NICE Guidance title: Managing overweight and obesity among children and young people: lifestyle weight management services

Review 2: The barriers and facilitators to implementing lifestyle weight management programmes for children and young people

REVIEW 2 - REPORT

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Review Team
Ruth Turley, SURE, Cardiff University
Alison Weightman, SURE, Cardiff University
Elizabeth Halstead, Bangor University
Helen Morgan, SURE, Cardiff University
Fiona Morgan, SURE, Cardiff University
Jane Noyes, Bangor University
Sinead Brophy, DECIPHer, Swansea University
Ruth Kipping, DECIPHer, Bristol University
Sarah Whitehead, DECIPHer, Cardiff University

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Version 3

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APPENDICES (**in separate document**)

ABBREVIATIONS

BMI	Body mass index
C	Control group
CS	Correlation study
DH	Department of Health
F	Female
GP	General Practitioner
I	Intervention group
IPA	Interpretative Phenomenological Analysis
LWMP	Lifestyle weight management programme
MRC	Medical Research Council
NCMP	National Child Measurement Programme
NHS	National Health Service
NICE	National Institute for Health and Clinical Excellence
NIHR	National Institute for Health Research
PARIHS	Promoting Action on Research Implementation in Health Services
PCT	Primary Care Trust
PE	Process evaluation
Qual	Qualitative study
SD	Standard deviation
SES	Socio-economic status
UC	Usual care
WLC	Wait list control
Xsec	Cross sectional study

EXECUTIVE SUMMARY

1 INTRODUCTION

1.1 Aims of the review

To explore the barriers and facilitators to implementing effective and cost effective lifestyle weight management programmes for overweight and obese children and young people. To include the perspectives of those delivering and participating in them, specifically:

- children and young people
- their parents and carers; and
- those providing, commissioning and delivering lifestyle weight management services for children and young people.

1.2 Research questions

The overarching research question is:

What barriers and facilitators affect the implementation and uptake of, and adherence to, effective and cost effective lifestyle weight management services for children and young people, from the perspectives of those using, and those providing, commissioning and delivering, these services?

To answer this we will address the following subsidiary questions:

Q1. What are the views, perceptions, beliefs and experiences of children, young people and their families who use lifestyle weight management services?

Q2. What are the views, perceptions, beliefs and experiences of the staff providing, commissioning and delivering lifestyle weight management services to children and young people?

Q3. How do the barriers and facilitators perceived by staff, children or young people and their families vary for different population groups of programme users?

1.3 Background

The National Institute for Health and Clinical Excellence (NICE) has been asked by the Department of Health (DH) to develop guidance on managing overweight and obesity in children and young people through lifestyle weight management services.

The guidance will provide recommendations for good practice, based on the best available evidence of effectiveness and cost effectiveness. It will complement NICE guidance on: obesity; behaviour change; maternal and child nutrition; prevention of cardiovascular disease and promoting physical activity.

The guidance will be underpinned by two evidence reviews and an economic analysis. The first review (Review 1) considered the effectiveness and cost effectiveness of lifestyle weight management services in overweight and obese children and young people under the age of 18.

This review (Review 2) is a companion review that looks at barriers and facilitators to lifestyle weight management service approaches. The series will be completed with a health economic analysis.

2 METHODS

A systematic review of evidence to address the above review questions was undertaken. A wide range of databases and websites was searched systematically, supplemented by grey literature[1] searches. Searches were carried out in May 2012 to identify relevant studies in the English language published between 2000 and May 2012. Additionally, studies published between 1990 and 1999 were identified and included using snowballing methods. In accordance with review 1, studies were limited to those countries with a high degree of applicability to the UK; i.e. UK, USA, Canada, Western Europe, Australia and New Zealand.

Study selection was conducted independently in duplicate. Quality assessment was undertaken by one reviewer and checked by a second, with 20% of papers being considered independently in duplicate. A thematic analysis of the evidence was completed, and results described in a narrative summary of the evidence.

3. RESULTS

Question 1a: What are the views, perceptions, beliefs and experiences of children, young people and their families who use lifestyle weight management services?

Question 1b: What are the views, perceptions, beliefs and experiences of the staff providing, commissioning and delivering weight management services to children and young people?

Goals and Outcomes

Goals and outcomes: user and provider shared themes

1.1 **Facilitator: weight management goals.** There is evidence from 5 qualitative studies (4 [+][1-4] and 1 [–][5]) that the desire to lose weight or prevent further weight gain was a motivator for programme users to join and continue attendance at lifestyle weight management programmes. In eight studies, perceived improvements in children's and/or young people's weight management outcomes were described by programme providers (1 (+) qualitative study[6]) and programme users (1 [++] qualitative[7], 4 [+] qualitative[2,3,8,9,], and 2 process evaluations[10,11]).

[1]Holt 2005, [2] Pescud 2010, [3] Stewart 2008, [4]Twiddy 2012, [5]Withnall 2008, [6]Jinks 2010 , [7]Hester 2010, [8]Alm 2008 , [9]Watson 2012a , [10]Pittson Unpublished, [11]Watson 2008.

1.2 **Facilitator: health improvement goals.** Health improvement or prevention of future health problems were described as incentives to joining weight management programmes by children and families in six qualitative studies (two [++][1,2], three [+][3-5] and one [–][6]). Providers in one [+] qualitative study[7] and programme users in four studies (three process evaluations[8-10], one [+] qualitative study[11]) perceived health improvements as a consequence of attending weight management programmes.

[1] Technical or research reports, doctoral dissertations, conference papers and official publications.

[1]Morinder 2011, [2]Staniford 2011, [3]Alm 2008, [4]Holt 2005, [5]Watson 2012a, [6]Dixey 2006 –, [7]Jinks 2010, [8]Pittson 2011, [9]Pittson unpublished, [10]Watson 2008, [11]Stewart 2008

1.3 **Facilitator: healthier lifestyle behaviour.** Weight management programmes were perceived to improve children's lifestyle behaviours, such as healthier diet and increased physical activity, by programme providers in two process evaluations[1-2] and also by programme users in five studies (one [++] qualitative[3], two [+] qualitative[4,5], one [–] qualitative[6] and one process evaluation[1]).

[1]Watson 2008, [2]Watson 2012b, [3]Hester 2010, [4]Stewart 2008 UK, [5]Watson 2012a, [6]CI Research 2009

1.4 **Barrier: lack of programme impact on weight management.** Concerns that programmes were not helping children achieve weight management goals were expressed by providers in one [–] qualitative study[1] and by parents in one [+] qualitative study[2]. In both studies the weight outcome was described in terms of weight loss, without reference to the wider aims of most weight management programmes to slow further weight gain so that BMI z-scores improve as children grow. Also, children in one [++] qualitative study[3] stated that weight gain prompted feelings of embarrassment and shame, and led to non-attendance at booked appointments. There were different views between studies and between the participants of the same studies as to whether weight was the most important outcome. Two [+] qualitative studies[4,5] suggested psychological wellbeing was of equal or greater importance to parents, whereas weight outcomes appeared more important to some children in two [+] qualitative studies[4,6] and to parents in one [–] qualitative study[1].

[1]Dixey 2006, [2]Watson 2012a, [3]Morinder 2011 [4]Twiddy 2012, [5]Stewart 2008. [6]Murtagh 2006

<u>Goals and outcomes: programme user-only themes</u>

1.5 **Facilitator: psychological wellbeing and social outcomes.** Improved psychological wellbeing such as confidence and self-esteem, or improved social outcomes such as reduced bullying and making friends were strong motivators for programme participation among children and their families in ten studies (two [++] qualitative[1,2], six [+] qualitative[3-8], and two [–] qualitative[9,10]). Programmes were perceived to be successful in improving these outcomes in twelve studies (two [++] qualitative[11,12], four [+] qualitative[3,6,7,13], two [–] qualitative [9,10], four process evaluations[14-17]). Two [+] qualitative studies[6,7] suggested improvements in these outcomes were sufficient to maintain engagement with programmes despite lack of weight management.

[1]Gellar 2012, [2]Morinder 2011, [3]Alm 2008, [4]Holt 2005 , [5]Pescud 2010, [6]Stewart 2008, [7]Twiddy 2012, [8]Murtagh 2006, [9]Dixey 2006, [10]Withnall 2008, [11]Hester 2010, [12]Staniford 2011, [13]Watson 2012a, [14]Pittson unpublished, [15]Pittson 2011, [16]Robertson 2009, [17]Watson 2008

1.6 **Barrier: concerns of adverse effects.** Five studies reported concerns that programmes may have a negative impact on children's wellbeing. One [+] qualitative study[1] reported parents' fears of children developing a 'complex' about their weight or becoming anorexic. Two qualitative studies (one [++][2], one [+][3]) described negative impacts on children's psychological wellbeing if they failed to lose weight, and in one further [+] qualitative study[4] children described how an e-contact intervention could potentially trigger cravings for unhealthy foods if they were mentioned in the e-messages.

[1]Twiddy 2012, [2]Hester 2010, [3]Morinder 2011, [4]Woolford 2011

Applicability:

1.1 Directly applicable: conducted in community-based settings in the UK or other similar countries (USA[8]).

1.2 Directly applicable: conducted in the UK in community-based settings.

1.3 Directly applicable: conducted in the UK in community-based settings.

1.4 Directly applicable: conducted in community settings in the UK and Sweden[3].

1.5 Directly applicable: conducted in community settings in the UK or similar countries (USA[3], Sweden[2], Australia[5]).

1.6 Directly applicable: conducted in community settings in the UK or similar countries (USA[4], Sweden[3]).

Personal Factors

Personal factors: user and provider shared themes

1.7 **Facilitator: children's motivation to manage weight.** High levels of children's motivation to manage weight was reported in six qualitative studies (three [++][1-3], two [+][4,5] and one [–][6]), and helped promote participation in weight management programmes.

[1] Gellar 2012, [2]Morinder 2011, [3]Owen 2009, [4]Jinks 2010, [5]Twiddy 2012, [6]Dixey 2006.

1.8 **Facilitator: awareness and acceptance of children being overweight or obese**. Children, their families and providers emphasised that awareness and acceptance of children being overweight or obese was a facilitator to programme adherence. This was evidenced in six qualitative studies (three [++][1-3], two [+][4,5], one [–][6]).

[1] Gellar 2012, [2]Morinder 2011, [3]Owen 2009, [4]Jinks 2010, [5]Twiddy 2012, [6]Dixey 2006.

1.9 **Barrier: lack of children's motivation.** Programme user and providers shared views that **c**hildren's lack of motivation was a barrier to uptake of lifestyle weight management programmes. This was described in one [+] qualitative[1] study and one process evaluation[2]. Lack of motivation was also described by programme users and providers as a barrier to programme adherence in seven studies (one [++] qualitative[3], three [+] qualitative[1,4,5], one [–] cross-sectional[6] , one [–] qualitative[7], and one process evaluation[8]).

[1]Twiddy 2012, [2]Truby 2011, [3]Morinder 2011, [4] Jinks 2010, [5]Kitscha 2009, [6]Barlow 2006, [7]Dixey 2006, [8]Brennan 2012

1.10 **Barrier: lack of awareness and acceptance of children being overweight or obese**. Family and provider perspectives in five studies (one [++] qualitative[1], two [+] qualitative[2,3], one [+] cross-sectional[4] and one [–] qualitative study[5]) indicated that some families do not acknowledge or recognise that their child is overweight or obese, which hindered programme uptake and adherence.

[1]Farnesi 2012, [2]Stewart 2008, [3]Murtagh 2006, [4]Braet 2010, [5]CI Research 2009.

Personal factors: programme-user only themes

1.11 **Barrier: children's and their parents' apprehension.** A strong theme identified in five qualitative studies (one [++][1], three [+][2-4] and one [–][5]) was the anxiety and apprehension described by children and parents about joining weight management programmes. Concerns manifested as general fears of the unknown (e.g. anxieties of meeting new people, struggling to make friends or worries of being the largest on the programme). In addition, there were reports in three qualitative studies (one [+][2], two [–][5,6]) and one process evaluation[7] of programme users having negative misperceptions of the programme characteristics and eligibility criteria prior to starting the intervention.

[1] Gellar 2012,[2]Holt 2005, [3]Stewart 2008, [4]Watson 2012a, [5]Withnall 2008, [6]CI Research 2009, [7]Robertson 2009

1. 12 **Barrier: individual and family demands.** Parents and children described a range of individual and family demands, such as busy lifestyles, homework, work or family commitments. These

were indicated as obstacles to programme uptake or adherence in ten studies: two [++] qualitative[1,2], three [+] qualitative[3-5], one [+] cross-sectional[6] and one [–] cross-sectional[7], one [–] qualitative[8] and two process evaluations [9,10].

[1]Perry 2008, [2]Farnesi 2012 [3]Gunnarsdottir 2011, [4]Watson 2012a, [5]Stewart 2008, [6]Braet 2010 [7]Barlow 2006, [8]CI Research 2009, [9]Brennan 2012, [10]Golley 2007

Applicability:

1.7 Directly applicable: conducted in community settings in the UK or similar countries (United States[1], Sweden[2]).

1.8 Directly applicable: conducted in community settings in the UK or similar countries (United States[1], Sweden[2]).

1.9 Directly applicable: conducted in community settings in the UK or similar countries (Australia[2,8], Sweden[3], Canada[5], United States[6]).

1.10 Directly applicable: conducted in community settings in the UK or similar countries (Canada[1], Belgium[3]).

1.11 Directly applicable: conducted in community settings in the UK or similar countries (United States[1]).

1.12 Directly applicable: conducted in community settings in the UK or similar countries (Australia[1,9], Canada[2], Iceland[3], Belgium[6.]).

Parental and Family Support

Parental and family support: user and provider shared themes

1.13 **Facilitator: parental support.** Both providers and children were reported as believing parental support to be an important facilitator of successful lifestyle weight management interventions**.** High levels of parental support and their role in children's weight management was described in five qualitative studies (one [++][1], three [+][2-4] one [–][5]). A [+] cross-sectional study[6] identified parents 'motivation for treatment as a statistically significant predictor of programme completion.

[1]Staniford 2011, [2]Alm 2008, [3]Stewart 2008, [4]Twiddy 2012, [5]Dixey 2006, [6]Braet 2010

1.14 **Facilitator: parental motivation**. Parental motivation was perceived to be a critical factor in children's successful engagement with weight management programmes, as evidenced in seven studies: three qualitative (two [+][1,2], one [–][3]), three cross-sectional surveys (two [+][4,5], one [–][6]) and one process evaluation[7]. Perceptions of high levels of parental motivation were reported in three studies, primarily from parents[1-3] while providers acknowledged high parent motivation in only one study[2]. Two studies found a statistically significant association between motivated parents and either programme uptake[5] or completion[4].

[1]Jinks 2010, [2]Twiddy 2012, [3]CI Research 2009, [4]Braet 2010, [5]Dhingra 2011, [6]Watson 2012b, [7]Barlow 2006.

1.15 **Barrier: lack of parental support**. Providers reported a lack of parental support acting as a barrier to children's weight management in four qualitative studies (one [++][1], two [+][2,3], one [–][4]). Three of these studies[1,3,4] described provider perceptions that parents did not realise their role as agents of change and they looked to the programme to solve children's weight management difficulties.

[1]Staniford 2011, [2]Avery 2012, [3]Twiddy 2012, [4]CI Research 2009

1.16 **Barrier: lack of parental motivation.** Programme providers described how low parental motivation hindered children's weight management in one [+] qualitative study[1], one [–] qualitative study[2] and one process evaluation[3]. In addition, a small proportion of parents (4.7%)

cited lack of family readiness to change as a reason for dropping out of a lifestyle weight management programme in one [–] cross-sectional study[4].

[1]Jinks 2010, [3]Watson 2012b, [2]CI Research 2009, [4]Barlow 2006

1.17 **Barrier: lack of support from other family members.** Children and parents described situations whereby other family members (either partners or members outside of the nucleus family such as grand-parents) did not support and even sabotaged children's weight management attempts. This was described in eight qualitative studies (two [++][1,2], four [+][3-6] , one [–][7]).

[1]Owen 2009, [2]Staniford 2011, [3]Alm 2008, [4]Hester 2010, [5]Stewart 2008, [6]Twiddy 2012, [7]Dixey 2006

Applicability

1.13 Directly applicable: conducted in community settings in the UK or similar countries (United States[2], Belgium[6]).

1.14 Directly applicable: conducted in community settings in the UK or similar countries (Belgium[4], Australia[5], United States[7]).

1.15 Directly applicable: conducted in the UK in a community setting.

1.16 Directly applicable: conducted in community settings in the UK or similar countries (Belgium[4], United States[5])

1.17 Directly applicable: conducted in community settings in the UK or similar countries (United States[3]).

Programme Design (Recruitment of Clients)

Programme design (recruitment): user and provider shared themes

1.18 **Barrier: lack of awareness.** Both providers and programme users identified a lack of awareness of local weight management programmes. Providers considered poor programme publicity to be the reason why potential users were unaware of the programme in one process evaluation[1]. Programme users also reflected on the lack of programme awareness among children and families in four qualitative studies (one [+][2], three [–][3-5]). Providers and users also referred to health professionals' lack of programme awareness in one process evaluation[6] and one [–] qualitative study[4].

[1]Watson 2012b , [2]Watson 2012a, [3]Dixey 2006, [4]CI Research 2009, [5]Withnall 2008, [6]Watson 2008

1.19 **Role of health professionals.** Both programme users and providers felt health professionals such as GPs, nurses and health visitors should raise awareness or refer children to lifestyle weight management programmes. However, varying opinions were offered on whether this was being sufficiently implemented. Examples of awareness-raising by other professionals were reported by providers or programme users in two [+] qualitative studies[1,2], one [–] qualitative study[3] and one process evaluation[4]. However providers in three studies (one [+] qualitative[5], two process evaluations[6,7]) and programme users in one [+] qualitative study[8], described circumstances in which children were not referred, or inappropriate referrals were made.

[1]Stewart 2008, [2]Watson 2012a, [3]CI Research 2009, [4]Watson 2012b, [5]Jinks 2010, [6]Wolman 2008, [7]Watson 2008, [8]Woolford 2011.

1.20 **Facilitator: recruitment suggestions.** Programme users and providers offered varied suggestions for future programme recruitment strategies in eight studies (two [++] qualitative[1,2], four process evaluations[3-6] ,two [–] qualitative[7,8]. Increasing referral routes,

recruiting through schools and family support workers, was suggested by both programme providers[1,2,4,5,7] and users[8]; advertising in local media was suggested by providers and users[7]. Providers also mentioned ensuring programme aims and characteristics were sufficiently described[3] and offering rolling programmes that allow families to join on an ongoing basis[6]. Users felt that emphasising the healthy living and fun aspects of programmes rather than weight management would promote uptake[8].

[1]Gellar 2012, [2]Jinks 2010, [3]Robertson 2009, [4]Watson 2008, [5]Watson 2012b , [6]Wolman 2008, [7]CI Research 2009, [8]Withnall 2008

Applicability

1.18 Directly applicable: all studies conducted in UK community settings.

1.19 Directly applicable: all studies conducted in community settings in the UK or similar countries (United States[8])

1.20 Directly applicable: all studies conducted in community settings in the UK or similar countries (United States[1])

Programme Design (Intervention Features)

Programme design (features): user and provider shared themes

1.21 **Programme duration.** Programme duration was a common theme across seven studies: three [+] qualitative[1-3], one [–] qualitative[4] and three process evaluations[6,7]. However, there was no clear consensus from providers or users of an optimal intervention duration. The majority of programmes mentioned by participants lasted for 12 weeks[1,4,5,6] and two further programmes were run for 18 weeks[3,7] or 24 weeks[2]. Participants in the same studies had differing views on whether the programme was too long or too short, and there was no clear pattern between studies of similar intervention durations.

While some views were shared by both participants and parents, in general the majority of provider comments described programmes as lasting too long which was feared to discourage families from enrolling[6]. They also described challenges in designing content for an extended period, as well as staff and attendee fatigue[6]. Providers from just one [+] qualitative study[1] felt that 12 weeks was not long enough to deliver the information they wished to.

In two studies, some programme users felt that their 12-week programme was of sufficient duration[4,5].

[1]Jinks 2010 , [2]Stewart 2008, [3]Watson 2012a, [4]CI Research 2009, [5]Robertson 2009, [6]Wolman 2008, [7]Watson 2012b,

1.22 **Facilitator: venue.** Programme users valued the comfortable and welcoming environment of their programme venues in two [+] qualitative studies, which were either located in a clinic[1] or at schools[2]. Community settings and schools were suggested by providers and programme users as suitable venues in one [++] qualitative study[3] and two process evaluations[4,5].

[1]Kitschna 2009, [2]Watson 2012a [3]Staniford 2012, [4]Robertson 2009, [5]Watson 2008

1.23 **Facilitator: family involvement.** Providers, children and families, valued a delivery approach that incorporated family involvement in lifestyle weight management programmes, perceiving it to facilitate behaviour change. Users expressed these views in nine studies (two [++] qualitative[1,2], four [+] qualitative[3-6], and four process evaluations[7-10]) and providers in three studies (one [++] qualitative study[11], one [–] qualitative study[12] and one process evaluation[8]).

Regarding specific parenting education sessions, users in receipt of these interventions liked the emphasis on positive parenting[9,10] and separate children and parent sessions addressing the same topic as each other[10].

[1]Gellar 2012, [2]Perry 2008, [3]Jinks 2010, [4]Kitscha 2009, [5]Pescud 2010, [6]Twiddy 2012, [7]Watson 2012a, [8]Watson 2008, [9]Golley 2007, [10]Robertson 2009, [10]Watson 2012b, [11]Staniford 2011, [12]CI Research 2009

1.24 **Facilitator: group intervention sessions with peers.** There was evidence from thirteen studies (two [++] qualitative[1,2], three [+] qualitative[3-5], three [–] qualitative[6-8], five process evaluations[9-13]) that group-based sessions and interaction with peers were highly valued by children and parents. Interventions incorporating group sessions/peer interactions were perceived to be opportunities to share experiences, and give and receive support from people facing similar problems.

[1]Morinder 2011,[2]Staniford 2011, [3]Holt 2005,[4]Jinks 2010, [5]Watson 2012a, [6]CI Research 2009, [7]Dixey 2006, [8]Monastra 2005, [9]Golley 2007, [10]Pittson Unpublished, [11]Robertson 2009, [12]Watson 2008, [13]Watson 2012b

1.25 **Facilitator: goal setting.** Programme users and providers shared the view that the use of goal setting (which may or may not also involve rewards) was a beneficial feature of interventions, and emphasised the importance of frequent but small and realistic goals. This was evidenced in eleven studies (two [++] qualitative[1-2], six [+] qualitative[3-8], and three process evaluations[9-11]).

[1]Owen 2009, [2]Farnesi 2012, [3]Alm 2008, [4]Kitscha 2009, [5]Stewart 2008, [6]Twiddy 2012, [7]Tyler 2008, [8]Watson 2012a, [9]Pittson unpublished, [10]Watson 2008, [11]Watson 2012b.

1.26 **Facilitator: user-tailored interventions.** Programme users and providers highly valued the interventions that were tailored to the user in 9 studies: six qualitative (two [++][1,2], two [+] [3,4], two [–][6,7] one [+] cross-sectional survey[5],and two process evaluations[8,9]).

Interventions were viewed positively if they were tailored to different population groups of children (for example, age, gender, ethnicity) by parents[7], providers[2] and children[4]. There was a strong emphasis on the value of interventions addressing the individual personal needs of programme users. Programme users commented on the importance of identifying and adjusting interventions to the needs, goals, motives[1,9] or existing knowledge[3] of individual participants. Providers in 1 study recommended tailoring programmes to children's age, ethnicity, degree of obesity and their readiness for change[2]. Authors in 1 study also commented on the benefits of collaborating with families to create individual goals and strategies.

[1] Morinder 2011, [2] Staniford 2011, [3] Kitscha 2009, [4] Woolford 2011, [5] CI Research 2009, [6] Dixey 2006, [7] Tyler 2008, [8] Jones 2010, [9] Watson 2008.

1.27 **Facilitator: monitoring and feedback.** There was evidence from ten studies that regular monitoring and feedback of weight management progress, was highly valued by programme users and providers: two [++] qualitative[1,2], four [+] qualitative[3-6], two [–] qualitative studies[7,8], and two process evaluations[9,10].

