 2.05)	MODERATE	CRITICAL
Parity (0) - Parity (3)										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	7924	OR 1.8 (1.3 to 2.49)	HIGH	CRITICAL
Parity (0) - Parity (4 or greater)										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	7924	OR 2 (1.5 to 2.67)	HIGH	CRITICAL
Parity (two children of less) - Parity (three children or more)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1590	OR 1.61 (1.14 to 2.27)	MODERATE	CRITICAL
Poverty income ratio (high) - Poverty income ratio (low)										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	7924	OR 0.9 (0.81 to 1)	HIGH	CRITICAL
Race (Non-Hispanic white) - Race (all other racial and ethnic groups)										
1 Wu 2014	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	7924	OR 1.3 (1.1 to 1.54)	MODERATE	CRITICAL
Vitamin D (per 5 unit increase) - Vitamin D - women aged 20 years or older										
1 Badalian 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	2197	OR 0.94 (0.88 to 1)	HIGH	CRITICAL
Vitamin D (per 5 unit increase) - Vitamin D - women aged 50 years or older										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Badalian 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	2197	OR 0.92 (0.85 to 1)	HIGH	CRITICAL
Vitamin D (less than 30ng/ml) - Vitamin D (more than 30 ng/ml) - women aged 20 years or older										
1 Badalian 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	2197	OR 0.75 (0.54 to 1.04)	MODERATE	CRITICAL
Vitamin D (less than 30ng/ml) - Vitamin D (more than 30 ng/ml) - women aged 50 years or older										
1 Badalian 2010	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	2197	OR 0.79 (0.56 to 1.11)	MODERATE	CRITICAL
Wealth (highest quintile) - Wealth (fourth quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1590	OR 1.63 (0.97 to 2.74)	MODERATE	CRITICAL
Wealth (highest quintile) - Wealth (third quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1590	OR 3.05 (1.72 to 5.41)	HIGH	CRITICAL
Wealth (highest quintile) - Wealth (second quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1590	OR 2.49 (1.39 to 4.46)	HIGH	CRITICAL
Wealth (highest quintile) - Wealth (lowest quintile)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	1590	OR 3.13 (1.68 to 5.83)	HIGH	CRITICAL
Years of education (secondary and above) - Years of education (primary)										

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	1590	OR 1.34 (0.85 to 2.11)	MODERATE	CRITICAL
Years of education (secondary and above) - Years of education (illiterate)										
1 Islam 2016	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[2]	none	1590	OR 1.01 (0.63 to 1.62)	LOW	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio; PFD: pelvic floor dysfunction
1 95% CI crosses 1 MID
2 95% CI crosses 2 MIDs

Table 59 Clinical evidence profile for risk factors for developing urgency

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
BMI (lowest quartile) - BMI (highest quartile)										
1 Bradley 2005	cross-sectional	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[1]	none	297	OR 1.8 (0.8 to 4.05)	MODERATE	CRITICAL

BMI: body mass index; CI: confidence interval; OR: odds ratio
1 95% CI crosses 1 MID

Table 60 Clinical evidence profile for risk factors for developing obstructive bladder symptoms

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age - Age										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	270	OR 1.8 (1.3 to 2.49)	MODERATE	CRITICAL
Coffee drinking (no) - Coffee drinking (yes)										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	270	OR 4 (1.3 to 12.31)	MODERATE	CRITICAL

CI: confidence interval; OR: odds ratio.
1 Evidence downgraded by 1 level due the majority of the population already having POP

Table 61 Clinical evidence profile for risk factors for developing obstructive bowel symptoms

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age - Age										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	270	OR 1.3 (1 to 1.69)	LOW	CRITICAL

CI: confidence interval; OR: odds ratio
1 Evidence downgraded by 1 level due the majority of the population already having POP
2 95% CI crosses 1 MID

Table 62 Clinical evidence profile for risk factors for developing bowel pain symptoms

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Age - Age										
1 Bradley 2008	prospective cohort	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	270	OR 1.8 (1.1 to 2.95)	LOW	CRITICAL

CI: confidence interval; OR: odds ratio.
1 Evidence downgraded by 1 level due the majority of the population already having POP and low study attrition
2 95% CI crosses 1 MID