[1]Morinder 2011, [2]Farnesi 2012, [3]Stewart 2008, [4]Jinks 2010, [5]Watson 2012a , [6]Woolford 2011, [7]CI Research 2009, [8]Dixey 2006, [9]Robertson 2009, [10]Watson 2012b

1.28 **Facilitators: scheduling suggestions.** Suggestions for improving programme scheduling were offered by programme users and providers in nine studies (one [++] qualitative[1], two [+] qualitative[2,3], one [+] qualitative[4], one [+] cross-sectional survey[5] and four process evaluations[6-9]). More flexible appointment times, such as in the evening or weekends were suggested by programme users[2-6,9] and providers[2,7] . Programme users also wanted increased

frequency of appointments to maintain their motivation[1,2].

[1]Owen 2009,[2] Jinks 2010, [3]Watson 2012a, [4]Cote 2004, [5]Jones 2010, [6]Robertson 2009, [7]Watson 2008, [8]Watson 2012b, [9]Truby 2011.

1.29 **Barrier: inconvenient intervention scheduling.** Scheduling of interventions (e.g. timing, length of individual sessions) were important influences on programme users but no clear consensus was described on what this should be.

Potential users cited inconvenient timing of programmes as a reason for not joining programmes in one [–] qualitative study[1] and two process evaluations[2-3]. Programme attendees also reported difficult scheduling as a barrier to continued participation in ten studies (two [++] qualitative studies[4,5], two [+] qualitative studies[6,7], one [+] cross-sectional survey [8], three process evaluations[9-11], one [–] cross-sectional[12] and one [–] qualitative study[13]). Programme users in one [–] cross-sectional survey[12] disagreed on how the frequency of appointments resulted in their attendance or drop-out. 11.6% dropped out of programmes as appointments were not frequent enough, whereas 7% stated they were too frequent.

[1]CI Research 2009, [2]Pittson unpublished, [3]Truby 2011, [4]Farnesi 2012, [5]Owen 2009, [6]Jinks 2010, [7]Kitscha 2009, [8]Cote 2004, [9]Golley 2007, [10]Robertson 2009, [11]Watson 2008 [12]Barlow 2006, [13]CI Research 2009.

1.30 **Barrier: venue location.** Negative comments regarding programme venues were expressed in six studies: three [+] qualitative[1-3], one [–] qualitative[4], one [–] cross-sectional survey[5] and one process evaluation[6]. Challenges relating to locations being too far away, difficult to reach, or hindered by traffic problems at peak times were described by both providers[2,6] and users[1-6].

[1]Watson 2012a, [2]Jinks 2010, [3]Kitschna 2009, [4]CI Research 2009, [5]Barlow 2006, [6]Robertson 2009

1.31 **Barrier: challenges in goal setting.** Challenges of setting goals within programmes were highlighted by users and providers in three studies (one [++] qualitative[1], and two process evaluations[2,3]). Programme users spoke negatively about too many goals being set[2], long-term goals not being revisited or monitored[3] or goals not being matched to those valued by the child[1]. Providers described difficulties in designing goals for users[3].

[1]Morinder 2011 [2]Brennan 2012, [3]Watson 2012b

Programme design (features): user-only themes

1.32 **Facilitator: practical intervention elements.** A recurring theme within studies were that programme users particularly liked the practical elements of their intervention sessions, as evidenced in eleven studies: seven qualitative (one [++][1], four [+][2-5], two [-][6,7]) and four process evaluations[8-11].

Regarding dietary components, children and/or parents enjoyed cookery lessons in particular enjoyed or wanted the programme to incorporate more of these[2,4,6,11]. Specific directive information was also valued, including the provision of recipes[7], eating plans[1,8] or messages that 'told them what to do'[5] . Education on food in supermarkets was also valued[2,7] with one study suggesting that education on labels should be followed up with trips to the supermarket[2].

Regarding physical activity education, children consistently commented on enjoying games and physical exercise sessions, and views indicated they would like more activities within the intervention[3,6,9,11]. Some parents also wanted more exercise sessions[2,4,10], though some parents expressed negative views of physical activity sessions[2]. Variety in the available activities was also valued [4,11].

[1]Owen 2009 ++, [2]Jinks 2010 +, [3]Staniford 2011 +, [4]Watson 2012a +, [5]Woolford 2011 +, [6]CI Research 2009 - , [7]WIthnall 2008 -, [8]Golley 2007 PE, [9]Pittson Unpublished PE, [10]Robertson 2009 PE, [11]Watson 2008 PE.

1.33 Facilitator: behavioural change components

Parents and children had positive views of the behavioural change elements in the programmes they received, evidenced in seven studies: five qualitative (one [++][1], two [+][2,3], two [-]) and two process evaluations[6,7]. Positive comments were stated regarding: understanding the 'how and why' of their eating behaviour[1,6], learning about their feelings and being able to talk about how they feel[5], or learning about stress and how to cope with it[7] **.** One study reported that users believed LWMPs should include physical activity, nutrition and psychological components[2]**.**

[1]Farnesi 2012, [2]Staniford 2011 +, [3]Stewart 2008 +, [4]CI Research 2009 -, [5]Monastra 2005 –, [6]Golley 2007, [7]Robertson 2009 PE

1.34 Barrier: relevance of intervention to home life. Seven studies described children and/or their families concerns with the relevance and ease of managing their weight outside in their home life or after leaving their programme (four [++][1-4], one [+],[5], 1 [–][6] qualitative and one [+][7] cross-sectional study).

[1]Owen 2009, [2] Staniford 2011, [3]Morinder 2011, [4]Hester 2010, [5]Stewart 2008, [6]CI Research 2009, [7]Braet 2010.

Applicability

1.21 Directly applicable: all studies conducted in UK community settings.

1.22 Directly applicable: all studies all studies conducted in community settings in the UK or similar countries (Canada[1])

1.23 Directly applicable: all studies all studies conducted in community settings in the UK or similar countries (Australia[2,5], Canada[4], USA[1]

1.24 Directly applicable: all studies all studies conducted in community settings in the UK or similar countries (Sweden[1])

1.25 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[2,4], USA[3])

1.26 Directly applicable: all studies were conducted in community settings in the UK or similar countries (Canada[3], USA[4,7], Sweden[1]).

1.27 Directly applicable: all studies conducted in community settings in the UK or similar countries (Sweden[1])

1.28 Directly applicable: all studies all studies conducted in community settings in the UK or similar countries (Australia[9], USA[4])

1.29 Directly applicable: all studies conducted in community settings in the UK or similar countries (Australia[3], Canada[4], USA[8,12]

1.30 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[3] and USA[5])

1.31 Directly applicable: all studies conducted in community settings in the UK or similar countries (Sweden[1], Australia[2])

1.32 Directly applicable: all studies conducted in community settings in the UK

1.33 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[1], USA[5])

1.34 Directly applicable: all studies were conducted in community settings in the UK or similar countries (Belgium[7]).

Programme Design (Post-Intervention Support)

Programme design (post-intervention support): user-only themes

1.35 **Facilitator: post-intervention support and follow-up.** Seven studies (one [++] qualitative[1], two [+] qualitative[2-3], two [–] qualitative[4-5], two process evaluations[6-7]) identified that the continuation of professional support following completion of the programme was important to users. Families wanted support to continue and thought it would be helpful for ensuring that weight management goals were continued.

Very little detail was provided regarding the forms this support should take. Parents in one [–] qualitative study[4] suggested follow up letters, meetings or continuation sessions. Parents in another [–] qualitative study[5] proposed a long-term financial subsidy to encourage children and young people to maintain participation in formal activities.

[1]Staniford 2011, [2]Stewart 2008, [3]Watson 2012a, [4]CI Research 2009, [5]Withnall 2008, [6]Golley 2007, [7]Robertson 2009

1.36 **Facilitator: personal strategies to sustain weight management behaviour.** Parents in three studies (two [+] qualitative[1,2], one process evaluation[3]) described a range of strategies they employed to facilitate continuation of their children's weight management behaviour. These included staying consistent[2,3] setting planned routines[3], enjoying their new healthy lifestyle[3], and seeking additional support[1].

[1]Jinks 2010 , [2]Watson 2012a [3]Golley 2007

1.37 **Barrier: attendance at follow-up sessions.** Despite strong support for professional follow-up after completion of weight management programmes, children and parent views in three studies suggested that the content and timing of potential support may impact on the up-take of sessions if they did not appeal to programme users or conflicted with their competing interests. This was indicated in three qualitative studies: (one [++][1], one [+][2] and one [–][3]).

[1]Staniford 2011, [2]Kitscha 2009,[3]CI Research 2009

Applicability

1.35 Directly applicable: all studies conducted in UK community settings

1.36 Directly applicable: all studies conducted in the UK community settings

1.37 Directly applicable: studies conducted in the UK community settings[1,3] or similar countries (Canada[2]).

Provider Factors and Organisational Environment

Provider factors and organisational environment: user and provider shared themes:

1.38 **Facilitator: building good child/family-provider relationships.** There was evidence from fifteen studies (three [++] qualitative[1-3], six [+] qualitative[4-9], four process evaluations[10-13], and two [–] qualitative[14,15]) of children's and parents' perspectives, that provider characteristics were key factors for continued participation in weight management programmes and behaviour change attempts. Valued characteristics included the encouraging, non-judgemental tone of providers[1,3,5,7,9,14], and continuity of staff[6]. Parents also appreciated the

role providers had in acting as voices of authority that parents could rely on to educate children[3,7]. Provider perspectives in two of these studies also suggested that staff were aware of the importance of establishing good relationships with programme users and their families[1,6].

[1]Farnesi 2012, [2]Morinder 2011, [3]Owen 2009, [4]Alm 2008, [5]Holt 2005, [6]Twiddy 2012, [7]Watson 2012a, 8 Stewart 2008 [9]Woolford 2011, [10]Golley 2007, [11]Jones 2010, [12]Robertson 2009, [13]Watson 2008, [14]Monastra 2005, [15]CI Research 2009.

1.39 **Barrier: negative opinions of providers' characteristics.** Six studies (two [++] qualitative[1,2], two [+] qualitative[3,4], one process evaluation[5], one [–] qualitative[6]) described how negative opinions of provider dynamics influenced user engagement. Children and parents provided examples of poor user-provider relationships and suggested this hindered engagement with programmes or weight management behaviour[1-5.] Providers also recognised the negative effect bad relationships with users[1] and staff discontinuity[6] could have on programme adherence[6].

[1]Farnesi 2012, [2]Morinder 2011, [3]Stewart 2008,[4] Twiddy 2012, [5]Watson 2012b, [6]CI Research 2009.

Provider factors and organisational environment: provider-only themes

1.40 **Facilitator: collaborative multi-disciplinary teams.** Three studies (one [+] qualitative study[1], one process evaluation[2] and one [+] cross-sectional survey[3]) indicated that providers highly valued working within effective collaborative multi-disciplinary teams[1-3].

[1]Jinks 2010, [2]Watson 2008, [3]Gunn 2008

1.41 **Facilitator: provider highly valued opportunities for training.** Three studies (one [+] qualitative[1], one process evaluation[2] and one [+] cross-sectional survey[3]) reported that providers were keen to receive relevant training that would help them gain necessary skills to effectively deliver interventions.

[1]Jinks 2010, [2]Gunn 2008, [3]Watson 2012b

1.42 **Barrier: provider gaps in knowledge**. Three studies (one [+] qualitative study[1], one [+] cross-sectional study[2] and one process evaluation[3]) referred to providers' perceptions of their skills and knowledge Three studies indicated some providers felt unqualified to deliver interventions, specifically where interventions were broad in their nature, or were delivered to a varying user group who sometimes had complex psychosocial needs.

[1]Jinks 2010, [2]Gunn 2008, [3]Watson 2012b

1.43 **Barrier: insufficient staffing for effectively delivering LWMPs**. Three studies (one [+] qualitative[1], two process evaluations[2-3]) described how insufficient staffing and time hindered providers' ability to effectively deliver interventions.

[1]Jinks 2010, [2]Watson 2008, [3]Wolman 2008

Applicability

1.38 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[1,]Sweden[2], United States[9,] Australia[14]

1.39 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[1,]Sweden[2)]

1.40 Directly applicable: all studies conducted in community settings in the UK or similar countries (Australia[3])

1.41 Directly applicable: all studies conducted in community settings in the UK or similar countries

(Australia[2])

1.42 Directly applicable: all studies conducted in community settings in the UK or similar countries (Australia[2])

1.43 Directly applicable: all studies conducted in UK community settings

Question 2 How do the barriers and facilitators perceived by staff, children or young people and their families vary for different population groups of programme users?

Barriers and Facilitators for Different Population Groups of Programme Users

2.1 No studies were identified that were designed to examine whether particular population groups encounter different barriers and facilitators compared with other populations.

2.2 **Gender differences**. There is insufficient evidence to draw firm conclusions on whether boys and girls experience different barriers and facilitators related to engagement in lifestyle weight management programmes. One [+] qualitative study[1] indicated differences in the motivations for attending LWMPs between girls and boys. Girls described desires to improve their physical appearance and social acceptance, whereas boys were more concerned with their physical fitness and sports ability.

[1] Alm 2008

2.3 **Young children (under six years old).** There is insufficient evidence to draw conclusions on the barriers and facilitators for engagement of young children in lifestyle weight management programmes. The barriers in recruiting young children were explored in only one process evaluation[1]. The study identified that uptake and attendance of eligible children was low, due to poor parental perception of child weight status, commitment issues and limited staff capacity for outreach work.

[1]Wolman 2008

2.4 **Pre-adolescent children (6-13 years).** A wide range of themes were described in sixteen studies of school-age children: seven qualitative (three [++][1-3], three [+][4-6], one [–][7]), one [+] correlation[8], two cross-sectional[9-10], six process evaluations[11-16]. However none of the studies were designed to explore differences in barriers and facilitators compared to other age groups.

Commonly shared facilitators across studies were the importance of non-weight outcomes such as psychological wellbeing[3,4,5,14-16], social outcomes such as making friends [3,5,14] and reduced bullying[3,17]; interventions with a whole-family approach[2-4 12,14-16]; positive provider characteristics[1,5,11,12,16]**;** group based sessions with peers[12, 14, 15,16]; regular monitoring and feedback[1,5,14, 16]; and post-intervention support[3,5,12,14]. Commonly shared barriers across studies were poor relationships of providers with children and/or their parents[1,5,16]

[1]Farnesi 2012, [2]Perry 2008, [3]Staniford 2011, [4]Pescud 2010, [5]Stewart 2008,[6] Tyler 2008, [7]Pinard 2012, [8]Gunnarsdottir 2012, [9]Braet 2010, [10]Gunn 2008, [11]Jones 2010, [12]Golley 2007, [13]Pittson 2011, [14]Robertson 2009, [15]Watson 2008, [16]Watson 2012b, [17]Murtagh 2006

2.5 **Adolescents.** A wide range of themes were described in ten studies of adolescents (two [++] qualitative[1-3], three [+] qualitative[4-6], one [+] cross-sectional surveys[7], four process evaluations[7-10]). However none of the studies were designed to explore differences in barriers and facilitators for adolescents when compared with other age groups. Facilitators shared across three or more studies were the importance of psychological wellbeing as an outcome[2,3,5] and

positive provider characteristics[2,5,6]. Commonly shared barriers across studies were: perceived lack of parental support[1,4,5,10]and concern regarding unintended consequences of weight management programmes.[2,3,6]

[1]Gellar 2012 [2]Morinder 2011 [3]Hester 2010, [4]Avery 2012, [5]Alm 2008, [6]Woolford 2011, [7]Dhingra 2011, [8]Truby 2011, [9]Kornman 2010, [10]Brennan 2012

2.6 **Socioeconomic status.** There is insufficient evidence available to draw conclusions on the barriers and facilitators for engaging populations from different socioeconomic groups with LWMPs. Only disparate and minimal information was provided in three studies: one [+] cross-sectional[1], one [–] cross-sectional[2] and one [–] qualitative study[3]. One study described positive views of children and parents from low socio-economic backgrounds towards the use of tailored goal setting, and monitoring and feedback[1]. Providers in one study with a high black and ethnic minority population valued the positive aspects of collaborative multidisciplinary team working[2]. In addition, providers in one study perceived parents from more deprived areas were less likely to address issues of child obesity, believing that these parents felt unable to exert positive change on a variety of aspects of their life, including weight management[3].

[1]Tyler 2008, [2]Pinard 2012, [3]CI Research 2009.

2.7 **Ethnic groups.** No studies were identified that explored that barriers and facilitators Black, Minority and Ethnic groups encounter when participating with lifestyle weight management programmes.

2.8 **Children with complex needs (medical conditions or disability).** No studies were identified that explored that barriers and facilitators faced by children with additional medical conditions or disabilities in participating with lifestyle weight management programmes.

Applicability:

2.2 Directly applicable: study conducted in a UK community setting.

2.3 Directly applicable: study conducted in a UK community setting.

2.4 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[1], Australia[2,4], United States[6,7], Iceland[8], Belgium[9]).

2.5 Directly applicable: all studies conducted in community settings in the UK or similar countries (Australia[7,8,9,10] United States[1,5,6] and Sweden[2]).

2.6 Directly applicable: study conducted in a UK community setting or other similar countries (United States[1,2]).

4. DISCUSSION

A broad range of barriers and facilitators were identified regarding participation in and delivery of lifestyle weight management programmes (LWMPs).

Findings could be organised within categories relating to children's personal factors, parental support, programme design, provider factors and organisational environment. Several strong themes emerged:

- Programme users had a broad range of motives for participating in LWMPs. While users and providers both acknowledged intervention aims of improved weight management, health and

health behaviour; children and parents were also motivated by perceived opportunities for improved psychological wellbeing and social outcomes such as friendships and reduced bullying.

- Studies highlighted a lack of awareness of local programmes by potential users, and professionals. It was also evident that in addition to general apprehension prior to the start of interventions, programme users had different expectations (often negative misperceptions) of what the LWMP involved.
- A range of intervention features were highly regarded, including using a whole-family approach, group sessions with peers, user-tailored programmes and the use of goal setting and regular progress monitoring and feedback.
- Users wanted the location and scheduling of interventions to be convenient given competing demands for work, child-care and school, with sessions held in evenings and weekends.
- Establishing good user-provider relationships was highlighted. Participants particularly valued the child-friendly, encouraging and non-judgemental tone of providers, and their role as alternative voices of authority to the child's parent or guardian.
- There was no clear consensus regarding the optimal duration of programmes. However, programme users commonly wanted longer lasting interventions. Providers held less positive views about extended programme durations.
- Users had wide-ranging motives for participating in LWMPs. A number of different individual demands and personal factors affected participant interactions, including insufficient or inappropriate support from parents or families, and presented differing and sometimes complex needs.

Strengths and limitations of this review:
This review was built on a comprehensive search strategy to find views-based studies of users and providers of UK-based child weight management interventions and other applicable countries. The literature search included a thorough attempt to identify relevant unpublished studies, and the overall evidence base was judged to have high applicability to UK settings.

A large proportion of studies were qualitative in design, and provided rich data for a detailed insight into the views of users and providers. Views of children, their parents / carers and programme providers were also well represented across the evidence base. However the available evidence was extremely limited for programmes targeting children aged less than 6 years and for differential barriers and facilitators by population groupings such as gender, socio-economic status, ethnicity and special needs.

Several studies lacked sufficient detail on the exact nature of interventions included, such as the programme duration. It was evident however that across the included studies interventions there was a degree of heterogeneity in their design. Most interventions were conducted with either the family or children alone and did not always provide age group information. Just one intervention was conducted with parents / carers only. The majority of studies provided behavioural / lifestyle education interventions – some with additional diet and /or exercise interventions. One study only delivered an exercise intervention and a further study provided only a dietary intervention.

A further weakness of the evidence base was the lack of clarity on when views and experiences of study participants were collected, and whether they reflected users who had been successful or not in managing their weight. Thus the views of those who did not engage with a programme, or dropped out early, may have been under reported.

1 INTRODUCTION

1.1 Aims of the review

To explore the barriers and facilitators to implementing effective and cost effective lifestyle weight management programmes for overweight and obese children and young people. To include the perspectives of those delivering and participating in them, specifically:

- children and young people
- their parents and carers; and
- those providing, commissioning and delivering lifestyle weight management services for children and young people.

1.2 Research questions

This review answers the overarching research question:

What barriers and facilitators affect the implementation and uptake of, and adherence to, effective and cost effective lifestyle weight management services for children and young people, from the perspectives of those using, and those providing, commissioning and delivering, these services?

In order to do so, the report considers three subsidiary questions

Question 1a. What are the views, perceptions, beliefs and experiences of the children, young people and their families who use lifestyle weight management services?

Question 1b. What are the views, perceptions, beliefs and experiences of the staff providing, commissioning and delivering lifestyle weight management services to children and young people?

Question 2. How do the barriers and facilitators perceived by staff, children or young people and their families vary for different population groups of programme users?

1.3 Background

Around three out of every ten boys and girls aged 2 to 15 years in England in 2010 were either overweight or obese[2] (NHS Information Centre 2012). The proportion that is overweight has remained largely unchanged since the mid-1990s. However, there has been a stark rise in childhood obesity (NHS Information Centre 2012) – by around one percentage point every 2 years up to 2007 (Department of Health 2011a). Although this increase now appears to be levelling off, in 2010 around 17% of boys and just below 15% of girls were classed as obese (NHS Information Centre 2012).

The 'National child measurement programme' (NCMP), part of the 'Healthy weight: healthy lives' strategy, aims to identify the prevalence of childhood obesity locally to help plan and deliver local support services (DH 2011b). Schoolchildren in reception (aged 4–5 years) and in year 6 (aged 10–11 years) have their height and weight measured (NHS Information Centre 2011). In the school year 2010/11, the NCMP showed that around 23% of children in reception and 33% in year 6 were either overweight or obese, and around 9% and 19%, respectively, were obese (NHS Information

[2] Several classification systems are used in the UK to define 'obesity' and 'overweight' in children. The 'National child measurement programme' (NCMP) and 'Health survey for England' use a gender- specific BMI chart (UK 1990 chart for children aged over 4 years). Children over the 85th centile, and on or below the 95th centile, are 'overweight'. Children over the 95th centile are 'obese'. In clinical practice, however, the 91st and 98th centiles may be used to define 'overweight' and 'obese' respectively.

Centre 2011). The NCMP shows that obesity prevalence rises with increasing socioeconomic deprivation and is more prevalent in urban, compared with rural, areas. Obesity is also more prevalent among children from black, Asian, 'mixed' and 'other' minority ethnic groups than among their white counterparts (NHS Information Centre 2011).

Most of the longer-term health consequences of obesity such as type 2 diabetes, cardiovascular disease and some cancers are seen in adults. However, over the last decade, it has become increasingly common for children to develop Type 2 Diabetes (Diabetes UK 2011). Being overweight as a child has been associated with the development of cardiovascular risk factors in childhood or early adulthood (Craig et al 2008; Logue and Sattar 2011). Childhood obesity is also associated with an increased prevalence of asthma (Figueroa-Munoz et al. 2001) and with sleep-associated breathing disorders including sleep apnoea. In addition, overweight and obese children are likely to experience bullying and stigma (Griffiths et al. 2006) which can impact on their self-esteem. Some of these issues and conditions may, in turn, affect their performance at school (Caird et al. 2011).

Up to 79% of children who are obese in their early teens are likely to remain obese as adults (Chief Medical Officer 2008). Consequently, they will be at greater risk of conditions such as type 2 diabetes, coronary heart disease and some cancers in adulthood (Foresight 2007). Studies have also shown that a child with at least one obese parent is more likely to be obese themselves, and so there is a potential intergenerational effect (Perez-Pastor et al. 2009). Unless obesity is addressed in childhood, most of the financial consequences are likely to be incurred when treating and managing the co-morbidities that arise in adulthood. However, there are examples of more contemporary costs – such as schools needing to purchase specialist classroom and gym equipment to accommodate the needs of obese and overweight children (Local Government Association 2008).

'Healthy lives: a call to action on obesity in England' (DH 2011a) states that a range of local interventions are needed to both prevent obesity and treat those who are already obese or overweight. The 'Healthy child programme for 5–19 year olds' recommends that overweight or obese children should be referred to appropriate weight management services to help them achieve and maintain a healthier weight (DH 2009a). In 2008, an estimated 314 to 375 weight management programmes for children were operating in England (Aicken et al. 2008). Some were small local schemes; others were available on a regional or national basis – such as those listed in the DH's 'Child weight management programme and training providers' framework' (Cross Government Obesity Unit 2009). In addition, some adult weight management programmes may accept children and young people. Local commissioners need to be able to determine which programmes are effective and provide good value for money.

The National Institute for Health and Clinical Excellence (NICE) has been asked by the Department of Health (DH) to develop guidance on managing overweight and obesity in children and young people through lifestyle weight management services. The guidance will be underpinned by two evidence reviews and an economic analysis. The first review (Review 1) considered the effectiveness and cost effectiveness of lifestyle weight management services in overweight and obese children and young people under the age of 18. This review (Review 2) is a companion review that looks at barriers and facilitators to lifestyle weight management service approaches. The series will be completed with a health economic analysis.

2. METHODS

2.1 Literature search

A single literature search was undertaken to identify evidence for both Review 1 and Review 2.

A wide range of databases and websites were searched, supplemented by grey literature[3] searches, to identify relevant studies in the English language published between 2000 and May 2012. Additional snowballing techniques (contacts with experts and reference list checking) were conducted to identify research published between 1990 and 1999.

A comprehensive literature search was undertaken to identify evidence in the English language that is:

- from the UK and/or applicable to the UK (Western Europe, USA, Canada or Australia/New Zealand)
- publicly available, including trials in press ("academic in confidence")
- commercially sensitive data made available to NICE ("commercial in confidence")

The following study designs were included in this review:

- Qualitative and quantitative evidence of views and opinions including qualitative, survey and other observational studies of barriers and facilitators to delivering such interventions or the views, perceptions and beliefs of those using and delivering such services. These include surveys, interviews, reports of focus groups, and process and outcome evaluations of local projects and interventions. Systematic reviews were 'unpicked' for relevant studies.

2.1.1 Electronic sources (databases and websites)

The following sources were searched to identify relevant research papers/studies in the English language published between 2000 and May 2012. The outline search strategy was developed for Ovid Medline [Appendix E] as a precise search strategy to identify research on lifestyle weight management services for children and young people including studies of effectiveness (Review 1) and 'barriers and facilitators' (this review). The search was developed using search strategies in relevant systematic reviews and 20 primary research papers known to the review team. It was tested against a further 20 papers set to ensure a good sensitivity/precision balance. It was translated for use in all sources detailed below. Searches were recorded in accordance with Appendix C of the NICE Manual (2009) and search strategies used for each resource and provided to NICE.

Databases:

- ASSIA (Applied Social Science Index and Abstracts) - Proquest
- CEA registry [Cost Effectiveness Analysis] https://research.tufts-nemc.org/cear4/Home.aspx
- CINAHL (Cumulative Index of Nursing and Allied Health Literature) - EBSCO
- Cochrane Central Register of Controlled Trials - Wiley
- Cochrane Database of Systematic Reviews – Wiley

[3] Technical or research reports, doctoral dissertations, conference papers and official publications.

- Database of Abstracts of Reviews of Effectiveness (DARE) - Wiley
- Econlit - EBSCO
- EconPapers http://econpapers.repec.org/
- EMBASE - Ovid
- HEED - Wiley
- HMIC - Ovid
- Medline and Medline in Process - Ovid
- NHS EED - Wiley
- PHICED [Public Health Interventions Cost Effectiveness Database] http://www.yhpho.org.uk/PHICED/
- PsycINFO - Ovid
- Social Policy and Practice - Ovid
- UK Clinical Research Network Portfolio Database
- *Citation tracking only*
    - Science Citation Index - Thomson Reuter
    - Scopus - Elsevier
    - Social Science Citation Index – Thomson Reuter
- *Specialist (public health) systematic review registers*
    - EPPI Centre DoPHER
    - Cochrane Public Health Group Specialized Register

Web sites:

- Association for the Study of Obesity http://www.aso.org.uk/
- Centre for Childhood Obesity Research http://www.hhdev.psu.edu/ccor/
- Centres for Disease Control and Prevention – Nutrition, physical activity and obesity http://www.cdc.gov/healthyyouth/npao/index.htm
- Current controlled trials http://www.controlled-trials.com
- Department of Health – obesity http://www.dh.gov.uk/en/Publichealth/Obesity/index.htm
- European Association of the Study of Obesity http://www.easo.org/ [including abstracts from the European Obesity Conference, Lyon, May 2012]
- ETHOS (dissertation search) http://ethos.bl.uk
- Food Standards Agency http://www.food.gov.uk/
- Health Evidence Canada http://health-evidence.ca/articles/search
- Joseph Rowntree Foundation http://www.jrf.org.uk/
- MEND http://www.mendcentral.org/aboutus/whoweare
- More Life http://www.more-life.co.uk/Default.aspx?PageName=Research
- National Technical Information Service http://www.ntis.gov/search/index.aspx
- National Obesity Forum http://www.nationalobesityforum.org.uk/
- National Obesity Observatory http://www.noo.org.uk/
- NHS Evidence http://http://www.evidence.nhs.uk/
- NICE http://www.nice.org.uk/
- Obesity Learning Centre http://www.obesitylearningcentre-nhf.org.uk/

- OpenGrey http://www.opengrey.eu/
- Public health observatories http://www.apho.org.uk/
- Scottish Government http://home.scotland.gov.uk/home
- Youth Health talk (Review 2 only) http://www.youthhealthtalk.org/young_people_health_and_weight/
- Welsh Government http://wales.gov.uk/?lang=en

2.1.2 Additional searches

Research reported in the grey literature, unpublished work, or research in progress was sought by contacting the corresponding authors of studies included in Review 1. NICE issued a call for evidence from registered stakeholders in May 2012 and suggestions were made by members of the Programme Development Group.

In addition, relevant systematic reviews were unpicked, the reference lists of included studies checked and the previous 12 months issues of 'top' journals (Obesity, Patient Education and Counseling, and Journal of Human Nutrition and Dietetics) were hand searched for further relevant studies.

Results of the literature searches were imported into a single Reference Manager database and de- duplicated. Papers were reviewed for inclusion in any review and tagged accordingly.

2.2 Inclusion/Exclusion criteria:

	Inclusion	Exclusion

Population	• Current/former/potential users of lifestyle weight management programmes:
	  • Children and young people aged below 18 who are overweight or obese[4].
	  • The parents or carers and families of these children and young people
	• Referrers, providers commissioners and deliverers of weight management programmes
		• Children and young people who are of a healthy weight (healthy BMI adjusted for their age and sex) or underweight
		• Young women under 18 who are pregnant
		• Adults (apart from the parents and carers of children and young people who are overweight or obese)

Interventions	Weight management programmes that take a lifestyle approach to helping overweight or obese children and young people achieve and maintain a healthy weight. Lifestyle approaches focus on diet, physical activity, behaviour change or any combination of these factors. They will include programmes, courses or	For children and young people aged under 18 who are overweight or obese: • Hospital or primary care clinical treatment of obesity which excludes lifestyle approaches, or which combines lifestyle approaches with drug or other treatments where it is not possible

[4] Definitions of overweight will be as defined within the included studies. A child or young person whose weight is at or above the 98th BMI centile may be described as 'very overweight' or obese. See BMI healthy weight calculator.

	clubs (including online services) that are: • Specifically designed for overweight or obese children or young people • Designed for the parents, carers or families of obese or overweight children and young people • Designed primarily for adults but which accept, or may be used by, children and young people • Provided by the public, private or voluntary sector, in the community or in (or via) primary care or hospital settings.	to disaggregate data for lifestyle approaches. • Programmes that focus only on the primary prevention of overweight or obesity including: Universal programmes to promote healthy eating or physical activity which are aimed at all children and young people regardless of their weight; programmes which focus on policy or environmental changes in particular settings (such as early years, schools and further educational establishments). • The clinical treatment of mental or physical health conditions among children and young people • Pharmacological or surgical treatment; complimentary therapies such as acupuncture and hypnotherapy • Programmes based on very low calorie diets or meal replacements • Assessment of the definition of 'overweight' or 'obese'.
Outcomes	Views, perceptions and beliefs of children, young people and their families and the views of staff providing, commissioning and delivering lifestyle weight management services for children and young people.	• Intrapersonal barriers and facilitators to losing or managing weight, not associated with the participation in, or delivery of, weight management programmes
Study designs	Qualitative and quantitative evidence of views and opinions from studies conducted in Western Europe, North America or Australia/New Zealand. Including qualitative, survey and other observational studies of barriers and facilitators to delivering such interventions or the views, perceptions and beliefs of those using and delivering such services. This includes surveys, interviews, reports of focus groups, and process and outcome evaluations of local projects and interventions.	• Quantitative studies that do not measure attitudes e.g. correlation studies • Studies conducted outside Western Europe, North America or Australia/New Zealand.

2.3 Study selection

Titles and abstracts were screened independently by two reviewers using the inclusion/exclusion criteria. Any disagreement was resolved by discussion with a third reviewer and, if in doubt, included. Full paper screening was undertaken independently by two reviewers, with recourse to a third to resolve any disagreements.

2.4 Quality assessment

Quality assessment was conducted using the checklist for qualitative studies in Appendix H of the NICE manual – methods for developing NICE public health guidance [NICE 2009]. Quantitative cross-sectional studies were assessed using a modified version of the Correlation Studies checklist from Appendix G of the NICE manual [NICE 2009]. The modified checklist contains an additional question relating to piloting of survey items and highlights questions that are only applicable to either correlation studies or cross-sectional surveys. An example of a template checklist for a cross-sectional survey is presented in Appendix G. No checklist was available for process evaluation studies and these have not been assessed for validity.

Studies were assessed by one reviewer and checked by a second, and disagreements resolved by discussion. Appendix B and C provides a summary of the validity ratings for each element of the included studies.

2.5 Data extraction

Data were extracted as specified in Appendix K of the NICE Manual (NICE 2009) and are presented in the Evidence Tables (Appendix A) with study characteristics, internal and external validity scores (where applicable) and a brief summary of the key themes identified in the papers with illustrative quotes where applicable.

To identify key themes across studies, an index ladder of codes was developed *a priori*, in accordance with Richie and Spencer (2010) so that key findings could be extracted and organised at the same time. The index ladder of codes was developed after reading a sample of eligible papers and in discussion with the team. Once agreed, findings were extracted and coded by one reviewer and checked by another, using the software Atlas.ti. The codes and quotations were then read and re-read, and categories further refined and organised.

2.6 Data synthesis

The synthesis of the views regarding barriers and facilitators to the delivery of weight management services was directed by the team's qualitative synthesis expert and guided by the NICE manual (Section 5.4) and Dixon Woods (2004).

A broad synthesis of the included evidence was performed. Views and opinions gathered from cross-sectional questionnaires and mixed methods studies were analysed thematically and integrated with the key findings from qualitative studies. Key findings of evidence are summarised in concise narrative summaries and evidence statements, supported by evidence tables (Appendix A). The statements indicate:

- the message given by the evidence;
- the applicability of the results to the UK

2.7 PARIHS Framework

The identified barriers and facilitators were also mapped against a conceptual model of implementation: the Promoting Action on Research Implementation in Health Services (PARIHS) framework, to understand better the critical factors for successful implementation outcomes from lifestyle weight management programmes. The PARIHS framework has been theoretically and empirically developed to represent the interplay and interdependence of the many factors influencing implementation of evidence (interventions) into practice. The hypothesis offered is that for interventions to be successful there needs to be clarity about the nature of the interventions being used, the quality of context, and, the type of facilitation needed to ensure a successful process. See section 5.

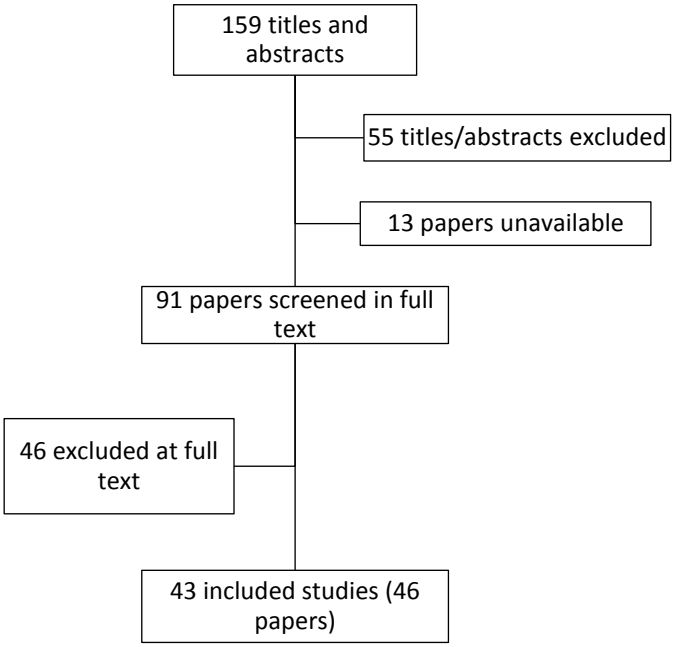
2.8 Process evaluations and views studies associated with Review 1 interventions

A comparison of the effectiveness findings from studies included in Review 1 and their associated process evaluations and views-based studies from Review 2 was also performed. This comparison offers additional data around and potential explanations for the results of Review 1, and highlights key barriers and facilitators that should be considered in the context of these data. See section 6.

3. RESULTS

3.1 Search Results

Literature searches were conducted during Review 1, and resulted in 7682 citations of which 139 titles and abstracts were potentially relevant to Review 2 [See Appendix F]. An additional 20 records were identified through contacts with experts and reference list checking. Thus 159 titles and abstracts were screened in duplicate. Of these, 91 were judged potentially relevant and passed to the full-text screening stage. The records of thirteen dissertations or conference abstracts were unavailable in full-text and did not provide sufficient information in the abstract for inclusion in the review. A further 46 were excluded as they did not fully meet the review criteria (see appendix G for reasons). Forty three studies (reported in 46 papers) were included.



3.2 Quality and applicability of studies

Twenty-three qualitative studies were identified, providing rich data for the thematic analysis. In general, the internal validity of these studies was moderate to good with eight studies deemed to have high internal validity (++), twenty of moderate quality (+) and five of low quality (−). Six cross-sectional studies and one correlation study were also included, which were judged to have mostly moderate interval validity (six [+] and one [−]). These study designs did not allow as rich an insight into participant's views as qualitative designs. Twelve process evaluations were also included which could not be quality assessed. The majority of these studies also provided only limited contextual insight into participants' views and experiences.

The review was limited to countries with similar levels of child overweight and obesity and economic development to the UK. Additionally, interventions were either community-based or in hospital outpatient settings. Overall applicability of the interventions is likely to be high. Twenty-one studies were conducted in the UK, nine in the USA, seven in Australia, two in Canada and three in Western Europe (Sweden, Iceland and Belgium). Further details of the characteristics of included studies are provided in table 1 overleaf.

Table 1: Brief summary of included studies

* Studies are complex and this table can only give a flavour of each intervention. See Appendix A for more detailed summaries.

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
Alm 2008 Qual +	To examine the reasons for managing weight, to investigate the barriers and facilitators to achieving behaviour goals, and to assess how a behaviour coach affects the goal-setting process of obese inner-city adolescents in a weight management program.	United States	**Programme:** Behavioural / lifestyle (teenways). Intervention duration: not clear but average length of participation was 3-9 months. **Timing of study interviews:** not clear but indicates telephone interviews were conducted once the participant had already completed Teenways pilot project Programme behavioural goals were monitored using the Teenways study records.	Children [Adolescents, 13-16].	Adolescents.
Avery 2012 Qual +	Evaluation through group facilitators of a family-based national programme that aimed to empower adolescents to adopt healthier lifestyles.	UK	**Programme:** Behavioural / lifestyle. **Intervention duration:** not clear though the mean attendance was 12.5 weeks (SD 8.11). **Timing of study interviews:** Not reported.	Children [Adolescents, 11-15].	Providers.
Barlow 2006 Xsec −	To identify parent reasons for lack of return to a weight management programme, a questionnaire was sent to 85 families who attended two or fewer visits.	United States	**Programme:** Behavioural / lifestyle. **Intervention duration:** not reported, participants are requested to attend monthly follow-up appointments for an unspecified amount of time. **Timing of study survey**: a questionnaire was sent out 1 year to 3.5 years after the initial appointment.	Family [Children and adolescents; mean 11.9 (SD 3.6)].	Parents.
Braet 2010 Xsec +	Evaluate the pre-treatment characteristics and barriers in completers and non completers for families applying for obesity treatment.	Belgium	**Programme:** Behavioural / lifestyle, plus exercise and diet interventions. **Intervention duration:** 6 biweekly group/individual sessions. **Timing of study survey:** at one year follow-up.	Family. [Children, mean 10.5 (SD 2.6)].	Parents.

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
Brennan 2012 PE Aus PE	To explore reported barriers to treatment completion in a sample of adolescents and their parents who either completed or did not complete family-based cognitive behavioural lifestyle intervention for overweight and obese adolescents.	Australia	**Programme:** Behavioural / lifestyle, plus exercise and diet interventions. **Intervention duration:** not clear, treatment phase 14 weeks then maintenance phase of weekly followed by monthly sessions. **Timing of study data collection:** at the completion of the programme or at the point of treatment cessation to complete either a completers or non-completers questionnaire.	Family [Adolescents, 11.5 to 18.9, mean 14.5].	Adolescents and Parents.
CI Research 2009 Qual –	A programme of research to include a consultation with parents who had received National Child Measurement Programme letters. The research was also intended to incorporate the views of stakeholders with knowledge of weight management programmes in Telford and Wrekin and also parents who had previously engaged with the 'Y W8?' programme.	UK	**Programme:** Behavioural / lifestyle (YW8). **Intervention duration:** not reported. **Timing of study interviews:** not reported.	Family [Children, age unspecified].	Parents and Providers.
Cote 2004 Xsec +	To examine the demographic, illness and quality of care determinants of service attrition in a paediatric obesity program, and to elucidate factors that may promote families return to care.	United States	**Programme:** Behavioural / lifestyle and exercise interventions. **Intervention duration:** 12 week programme followed by a 6 month and 12 month phase. **Timing of study survey:** at end of treatment and for period thereafter.	Family [Children & adolescents, 5-17].	Parents.
Dhingra 2011 Xsec +	To combine adolescent demographic and health information and parent motivational measures to improve understanding of treatment initiation in adolescent overweight and obesity intervention.	Australia	**Programme:** Behavioural / lifestyle. **Intervention duration:** 10-12 week face to face programme, followed by a 6month maintenance intervention that combined both face to face and telephone interviews. **Timing of study survey:** on registering interest in participation.	Family [Adolescents, 12-18].	Parents.

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
Dixey 2006 Qual –	To find out from parents what they thought about the programme, and in a more general sense to find out more about the role of parents in weight management.	UK	**Programme:** Behavioural and exercise intervention (WATCH-IT). **Intervention duration:** 12 months. **Timing of study interviews:** not reported.	Family [Children, age unspecified].	Parents.
Farnesi 2012 Qual ++	To explore the understanding of collaboration between clinicians working in the field of paediatric weight management and parents of overweight children.	Canada	**Programme:** Limited info on intervention content. Appears to be group-based behavioural / lifestyle education intervention for parents. **Intervention duration:** 16 sessions. **Timing of study interviews:** According to participant preference and availability.	Family [Children, 8-12].	Children, Parents and Providers.
Gellar 2012 Qual ++	To gain insight into the needs and suggestions of stakeholders regarding the design and implementation of a nurse-delivered intervention for overweight and obese adolescents.	United States	**Programme:** Not yet delivered. Study considers planning the design and implementation of a school nurse-delivered intervention for overweight and obese adolescents. **Intervention duration:** 3 focus groups with each of the 5 stakeholder groups, 45 minutes to 1.5 hours in duration. **Timing of study interviews:** Not reported.	Children [Adolescents, 15-18].	Children, Parents and Providers.
Golley 2007 PE	To evaluate the effectiveness of a parenting skills training in the treatment of overweight children.	UK	**Programme:** Behavioural / lifestyle (Triple P). **Intervention duration:** 12 months. **Timing of study data collection:** Anonymous satisfaction questionnaire, probably at end of intervention.	Parents [Children, 6-9].	Parents.
Gunn 2008 Xsec +	Why GPs became involved and the benefits they enjoyed from their involvement in the study?	Australia	**Programme:** Behavioural / lifestyle education **Intervention duration:** 9 to 12 months **Timing of study survey:** Not clear, one survey completed before training sessions, another 3-4weeks after training and finally completion of the trial 9-12 months later.	Children [Children, age unspecified].	Parents and Providers.
Gunnarsdottir 2011	To investigate whether outcome from child obesity treatment is affected by parental	Iceland	**Programme:** Behavioural / lifestyle education.	Family [Children, 7.5 – 13.6,	Parents.

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
CS +	level of motivation for treatment at baseline. Specifically the predictive power of the three components of motivation (importance, confidence, readiness) was tested for four outcomes: (i) treatment completion; (ii) early treatment response (weight loss assessed at week 5); (iii) post-treatment weight loss) and (iv) weight loss at 1-year follow up.		**Intervention duration:** 18 weeks **Timing of study survey:** Baseline assessment of parental views and motivations (subsequently linked to outcomes). Also contact with parents following child drop-out from programme.	mean 11.4].	
Hester 2010 Qual ++	Questions around: returning home, living life, personal transitions, possible selves, change and exception talk.	UK	**Programme:** Behavioural / lifestyle; plus exercise and diet interventions delivered as part of a residential camp (Carnegie International Camp). **Intervention duration:** 8-week residential programme. **Timing of study interviews:** Not clear, but 3 interviews were completed in total: end of programme, 3month and 6month post-programme.	Children [Adolescents, 14-16].	Children.
Holt 2005 Qual +	To evaluate (1) goals and aspirations; (2) pre-camp concerns; (3) experiences during the first few weeks of camp; (4) experiences during the rest of the camp; (5) evaluation of strengths and weaknesses of camp.	UK	**Programme:** Behavioural / lifestyle; plus exercise and diet interventions delivered as part of a residential camp (Carnegie International Camp). **Intervention duration:** 6-week residential programme. **Timing of study interviews:** Before and after the 2002 CIC-UK programme and then a 5month follow up interview.	Children [Adolescents, mean 13.7 (SD 1.5)].	Children.
Jinks 2010 Qual +	To collect in-depth information of the participants' views concerning the programme's effectiveness and how the programme could be improved. No other details.	UK	**Programme:** Behavioural / lifestyle and exercise interventions. (OSCAR programme family education – whereby family plans are made). **Intervention duration:** 12 weeks. **Timing of study interviews:** Variety of data collection methods and times (discussion, 1:1, email, phone). Details of timing not reported.	Family [Children & adolescents, 7-14].	Children, Parents and Providers.

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
Jones 2010 PE	To (a) Outline findings from process outcome data of the HIKCUPS study; (b) Inform the design and development of future research interventions and practice in the management of child obesity.	UK	**Programme:** Behavioural / lifestyle plus exercise and diet. **Intervention duration:** 6 months. **Timing of study data collection:** At the final face to face session in week 10.	Family [Children, 5-9].	Parents and Providers.
Kitscha 2009 Qual +	Assessment of the reasons for patient non-return to an individual weight management counselling for physician-referred children and adolescents.	Canada	**Programme:** Behavioural / lifestyle plus exercise and diet. **Intervention duration:** 6 months. **Timing of study interviews:** Following non-return of child/adolescent to the programme.	Family [Children & adolescents, 2-17].	Parents and Providers.
Kornman 2010 PE	To examine adolescent and facilitator participation in the first 10 months of an obesity management intervention including electronic contact via e-mail and short message service (SMS) communication.	Australia	**Programme:** Behavioural / lifestyle (e-contact intervention). **Intervention duration:** 21 months; to 10 months for this evaluation. **Timing of study data collection:** 12 months post baseline.	Children [Adolescents, 13-16].	Children.
Monastra 2005 Qual –	To evaluate short term outcomes of the LEAP intervention.	United States	**Programme:** Behavioural / lifestyle. **Intervention duration:** 8 weeks. **Timing of study interviews:** Survey completion at the beginning and end of the intervention.	Children [Children & adolescents, 7-14].	Children and Parents.
Morinder 2011 Qual ++	Awareness and individual consequences of obesity, referral to and participation in obesity treatment, personal goals and motives for weight reduction and participation in obesity treatment, possibility to influence one's own treatment, turning points in the treatment process, treatment recommendations and compliance, self-esteem and participation in obesity treatment, thoughts about potential adult body weight.	Sweden	**Programme:** Behavioural / lifestyle plus exercise and diet (in some cases also includes weight-loss drugs and bariatric surgery). **Intervention duration:** Not clear as study focuses on pre-intervention feelings. **Timing of study interviews:** Not clear; Appears that one face to face interview was conducted prior to the intervention taking place.	Children [Adolescents, 14-16].	Adolescents.