Women recruited in a non-obstetric setting. Data presented as Risk Ratios

Table 63 Clinical evidence profile for risk factors for developing double incontinence

Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
Dependence on instrumental activities on daily living (0) - Dependence on instrumental activities on daily living (1-2)										
1 Yuaso 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	865	RR 1.85 (0.79 to 4.33)	LOW	CRITICAL
Dependence on instrumental activities on daily living (0) - Dependence on instrumental activities on daily living (3+)										
1 Yuaso 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	865	RR 2.46 (0.88 to 6.88)	MODERATE	CRITICAL
Dependence on basic activities on daily living (0) - Dependence on basic activities on daily living (1-2)										

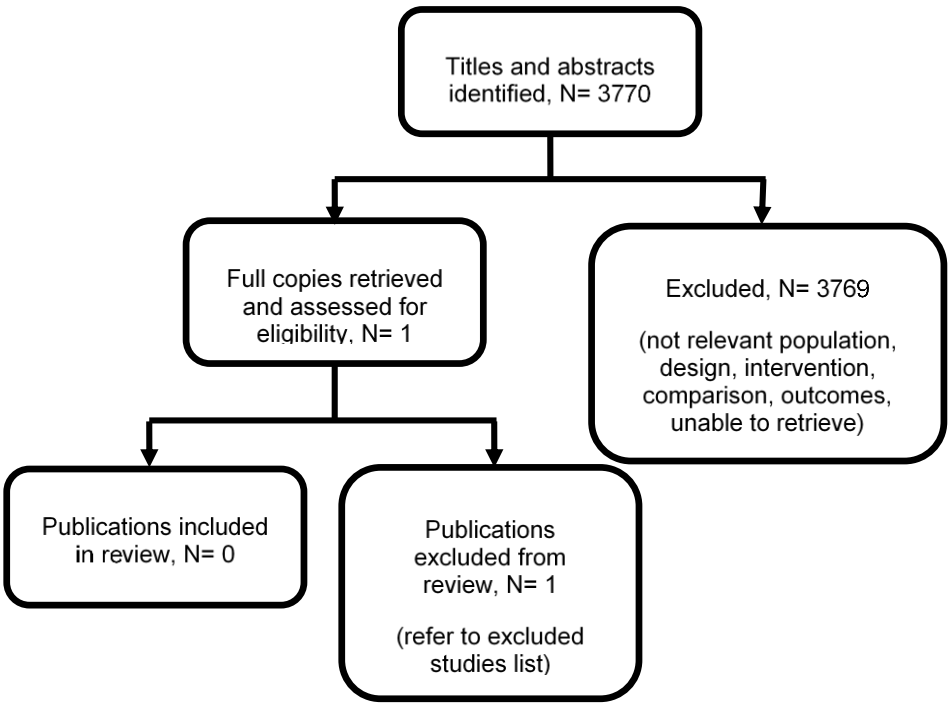
Quality assessment							No of patients	Effect	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		Relative (95% CI)		
1 Yuaso 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	865	RR 1.29 (0.6 to 2.77)	LOW	CRITICAL
Dependence on basic activities on daily living (0) - Dependence on basic activities on daily living (3+)										
1 Yuaso 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	865	RR 1.32 (0.4 to 4.36)	LOW	CRITICAL
Polypharmacy (no medicine) - Polypharmacy (1-3 medicines)										
1 Yuaso 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	865	RR 0.67 (0.21 to 2.14)	LOW	CRITICAL
Polypharmacy (no medicine) - Polypharmacy (4+ medicines)										
1 Yuaso 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	865	RR 1.42 (0.4 to 5.04)	LOW	CRITICAL
Falls (never) - Falls (more than 1 year ago)										
1 Yuaso 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious[1]	none	865	RR 1.04 (0.41 to 2.64)	LOW	CRITICAL
Falls (never) - Falls (during the last year)										
1 Yuaso 2018	prospective cohort	no serious risk of bias	no serious inconsistency	no serious indirectness	serious[2]	none	865	RR 2.22 (0.97 to 5.08)	MODERATE	CRITICAL

CI: confidence interval; RR: risk ratio
1 95% CI crosses 2 MIDs
2 95% CI crosses 1 MID

Appendix G – Economic evidence study selection

Economic evidence study selection for review question: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

Figure 2: Study selection flow chart



Appendix H – Economic evidence tables

Economic evidence tables for review question: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

No evidence was identified which was applicable to this review question.