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
Murtagh 2006 Qual +	To identify the physical and psychological levers and barriers to weight loss experienced by obese children.	UK	**Programme:** Behavioural / lifestyle. **Intervention duration:** > 3 months (no information on upper limit). **Timing of study interviews:** Unstated but > 3 months after enrolment.	Children [Children & adolescents, 7-15].	Children.
Owen 2009 Qual ++	To identify which aspects of management they thought helped or hindered weight loss, and thus gain insight into how a childhood obesity clinic should be developed in primary care.	UK	**Programme:** Behavioural / lifestyle (COCO). **Intervention duration:** Not clear. **Timing of study interviews:** Interview with the parent, followed by interview with the child at some point while attending the obesity clinic.	Family [Children & adolescents, 7-18].	Children and Parents.
Perry 2008 Qual ++	To assess how the programme was implemented and how far it satisfied participant expectations.	Australia	**Programme:** i) Behavioural / lifestyle only; ii) behavioural / lifestyle and parenting education (PEACH). **Intervention duration:** 6 months. **Timing of study interviews:** Anonymous questionnaires at the end of the 4 week parent skills training component; Semi structured interviews at the 12 month time point.	Children [Young children, mean 8.2±1.2].	Parents.
Pescud 2010 Qual +	A wide range of topics was discussed including motivations to commence the program, perceptions of the program, and any problems that may have been experienced. Interviewees were also asked to reflect upon the positive and negative aspects of the program and to describe any barriers to their on-going participation in similar programs in the future.	Australia	**Programme:** Exercise only. **Intervention duration:** 8-, 16- or 24-weeks. **Timing of study interviews:** Semi-structured interviews with both parent and child separately completed after completion of the programme.	Children [Children, 7-11].	Children and Parents.
Pinard 2012 Qual **–**	To explore the feasibility and effectiveness of family based intervention to treat	United States	**Programme:** Behavioural / lifestyle.	Family [Children, 8-12].	Children, Parents and

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
	childhood obesity.		**Intervention duration:** 12-weeks. **Timing of study interviews:** Pre- and post- programme interviews plus biweekly automated telephone surveys and group sessions throughout intervention.		Providers.
Pittson 2011 PE	To develop a family based programme using intervention mapping to ensure the intervention developed was grounded in theory.	UK	**Programme:** Behavioural / lifestyle [Y W8]. **Intervention duration:** 12 weeks. **Timing of study data collection:** Focus groups with children and semi-structured interviews with parents as pre-intervention needs assessment. End of programme evaluation.	Family [Children, 11-13].	Children and Parents.
Pittson Unpublished PE	Not stated. [A mixed methods process evaluation of the YW8 intervention]	UK	**Programme:** Behavioural / lifestyle [Y W8]. **Intervention duration:** 12 weeks. **Timing of study data collection:** End of programme evaluation of attendees and non- attendees.	Family [Children, 8-13].	Children, Parents and Providers.
Robertson 2009 PE	Re this review: [p.111] To evaluate the programme's acceptability to families.	UK	**Programme:** Behavioural / lifestyle (Families for Health). **Intervention duration:** 12 weeks. **Timing of study data collection:** A range of within- and end of programme evaluations (weekly evaluation forms and end of programme questionnaire for parents, weekly provider evaluations, end of programme interviews with children).	Family [Children, 7-13].	Children, Parents and Providers.
Sahota 2010 PE	To identify key knowledge and skills required by professionals to deliver the behavioural aspects (of child weight management programmes) effectively and identify any tools (resources, checklists, frameworks and training) to facilitate delivery.	UK	**Programme:** Behavioural / lifestyle. **Intervention duration:** Not applicable. Interviews with providers of a range of lifestyle weight management programmes for children and adolescents. **Timing of study data collection:** Not linked to specific intervention.	Family [Children & adolescents, 2-18].	Providers.

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
Staniford 2011 Qual ++	To explore key stakeholders perspectives towards childhood obesity treatment and intervention design.	UK	**Programme:** Behavioural / lifestyle (MEND). **Intervention duration:** Not clear, children were enrolled in MEND or some other childhood obesity treatment intervention. **Timing of study interviews:** During the intervention period.	Family [Children, 7-13].	Children, Parents and Providers.
Stewart 2008 Qual +	To gain insight into the journey of parents of obese children to and through treatment (2008a) and explore behavioural change techniques in paediatric obesity (2008b).	UK	**Programme:** Behavioural / lifestyle, plus exercise and diet interventions (SCOTT). **Intervention duration:** 26 weeks. **Timing of study interviews:** 12 months after the start of treatment.	Family [Children, 5-11].	Parents.
Truby 2011 PE	To describe the characteristics of adolescents seeking treatment for obesity via the 'Eat Smart' feasibility study.	Australia	**Programme:** Behavioural / lifestyle, plus exercise and diet interventions. **Intervention duration:** 12 weeks. **Timing of study data collection:** Baseline predictors of outcomes for participants and non-participants.	Children [Adolescents, 10-17, mean 13.2 (SD 1.9)].	Children.
Twiddy 2012 Qual +	To explore the views of parents, children and health trainers to identify issues which can inform the development of more effective (childhood weight management) programmes.	UK	**Programme:** Behavioural / lifestyle (WATCH-IT. **Intervention duration:** 3 or 4 months with optional renewals up to 12 months. **Timing of study interviews:** Semi structured interviews with families and focus groups with providers. No information on timings.	Family [Children & adolescents, 8-18].	Children, Parents and Providers.
Tyler 2009 Qual +	To examine the collaborative negotiation process to help low-income families improve lifestyle and weight-related health indicators in their overweight children.	United States	**Programme:** Behavioural / lifestyle. **Intervention duration:** 37weeks. **Timing of study interviews:** Recording of structured field notes and interactions within the programme throughout the intervention.	Children [Children, 8-12].	Parents.
Watson 2008	In addition to investigating impact,	UK	**Programme:** Behavioural / lifestyle and exercise.	Family	Children and

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
PE	a) To explore the acceptability of the GOALS intervention for Sandwell families and the key factors that supported their behaviour change (if applicable). b) To explore the feasibility of delivering and implementing GOALS in Sandwell, with a view to sustainable partnership working allowing development of the intervention to meet local need.		interventions. **Intervention duration:** 18 weeks. **Timing of study data collection:** Separate child and adult focus groups at weeks 6 and 18. Post intervention email feedback.	[Children, 8-14].	Parents.
Watson 2012a Qual +	In addition to assessing efficacy of intervention (Study 1): Study 2 (how does GOALS work?) qualitatively explores experiences of families. Study 3 (who does GOALS work for in the long-term and how?) follows up families 3-5 years after attending GOALS to explore actual and perceived outcomes, parental psychosocial factors associated with positive outcomes and the processes involved in sustaining long-term behavioural change.	UK	**Programme:** Behavioural / lifestyle, plus exercise and diet interventions. **Intervention duration:** 18 weeks. **Timing of study interviews:** Post intervention and 12 month post intervention responses from parents by written questionnaire. Separate parent and child focus groups at week 6.	Family [Children & adolescents, 4-16].	Children and Parents.
Watson 2012b PE	To explore the feasibility of the Getting Our Active Lifestyles Started (GOALS) intervention as a model for treating childhood obesity in Blackburn with Darwen.	UK	**Programme:** Behavioural / lifestyle, plus exercise and diet interventions. **Intervention duration:** 18 weeks. **Timing of study data collection:** Follow up interview, 9months after baseline.	Family [Children, 8-12].	Children, Parents and Providers.
Withnall 2008 Qual -	Scope the behaviours and motivational issues related to weight management with the chosen target audience to inform current and future weight management	UK	**Programme:** Behavioural / lifestyle and exercise interventions. **Intervention duration:** not applicable as three different	Children [Children & adolescents, 5-18].	Children and Parents.

First Author(s), Year(s) Programme	Study Aim	Location	Intervention	Intervention Target: attendees [age range, years]]	Views of…
	provision in Kirklees.		weight management interventions were discussed. **Timing of study interviews:** Not reported. Various group sessions with participants.		
Wolman 2008 PE	Not stated. A general discussion paper around recruitment difficulties to the programme.	UK	**Programme:** Behavioural / lifestyle and physical activity (Fighting Fit Tots). **Intervention duration:** 11 weeks. **Timing of study data collection:** End of intervention evaluation.	Family [Young children, 1.5 – 2.5].	Parents.
Woolford 2010 Xsec +	To identify factors that might influence physicians referral to weight management programmes.	United States	**Programme:** Behavioural / lifestyle. **Intervention duration:** Not applicable; survey for paediatricians and family physicians. **Timing of study survey:** Not linked to specific intervention.	Children [Adolescents, ages unstated].	
Woolford 2011 Xsec +	Within a larger project on the development of tailored text messages for adolescents enrolled in an existing multidisciplinary weight management program, this study explored participants' perspectives about message content.	United States	**Programme:** Behavioural / lifestyle (MPOWER programme). **Intervention duration:** 6 months. **Timing of study survey:** Not stated. Four focus groups.	Children [Adolescents, 11-19].	Children.

4. FINDINGS

The review findings are organised according to the journey a child or young person makes throughout their participation in lifestyle weight management programmes (whether directly attending programme sessions or indirectly through their parent or guardians' attendance) and the internal and external influences that may affect engagement and successful progression through the intervention.

These factors are conceptualised in the diagram below. A lifestyle weight management programme may consist of recruitment and/or referral stage, the delivery of a singular or package of intervention components incorporating specific design features and a post intervention stage.

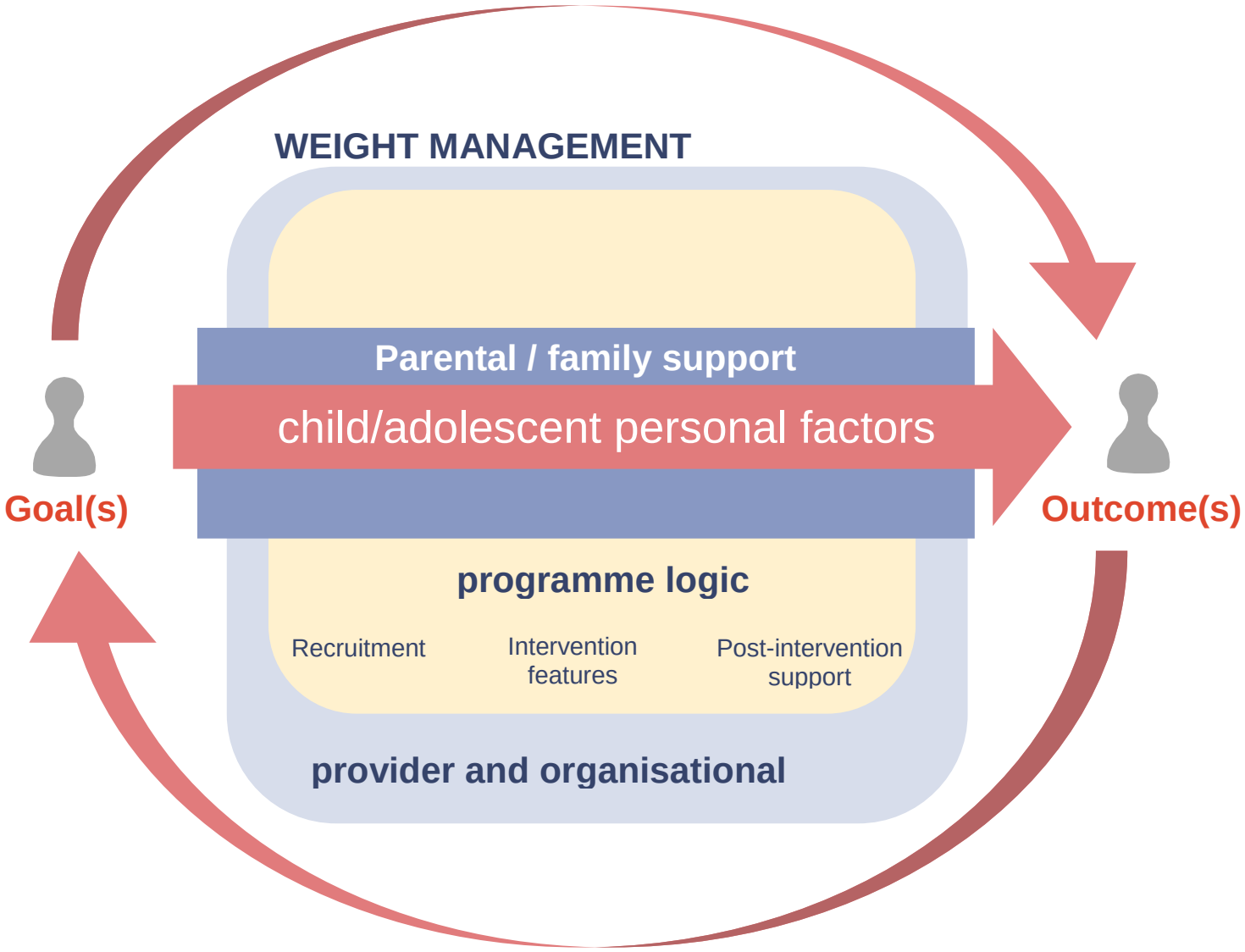


Figure 1: Logic model conceptualising factors associated with a child or young persons' uptake, experience and adherence with weight management programmes

These combined elements are referred to as the 'programme logic'. The effectiveness of the programme logic delivery will be influenced by provider dynamics and the corresponding organisational environment within which they operate.

Children and/or their parents are likely to be motivated by specific goals and expectations for the programme. These goals may not be fixed, and could alter or change throughout the intervention as outcomes are achieved or re-evaluated. Core to the attendee's engagement with the programme, will be a range of personal factors that may influence their successful progression with the intervention; along with any support provided from attendee's parents /carers or families.

Please note that although the logic model focuses on the downstream or 'closely linked' factors related to the uptake, adherence and sustainment of lifestyle weight management programmes (LWMP), it should be considered within the broader context of lifestyle and behavioural change. Adolescents' and children's weight will be affected by a broad range of direct and indirect influences of behaviour change and healthy lifestyles apart from those inherent in lifestyle weight management programmes. The importance of these factors are recognised in their contribution to the overall success of weight management programmes, but are considered outside of the scope and purpose of this review, and are therefore not covered.

Analysis of the results revealed that programme users and providers shared many common themes, therefore subsidiary questions 1a and 1b are answered in the same section, first by presenting shared themes between programme clients (children/young people) and intervention providers, then by presenting additional themes raised only by one group or the other.

The third subsidiary question is answered separately, with a description of key findings for each type of population group based on information contained within the available evidence.

Currently the overall aim of most lifestyle weight management programmes for children is to prevent or slow further weight gain so that as the child grows there will be a resulting improvement in BMI z score.

However in some studies authors or study participants refer to goals and outcomes as 'weight loss'. To reflect current practice, this review describes key findings using the overarching term 'weight management', unless quoting a paper verbatim.

Question 1a: What are the views, perceptions, beliefs and experiences of children, young people and their families who use lifestyle weight management services?

Question 1b: What are the views, perceptions, beliefs and experiences of the staff providing, commissioning and delivering weight management services to children and young people?

4.1. Goals and Outcomes

Goals and outcomes: user and provider shared themes

Weight management

The desire to manage weight was reported by both children and parents as a clear motivator for programme users to join lifestyle weight management programmes (LWMPs) (**Holt 2005 +**, **Pescud 2010 +**, **Stewart 2008 +**, **Twiddy 2012 +**, **Withnall 2008 –**). However the level of importance given to weight management varied, in comparison to other desired goals and according to whether the view was expressed by parents or children. For example:

> *"Half of parents explicitly stated they wanted their child to lose weight, but just as many hoped that involvement in the programme would positively impact on their psychological well-being, and often prioritised this over weight-loss. For the majority of children, the goal was to lose weight, and none mentioned increased self-confidence as a reason for joining."* (**Twiddy 2012 +; UK**, **parent and children views**)**.**

The majority of current child LWMPs to prevent or slow further weight gain so that as the child grows there will be a resulting improvement in BMI z score. However most of the review studies that considered weight outcomes referred to 'weight loss' goals (**Holt 2005 +**, **Pescud 2010 +**, **Twiddy 2012 +**, **Withnall 2008 –**).

In eight studies, perceived improvements in children's and/or young people's weight management outcomes were described by providers (**Jinks 2010 +**) or programme users (**Alm 2008 +**, **Hester 2010 +**, **Pescud 2010 +**, **Pittson Unpublished PE**, **Stewart 2008 +**, **Watson 2008 PE**, **Watson 2012a +**). Parents identified in one study that weight management was a facilitator to remaining in the programme (**Pescud 2010 +**).

Two studies presented perceptions of the lack of children's 'weight loss', without reference to the wider aims of weight management programmes. These were voiced by providers (**Dixey 2006 –**) and parents (**Watson 2012a +**). One study of children also described how weight gain prompted feelings of embarrassment and shame, and led to failure to attend booked appointments:

> *"It was summer when I'd put on…like…five kilos…then I called and cancelled on my own…I really did not want to come…did not show the appointment letter to my mother"* (**Morinder 2011 ++**, **Sweden**, **child view**)**.**

Healthy lifestyle

Improvements to healthy lifestyle behaviours such as improved diet and increased physical activity were described in five studies (provider perspectives: **Watson 2008 PE**, **Watson 2012b PE**;

user perspectives: **CI Research 2009 –**, **Hester 2010 ++ Hester 2010 ++**, **Stewart 2008 +**, **Watson 2008 PE**, **Watson 2012a +**). These changes were expressed in studies that had also raised concerns over whether the programme was resulting in overall weight management (**Stewart 2008 +**, **Watson 2008 PE**).

Health

Health improvement or prevention of future health problems were also described as incentives to joining LWMPs by children and families (**Alm 2008 +**, **Dixey 2006 –**, **Holt 2005 +**, **Morinder 2011 ++**, **Staniford 2011 ++**, **Watson 2012a +**):

> *"Being overweight is not healthy. I don't want to have a heart attack like my grandmother"* (**Alm 2008 +; US**, **child view**)

Providers (**Jinks 2010 +**) and programme users (**Pittson 2011 PE**, **Pittson unpublished PE**, **Stewart 2008 +**, **Watson 2008 PE**) described perceived health improvements during their programme participation:

> *"Family commitment to …[weight management programme] and (their) regular attendance at the sessions was reflected in their improved medical outcome"* (**Jinks 2010 +; UK**, **provider view**)

<u>Goals and outcomes: programme user-only themes</u>

Psychological wellbeing

Psychological wellbeing was highly valued among children and their families, and was the most commonly described outcome across the included studies. Improving children's confidence and self-esteem were offered as reasons for joining LWMPs in six studies (**Dixey 2006 –**, **Holt 2005 +**, **Morinder 2011 ++**, **Pescud 2010 +**, **Stewart 2008 +**, **Twiddy 2012 +**). Twelve studies also described child and family reports of increased confidence and self-esteem as a result of programme participation (**Alm 2008 +**, **CI Research 2009 –**, **Dixey 2006 –**, **Hester 2010 ++ Pittson unpublished PE**, **Pittson 2011 PE**, **Robertson 2009 PE**, **Staniford 2011 ++**, **Stewart 2008 +**, **Twiddy 2012 +**, **Watson 2008 PE**, **Watson 2012a +**).

Differing degrees of importance appeared to be given to psychological wellbeing as an outcome for LWMPs. **Stewart 2008 +** suggested that perceived benefits to children's self esteem or quality of life were consistently more important than weight outcomes. Parent viewpoints also suggested that psychological improvements were motivators to remain with the LWMP, even without weight management achievements:

> *"Six families continued to attend even when their child failed to lose weight and identified other tangible benefits from participation including weight maintenance and increased confidence"* (**Twiddy 2012 +;** UK, authors reporting family behaviour)

> *"Most parents did note as a positive and concrete outcome were improvements in the child's self-esteem and confidence…Indeed by this stage of the journey, most parents overwhelmingly saw the positive changes in self-esteem as the key outcome, more important than weight change, and for them an affirmation of successful treatment".* (**Stewart 2008 +;** UK, authors reporting parent view).

Whereas in two studies, some parents (**Dixey 2006 –**) and children (**Twiddy 2012 +**) indicated weight loss was the most important outcome. For example following provider concerns that the programme was not sufficiently improving attendees' weight, parents agreed that the real goal was weight loss:

> *"I think it's the friendship factor that they get out of it as well and they don't feel they have to lose weight…if he hasn't lost the weight he still feels he can go and enjoy himself….It's got to be moving forward as well. You're not just about accepting them, it's got to be looking at the weight issue as well."* (**Dixey 2006 –; USA**, **parent view**)**.**

Social outcomes

The desire to improve children's social integration was a strong theme across children and families, but was not mentioned by providers. Seven studies listed goals to make friends, 'fit in' or reduce bullying as incentives to joining LWMPs (**Alm 2008 +**, **Gellar 2012 ++**, **Holt 2005 +**, **Murtagh+, Twiddy 2012 +**, **Withnall 2008 –**). Children and families described positive impacts on friendships and 'fitting in' with peers, as a consequence of meeting other children on the programme or due to improved weight management and confidence (**Dixey 2006 –**, **Hester 2010 ++**, **Jinks 2010 +**, **Pittson Unpublished PE**, **Robertson 2009 PE**, **Staniford 2011 ++**, **Stewart 2008 +**, **Withnall 2008 –**)**.** For example:

> *"They liked making new friends that were like them"* (**Jinks 2010 +; UK**, **provider recording families view in their family plan**)
>
> *"The greatest reward or anticipated reward of losing weight for parents, children and young people was 'fitting in' with peers; wearing the same clothes, going to the same shops and partaking in the same sports"* (**Withnall 2008 –; UK**, **author describing children and parent view**)**.**
>
> *Most parents did note as a positive and concrete outcome were improvements in the child's self-esteem and confidence. This was generally discussed in terms of style of clothes they could now wear, increased enjoyment in participating in PE and improved peer relationships" (***Stewart 2008 +; UK**, **author reporting parent view**)**.**

Unintended consequences

Five studies reported families of children being concerned about potential adverse effects of weight management on children's health, wellbeing or health behaviour (**Hester 2010 ++**, **Morinder 2011 ++**, **Twiddy 2012 +**, **Woolford 2011 +**). Children described in one [+] cross-sectional survey[4] how an e-contact intervention could potentially trigger cravings for unhealthy foods if they were mentioned in the e-messages (**Woolford 2011 +**). Whereas failure to achieve weight management goals was described as impacting on other valued goals, particularly psychological well-being in two further studies:

> *"For … [child's name], acquiring more knowledge was only serving to increase his daily consciousness of not losing weight, which emphasised incompetence."* (**Hester 2010 ++; UK**, **author reporting child view**)
>
> *"felt ashamed…because you said you would lose weight but instead you gained"* (**Morinder 2011 ++; UK**, **child view**)

Parents' views also suggested potential barriers to the uptake of or adherence to programmes due to fears of adverse effects in one further study:

> *"Three parents were ambivalent about making an issue out of their child's weight. They wanted their child to lose weight and were aware of the health implications but did not want their child to 'have a complex'…Although they acknowledge that … [the weight management programme] was careful to talk about achieving a healthy weight they were nevertheless worried about getting the balance right between being supportive and their child becoming anorexic."* (**Twiddy 2012 +; UK**, **author reporting parent views**)

Evidence Statements:

Goals and Outcomes

Goals and outcomes: user and provider shared themes

1.1 **Facilitator: weight management goals.** There is evidence from 5 qualitative studies (4 [+][1-4] and 1 [–][5]) that the desire to lose weight or prevent further weight gain was a motivator for programme users to join and continue attendance at lifestyle weight management programmes. In eight studies, perceived improvements in children's and/or young people's weight management outcomes were described by programme providers (1 (+) qualitative study[6]) and programme users (1 [++] qualitative[7], 4 [+] qualitative[2,3,8,9], and 2 process evaluations[10,11]). This evidence is directly applicable as the studies were conducted in community-based settings in the UK or other similar countries (USA[8]).

[1]Holt 2005, [2] Pescud 2010, [3] Stewart 2008, [4]Twiddy 2012, [5]Withnall 2008, [6]Jinks 2010 , [7]Hester 2010, [8]Alm 2008 , [9]Watson 2012a , [10]Pittson Unpublished, [11]Watson 2008.

1.2 **Facilitator: health improvement goals.** Health improvement or prevention of future health problems were described as incentives to joining weight management programmes by children and families in six qualitative studies (two [++][1,2], three [+][3-5] and one [–][6]). Providers in one [+] qualitative study[7] and programme users in four studies (three process evaluations[8-10], one [+] qualitative study[11]) perceived health improvements as a consequence of attending weight management programmes.

[1]Morinder 2011, [2]Staniford 2011, [3]Alm 2008, [4]Holt 2005, [5]Watson 2012a, [6]Dixey 2006 –, [7]Jinks 2010, [8]Pittson 2011, [9]Pittson unpublished, [10]Watson 2008, [11]Stewart 2008

1.3 **Facilitator: healthier lifestyle behaviour.** Weight management programmes were perceived to improve children's lifestyle behaviours, such as healthier diet and increased physical activity, by programme providers in two process evaluations[1-2] and also by programme users in five studies (one [++] qualitative[3], two [+] qualitative[4,5], one [–] qualitative[6] and one process evaluation[1]).

[1]Watson 2008, [2]Watson 2012b, [3]Hester 2010, [4]Stewart 2008 UK, [5]Watson 2012a, [6]CI Research 2009

1.4 **Barrier: lack of programme impact on weight management.** Concerns that programmes were not helping children achieve weight management goals were expressed by providers in one [–] qualitative study[1] and by parents in one [+] qualitative study[2]. In both studies the weight outcome was described in terms of weight loss, without reference to the wider aims of most weight management programmes to slow further weight gain so that BMI z-scores improve as children grow. Also, children in one [++] qualitative study[3] stated that weight gain prompted feelings of embarrassment and shame, and led to non-attendance at booked appointments. There were different views between studies and between the participants of the same studies as to whether weight was the most important outcome. Two [+] qualitative studies[4,5] suggested psychological wellbeing was of equal or greater importance to parents, whereas

weight outcomes appeared more important to some children in two [+] qualitative studies[4,6] and to parents in one [–] qualitative study[1].

[1]Dixey 2006, [2]Watson 2012a, [3]Morinder 2011 [4]Twiddy 2012, [5]Stewart 2008, [6]Murtagh 2006

Goals and outcomes: programme user-only themes

1.5 **Facilitator: psychological wellbeing and social outcomes.** Improved psychological wellbeing such as confidence and self-esteem, or improved social outcomes such as reduced bullying and making friends were strong motivators for programme participation among children and their families in ten studies (two [++] qualitative[1,2], six [+] qualitative[3-8], and two [–] qualitative[9,10]). Programmes were perceived to be successful in improving these outcomes in twelve studies (two [++] qualitative[11,12], four [+] qualitative[3,6,7,13], two [–] qualitative [9,10], four process evaluations[14-17]). Two [+] qualitative studies[6,7] suggested improvements in these outcomes were sufficient to maintain engagement with programmes despite lack of weight management.

[1]Gellar 2012, [2]Morinder 2011, [3]Alm 2008, [4]Holt 2005 , [5]Pescud 2010, [6]Stewart 2008, [7]Twiddy 2012, [8]Murtagh 2006, [9]Dixey 2006, [10]Withnall 2008, [11]Hester 2010, [12]Staniford 2011, [13]Watson 2012a, [14]Pittson unpublished, [15]Pittson 2011, [16]Robertson 2009, [17]Watson 2008

1.6 **Barrier: concerns of adverse effects.** Five studies reported concerns that programmes may have a negative impact on children's wellbeing. One [+] qualitative study[1] reported parents' fears of children developing a 'complex' about their weight or becoming anorexic. Two qualitative studies (one [++][2], one [+][3]) described negative impacts on children's psychological wellbeing if they failed to lose weight, and in one further [+] qualitative study[4] children described how an e-contact intervention could potentially trigger cravings for unhealthy foods if they were mentioned in the e-messages.

[1]Twiddy 2012, [2]Hester 2010, [3]Morinder 2011, [4]Woolford 2011

Applicability:

1.1 Directly applicable: conducted in community-based settings in the UK or other similar countries (USA[8]).

1.2 Directly applicable: conducted in the UK in community-based settings.

1.3 Directly applicable: conducted in the UK in community-based settings.

1.4 Directly applicable: conducted in community settings in the UK and Sweden[3].

1.5 Directly applicable: conducted in community settings in the UK or similar countries (USA[3], Sweden[2], Australia[5]).

1.6 Directly applicable: conducted in community settings in the UK or similar countries (USA[4], Sweden[3]).

4.2 Children's personal factors

Personal factors: user and provider shared themes

Children's' personal factors

Programme users and providers both perceived children's lack of motivation to be a barrier to LWMP uptake (**Truby 2011 PE**, **Twiddy 2012 +**) and adherence (**Barlow 2006 –**, **Brennan 2012 PE**, **Dixey 2006 –**, **Jinks 2010 +**, **Kitscha 2009 +** , **Morinder 2011 ++**, **Twiddy 2012 +**)**.** For example, one parent stated:

> *"I don't think he was quite ready to take on the responsibility of the programme really […] he didn't want it enough"* (**Twiddy 2012 +; UK, parent view)**

> *"The levels of attendance was sporadic. This was due to the nature of the problems encountered by the families such as problems with transport, lack of motivation and lack of understanding what was expected (of the families)" (***Jinks 2010 +; UK, provider view)**

Similarly, high motivation was described as a facilitator to LWMP adherence by programme users and providers (**Dixey 2006 –**, **Gellar 2012 ++**, **Jinks 2010 +**, **Morinder 2011 ++**, **Owen 2009 ++**, **Twiddy 2012 +**). For example one parent recalled:

> *"Carl* never complained (although he didn't enjoy the programme). He only missed one session. He really wanted to succeed"* [*pseudonym] (**Jinks 2010 +; UK**, **parent view**).

Realisation and acceptance of children being overweight or obese

Children, their families and providers agreed on the importance of programme users realising and accepting children had weight management problems in six studies (**Dhingra 2011 +**, **Morinder 2011 ++**, **CI Research 2009 –**, **Stewart 2008 +**, **Watson 2012a +**). This provided the motivation to join and adhere to weight management programmes. For example, one child stated:

> *"This is the final step so to say…this is where you realise…well I am **very** very overweight"* (**Morinder 2011 ++; UK**, **child view**)

Accordingly, programme uptake was inhibited where families' did not acknowledge their child was overweight or obese (**Braet 2010 +**, **CI Research 2009 –**, **Farnesi 2012 ++**, **Murtagh 2006+, Stewart 2008 +**). For example, **CI Research 2009 –**, identified that the re-actions of recipients of National Child Measurement Programme (NCMP) letters informing them that their child was either overweight or very overweight depended on whether the parents accepted this judgement. Eighty percent of parents who did nothing were those who denied their child was overweight, compared to 55% of those who accepted the child's weight management difficulty. This was also reflected in parent and provider views:

> *"If my children had a problem then I probably would, but they haven't" (Parent, NCMP letter recipient" (***CI Research 2009 –; UK**, **child view**)

> *"They don't seem to be worried about it. It seems to be commonly accepted that their children are getting bigger and bigger. (Exercise instructor)"* (**CI Research 2009 –; UK**, **provider view**)

Personal factors: programme-user only themes

Apprehension about joining LWMPs

A strong theme among studies was the fear and apprehension felt among children and parents about joining weight management programmes. Many listed concerns related to general fears of the unknown [i.e. anxieties of meeting new people, struggling to make friends or worries of being the largest on the programme] (**Gellar 2012 ++**, **Holt 2005 +**, **Stewart 2008 +**, **Watson 2012a +**, **Withnall 2008 –**). However, several accounts highlighted misconceptions related to the nature of the programme. Reports of being unaware of the intervention eligibility criteria or participation requirements (**Robertson 2009 PE**, **Watson 2012b PE**, **Withnall 2008 –**) and negative expectations of the intervention being run in a military manner (**CI Research 2009 –**, **Holt 2005 +**, **Watson 2012a+**, **Watson 2012b PE**) were described. For example:

> *"I thought we would be doing a lot more like physical activity and everything and we would be really pushed to do it and everything but it was better than I expected" (***Watson 2012b PE;** UK, child view)

> *"You know I think if somebody said oh, it included parenting skills they'd probably think you know you're going to tell me I'm doing this wrong. But because of how it's all presented, parenting changes you make you've chosen to do yourself and it's not until you reach the end that you realise that there really is some practical parenting, oh what's the word, tips, if you like. And because it's not sort of thrust in your face as a parenting thing you don't feel on edge about it. You don't feel you're being judged, you just see it as an aid, to help you achieve your goal at the end, it's really nice".* (**Robertson 2009 PE**, **UK**, **parent view**)

Individual and family demands

Parents and children described a range of individual and family demands, such as busy lifestyles, homework, work or family commitments, which hindered programme participation (**Brennan 2012 PE**, **Golley 2007 PE**, **Gunnarsdottir 2011 +**, **Perry 2008 ++**, **Watson 2012a +**) and adherence (**Barlow 2006 –**, **Braet 2010 +**, **CI Research 2009 –**, **Farnesi 2012 ++**, **Stewart 2008 +**).

Evidence Statements:

Personal Factors

Personal factors: user and provider shared themes

1.7 **Facilitator: children's motivation to manage weight.** High levels of children's motivation to manage weight was reported in six qualitative studies (three [++][1-3], two [+][4,5] and one [–][6]), and helped promote participation in weight management programmes.

[1] Gellar 2012, [2]Morinder 2011, [3]Owen 2009, [4]Jinks 2010, [5]Twiddy 2012, [6]Dixey 2006.

1.8 **Facilitator: awareness and acceptance of children being overweight or obese**. Children, their families and providers emphasised that awareness and acceptance of children being overweight or obese was a facilitator to programme adherence. This was evidenced in six qualitative studies (three [++][1-3], two [+][4,5], one [–][6]).

[1] Gellar 2012, [2]Morinder 2011, [3]Owen 2009, [4]Jinks 2010, [5]Twiddy 2012, [6]Dixey 2006.

1.9 **Barrier: lack of children's motivation.** Programme user and providers shared views that

children's lack of motivation was a barrier to uptake of lifestyle weight management programmes. This was described in one [+] qualitative[1] study and one process evaluation[2]. Lack of motivation was also described by programme users and providers as a barrier to programme adherence in seven studies (one [++] qualitative[3], three [+] qualitative[1,4,5], one [–] cross-sectional[6] , one [–] qualitative[7], and one process evaluation[8]).

[1]Twiddy 2012, [2]Truby 2011, [3]Morinder 2011, [4] Jinks 2010, [5]Kitscha 2009, [6]Barlow 2006, [7]Dixey 2006, [8]Brennan 2012

1.10 **Barrier: lack of awareness and acceptance of children being overweight or obese**. Family and provider perspectives in five studies (one [++] qualitative[1], two [+] qualitative[2,3], one [+] cross-sectional[4] and one [–] qualitative study[5]) indicated that some families do not acknowledge or recognise that their child is overweight or obese, which hindered programme uptake and adherence.

[1]Farnesi 2012, [2]Stewart 2008, [3]Murtagh 2006, [4]Braet 2010, [5]CI Research 2009.

Personal factors: programme-user only themes

1.11 **Barrier: children's and their parents' apprehension.** A strong theme identified in five qualitative studies (one [++][1], three [+][2-4] and one [–][5]) was the anxiety and apprehension described by children and parents about joining weight management programmes. Concerns manifested as general fears of the unknown (e.g. anxieties of meeting new people, struggling to make friends or worries of being the largest on the programme). In addition, there were reports in three qualitative studies (one [+][2], two [–][5,6]) and one process evaluation[7] of programme users having negative misperceptions of the programme characteristics and eligibility criteria prior to starting the intervention.

[1] Gellar 2012,[2]Holt 2005, [3]Stewart 2008, [4]Watson 2012a, [5]Withnall 2008, [6]CI Research 2009, [7]Robertson 2009

1. 12 **Barrier: individual and family demands.** Parents and children described a range of individual and family demands, such as busy lifestyles, homework, work or family commitments. These were indicated as obstacles to programme uptake or adherence in ten studies: two [++] qualitative[1,2], three [+] qualitative[3-5], one [+] cross-sectional[6] and one [–] cross-sectional[7], one [–] qualitative[8] and two process evaluations [9,10].

[1]Perry 2008, [2]Farnesi 2012 [3]Gunnarsdottir 2011, [4]Watson 2012a, [5]Stewart 2008, [6]Braet 2010 [7]Barlow 2006, [8]CI Research 2009, [9]Brennan 2012, [10]Golley 2007

Applicability:

1.7 Directly applicable: conducted in community settings in the UK or similar countries (USA[1], Sweden[2]).

1.8 Directly applicable: conducted in community settings in the UK or similar countries (USA[1], Sweden[2]).

1.9 Directly applicable: conducted in community settings in the UK or similar countries (Australia[2,8], Sweden[3], Canada[5], USA[6]).

1.10 Directly applicable: conducted in community settings in the UK or similar countries (Canada[1], Belgium[3]).

1.11 Directly applicable: conducted in community settings in the UK or similar countries (USA[1]).

1.12 Directly applicable: conducted in community settings in the UK or similar countries (Australia[1,9], Canada[2], Iceland[3], Belgium[6.]).

4.3 Parental and/or family support

Parental and family support: user and provider shared themes

Level of parental support

Providers and children shared the belief that parental support was an important facilitator of successful weight management, and recalled cases where this was in place (**Alm 2008 +**, **Dixey 2006 –**, **Staniford 2011 ++**, **Stewart 2008 +**, **Twiddy 2012 +**). Parents in receipt of parenting education in addition to lifestyle classes had a widespread sense that they had more of an overseeing role in encouraging but not controlling their child to keep to their goals; in contrast to parents only in receipt of lifestyle education (**Stewart 2008 +**).

Providers perceived a lack of parental support in four studies (**Avery 2012 +**, **CI Research 2009 –**, **Staniford 2011 ++**, **Twiddy 2012 +**) observing that many parents did not realise their role as agents of change; instead expecting the programme to solve children's weight management difficulties:

> "'A lot of them [families] are looking for a quick fix, […] one of our families, we've been made to feel that it's our fault their children aren't doing as well as Mum perceived perhaps that they were going to do. It's difficult to turn around and say the bottom line is that we can't do it for you.' [trainer]" (**Twiddy 2012 +; UK**, **provider view**)

Support of other family members

In eight studies, children and parents described situations whereby other family members (either partners or members outside of the nuclear family such as grand-parents) did not support, or sabotaged weight management attempts (**Alm 2008 +**, **Hester 2010 +**, **Dixey 2006 –**, **Owen 2009 ++**, **Staniford 2011 ++**, **Stewart 2008 +**, **Twiddy 2012 +**).

Parents' motivation for children to manage weight

Parental motivation was also perceived to be a critical factor in children's successful engagement with LWMPs, evidenced in eight studies: (**Barlow 2006 –**. **Braet 2010 +** , **CI Research 2009 –**, **Dhingra 2011 +**, **Jinks 2010 +**, **Twiddy 2012 +**, **Watson 2012b PE**)

Three studies relayed providers' concerns regarding the varying levels of motivation among children's families (**CI Research 2009 –**, **Jinks 2010 +**, **Watson 2012b PE**)

Perceptions of high levels of parental motivation were reported in three studies, primarily from parents (**Jinks 2010 +**, **CI Research 2009 –**, **Twiddy 2012 +**), while providers acknowledged high parent motivation in only one study (**Twiddy 2012 +**). Provider-perceptions of high parental motivation were described in just one [+] qualitative study (**Twiddy 2012 +**), for example:

> *"One of the families, everybody got involved and I think they were one of the most successful families because not only did the child lose a little bit of weight, his attitude changed and his parents attitude as well."* (**Twiddy 2012 +; UK**, **provider view**)

Two studies demonstrated a statistically significant association between motivated parents and programme uptake (**Dhingra 2011 +**) or completion (**Braet 2010 +**). **Barlow 2006 –** reported that

4.7% of parents who dropped out of a LWMP stated the reason that 'their family was not ready to make this type of change'**.**

Evidence Statements:

Parental and Family Support

Parental and family support: user and provider shared themes

1.13 **Facilitator: parental support.** Both providers and children were reported as believing parental support to be an important facilitator of successful lifestyle weight management interventions**.** High levels of parental support and their role in children's weight management was described in five qualitative studies (one [++][1], three [+][2-4] one [–][5]). A [+] cross-sectional study[6] identified parents 'motivation for treatment as a statistically significant predictor of programme completion.

[1]Staniford 2011, [2]Alm 2008, [3]Stewart 2008, [4]Twiddy 2012, [5]Dixey 2006, [6]Braet 2010

1.14 **Facilitator: parental motivation**. Parental motivation was perceived to be a critical factor in children's successful engagement with weight management programmes, as evidenced in seven studies: three qualitative (two [+][1,2], one [–][3]), three cross-sectional surveys (two [+][4,5], one [–][6]) and one process evaluation[7]. Perceptions of high levels of parental motivation were reported in three studies, primarily from parents[1-3] while providers acknowledged high parent motivation in only one study[2]. Two studies found a statistically significant association between motivated parents and either programme uptake[5] or completion[4].

[1]Jinks 2010, [2]Twiddy 2012, [3]CI Research 2009, [4]Braet 2010, [5]Dhingra 2011, [6]Watson 2012b, [7]Barlow 2006.

1.15 **Barrier: lack of parental support**. Providers reported a lack of parental support acting as a barrier to children's weight management in four qualitative studies (one [++][1], two [+][2,3], one [–][4]). Three of these studies[1,3,4] described provider perceptions that parents did not realise their role as agents of change and they looked to the programme to solve children's weight management difficulties.

[1]Staniford 2011, [2]Avery 2012, [3]Twiddy 2012, [4]CI Research 2009

1.16 **Barrier: lack of parental motivation.** Programme providers described how low parental motivation hindered children's weight management in one [+] qualitative study[1], one [–] qualitative study[2] and one process evaluation[3]. In addition, a small proportion of parents (4.7%) cited lack of family readiness to change as a reason for dropping out of a lifestyle weight management programme in one [–] cross-sectional study[4].

[1]Jinks 2010, [3]Watson 2012b, [2]CI Research 2009, [4]Barlow 2006

1.17 **Barrier: lack of support from other family members.** Children and parents described situations whereby other family members (either partners or members outside of the nucleus family such as grand-parents) did not support and even sabotaged children's weight management attempts. This was described in eight qualitative studies (two [++][1,2], four [+][3-6] , one [–][7]).

[1]Owen 2009, [2]Staniford 2011, [3]Alm 2008, [4]Hester 2010, [5]Stewart 2008, [6]Twiddy 2012, [7]Dixey 2006

Applicability

1.13 Directly applicable: conducted in community settings in the UK or similar countries

(USA[2], Belgium[6]).

1.14 Directly applicable: conducted in community settings in the UK or similar countries (Belgium[4], Australia[5], USA[7]).

1.15 Directly applicable: conducted in the UK in a community setting.

1.16 Directly applicable: conducted in community settings in the UK or similar countries (Belgium[4], USA[5])

1.17 Directly applicable: conducted in community settings in the UK or similar countries (USA[3]).

4.4 Programme Design

Programme Design (Intervention Features)

Programme design (recruitment): user and provider shared themes

Programme Awareness

Awareness of LWMP was a common theme among children, families and providers. Seven studies described lack of awareness of local LWMPs, which restricted uptake (**Dixey 2006 –**, **CI Research 2009 –**, **Sahota 2010 PE**, **Watson 2012 PE**, **Withnall 2008 –**).

Both programme users and programme providers felt other professionals such as GPs, nurses and health visitors should raise awareness or refer children to LWMPs. Four studies provided examples of this being carried out (**CI Research 2009 –**, **Stewart 2008 +**, **Watson 2012b PE**, **Watson 2012a +**) and four studies described circumstances in which children were not referred, or inappropriate referrals were made (**Jinks 2010 +**, **Wolman 2008 PE**, **Watson 2008 PE**, **Woolford 2011 +**). For example:

> *"Health visitors or nursery nurses who, in many cases inappropriately referred children without calculating their BMI"* (**Wolman 2008 PE;** UK, authors describing professionals' behaviour)

Users and providers offered varied suggestions for future programme recruitment strategies. For example: emphasising healthy living and fun programme aspects rather than weight management, advertising in local media, increasing referral routes, recruiting through schools and family support workers and offering rolling programmes that allow families to join on an ongoing basis (**CI Research 2009 –**, **Gellar 2012 ++**, **Jinks 2010 +**, **Robertson 2009 PE**, **Watson 2008 PE**, **Watson 2012b PE**, **Withnall 2008 –**, **Wolman 2008 PE**).

Evidence Statements:

Programme Design (Recruitment of Clients)

Programme design (recruitment): user and provider shared themes

1.18 **Barrier: lack of awareness.** Both providers and programme users identified a lack of awareness of local weight management programmes. Providers considered poor programme publicity to be the reason why potential users were unaware of the programme in one process evaluation[1]. Programme users also reflected on the lack of programme awareness among children and families in four qualitative studies (one [+][2], three [–][3-4]). Providers and users also referred to health professionals' lack of programme awareness in two process evaluations[5,6] and one [–] qualitative

study[7].

[1]Watson 2012b , [2]Watson 2012a, [3]Dixey 2006, [4]CI Research 2009, [5]Withnall 2008, [6]Sahota 2010 PE, [7]Watson 2008

1.19 **Role of health professionals.** Both programme users and providers felt health professionals such as GPs, nurses and health visitors should raise awareness or refer children to lifestyle weight management programmes. However, varying opinions were offered on whether this was being sufficiently implemented. Examples of awareness-raising by other professionals were reported by providers or programme users in two [+] qualitative studies[1,2], one [–] qualitative study[3] and one process evaluation[4]. However providers in three studies (one [+] qualitative[5], two process evaluations[6,7]) and programme users in one [+] qualitative study[8], described circumstances in which children were not referred, or inappropriate referrals were made.

[1]Stewart 2008, [2]Watson 2012a, [3]CI Research 2009, [4]Watson 2012b, [5]Jinks 2010, [6]Wolman 2008, [7]Watson 2008, [8]Woolford 2011.

1.20 **Facilitator: recruitment suggestions.** Programme users and providers offered varied suggestions for future programme recruitment strategies in eight studies (two [++] qualitative[1,2], four process evaluations[3-6] ,two [–] qualitative[7,8]. Increasing referral routes, recruiting through schools and family support workers was suggested by both programme providers[1,2,4,5,7] and users[8]; advertising in local media was suggested by providers and users[7]. Providers also mentioned ensuring programme aims and characteristics were sufficiently described[3] and offering rolling programmes that allow families to join on an ongoing basis[6]. Users felt that emphasising the healthy living and fun aspects of programmes rather than weight management would promote uptake[8].

[1]Gellar 2012, [2]Jinks 2010, [3]Robertson 2009, [4]Watson 2008, [5]Watson 2012b , [6]Wolman 2008, [7]CI Research 2009, [8]Withnall 2008

Applicability

1.18 Directly applicable: all studies conducted in UK community settings.

1.19 Directly applicable: all studies conducted in community settings in the UK or similar countries (USA[8])

1.20 Directly applicable: all studies conducted in community settings in the UK or similar countries (USA[1])

Programme Design (Intervention Features)

Programme design (features): user and provider shared themes

Programme Duration

There was no clear consensus on what was perceived to be the optimal duration for intervention programmes. Participants in the same studies had differing views on whether the programme was too long or too short, and there was no clear pattern between studies of similar intervention durations.

The majority of programmes mentioned by study participants lasted for 12 weeks (**CI Research 2009 –**, **Jinks 2010 +**, **Robertson 2009 PE**, **Wolman 2008 PE**), with two further programmes lasting 18 weeks (**Watson 2012a +**, **Watson 2012b PE**) or 24 weeks (**Stewart 2008 +**).

While some views were shared by both participants and parents, in general the majority of provider comments described programmes as lasting too long, whereas most of the programme user comments related to interventions being too short or that they wanted longer programmes.

Providers and parents commented that the long-lasting interventions could discourage users from joining LWMPs (**Watson 2012a +**, **Wolman 2008 PE**).