Appendix I – Economic evidence profiles

Economic evidence profiles for review question: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

No economic evidence was identified which was applicable to this review question.

Appendix J – Economic analysis

Economic evidence analysis for review question: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

No economic analysis was conducted for this review question.

Appendix K – Excluded studies

Excluded studies for review question: What are the non-obstetric and obstetric risk factors for pelvic floor dysfunction?

Clinical studies

Table 64: Excluded studies and reasons for their exclusion

Study	Reason for exclusion
Auwad, W., Hagi, S., Al kenawi, A., Altaf, Z., El-Sayed, R., Pelvic floor disorders, symptoms and quality of life after caesarean versus vaginal delivery: A prospective study of primiparous women using MRI and validated assessment tools, Neurourology and Urodynamics, 35, S136-S137, 2016	Conference abstract
Baessler, K., Bircher, M. D., Stanton, S. L., Pelvic floor dysfunction in women after pelvic trauma, BJOG: An International Journal of Obstetrics & GynaecologyBjog, 111, 499-502, 2004	No relevant outcomes, no multivariate analysis
Bradley, C. S., Nygaard, I. E., Vaginal wall descensus and pelvic floor symptoms in older women, Obstetrics and Gynecology, 106, 759-766, 2005	No relevant outcomes, no multivariate analysis
Callewaert, G., Albersen, M., Janssen, K., Damaser, M. S., Van Mieghem, T., van der Vaart, C. H., Deprest, J., The impact of vaginal delivery on pelvic floor function - delivery as a time point for secondary prevention, BJOG: An International Journal of Obstetrics & GynaecologyBjog, 123, 678-81, 2016	Literature review
Chan, S. C. S., Wan, Y. K. O., Lee, L. L., Cheung, Y. K. R., Symptoms and health-related quality of life on pelvic floor disorders in women 3-5 years after delivery, BJOG: An International Journal of Obstetrics and Gynaecology, 123, 178-179, 2016	Abstract
Chen,C.C.G., Gatmaitan,P., Koepp,S., Barber,M.D., Chand,B., Schauer,P.R., Brethauer,S.A., Obesity is associated with increased prevalence and severity of pelvic floor disorders in women considering bariatric surgery, Surgery for Obesity and Related Diseases, 5, 411-415, 2009	Case control study design
Diez-Itza, I., Arrue, M., Ibanez, L., Paredes, J., Murgiondo, A., Sarasqueta, C., Postpartum impairment of pelvic floor muscle function: Factors involved and association with prolapse, International urogynecology journal, 22, 1505-1511, 2011	No relevant outcomes, no multivariate analysis
Dolan, L. M., Hosker, G. L., Mallett, V. T., Allen, R. E., Smith, A. R., Stress incontinence and pelvic floor neurophysiology 15 years after the first delivery, BJOG: An International Journal of Obstetrics & GynaecologyBjog, 110, 1107-14, 2003	No relevant data, no multivariate analysis
Durnea, C., Carlson, V., Khashan, A., Kenny, L. C., O'Reilly B, A., Prevalence of pelvic floor dysfunction in primiparous women at 1 year after delivery, International Urogynecology Journal and Pelvic Floor Dysfunction, 22, S74-S75, 2011	Abstract
Freeman, R. M., Can we prevent childbirth-related pelvic floor dysfunction?, BJOG: An International Journal of Obstetrics & GynaecologyBjog, 120, 137-140, 2013	Review
Gabriella, T., Giuseppe, E., Ilenia, F., Sebastiana, F., Elisa, P., Elisabetta, D., Vincenzo, G., Water birth and perineal dysfunctions: Prospective study, Neurourology and Urodynamics, 29, 89-91, 2010	Abstract
Gunnarsson, M., Mattiasson, A., Female stress, urge, and mixed urinary incontinence are associated with a chronic and progressive pelvic floor/vaginal neuromuscular disorder: An investigation of 317 healthy	No relevant outcomes, no multivariate analysis