> *"I didn't tell [my daughter] how many lessons there was before we first started it was only when someone let it slip here and I'm thinking oh god I hope she's not listening because I thought if you say 18 weeks to someone they think I'm not sticking at that (mother B2)."* (**Watson 2012a +; UK**, **parent view**)

Watson 2012b PE also described issues relating to providing content for eighteen week programmes, and general fatigue in staff and participants. For example:

> *"There was a feeling that the families already knew a lot of the nutritional knowledge being delivered and the programme itself was too long: with both staff and families "flagging" by the 12th session. Setting weekly goals also proved a challenge."* (**Watson 2012b PE; UK**, **authors describing provider views**)

Five studies presented participant accounts of the duration being too short: - providers believing they had not had enough time to deliver all the information they wished to (Jinks 2010 +) and users concerned that they had not participated long enough to bring about long-term changes (**Jinks 2010 +**, **CI Research 2009 –**, **Stewart 2008 +**, **Robertson 2009 PE**, **Watson 2012a +**, **Watson 2012b PE**). For example:

> *"I don't know if it was long enough to really, you know, have changed our ways forever"* (**Watson 2012b PE; UK**, **parent view**)

> *"Twelve weeks wasn't long enough for the programme. It wasn't long enough to deliver even the education elements of the programme. It needed to be at least a 20 week programme. We didn't have time to do so many things"* (**Jinks 2010 +; UK**, **provider view**).

Participants in two 12-week interventions felt that the duration had been about right (**CI Research 2009 –**, **Robertson 2009 PE**).

Scheduling of intervention

As with intervention duration, scheduling of interventions (e.g. timing, length of individual sessions) were important influences on programme users. There was no clear consensus from the evidence, and the overall picture appeared to be of individuals with varying competing demands (school, work, family) and potential travel constraints. Inconvenient timing of programmes was cited as the reason for not joining programmes in three studies (**CI Research 2009 –**, **Pittson unpublished PE**, **Truby 2011 PE**) and programme attendees also reported difficult scheduling as a barrier to continued participation (**Barlow 2006 –**, **CI Research 2009 –**, **Cote 2004 +**, **Farnesi 2012 ++**, **Golley 2007 PE**, **Jinks 2010 +**, **Kitscha 2009 +** , **Owen 2009 ++**, **Robertson 2009 PE**, **Watson 2008 PE**). Study participants in **Barlow 2006 –** also disagreed on how the frequency of appointments resulted in their attendance drop-out. 11.6% dropped out of programmes as appointments were not frequent enough, whereas 7% stated they were too frequent. A range of suggestions for improving schedules were offered: evening, out-of-hours, or weekend appointments so school time was not compromised; improving the flexibility of appointment

times, and increased frequency of appointments to maintain motivation (**Cote 2004 +**, **Jinks 2010 +**, **Jones 2010 PE**, **Owen 2009 ++**, **Robertson 2009 PE**, **Watson 2008 PE**, **Watson 2012b PE**, **Watson 2012a +**, **Truby 2011 PE**.)

Venue

The venue in which interventions were delivered was an important consideration for both programme users and providers.

Negative comments regarding the venue related to locations being too far away, difficult to reach, or hindered by traffic problems at peak times (**Barlow 2006 –**, **Robertson 2009 PE**, **Jinks 2010 +**, **Morinder 2011 +**, **Kitscha 2009 +** , **CI Research 2009 –**, **Watson 2012a +**). In **CI Research 2009 –** the view was expressed that parents and children would be reluctant to travel to areas outside of their immediate locality.

> *"Some people don't feel comfortable going out of their area"* (**CI Research 2009 –; UK**, **provider view**)

Comfortable and welcoming environments were valued by users in two studies (**Kitscha 2009 +** , **Watson 2012a +**). Community settings and schools were suggested as suitable venues in three studies, by both users and providers (**Robertson 2009 PE**, **Staniford 2012 ++**, **Watson 2008 PE**)

Family Involvement in LWMPs

Interventions incorporating family involvement were highly valued by children, parents and providers (**CI Research 2009 –**, **Gellar 2012 ++**, **Golley 2007 PE**, **Jinks 2010 +**, **Kitscha 2009 +**, **Perry 2008 ++**, **Pescud 2010 +**, **Robertson 2009 PE**, **Staniford 2011 ++**, **Twiddy 2012 +**, **Watson 2008 PE**, **Watson 2012a +**, **Watson 2012b PE**). For example:

> *"All the family needs to be involved in that and need to take ownership or responsibility for changing behaviours" (***Staniford 2011 ++; UK**, **provider view**)
>
> *"The whole family delivery approach was seen as helpful to behaviour change in several ways. Parents felt in the cooking sessions they were developing skills that were transferable to the home environment, and – by increasing their children's understanding - the shared learning experience supported them to influence their children's food intake at home."* (**Watson 2012a +; UK**, **author describing parents views**)
>
> *"Speaking for myself, my family eats junk. So the whole family should just work together to find a good routine"* (**Gellar 2012 ++; US**, **child view**).

Regarding parenting education sessions, parents in receipt of these interventions liked the emphasis on positive parenting (**Golley 2007 PE**, **Robertson 2009 PE**) and that separate children and parent sessions addressed the same topic as each other (**Robertson 2009 PE**).

Group-based interventions with peers

Group-based sessions and interaction with peers were also highly valued by children, parents and providers. Group sessions were described as opportunities to share experiences, and support with people facing similar problems (**CI Research 2009 –**, **Dixey 2006 –**, **Golley 2007 PE**, **Holt 2005 +**, **Jinks 2010 +**, **Monastra 2005 – Q Aus**, **Morinder 2011 ++**, **Pittson Unpublished PE**, **Robertson**

2009 PE, **Staniford 2011 ++**, **Watson 2008 PE**, **Watson 2012a +**, **Watson 2012b PE**). This is evidenced in stakeholder accounts:

> *''I think erm . . . coming here with other children similar to himself and getting to speak to other parents dealing with like the same issues is really helpful for us and you don't feel like you're being looked at funny and child 2 actually looks forward to coming.''* (**Staniford 2011 ++; UK**, **parent view**)

> *"The best bits were the family, meeting people with the same problems as your family and watching them flourish as the weeks went on"* (**Watson 2012b PE; UK**, **family view**)

Despite these benefits, providers and parents also commented on the difficulties in attending or delivering interventions to groups with mixed ages, preferences and abilities (**Jones 2010 PE**; **Watson 2012a +**). For example:

> *"I think the problem once you put people in a group is you've got real mixed ability you've got mixed ages…and so those children the perception I mean [my son] said to me a few weeks ago "this is for babies" I said "no you're going do it and you're gonna crack on with it" and I know what he meant and I understood him but I understood that you've got to put something on that will appeal to everyone and it's not easy to personalise it".* (**Watson 2012a +; UK**, **parent view**)

> *"Facilitators at both sites reported that group cohesion was sometimes difficult because of some activities being more appropriate for younger children (5-7 years) than for older children (8-9 years) , or vice versa, and the presence of siblings.*(**Jones 2010 PE; Australia**, **authors describing provider views**)

Goal setting and/or rewards

The use of goal setting was viewed in a very positive light by providers and programme users alike (**Alm 2008 +**, **Farnesi 2012 ++**, **Kitscha 2009 +** , **Owen 2009 ++**, **Pittson unpublished PE**, **Sahota 2010 PE**, **Stewart 2008 +**, **Twiddy 2012 +**, **Tyler 2008 +**, **Watson 2008 PE**, **Watson 2012a +**, **Watson 2012b PE**). This could also include offering rewards when goals were reached. A common theme was the need for frequent, but small, realistic goals. Users valued the role providers often played in helping children set such goals, as evidenced in **Alm 2008 +**, whereby intervention adolescents received weekly motivational phone calls from a motivational behavioural coach

> *"participants with coaches tended to mention more concrete goals than those without coaches" (**Alm 2008 +, US, authors reporting children views**)*

Negative opinions were expressed when too many goals were being set, or users felt their own personal goals were being overlooked or interventions failing to follow-up long-term set goals (**Brennan 2012 PE**, **Morinder 2011 ++**, **Watson 2012b PE**) .For example:

> *Looks are important I guess . . . of course I would like to be slim and so on . . . but in a way the most important thing is that I feel good.* (IP17)" (**Morinder 2011 +; UK**, **children views**)

Tailored interventions

The included studies highlighted the great variety in the attitudes, motivations, behaviours and needs of programme users. It is therefore not surprising that one of the valued elements of LWMPs was the tailored approach some programmes utilised, as evidenced in nine studies (**CI**

Research –, **Dixey 2006 –**, **Jones 2010 PE**, **Kitscha 2009 +** , **Morinder 2011 +**, **Staniford 2011 +**, **Tyler 2008 +**, **Watson 2008 PE**, **Woolford 2011 +**).

Interventions were viewed positively if they were tailored to different population groups of children (e.g. age, gender, ethnicity) by parents (**Dixey 2006 –**), providers (**Jones 2010**, **Staniford 2011+**) and children (**Woolford 2011 +**). For example, adolescents in **Woolford 2011+** liked testimonials received as part of their e-contact intervention, identified as being from other peers or 'teens' as opposed to 'patients'.

There was a strong emphasis on the value of interventions addressing the individual personal needs of programme users. Programme users commented on the importance of identifying and adjusting interventions to the needs, goals, motives (**Morinder 2011 +**, **Watson 2008 PE**) or existing knowledge (**Kitscha 2009 +**) of individual participants. For example parents suggested:

> *"conducting a nutritional knowledge questionnaire to allow a dietician to gain an understanding of what the family already knows about nutrition, what they are interested in learning, and what areas related to diet and lifestyle they find to be a struggle in everyday life"* (**Kitscha 2009 +; Canada**, **Parent views**)

Providers in one study recommended tailoring LWMPs to children's 'age, ethnicity, degree of obesity and their readiness or change' (**Staniford 2011+**).

Authors in one further study commented:

> *"Collaborating with families to create individual goals and strategies to overcome identified barriers, rather than imposing a regimented predetermined plan may have lessened resistance over time"* (**Tyler 2008 +; USA**, **Authors observations.**

Monitoring and feedback

Regular monitoring and feedback was highly valued by programme users and providers, to help users evaluate their progress and assess what works for them. This viewpoint was shared among participants in 10 studies (**CI Research 2009 –**, **Dixey 2006 –**, **Farnesi 2012 ++**, **Jinks 2010 +**, **Morinder 2011 ++**, **Robertson 2009 PE**, **Stewart 2008 +**, **Watson 2012b PE**, **Watson 2012a +**, **Woolford 2011 +**).

> *"Parent: ''[I]t's always in the back of your head, so you never quit doing it at home'*
>
> *Clinician: ''Knowing that they'll [family] probably be keen on it [making changes] for a bit, and when they don't seem so keen anymore is when they need the follow up [. . .] or the encouragement to come and get back on track'*
>
> *Clinician: ''[I]it's kind of sending them away with, OK, this is what you want to do, let's give it a try, and them coming back and saying OK, that didn't work and figuring out why. And try and understand where they're coming from'*
>
> *Parent: ''We tried many things, finally we're here. Well, I think a lot of it will be trial and error when you're trying to find something that fits a family. Tried it, won't work, try something else'"* (**Farnesi 2012 ++**, **Canada**, **provider and parent views**)

<u>Programme design (features): user-only themes</u>

Practical intervention components

A recurring theme within studies were that programme users particularly liked the practical elements of their intervention sessions, as evidenced in 8 studies (**CI Research 2009 –** , **Golley 2007 PE**, **Jinks 2010 +**, **Owen 2009 ++**, **Watson 2008 PE**, **Watson 2012a +**, **Withnall 2008 –**, **Woolford 2011**). Regarding dietary components, children and/or parents enjoyed cookery lessons and, in particular, enjoyed or wanted the programme to incorporate more of these (CI Research 2009 - , Jinks 2010 +, Watson 2008 PE, Watson 2012a +). Specific directive information was also valued including the provision of recipes (Withnall 2008-), eating plans (Golley 2007, Owen 2009) or messages that 'told them what to do' (Woolford 2011 + USA). Education on food in supermarkets was also valued (Jinks 2010 +, Withnall 2008 -) with one study suggesting that education on labels should be followed up with trips to the supermarket (Jinks 2010).

Regarding physical activity education, children consistently commented on enjoying games and physical exercise sessions, and views indicated they would like more activities within the intervention (**CI Research 2009 –**, **Watson 2008a +**, **Pittson Unpublished PE**, **Robertson 2009 PE**, **Staniford 2011 +**) . Some parents also wanted more exercise sessions (**Jinks 2010 +**, **Robertson 2009 PE**, **Watson 2012a +**), though other parents expressed negative views of physical activity sessions (Jinks 2010 +). For example:

> *"I don't know what they think we were. I had to sit down at one point. I said "I think you are having a laugh with us." I couldn't do it'"* (**Jinks 2010 +; UK**, **parent view**)

Variety in the available activities was also valued (**Watson 2012a Q+**, **Watson 2008a PE**).

Behavioural change components

Parents and children had positive views of the behavioural change elements in the programmes they received, evidenced in seven studies: (**CI Research 2009 -**, **Farnesi 2012 ++**, **Golley 2007**, **Monastra 2005 –**, **Robertson 2009 PE**, **Staniford 2011 +**, **Stewart 2008 +**)**.** Positive comments were stated regarding: understanding the 'how and why' of their eating behaviour (**Farnesi 2012 ++**, **Golley 2007 PE**), learning about their feelings and being able to talk about how they feel (**Monastra 2005 –**), or learning about stress and how to cope with it (**Robertson 2009 PE**)**.** One study reported that users believed LWMPs should include physical activity, nutrition and psychological components (**Staniford 2011 +**)**.**

Relevance of intervention to home life

Seven studies described children and/or their families concerns regarding the relevance and ease of managing their weight outside in their home life or after leaving their programme (**Hester 2010 ++**, **Morinder 2011 ++**, **Owen 2009 ++**, **Braet 2010 +**, **Stewart 2008 +**, **Staniford 2011 ++**, **CI Research 2009 –**)**.** For example:

> *"Others described the advice as impractical due to the expense or lack of exercise facilities. A few families never received the exercise advice and regretted this. "Yeah and I said that the gym he suggested was down in (area name), and I phoned them up and they don't accept kids under twelve, so do you know what I mean, some of things that he suggested would have been good if I could have afforded it"."* (**Owen 2009; UK**, **parent view**)

Evidence Statements:

Programme Design (Intervention Features)

Programme design (features): user and provider shared themes

1.21 **Programme duration.** Programme duration was a common theme across seven studies: three [+] qualitative[1-3], one [–] qualitative[4] and three process evaluations[6,7]. However, there was no clear consensus from providers or users of optimal intervention duration. The majority of programmes mentioned by participants lasted for 12 weeks[1,4,5,6] and two further programmes were run for 18 weeks[3,7] or 24 weeks[2]. Participants in the same studies had differing views on whether the programme was too long or too short, and there was no clear pattern between studies of similar intervention durations.

While some views were shared by both participants and parents, in general the majority of provider comments described programmes as lasting too long which was feared to discourage families from enrolling[6]. They also described challenges in designing content for an extended period, as well as staff and attendee fatigue[6]. Providers from just one [+] qualitative study[1] felt that 12 weeks was not long enough to deliver the information they wished to.

In two studies, some programme users felt that their 12-week programme was of sufficient duration[4,5].

[1]Jinks 2010 , [2]Stewart 2008, [3]Watson 2012a, [4]CI Research 2009, [5]Robertson 2009, [6]Wolman 2008, [7]Watson 2012b,

1.22 **Facilitator: venue.** Programme users valued the comfortable and welcoming environment of their programme venues in two [+] qualitative studies, which were either located in a clinic[1] or at schools[2]. Community settings and schools were suggested by providers and programme users as suitable venues in one [++] qualitative study[3] and two process evaluations[4,5].

[1]Kitschna 2009, [2]Watson 2012a [3]Staniford 2012, [4]Robertson 2009, [5]Watson 2008

1.23 **Facilitator: family involvement.** Providers, children and families, valued a delivery approach that incorporated family involvement in lifestyle weight management programmes, perceiving it to facilitate behaviour change. Users expressed these views in nine studies (two [++] qualitative[1,2], four [+] qualitative[3-6], and four process evaluations[7-10]) and providers in three studies (one [++] qualitative study[11], one [–] qualitative study[12] and one process evaluation[8]). Regarding specific parenting education sessions, users in receipt of these interventions liked the emphasis on positive parenting[9,10] and separate children and parent sessions addressing the same topic as each other[10].

[1]Gellar 2012, [2]Perry 2008, [3]Jinks 2010, [4]Kitscha 2009, [5]Pescud 2010, [6]Twiddy 2012, [7]Watson 2012a, [8]Watson 2008, [9]Golley 2007, [10]Robertson 2009, [10]Watson 2012b, [11]Staniford 2011, [12]CI Research 2009

1.24 **Facilitator: group intervention sessions with peers.** There was evidence from thirteen studies (two [++] qualitative[1,2], three [+] qualitative[3-5], three [–] qualitative[6-8], five process evaluations[9-13]) that group-based sessions and interaction with peers were highly valued by children and parents. Interventions incorporating group sessions/peer interactions were perceived to be opportunities to share experiences, and give and receive support from people facing similar problems.

[1]Morinder 2011,[2]Staniford 2011, [3]Holt 2005,[4]Jinks 2010, [5]Watson 2012a, [6]CI Research 2009, [7]Dixey 2006, [8]Monastra 2005, [9]Golley 2007, [10]Pittson Unpublished, [11]Robertson 2009,

[12]Watson 2008, [13]Watson 2012b

1.25 **Facilitator: goal setting.** Programme users and providers shared the view that the use of goal setting (which may or may not also involve rewards) was a beneficial feature of interventions, and emphasised the importance of frequent but small and realistic goals. This was evidenced in twelve studies (two [++] qualitative[1-2], six [+] qualitative[3-8], and four process evaluations[9-11]).

[1]Owen 2009, [2]Farnesi 2012, [3]Alm 2008, [4]Kitscha 2009, [5]Stewart 2008, [6]Twiddy 2012, [7]Tyler 2008, [8]Watson 2012a, [9]Pittson unpublished, [10]Watson 2008, [11]Watson 2012b, [12]Sahota 2010 PE.

1.26 **Facilitator: user-tailored interventions.** Programme users and providers highly valued the interventions that were tailored to the user in 9 studies: six qualitative (two [++][1,2], two [+] [3,4], two [–][6,7] one [+] cross-sectional survey[5],and two process evaluations[8,9]).

Interventions were viewed positively if they were tailored to different population groups of children (for example, age, gender, ethnicity) by parents[7], providers[2] and children[4]. There was a strong emphasis on the value of interventions addressing the individual personal needs of programme users. Programme users commented on the importance of identifying and adjusting interventions to the needs, goals, motives[1,9] or existing knowledge[3] of individual participants. Providers in 1 study recommended tailoring programmes to children's age, ethnicity, degree of obesity and their readiness for change[2]. Authors in 1 study also commented on the benefits of collaborating with families to create individual goals and strategies.

[1] Morinder 2011, [2] Staniford 2011, [3] Kitscha 2009, [4] Woolford 2011, [5] CI Research 2009, [6] Dixey 2006, [7] Tyler 2008, [8] Jones 2010, [9] Watson 2008.

1.27 **Facilitator: monitoring and feedback.** There was evidence from ten studies that regular monitoring and feedback of weight management progress, was highly valued by programme users and providers: two [++] qualitative[1,2], four [+] qualitative[3-6], two [–] qualitative studies[7,8], and two process evaluations[9,10].

[1]Morinder 2011, [2]Farnesi 2012, [3]Stewart 2008, [4]Jinks 2010, [5]Watson 2012a , [6]Woolford 2011, [7]CI Research 2009, [8]Dixey 2006, [9]Robertson 2009, [10]Watson 2012b

1.28 **Facilitators: scheduling suggestions.** Suggestions for improving programme scheduling were offered by programme users and providers in nine studies (one [++] qualitative[1], two [+] qualitative[2,3], one [+] qualitative[4], one [+] cross-sectional survey[5] and four process evaluations[6-9]). More flexible appointment times, such as in the evening or weekends were suggested by programme users[2-6,9] and providers[2,7] . Programme users also wanted increased frequency of appointments to maintain their motivation[1,2].

[1]Owen 2009,[2] Jinks 2010, [3]Watson 2012a, [4]Cote 2004, [5]Jones 2010, [6]Robertson 2009, [7]Watson 2008, [8]Watson 2012b, [9]Truby 2011.

1.29 **Barrier: inconvenient intervention scheduling.** Scheduling of interventions (e.g. timing, length of individual sessions) were important influences on programme users but no clear consensus was described on what this should be.

Potential users cited inconvenient timing of programmes as a reason for not joining programmes in one [–] qualitative study[1] and two process evaluations[2-3]. Programme attendees also reported difficult scheduling as a barrier to continued participation in ten studies (two [++] qualitative studies[4,5], two [+] qualitative

studies[6,7], one [+] cross-sectional survey [8], three process evaluations[9-11], one [–] cross-sectional[12] and one [–] qualitative study[13]). Programme users in one [–] cross-sectional survey[12] disagreed on how the frequency of appointments resulted in their attendance or drop-out. 11.6% dropped out of programmes as appointments were not frequent enough, whereas 7% stated they were too frequent.

[1]CI Research 2009, [2]Pittson unpublished, [3]Truby 2011, [4]Farnesi 2012, [5]Owen 2009, [6]Jinks 2010, [7]Kitscha 2009, [8]Cote 2004, [9]Golley 2007, [10]Robertson 2009, [11]Watson 2008 [12]Barlow 2006, [13]CI Research 2009.

1.30 **Barrier: venue location.** Negative comments regarding programme venues were expressed in six studies: three [+] qualitative[1-3], one [–] qualitative[4], one [–] cross-sectional survey[5] and one process evaluation[6]. Challenges relating to locations being too far away, difficult to reach, or hindered by traffic problems at peak times were described by both providers[2,6] and users[1-6].

[1]Watson 2012a, [2]Jinks 2010, [3]Kitschna 2009, [4]CI Research 2009, [5]Barlow 2006, [6]Robertson 2009

1.31 **Barrier: challenges in goal setting.** Challenges of setting goals within programmes were highlighted by users and providers in three studies (one [++] qualitative[1], and two process evaluations[2,3]). Programme users spoke negatively about too many goals being set[2], long-term goals not being revisited or monitored[3] or goals not being matched to those valued by the child[1]. Providers described difficulties in designing goals for users[3].

[1]Morinder 2011 [2]Brennan 2012, [3]Watson 2012b

Programme design (features): user-only themes

1.32 **Facilitator: practical intervention elements.** A recurring theme within studies was that programme users particularly liked the practical elements of their intervention sessions, as evidenced in eleven studies: seven qualitative (one [++][1], four [+][2-5], two [-][6,7]) and four process evaluations[8-11].

Regarding dietary components, children and/or parents enjoyed cookery lessons in particular enjoyed or wanted the programme to incorporate more of these[2,4,6,11]. Specific directive information was also valued, including the provision of recipes[7], eating plans[1,8] or messages that 'told them what to do'[5] . Education on food in supermarkets was also valued[2,7] with one study suggesting that education on labels should be followed up with trips to the supermarket[2].

Regarding physical activity education, children consistently commented on enjoying games and physical exercise sessions, and views indicated they would like more activities within the intervention[3,6,9,11]. Some parents also wanted more exercise sessions[2,4,10], though some parents expressed negative views of physical activity sessions[2]. Variety in the available activities was also valued [4,11].

[1]Owen 2009 ++, [2]Jinks 2010 +, [3]Staniford 2011 +, [4]Watson 2012a +, [5]Woolford 2011 +, [6]CI Research 2009 - , [7]WIthnall 2008 -, [8]Golley 2007 PE, [9]Pittson Unpublished PE, [10]Robertson 2009 PE, [11]Watson 2008 PE.

1.33 **Facilitator: behavioural change components**

Parents and children had positive views of the behavioural change elements in the programmes they received, evidenced in seven studies: five qualitative (one [++][1], two [+][2,3], two [-]) and two process evaluations[6,7]. Positive comments were stated regarding: understanding the 'how and why' of their eating behaviour[1,6], learning about their feelings and being able to talk about how they feel[5], or learning about

stress and how to cope with it[7] **.** One study reported that users believed LWMPs should include physical activity, nutrition and psychological components[2] **.**

[1]Farnesi 2012, [2]Staniford 2011 +, [3]Stewart 2008 +, [4]CI Research 2009 -, [5]Monastra 2005 –, [6]Golley 2007, [7]Robertson 2009 PE

1.34 Barrier: relevance of intervention to home life. 1.34 Barrier: relevance of intervention to home life. Seven studies described children and/or their families concerns with the relevance and ease of managing their weight outside in their home life or after leaving their programme (four [++][1-4], one [+][,5], 1 [–][6] qualitative and one [+][7] cross-sectional study).

[1]Owen 2009, [2] Staniford 2011, [3]Morinder 2011, [4]Hester 2010, [5]Stewart 2008, [6]CI Research 2009, [7]Braet 2010.

Applicability

1.21 Directly applicable: all studies conducted in UK community settings.

1.22 Directly applicable: all studies all studies conducted in community settings in the UK or similar countries (Canada[1])

1.23 Directly applicable: all studies all studies conducted in community settings in the UK or similar countries (Australia[2,5], Canada[4], USA[1]

1.24 Directly applicable: all studies all studies conducted in community settings in the UK or similar countries (Sweden[1])

1.25 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[2,4], USA[3])

1.26 Directly applicable: all studies were conducted in community settings in the UK or similar countries (Canada[3], USA[4,7], Sweden[1]).

1.27 Directly applicable: all studies conducted in community settings in the UK or similar countries (Sweden[1])

1.28 Directly applicable: all studies all studies conducted in community settings in the UK or similar countries (Australia[9], USA[4])

1.29 Directly applicable: all studies conducted in community settings in the UK or similar countries (Australia[3], Canada[4], USA[8,12]

1.30 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[3] and USA[5])

1.31 Directly applicable: all studies conducted in community settings in the UK or similar countries (Sweden[1], Australia[2])

1.32 Directly applicable: all studies conducted in community settings in the UK

1.33 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[1], USA[5])

1.34 Directly applicable: all studies were conducted in community settings in the UK or similar countries (Belgium[7])

Programme Design (Post-Intervention Support)

Programme design (post-intervention support): user-only themes

There was a clear theme that some children and families felt dependent on their programme for continuing child weight management.

Seven studies revealed that the continuation of professional support following completion of the LWMP was important to programme users (**CI Research 2009 –**, **Golley 2007 PE**, **Robertson 2009 PE**, **Staniford 2011 ++**, **Stewart 2008 +**, **Watson 2012a +**, **Withnall 2008 –**). Families wanted ongoing support and perceived it would be helpful for ensuring that progress with weight management was maintained or improved. For example:

> *"Children and parents emphasised that to sustain behaviour change and weight-regulating behaviours, they need ongoing support from health professionals and 'similar others'. However, health professionals suggested ongoing support is unrealistic because of cost".* (**Staniford 2011 ++**, **author describing child**, **parent and provider views**)

> *"Families had positive outcomes during the…. [weight management programme] but they missed the regular support when it finished and their lifestyles had gone in "fits and starts" since.* (**Watson 2012a +; UK**, **authors describing family views**)

Very little detail was given in terms of the types of ongoing support provided after completion of the programme, or of participants' preferences in terms of post programme support. In one study (**CI Research 2009-**; 8-13 year age group) where parents and children had not attended the follow on activities this was either because the dates and times clashed with another after school activity, or because the activities on offer were not of interest to their child. Suggestions from parents included follow up letters, meetings or continuation sessions (**CI Research 2009-**). In another study, parents suggested a long-term financial subsidy for children and young people to maintain participation in formal activities (**Withnall 2008 –**; 5-18 year age group).

> *"Most parents were happy that the changes they had made to their lifestyles were sustainable. However, a few recognised that they could do with some further support around healthy living. Helpful support could take the form of a follow up letter, a follow up meeting a year later, or the continuation sessions on a monthly basis to help with fresh ideas and reassurance that current practices were correct …"Say a year later it would have been nice to have a refresher of the [weight management programme]" course to make sure you were still on top of things, you know concentrating on your food groups and how much sugar is in [*branded] milkshakes, a bit of a refresher. I know we came away with our folders but they get filed away."* (Parent, attended 2006)" (**CI Research 2009-; UK**, **parent view**)

Family perspectives suggest that the nature of potential follow-up appointments and support needs careful consideration to ensure attendance. Views expressed in three studies suggested that follow-up may not be fully attended, owing to a variety of barriers such as other competing commitments, or content of support:

> *"The most frequent reason for non-return in the 'no group' were program educational content (86%) and organizational barriers (43%)".* (**Kitscha 2009 +** , **Canada**, **parents views**)

"There was agreement, in reality, the majority of families would not take up, or commit to, extended support leading to poor attendance and high drop out" (**Staniford 2011 ++; UK**, **authors describing provider views of family behaviour**)

"I'm not going to attend the [follow-up] …. sessions because they are both on a Tuesday night and we're actually at karate Mondays through Thursdays. There's no other reason" (**CI Research 2009 –**, **UK**, **parent view**)

Participants in three studies described a number of strategies that helped them to continue to maintain their weight management behaviour (**Golley 2007 PE**, **Jinks 2010 +**, **Watson 2012a +**). These included setting planned routines (**Golley 2007 PE**), enjoying their new healthy lifestyle (**Golley 2007 PE**), seeking additional support (**Jinks 2010 +**) and staying consistent (**Golley 2007 PE**, **Jinks 2010 +**, **Watson 2012a +**). For example:

"We like our new lifestyle and our new found health keeps us motivated to continue healthy choices" (**Golley 2007 PE**, **UK**, **parent view**)

"Carl has joined … [weight management programme] with me…He's lost half a stone…He is really made up about it" [* a pseudonym]* (**Jinks 2010 +; UK**, **parent view**)

Evidence Statements:

Programme Design (Post-Intervention Support)

Programme design (post-intervention support): user-only themes

1.35 **Facilitator: post-intervention support and follow-up.** Seven studies (one [++] qualitative[1], two [+] qualitative[2-3], two [–] qualitative[4-5], two process evaluations[6-7]) identified that the continuation of professional support following completion of the programme was important to users. Families wanted support to continue and thought it would be helpful for ensuring that weight management goals were continued.

Very little detail was provided regarding the forms this support should take. Parents in one [–] qualitative study[4] suggested follow up letters, meetings or continuation sessions. Parents in another [–] qualitative study[5] proposed a long-term financial subsidy to encourage children and young people to maintain participation in formal activities.

[1]Staniford 2011, [2]Stewart 2008, [3]Watson 2012a, [4]CI Research 2009, [5]Withnall 2008, [6]Golley 2007, [7]Robertson 2009

1.36 **Facilitator: personal strategies to sustain weight management behaviour.** Parents in three studies (two [+] qualitative[1,2], one process evaluation[3]) described a range of strategies they employed to facilitate continuation of their children's weight management behaviour. These included staying consistent[2,3] setting planned routines[3], enjoying their new healthy lifestyle[3], and seeking additional support[1].

[1]Jinks 2010 , [2]Watson 2012a [3]Golley 2007

1.37 **Barrier: attendance at follow-up sessions.** Despite strong support for professional follow-up after completion of weight management programmes, children and parent views in three studies suggested that the content and timing of potential support may impact on the up-take of sessions if they did not appeal to programme users or conflicted with their competing interests. This was indicated in three qualitative

studies: (one [++][1], one [+][2] and one [–][3]).

[1]Staniford 2011, [2]Kitscha 2009,[3]CI Research 2009

Applicability

1.35 Directly applicable: all studies conducted in UK community settings

1.36 Directly applicable: all studies conducted in the UK community settings

1.37 Directly applicable: studies conducted in the UK community settings[1,3] or similar countries (Canada[2]).

4.5. Provider Factors and Organisational Environment

Provider factors and organisational environment: user and provider shared themes

Provider characteristics

Provider dynamics are of crucial importance to programme users. Good relationships with child/family were described as a key factor for continued participation in weight management programmes and behaviour change attempts in over a third of the included studies (**Alm 2008 +**, **CI Research 2009 –**, **Farnesi 2012 ++**, **Golley 2007 PE**, **Holt 2005 +**, **Jones 2010 PE**, **Monastra 2005 – Q Aus**, **Morinder 2011 ++**, **Owen 2009 ++**, **Robertson 2009 PE**, **Sahota 2010 PE**, **Twiddy 2012 +**, **Watson 2008 PE**, **Watson 2012a +**, **Woolford 2011 +**). Valued characteristics included the encouraging, non-judgemental tone of providers, engagement with children and continuity of staff. Parents also appreciated the role providers had in acting as voices of authority that parents could rely on to educate children. Providers' perspectives given in three studies (**Farnesi 2012 ++**, **Sahota 2010 PE**, **Twiddy 2012 +**) suggested that staff were aware of the importance of establishing good relationships with users:

> *"**Clinician**: '[I]nstead of it [being] so directed from the professional, go back to the family [asking] what would work for you?'*
>
> ***Parent**: '[I]ts like they give us room to, well, what do you think? So you bounce back a little bit and you give your ideas on what's worked'*
>
> ***Parent**: 'They're encouraging me to make decisions and me to set the goals and they're giving me some guidance'*
>
> ***Clinician**:'[T]that's something you have to bring up because they're [families] so used to sitting back and letting us tell them what to do, so what's my role and 'how can I help you' and 'what do I need from you'"* (**Farnesi 2012 ++**, **Canada**, **parent and provider views**)

Poor relationships were described in five studies as inhibiting successful user engagement with LWMPs (**Farnesi 2012 ++**, **Morinder 2011 ++**, **Stewart 2008 +**, **Twiddy 2012**, **Watson 2012b PE**). **Morinder 2011 ++** described how absence of personal bonds could cause obstinacy in users, who felt impelled to do the opposite of what was recommended:

> *"I just sit there and agree and then when I get out of the door…to be frank…I don't give a shit about what they've said…"* (**Morinder 2011 ++; UK**, **child view**)

Providers were also aware of the effect of staff discontinuity, observing that user engagement often fell sharply if staff members changed during the programme:

> *"Whenever delivery was changed we lost a lot of people because customers like consistency. You need to have the same staff all the time so you can build that relationship and gain the confidence of people [Provider]"* (**CI Research 2009 –; UK**, **provider view**).

Provider factors and organisational environment: provider-only themes

Sixteen studies provided views and opinions of intervention providers (**Avery 2012 +**, **CI Research 2009 –**, **Farnesi 2011 +**, **Gellar 2012 ++**, **Gunn 2008 +**, **Gunnarsdottir 2011 +**, **Jinks 2010 +**, **Jones 2010 PE**, **Kitscha 2009 +** , **Pinard 2012 –**, **Pittson Unpublished PE**, **Robertson 2009 PE**, **Staniford 2011 ++**, **Watson 2012b PE**, **Twiddy 2012 +**, **Woolford 2010 +**). Four key themes affecting the programme logic were identified from these studies, related to their work environment and resources.

Collaborative team-working

Two studies described the importance of collaborative team working; identifying advantages to having a 'multi-professional team (**Jinks 2010 +**) and praising how food and physical activity teams demonstrated a 'great alliance' in delivering the intervention (**Watson 2008 PE**). A further cross-sectional study highlighted that GPs participating in the LEAP research project, found collaborating with other professionals a particularly enjoyable aspect of the intervention (**Gunn 2008 +**)

Three studies (**Jinks 2010 +**, **Watson 2008 PE**, **Watson 2012b PE**) described concerns regarding the organisation of intervention sessions though the nature of the comments suggested this could be easily rectified:

> *"Standardisation of the programme was vital but we didn't have time to do that…All the sessions needed to be consistent and linked to one another. Simple stuff really"* (**Jinks 2010 +; UK**, **provider view**)

> *"Many of the challenges experienced by delivery staff were of a logistical nature and could be easily resolved for the future"* (**Watson 2008 PE**, **UK**, **provider view**)

> *"Half way through we decided we needed to spend more time, so we put in an extra hour and a half before so we could talk about what we were going to do and that worked better but yeah at first I think we were expecting to just pick it up and go with it…and we really couldn't, there was a lot of groundwork".* (**Watson 2012b PE**, **UK**, **provider view**)

Provider knowledge and expertise

Four studies reported barriers and facilitators relating to programme providers' expertise. GPs participating in the LEAP 1 trial (McCallum 2007) reported feeling unsure how to conduct consultations and finding 'difficulty in putting knowledge into practice' (**Gunn 2008 +**).

Lack of staff training was also identified by a number of OSCAR team members, stating for example:

> *"There are loads of holes in the training (such as) motivational interviewing, psychology. You don't need to necessarily have in-depth knowledge but you need to know the basics. Because we were key workers we needed to know about mental health issues. Just the basics so we would know how to tackle issues"* (**Jinks 2010 +; UK**, **provider view**).

Similarly, staff interviewed in **Watson 2012b PE** reported feeling unqualified to run psychology-based sessions given the complex psychosocial issues and age differences in the group.

Providers were receptive to receiving further training to enhance their skills and positively reflected on the training they received (**Gunn 2008 +**, **Jinks 2010 +**, **Watson 2012b PE**).

Staffing and workload capacity

Three studies revealed staff concerns regarding the lack of available staffing or time for effective delivery of LWMPs or to have sufficient time for regular team meetings (**Wolman 2008 PE**, **Jinks 2010 +**) and the need for additional specialist support for children with challenging behaviour (**Watson 2008 PE**). This was contrasted with the successful 'screening days' described by **Jinks 2010 +**, where high staff levels ensured families were not waiting for assessment prior to acceptance into the programme.

Evidence Statements:

Provider Factors and Organisational Environment

Provider factors and organisational environment: user and provider shared themes:

1.38 **Facilitator: building good child/family-provider relationships.** There was evidence from sixteen studies (three [++] qualitative[1-3], six [+] qualitative[4-9], five process evaluations[10-14], and two [–] qualitative[15,16]) of children's and parents' perspectives, that provider characteristics were key factors for continued participation in weight management programmes and behaviour change attempts. Valued characteristics included the encouraging, non-judgemental tone of providers[1,3,5,7,9,15], and continuity of staff[6]. Parents also appreciated the role providers had in acting as voices of authority that parents could rely on to educate children[3,7]. Provider perspectives in two of these studies also suggested that staff were aware of the importance of establishing good relationships with programme users and their families[1,6].

[1]Farnesi 2012, [2]Morinder 2011, [3]Owen 2009, [4]Alm 2008, [5]Holt 2005, [6]Twiddy 2012, [7]Watson 2012a, 8 Stewart 2008 [9]Woolford 2011, [10]Golley 2007, [11]Jones 2010, [12]Robertson 2009, [13]Watson 2008, [14]Monastra 2005, [15]CI Research 2009.

1.39 **Barrier: negative opinions of providers' characteristics.** Six studies (two [++] qualitative[1,2], two [+] qualitative[3,4], one process evaluation[5], one [–] qualitative[6]) described how negative opinions of provider dynamics influenced user engagement. Children and parents provided examples of poor user-provider relationships and suggested this hindered engagement with programmes or weight management behaviour[1-5.] Providers also recognised the negative effect bad relationships with users[1] and staff discontinuity[6] could have on programme adherence[6].

[1]Farnesi 2012, [2]Morinder 2011, [3]Stewart 2008,[4] Twiddy 2012, [5]Watson 2012b, [6]CI Research 2009.

Provider factors and organisational environment: provider-only themes

1.40 **Facilitator: collaborative multi-disciplinary teams.** Three studies (one [+] qualitative study[1], one process evaluation[2] and one [+] cross-sectional survey[3]) indicated that providers highly

valued working within effective collaborative multi-disciplinary teams[1-3].

[1]Jinks 2010, [2]Watson 2008, [3]Gunn 2008

1.41 **Facilitator: provider highly valued opportunities for training.** Three studies (one [+] qualitative[1], one process evaluation[2] and one [+] cross-sectional survey[3]) reported that providers were keen to receive relevant training that would help them gain necessary skills to effectively deliver interventions.

[1]Jinks 2010, [2]Gunn 2008, [3]Watson 2012b

1.42 **Barrier: provider gaps in knowledge**. Three studies (one [+] qualitative study[1], one [+] cross-sectional study[2] and one process evaluation[3]) referred to providers' perceptions of their skills and knowledge Three studies indicated some providers felt unqualified to deliver interventions, specifically where interventions were broad in their nature, or were delivered to a varying user group who sometimes had complex psychosocial needs.

[1]Jinks 2010, [2]Gunn 2008, [3]Watson 2012b

1.43 **Barrier: insufficient staffing for effectively delivering LWMPs**. Three studies (one [+] qualitative[1], two process evaluations[2-3]) described how insufficient staffing and time hindered providers' ability to effectively deliver interventions.

[1]Jinks 2010, [2]Watson 2008, [3]Wolman 2008

Applicability

1.38 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[1,]Sweden[2], USA[9,] Australia[15]

1.39 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[1,]Sweden[2)]

1.40 Directly applicable: all studies conducted in community settings in the UK or similar countries (Australia[3])

1.41 Directly applicable: all studies conducted in community settings in the UK or similar countries (Australia[2])

1.42 Directly applicable: all studies conducted in community settings in the UK or similar countries (Australia[2])

1.43 Directly applicable: all studies conducted in UK community settings

Question 2. How do the barriers and facilitators perceived by staff, children or young people and their families vary for different population groups of programme users?

The majority of studies were conducted in mixed population types, and did not explore whether particular population groups encounter different barriers and facilitators.

The limited evidence available is summarised below, presenting information identified in the studies regarding within-study population differences, where reported, and shared barriers and facilitators reported across studies of similar population groups.

Gender

There was insufficient evidence to draw firm conclusions on the different barriers and facilitators between boys and girls for engaging with LWMPs. Just one study (**Alm 2008 +**) described differences in the motivations for attending LWMPs between girls and boys. Most girls wished to improve physical appearance and social acceptance through weight management, whereas male participants indicated a desire to develop muscles and be more agile for physical activities and sports. For example,

> *"I really want to feel good about myself and look good. I want to wear cute clothes and bathing suits. I'd have a boyfriend and more friends if I was thinner. (female participant*)" (**Alm 2008 +**, **USA**, **child view**)
>
> *"I want to play football, so I need to improve my cardio and lose some weight to be speedier (Male participant)"* (**Alm 2008 +**, **USA**, **child view**).

No studies were conducted solely with male or female participants.

Age

Eleven studies were conducted in mixed age range populations, but did not explore differences between children in varying age groups. (**Cote 2004+**, **Dixey 2006 –**, **Holt 2005**, **Jinks 2010 +**, **Kitscha 2009 +**, **Monastra 2005 –**, **Owen 2009 ++**, **Sahota 2010 PE**, **Twiddy 2012 +.**

The remaining studies were conducted in particular age ranges, and the shared barriers and facilitators described across studies of the same age groups are shown below.

Age: Young Children

Only one study was conducted in young children. **Wolman 2008 PE** conducted a process evaluation examining the feasibility of a pilot programme "Fighting Fit Tots" to tackle toddler obesity (defined in the study as 18-30 months old). The study identified that uptake and attendance of eligible children was low, due to poor parental perception of child weight status, commitment issues and limited staff capacity for outreach work.

Age: Pre-adolescent children (**six to twelve years old**)

Sixteen studies were conducted in children (**Braet 2010 +**, **Farnesi 2012 ++**, **Golley 2007 PE**, **Gunn 2008 +**, **Gunnarsdottir 2012 +**, **Jones 2010**, **Perry 2008 ++** , **Pescud 2010 +**, **Pinard 2012 –**, **Pittson 2011 PE**, **Robertson 2009 PE**, **Staniford 2011 ++**, **Stewart 2008 +**, **Tyler 2008 +**, **Watson 2008 PE**, **Watson 2012b PE**).

Pre-adolescent children - goals and outcomes

Psychological wellbeing was highlighted as an important outcome in five studies (**Watson 2008**, **Watson 2012b**, **Pescud 2010**, **Stewart 2008 +**, **Robertson 2009**, **Staniford 2011**) along with social outcomes such as making friends (**Robertson 2009**, **Staniford 2011**, **Stewart 2008**) and reduced bullying (**Staniford 2011**)**.**

Other outcomes were less commonly mentioned across studies: weight management (**Pescud 2010**, **Stewart 2008+**, **Watson 2008 PE**) and improvement of children's health (**Staniford 2011**, **Watson 2012b**, **Gunnarsdottir 2012**).

Pre-adolescent - intervention features

Family involvement in LWMPs was the most common theme relating to intervention features, reported in studies of children aged 6-14. Children, parents and providers described benefits of whole family intervention approaches (**Golley 2007 PE**, **Perry 2008 ++**, **Pescud 2010 +**, **Robertson 2009 PE**, **Staniford 2011 ++**, **Watson 2008 PE**, **Watson 2012b PE**). For example:

> *"All the family needs to be involved in that and need to take ownership or responsibility for changing behaviours" Health Professional* (**Staniford 2011 ++; UK**, **provider view**)

Provider characteristics were also a strong theme for studies exploring LWMP with children. Three studies (**Farnesi 2012 ++**, **Stewart 2008 +**, **Watson 2012b PE**) revealed how poor relationships with intervention providers were barriers to programme engagement. Whereas, provider support was clearly valued by other programme users in five studies (**Farnesi 2012 ++**, **Golley 2007 PR** and **Jones 2010 PE**, **Stewart 2008 +**, **Robertson 2009 PE**, **Watson 2008 PE**). Parents in one study highlighted the benefits of providers acting as different voices of authority outside of the family (**Stewart 2008 +**).

Group-based sessions and interaction with peers were also highly valued by all stakeholders. Group sessions were described as opportunities to share experiences, and support with people facing similar problems (**Golley 2007 PE**, **Robertson 2009 PE**, **Staniford 2011 ++**, **Watson 2008 PE**, **Watson 2012b PE**). For example:

> *''I think erm . . . coming here with other children similar to himself and getting to speak to other parents dealing with like the same issues is really helpful for us and you don't feel like you're being looked at funny and child 2 actually looks forward to coming.''* (**Staniford 2011 ++; UK**, **parent view**)

> *"The best bits were the family, meeting people with the same problems as your family and watching them flourish as the weeks went on"* (**Watson 2012b PE**, **UK**, **family view**)

Despite these benefits, providers and parents also commented on the difficulties in attending or delivering interventions to groups with mixed ages, preferences and abilities:

> *"Facilitators at both sites reported that group cohesion was sometimes difficult because of some activities being more appropriate for younger children (5-7 years) than for older children (8-9 years) , or vice versa, and the presence of siblings.*(Jones 2010, Australia, Authors describing provider views)

Including realistic goal setting and rewards in LWMPs was viewed in a very positively in studies of children (**Farnesi 2012 ++**, **Stewart 2008 +**, **Watson 2008 PE**, **Watson 2012a +**, **Watson 2012b PE**).

Regular monitoring and feedback was also commonly valued across studies of school-aged children: (**Farnesi 2012 ++**, **Robertson 2009 PE**, **Stewart 2008 +**, **Watson 2012b PE**,). For example:

> *"Parent: ''[I]t's always in the back of your head, so you never quit doing it at home'*
>
> *Clinician: ''Knowing that they'll [family] probably be keen on it [making changes] for a bit, and when they don't seem so keen anymore is when they need the follow up [. . .] or the encouragement to come and get back on track'*
>
> *Clinician: ''[I]it's kind of sending them away with, OK, this is what you want to do, let's give it a try, and them coming back and saying OK, that didn't work and figuring out why. And try and understand where they're coming from'*
>
> *Parent: ''We tried many things, finally we're here. Well, I think a lot of it will be trial and error when you're trying to find something that fits a family. Tried it, won't work, try something else'"* (**Farnesi 2012 ++**, **Canada**, **provider and parent views**)

Pre-adolescent children: post intervention support

Children and parents commonly expressed the desire for further professional support following completion of the LWMP in studies of school-aged children (**Golley 2007 PE**, **Robertson 2009 PE**, **Staniford 2011 ++**, **Stewart 2008 +**), perceiving it would be helpful for ensuring that weight management goals were continued:

> *"Children and parents emphasised that to sustain behaviour change and weight-regulating behaviours, they need ongoing support from health professionals and 'similar others'. However, health professionals suggested ongoing support is unrealistic because of cost".* (**Staniford 2011 ++**, **author describing child**, **parent and provider views**)

Adolescents

Ten studies explored barriers and facilitators faced by Adolescents (Brennan 2012 PE Aus, **Gellar 2012 ++**, **Avery 2012 +**, **Truby 2011 PE**, **Morinder 2011 ++**, **Woolford 2011 +**, **Kornman 2010 PE**, **Hester 2010 ++**, **Dhingra 2011 +**, **Alm 2008 +**). Shared barriers and facilitators described across studies of adolescents are described below.

Adolescent goals and outcomes

Weight management was an important outcome for adolescents, with two studies describing positive intervention impacts on weight management (**Alm 2008 +**, **Hester 2010 ++**).

Additionally, **Alm 2008 +** and **Morinder 2011 +** both described adolescents being motivated by the desire to improve health or prevent future health problems. Psychological wellbeing was highlighted as an important outcome in three studies (**Morinder 2011 +**, **Alm 2008 +**, **Hester 2010 ++**)

Morinder 2011 + described how the desire for improved psychological wellbeing was a motivator for joining LWMPs. Whereas **Alm 2008 +** and **Hester 2010 ++** described psychological wellbeing as a positive impact of attending LWMPs, e.g.