Study	Reason for exclusion
and incontinent women using vaginal surface electromyography, Neurourology and urodynamics, 18, 613-621, 1999	
Ionescu, O. C., Bacalbasa, N., Saba, N., Banceanu, G., Implications of surgical, hormonal and obstetric factors in the pathophysiology of pelvic floor disorders prolapse. Results on 103 cases operated with the Saba Nahedd technique, Gineco.eu, 14, 15-24, 2018	Paper focuses on POP only
Karasick, S., Spettell, C. M., The role of parity and hysterectomy on the development of pelvic floor abnormalities revealed by defecography, Ajr, American journal of roentgenology. 169, 1555-1558, 1997	No relevant outcomes, no multivariate analysis
Meriwether, K. V., Rogers, R. G., Dunivan, G. C., Alldredge, J. K., Qualls, C., Migliaccio, L., Leeman, L., Perineal body stretch during labor does not predict perineal laceration, postpartum incontinence, or postpartum sexual function: a cohort study, International Urogynecology Journal, 27, 1193-1200, 2016	No relevant outcome, no multivariate analysis
Murad-Regadas, S. M., Rodrigues, L. V., Furtado, D. C., Regadas, F. S. P., Fernandes, G. O. D. S., Regadas Filho, F. S. P., Gondim, A. C., Da Silva, R. D. P. J., The influence of age on posterior pelvic floor dysfunction in women with obstructed defecation syndrome, Techniques in Coloproctology, 16, 227-232, 2012	No relevant outcomes, no multivariate analysis
Neto, I. J. F. C., Pinto, R. A., Jorge, J. M. N., Santo, M. A., Bustamante-Lopez, L. A., Cecconello, I., Nahas, S. C., Are Obese Patients at an Increased Risk of Pelvic Floor Dysfunction Compared to Non-obese Patients?, Obesity Surgery, 27, 1822-1827, 2017	No relevant outcomes, no multivariate analysis
Norton, P. A., Allen-Brady, K., Wu, J., Egger, M., Cannon-Albright, L., Clinical characteristics of women with familial pelvic floor disorders, International urogynecology journal and pelvic floor dysfunction, 26, 401-406, 2014	No relevant outcomes, no multivariate analysis
Ozel,B., Borchelt,A.M., Cimino,F.M., Cremer,M., Prevalence and risk factors for pelvic floor symptoms in women in rural El Salvador, International urogynecology journal and pelvic floor dysfunction, 18, 1065-1069, 2007	No relevant outcomes, no multivariate analysis
Pereira, G. M., Monteiro, M., Reis, Z. S., Figueiredo, E. M., Cruz, M. C., Meinberg, M., Prevalence of pelvic floor dysfunctions in primiparous 12 to 24 months after vaginal delivery, International Urogynecology Journal, 28, S182-S183, 2017	Abstract
Richter,H.E., Morgan,S.L., Gleason,J.L., Szychowski,J.M., Goode,P.S., Burgio,K.L., Pelvic floor symptoms and bone mineral density in women undergoing osteoporosis evaluation, International Urogynecology Journal and Pelvic Floor Dysfunction, 24, 1663-1669, 2013	Data on risk of osteoporosis or osteopenua and not risk of PFD
Slieker-Ten Hove, M. C., Pool-Goudzwaard, A. L., Eijkemans, M. J. C., Steegers-Theunissen, R. P. M., Burger, C. W., Vierhout, M. E., Vaginal noise: Prevalence, bother and risk factors in a general female population aged 45-85 years, International Urogynecology Journal, 20, 905-911, 2009	Risk factor not relevant
Tosun, G., Peker, N., Tosun, O. C., Yeniel, O. A., Ergenoglu, A. M., Elvan, A., Yildirim, M., Pelvic floor muscle function and symptoms of dysfunctions in midwifes and nurses of reproductive age with and without pelvic floor dysfunction, Taiwanese Journal of Obstetrics and Gynecology, 58, 505-513, 2019	No relevant outcomes, no multivariate analysis
Auwad, W., Hagi, S., Al kenawi, A., Altaf, Z., El-Sayed, R., Pelvic floor disorders, symptoms and quality of life after caesarean versus vaginal delivery: A prospective study of primiparous women using MRI and validated assessment tools, Neurourology and Urodynamics, 35, S136-S137, 2016	Conference abstract

Economic studies

Table 65: Excluded Economic studies

Study	Reason for exclusion
Xu, X., Ivy, J. S., Patel, D. A., Patel, S. N., Smith, D. G., Ransom, S. B., Fenner, D., Delancey, J. O., Pelvic floor consequences of cesarean delivery on maternal request in women with a single birth: a cost-effectiveness analysis, Journal of Women's Health, 19, 147-60, 2010	Analysis from a societal perspective

Appendix L – Research recommendations

Research recommendations for review question: Risk factors for pelvic floor dysfunction

Research question

Is multiple pregnancy an independent risk factor for pelvic floor dysfunction?

Why this is important

Some women develop symptoms of pelvic floor dysfunction during or after pregnancy and childbirth. Identification of women who are high risk of developing symptoms associated with pelvic floor dysfunction is needed. This would enable prevention strategies to be targeted for at risk groups. Currently the evidence base is sparse and the low quality of the evidence raises uncertainty about multiple pregnancy as a risk factor for pelvic floor dysfunction – and many research studies in this area specifically exclude women with multiple pregnancy.

The rate of multiple pregnancies has increased over the past twenty years and multiple pregnancies now occur in approximately 1 in 65 pregnancies. Parity has been identified as a risk factor for developing pelvic floor dysfunction, however it is unclear whether multiple pregnancies increases or reduces the risk compared with multiple, singleton pregnancies. Increased load on the pelvic floor during a multiple pregnancy may increase the risk of developing pelvic floor dysfunction.

Table 66: Research recommendation rationale

Research question	Is multiple pregnancy an independent risk factor for pelvic floor dysfunction?
Why is this needed	
Importance to 'patients' or the population	Being able to predict if a woman is likely to be at an increased risk of developing pelvic floor dysfunction would enable preventative strategies to be offered with the aim of preventing pelvic floor dysfunction developing.
Relevance to NICE guidance	The absence of evidence on this topic currently prevents NICE guidance from making any recommendations about multiple gestation as a risk factor for women for developing pelvic floor dysfunction.
Relevance to the NHS	Giving advice on strategies that could prevent pelvic floor dysfunction would be a lower cost intervention compared to needing to treat pelvic floor dysfunction, which would have higher cost impacts on the NHS.
National priorities	A national priority in the NHS long term plan (2019) is the use of physiotherapy to prevent symptoms of pelvic floor dysfunction associated with childbirth. Pelvic floor muscle training to prevent pelvic floor dysfunction is also a key recommendation, following the Independent Medicine and Medical Devices Safety Review (Cumberledge review) into mesh surgery in 2020.
Current evidence base	There very limited evidence about multiple pregnancy as a risk factor for pelvic floor dysfunction
Equality	None known
Feasibility	Researchers will need to recruit a large number of women for sufficient statistical power given that multiple pregnancy occurs in less than 2% of pregnancies.

Table 67: Research recommendation modified PICO table

Criterion	Explanation
Population	• Pregnant women without symptoms associated with PFD (for prospective cohort study) • Women with and without pelvic floor dysfunction following pregnancy (for retrospective cohort study)
Intervention	Measurement of established risk factors for pelvic floor dysfunction as well as multiple pregnancy.
Comparator	Not applicable
Outcomes	Development of the following symptoms associated with PFD: • urinary incontinence • emptying disorders of the bladder • faecal incontinence • emptying disorders of the bowel • pelvic organ prolapse • sexual dysfunction • chronic pelvic pain syndromes
Study design	Prospective cohort or retrospective cohort
Timeframe	A prospective study design would require regular (every year) follow-up intervals, ideally for 5 years or more. A retrospective recall study design could be carried out cross-sectionally.
Additional information	A number of known risk factors for PFD (such as mode of birth) are associated with multiple pregnancy so it is important for any study to establish whether multiple pregnancy is an independent risk factor in itself (for instance by reporting an odds ratio that controls for other predictor variables using a multivariable regression model).

PFD: pelvic floor dysfunction;