> *"I'm very happy with the changes I've made. It makes me feel good about myself, like I can do this (Participant reporting success)"* (**Alm 2008 +; USA**, **child view**)

Two studies suggested the desire to being socially accepted was a facilitator for joining LMWPs (**Alm 2008 +**, **Gellar 2012 ++**).

In addition to perceived positive impacts of LWMPS, three studies described concerns of unintended consequences. **Woolford 2011 +** described how the content of some e-contact messages could trigger unhealthy behaviours, i.e. mentioning unhealthy foods would most likely cause them to want those foods. **Hester 2010 ++** and **Morinder 2011 ++** indicated the potential of LWMPs to have negative effects on psychological wellbeing, as failure to lose weight is accomplished with feelings of shame, failure and disappointment.

Adolescent personal factors

Two studies described adolescents lack of motivation as barriers (**Brennan 2012 PE**, **Morinder 2011 +).** Whereas high levels of motivation were reported as a facilitator to adhering to weight management principals and LWMPs in two studies (**Morinder 2011 +**, **Gellar 2012 ++**), for example:

> *"I think you have to get yourself ready up here [in your mind] before you can actually say something about it. You have to tell yourself, ''I want to change. I want to be on a diet. I want to maintain this diet. I want to be better, and I want to lose weight.'' If you don't have that in your head, you're not going to be able to do it".* (**Gellar 2012 ++**, **USA**, **child view**)

Adolescents' parental and/or family support

Lack of parental support or parent/child conflict were indicated as barriers in four studies of adolescents (**Alm 2008 +**, **Avery 2012 +**, **Gellar 2012 ++**, **Brennan 2012 PE**). Just one study reported that successful participants had parents who joined them in their behaviour changing efforts (**Alm 2008 +**).

Adolescent views regarding intervention features

Too many behaviour change goals (**Brennan 2012 PE**) and individual goals not being understood or addressed (**Morinder 2011 +**). **Alm 2008 +** however described how successful participants stated they had set concrete manageable goals.

Provider dynamics were important aspect of LWMP interventions. **Morinder 2011 +** revealed how poor relationships with intervention providers were de-motivating for adolescents. Whereas, provider support was clearly valued in **Alm 2008 +** and a further two studies described positive non-judgemental and encouraging provider characteristics (**Woolford 2011 +**, **Morinder 2011 +**).

Low income

Two studies included LWMPs conducted with largely low income or unemployed families (**Pinard 2012 –**, **Tyler 2008 +**). However neither study provided rich qualitative information on the barriers and facilitators faced by these participants. **Pinard 2012-** described that providers valued the collaborative multidisciplinary team working aspects of their LWMP. **Tyler 20082009 +** presented positive examples of the use of tailored goal setting and monitoring and feedback. For example:

> *"Collaborating with families to create individual goals and strategies to overcome identified barriers, rather than imposing a regimented predetermined plan may have lessened resistance over time"* (**Tyler 2008 +**, USA, Authors observations).

"The plan [frozen home-cooked meals] was designed to limit the number of fast food meals that the husband bought when she [the mother] worked evenings and to control portion and serving sizes. However, the father stated that they frequently ate more than one meal because one meal did not satisfy […] He also had contacted the school and requested that his children be given extra servings at lunch because they were complaining they felt hungry […] The provider recognized that his father was demonstrating sincere care and concern for his children, and his concern was acknowledged and supported by the provider. The provider then weighed the children, and each had gained 7 pounds in the previous 8 weeks […] After reviewing this objective data, the father was willing to explore ways of managing his children's hunger" (**Tyler 2008 +**, USA, Authors observations).

In addition, providers in **CI Research 2009 –**, perceived differences between parents from more deprived areas. They believed these groups were less likely to address issues of child obesity as they were perceived to feel unable to exert positive change on a variety of aspects of their life, including weight management (**CI Research 2009 –**).

Ethnic groups

There was no available evidence to explore the barriers and facilitators specifically described for programme users of differing ethnic populations

Children with medical conditions or disabilities

There was no available evidence to explore the barriers and facilitators specifically described for programme users of with specific medical conditions or disabilities.

Evidence Statements:

Barriers and Facilitators for Different Population Groups of Programme Users

2.1 No studies were identified that were designed to examine whether particular population groups encounter different barriers and facilitators compared with other populations.

2.2 **Gender differences**. There is insufficient evidence to draw firm conclusions on whether boys and girls experience different barriers and facilitators related to engagement in lifestyle weight management programmes. One [+] qualitative study[1] indicated differences in the motivations for attending LWMPs between girls and boys. Girls described desires to improve their physical appearance and social acceptance, whereas boys were more concerned with their physical fitness and sports ability.

[1] Alm 2008

2.3 **Young children** (**under six years old**)**.** There is insufficient evidence to draw conclusions on the barriers and facilitators for engagement of young children in lifestyle weight management programmes. The barriers in recruiting young children were explored in only one process evaluation[1]. The study identified that uptake and attendance of eligible children was low, due to poor parental perception of child weight status, commitment issues and limited staff capacity for outreach work.

[1]Wolman 2008

2.4 **Pre-adolescent children** (**6-13 years**)**.** A wide range of themes were described in sixteen

studies of school-age children: seven qualitative (three [++][1-3], three [+][4-6], one [–][7]), one [+] correlation[8], two cross-sectional[9-10], six process evaluations[11-16]. However none of the studies were designed to explore differences in barriers and facilitators compared to other age groups.

Commonly shared facilitators across studies were the importance of non-weight outcomes such as psychological wellbeing[3,4,5,14-16], social outcomes such as making friends [3,5,14] and reduced bullying[3,17]; interventions with a whole-family approach[2-4 12,14-16]; positive provider characteristics[1,5,11,12,16]**;** group based sessions with peers[12, 14, 15,16]; regular monitoring and feedback[1,5,14, 16]; and post-intervention support[3,5,12,14]. Commonly shared barriers across studies were poor relationships between providers and children and/or their parents[1,5,16]

[1]Farnesi 2012, [2]Perry 2008, [3]Staniford 2011, [4]Pescud 2010, [5]Stewart 2008,[6] Tyler 2008, [7]Pinard 2012, [8]Gunnarsdottir 2012, [9]Braet 2010, [10]Gunn 2008, [11]Jones 2010, [12]Golley 2007, [13]Pittson 2011, [14]Robertson 2009, [15]Watson 2008, [16]Watson 2012b, [17]Murtagh 2006

2.5 **Adolescents.** A wide range of themes were described in ten studies of adolescents (two [++] qualitative[1-3], three [+] qualitative[4-6], one [+] cross-sectional surveys[7], four process evaluations[7-10]). However none of the studies were designed to explore differences in barriers and facilitators for adolescents when compared with other age groups. Facilitators shared across three or more studies were the importance of psychological wellbeing as an outcome[2,3,5] and positive provider characteristics[2,5, 6]. Commonly shared barriers across studies were: perceived lack of parental support[1,4,5,10]and concern regarding unintended consequences of weight management programmes.[2,3,6]

[1]Gellar 2012 [2]Morinder 2011 [3]Hester 2010, [4]Avery 2012, [5]Alm 2008, [6]Woolford 2011, [7]Dhingra 2011, [8]Truby 2011, [9]Kornman 2010, [10]Brennan 2012

2.6 **Socioeconomic status.** There is insufficient evidence available to draw conclusions on the barriers and facilitators for engaging populations from different socioeconomic groups with LWMPs. Only disparate and minimal information was provided in three studies: one [+] cross-sectional[1], one [–] cross-sectional[2] and one [–] qualitative study[3]. One study described positive views of children and parents from low socio-economic backgrounds towards the use of tailored goal setting, and monitoring and feedback[1]. Providers in one study with a high black and ethnic population valued the positive aspects of collaborative multidisciplinary team working[2]. In addition, providers in one study perceived parents from more deprived areas were less likely to address issues of child obesity, believing that these parents felt unable to exert positive change on a variety of aspects of their life, including weight management[3].

[1]Tyler 2008, [2]Pinard 2012, [3]CI Research 2009.

2.7 **Ethnic groups.** No studies were identified that explored that barriers and facilitators Black, Minority and Ethnic groups encounter when participating with lifestyle weight management programmes.

2.8 **Children with special needs** (**medical conditions or disability**)**.** No studies were identified that explored that barriers and facilitators faced by children with additional medical conditions or disabilities in participating with lifestyle weight management programmes.

Applicability:

2.2 Directly applicable: study conducted in a UK community setting.

2.3 Directly applicable: study conducted in a UK community setting.

2.4 Directly applicable: all studies conducted in community settings in the UK or similar countries (Canada[1], Australia[2,4], **USA**[6,7], Iceland[8], Belgium[9]).

2.5 Directly applicable: all studies conducted in community settings in the UK or similar countries (Australia[7,8,9,10] **USA**[1,5,6] and Sweden[2]).

2.6 Directly applicable: study conducted in a UK community setting or other similar countries (**USA**[1,2]).

5. PARIHS FRAMEWORK

There is a wider evidence base on the critical success factors to successful implementation of interventions in practice. These critical success factors have been incorporated in conceptual implementation frameworks such as the Promoting Action on Research Implementation in Health Services PARiHS Framework (Kitson et al 2008). Within the PARiHS framework, successful implementation is associated with the quality and value of the intervention, the qualities of the context in which the intervention is being introduced, and the way the intervention is facilitated and supported to achieve successful outcomes. The barriers and facilitators are mapped against these core concepts on a high to low continuum.

Please see Table 3 overleaf.

The value of such a framework can be to summarise a range of factors that should be considered, in both the intervention design and the context in which it is delivered, to maximise the chance of the success of any individual intervention. Entries in the last column (opportunities for additional interventions) are for illustration only.

Table 3: PARiHS Framework	**Critical success factors for translation and implementation of THR interventions**	
PARiHS framework concepts/domains	**LOW implementation** (**Barriers**)	**HIGH implementation** (**Facilitators**)
CONTEXT **Health service/ provider context.** service, quality assurance, evaluation, beliefs and values of the service/ professionals, culture and leadership.	**Skills and knowledge:** staff felt unqualified to deliver interventions that were broad in nature to a varying user group, who sometimes had complex psychosocial needs. **Staffing and time constraints**: providers described how insufficient staffing and time hindered their ability to deliver interventions effectively. **Insufficient organisation of interventions:** Poor organisation hindered effective delivery of interventions.	**Skills and knowledge:** providers were keen to receive relevant training that would help programme delivery. **Collaborative multi-discipline teams:** were highly valued by providers. **Organisation of interventions:** logistical and administrative problems were overcome when adequate planning was dedicated to intervention delivery.
Home/ work/ social context of programme users (**children or adolescents and their families**)	**Low parental motivation** for their children's weight management. **LACK OF AWARENESS OF CHILDREN'S OBESITY:** children/parents lack of awareness of children being overweight or obese. ***Lack of intervention relevance:*** *to home life.*	**AWARENESS OF CHILDREN'S OBESITY:** children /parents awareness of children being overweight or obese. **CHILDREN'S WEIGHT MANAGEMENT:** was a strong motive for engaging with weight management programmes. ***Psychological wellbeing and social goals:*** *were strong motivators for participating in LWMPs. Users desired improved* confidence*, self esteem, friendships and reduced bullying.* **High parental motivation:** for their children's weight management.
EVIDENCE [of effectiveness] **Perceived effectiveness of the intervention**	***Adverse effects of weight management programmes:*** *some parents were concerned LWMPs may lower self-esteem if children failed to lose weight, or cause anorexia.*	**PERCEIVED WEIGHT MANAGEMENT IMPROVEMENTS:** *programme users* and providers perceived improvements in children's weight management during programme participation. **PERCEIVED IMPROVEMENTS IN CHIDLREN'S HEALTH BEHAVIOUR:** such as diet and physical activity. ***Improved social and psychological wellbeing****: children and their families perceived programmes to improve children's confidence, self esteem and social interactions. May be sufficient motives to maintain engagement with services, even if weight management goals are not (yet) reached.*

TABLE 3 PARIHS Framework for THR barriers and facilitators. Key to Barriers and Facilitators: Black text = Providers' views; Italics = Users views. Shared themes = capitalised text. Themes are emphasised in bold [continued overleaf]

PARiHS framework concepts/domains	LOW implementation (Barriers)	HIGH implementation (Facilitators)
FACILITATION and SUPPORT Types of referral, patient choices, holistic enabling support, guidance, and purposeful knowledge exchange to support implementation/ concordance, family and other support.	**NEGATIVE PROVIDER DYNAMICS** relating to user-provider relationships and staff discontinuity. **LACK OF PARENTAL SUPPORT:** parents unaware of their role, expecting providers to address their children's weight management. ***Lack of family support:*** *Other family members sabotaging or not supporting programme efforts.* **INTERVENTION DURATION:** long intervention was perceived by some to reduce programme uptake. **LACK OF PROGRAMME AWARENESS:** common perception children, families and providers being unaware of locally available LWMPs. **Other relevant health professionals:** not raising programme awareness or making inappropriate referrals to the scheme. **INCONVENIENT SCHEDULING:** e.g. timing, length of individual sessions were important influences on programme uptake and/or adherence. **POOR VENUE CHOICE:** Venues being too far away, difficult to reach, or hindered by traffic problems at peak times were described as barriers. **Challenges of delivering group sessions:** and still meeting individual needs in groups with mixed ages, preferences and abilities.	**POSITIVE PROVIDER DYNAMICS** such as encouraging, non judgemental approaches, and continuity of staff. **PARENTAL SUPPORT:** high levels of parental support. **INTERVENTION DURATION:** insufficient length programmes could be too short to deliver the necessary information or instigate long-term behaviour change. **OTHER RELEVANT PROFESSIONALS:** raising programme awareness or referring children to the scheme. **SUGGESTED RECRUITMENT STRATEGIES:** included emphasising healthy living and fun programme aspects rather than weight management, advertising in local media, increasing referral routes, recruiting through schools and family support workers and offering rolling programmes that allow families to join on an ongoing basis**.** **SUGGESTED SCHUEDULING STRATEGIES:** included offering evening, out of hours or weekend appointments so school time was not compromised; improving the flexibility of appointment times; and increased appointment frequency. **SUGGESTED VENUES:** Community settings and schools ***Post-intervention support:*** *and follow-up wanted by user.*
Value placed on intervention – e.g. knowledge, **attitudes and beliefs from** various stakeholder perspectives.		**GROUP SESSIONS:** Group-based sessions with peers were highly valued as opportunities to share experiences with people facing similar problems. **TAILORED INTERVENTIONS**: were highly valued. **GOAL SETTING AND REGULAR MONITORING:** were valued. ***Practical intervention components:*** *such as cookery lessons, dietary plans, games and physical exercise sessions were enjoyed*. ***Behavioural change components:*** *were valued*.

TABLE 3 continued: PARIHS Framework for THR barriers and facilitators. Key to Barriers and Facilitators: Black text = Providers' views; Italics = Users views. Shared themes = capitalised text. Themes are emphasised in bold

6. COMPARISON BETWEEN REVIEW 1 AND 2 FINDINGS FOR INDIVIDUAL STUDIES

A number of the intervention studies from Review 1 had 'views' studies (with information about barriers and facilitators to implementing the intervention) associated with them. Table 4 summarises the main outcomes from the intervention studies (attrition rates and health outcomes) and the barriers and facilitators associated with those interventions.

Where there is a potential link between the programme outcomes and the identified barriers and facilitators this is noted in the final column, but these potential links are speculative.

Table 4: Linkage of intervention BMI/zBMI outcomes with locally and globally identified barriers and enablers (themes)

R1: Review 1 R2: Review 2

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
WATCH-IT	**Dixey 2006 – Twiddy 2012 +** [2 studies]				*Participants* Barriers: • Lack of awareness of LWMP preventing uptake. • Lack of parental/family support. • Low children's motivation. • Negative views of providers. • Perception of negative impact on health, wellbeing or health behaviour; no promotion of self-responsibility. Enablers: • Monitoring and feedback. • Group sessions with peers. • Positive views on goals as incentives (improve health, wellbeing, make friends). • Intervention tailored to personal needs and age of children. • Children's motivation as facilitator to adherence.		Perception of lack of parental/family support may have affected attrition rates and outcomes. Similar number of barriers/enablers identified. Mixed perceptions of programme benefits and children's motivation.
	Bryant 2011 + Rudolf 2006 –	UK, Leeds Disadvantaged communities.	RCT. Bryant + Duration: 4 months Assessment: 3,6 months Attrition: 20%, 24.3%. UBA Rudolf – Duration: 12 months Assessment: 3,6 months Attrition: 28%, 49%.	Family 94 children or adolescents aged 8-16. Motivational interviews and physical activity to encourage lifestyle change.	• No significant zBMI changes (pre-post or intervention vs control) in the RCT at 12 months. • Significant pre-post change in the UBA at 6 months (NB could be explained by high attrition) but not 3 months; marginally greater for girls and aged 13 or less.		
Triple P	Golley 2007 PE		Process evaluation		*Participants* Barriers:		More enablers than barriers identified.

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					• Negative aspects of scheduling. • Individual and family demands limit attendance and adherence to LWMP. Enablers: • Family involvement in programme. • Group sessions with peers. • Positive views of providers' approach. • Personal sustainment strategies. • Professional support after the LWMP is wanted or perceived as helpful. Intervention fidelity: • Report states interventions were delivered by providers as intended. • Session attendance was fairly low; about 50% parents attended less than 75% of sessions.		About half of the parents attended less than 75% of sessions. Positive views of programme approach and family involvement may have enhanced outcomes and reduced attrition. Unclear why boy/girl differences. Addressing scheduling concerns might have enhanced outcomes.
	Golley 2007 –, 2011	Australia hospital outpatient.	RCT ++ Duration: 6 months Assessment: 6,12 months Attrition: 24%, 18-20%.	Parents only 111 children aged 6-9. Behavioural - parenting skills and intensive lifestyle education vs parenting skills only vs usual care control.	• Significantly lower pre-post zBMI scores for boys at 6 and 12 months in both intervention groups but not in wait list control. For girls significant loss in control group only. • No significant differences between groups.		
HICKUPS	**Jones 2010 PE**		Process evaluation.		*Participants* Barriers: • Provider reports difficulty in delivering sessions. to groups with of broad ages. • Negative aspects of scheduling.		Overall parental approval for programme and the providers' approach may have enhanced outcomes though apparent

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					Enablers: • User-tailored intervention. • Positive views of providers' approach. • Positive views of scheduling. • Suggestions for improved scheduling. Intervention fidelity: • Session protocols were largely adhered to, and facilitators felt content was well understood, except more difficult nutritional concepts such as glycemic index. • Average attendance to dietary programme was 63% and 72% or 77% for the physical activity and combined programme, respectively. • User interest noted to be adversely affected by group dynamics (dominating parents and attendance of siblings).		sustainability could be explained by high attrition. Mixed views on scheduling and negative feelings re peer group sessions. Not all sessions were attended (average attendance 63-77%).
	Collins 2011, 2010 Okely 2010 ++ Burrows 2008, 2010, 2011, Cliff 2011, Jones 2011 HIKCUPS	Australia hospital outpatients	RCT ++ Duration: 6 months Assessment: 6,12,24 months Attrition: 31%, 36%, 44%	Family 165 children aged 5-9 Behaviour change, diet and physical activity – diet versus physical activity versus 'diet + physical activity'. [*No usual care control*]	• Significant pre-post reductions in zBMI in all groups at 6 months, maintained at 12 months with a lower but still significant effect at 24 months. A larger effect for diet or diet+PA than for PA alone. • Diet alone group significantly higher reduction than PA alone group at 24 months.		
Carnegie Residential Camps	**Hester 2010 ++;** **Holt 2005 +** [two studies]	Interviews at home post camp.	Qualitative (interviews).	Children & adolescents Hester: 5 Holt: 15.	*Participants* Barriers: • Perception of negative impact on health, wellbeing or health behaviour & difficultly in implementing changes. • Family members work against or sabotage		Positive views of providers' approach and tone may have reduced attrition and enhanced outcomes? This

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					weight management attempts. • Concerns that weight management won't be sustained after the LWMP without professional support. • Misconceptions/negative expectations inhibiting uptake of programme. Enablers: • Perception of positive improvements in children's health behaviour, wellbeing, friend-ships, self-responsibility, social acceptance; plus goals associated with the above. • Group sessions with peers. • Positive views of providers' approach/tone.		possibility is supported by greater benefits from longer stays. More enablers than barriers. Involvement of parents/families to gain their support may have enhanced outcomes.
	Gately 2005 – Gately 2007 – King 2007 – Duckworth 2009 –	UK weight reduction camp.	CBA; quasi-RCT, UBA, Quasi-RCT, all – Duration: 2-6 weeks Assessment: 6 weeks Attrition: Varied from 5% to 16%.	Child only aged 11-17 Gately: 233, 98 King: 38 Duckworth: 100 Physical activity, moderate dietary restrictions and behavioural education sessions vs usual summer activities.	• Significant pre-post reductions in zBMI • Longer stay significantly linked to higher reductions.		
Loozit	**Kornman 2010 PE**		Cross-sectional survey/Process evaluation.		*Participants* Enablers: • Most adolescents related e-contact as 'somewhat helpful'. Most adolescents (n=17) found SMS messages somewhat helpful, 10 found them very helpful and 7 found them to be unhelpful. Equivalent responses for e-mail messages were 16, 13 and 4. • Healthy eating messages (42% response), booster session reinforcement (34%) and those		*The views study only explored the e-contact aspects of the intervention. Limited enthusiasm for the e-contacts may have

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					concluding with 'please reply' elicited the highest reply rates (32% compared to 5% for statement messages) and authors surmised these message types should be included in future adolescent e-contact interventions. Intervention fidelity: • Intervention protocol was largely adhered to. Facilitators responded to 93% of adolescent replies. • Adolescent response to e-contact messages was low (22% reply rate). • Almost 12% of adolescents failed to participate in the e-contact intervention.		explained lack of benefit (at 12 months) from adding this additional therapeutic contact (ADT) component to the intervention. However the attrition rate is also much lower in the ADT group suggesting some benefit from this approach.
	Shrewsbury 2009, 2010, 2011 Nguyen 2012 ++	Australia Community	RCT ++ Duration: 2 years Assessment: 2, 12 months Attrition: CBT: 23.1%; CBT + ADT 12.3% at 12 months	Family 151 Adolescents aged 13-16. Behavioural (CBT) versus CBT plus additional therapeutic contact (ADT – electronic contact via email and SMS) [*No usual care control*].	• Significant pre-post reductions in zBMI at 2 months; lower but still significant pre-post reduction at 12 months. • No significant difference between groups at 12 months.		
LEAP 1	**Monastra 2005 –** *Evaluation of LEAP study in USA (UBA, thus not in R1).* **Gunn 2008 +** (Melbourne)	California (Monastra 2005) Australia (Gunn 2008)		Family	*Participants* Enablers: • Would like a longer programme. • Good quality and content of written materials. • Group sessions with peers. • Non-judgemental tone of providers. • Goal to improve health as incentive to joining LWMP. *Providers*		No indication from views studies as to why the intervention was not effective other than a preference for a longer programme. No barriers identified. Low attrition may explain

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					Enablers: • Professional skills and knowledge. • Collaborative team working within or between services.		non significant result compared to other studies with higher attrition and no ITT.
	McCallum 2007, 2005 +	Primary care GP practice, Australia	RCT + Duration: 3 months Assessment: 9,15 months Attrition: 6.2%, 10.4%	Family 163 children aged 5-9 Behaviour change focusing on nutrition, physical activity and sedentary behaviour vs no intervention	• No significant pre-post difference in zBMI at 9 or 15 months. • No significant intervention vs control group difference in zBMI at 9 or 15 months.		
COCO	**Owen 2009 ++** *Same clinic as Sabin 2007. Unclear if same participants.*	UK	Qualitative. Hospital-based childhood obesity clinic.	Family (Children and Parents).	*Participants* Barriers: • Negative aspects of scheduling. • Intervention does not promote self-responsibility. • Lack of relevance or difficulty in implementing interventions and/or knowledge learned into home life. • Family members work against or sabotage weight management attempts. Enablers: • Goal setting and rewards. • Encouraging tone of providers. • Positive views of providers' approach. • Providers act as different voice of authority to parents. • Suggestions for improved scheduling. • Children's motivation as facilitator to adherence.		Positive views of intervention may explain fairly low attrition and pre-post reductions. Careful scheduling and closer engagement with families may enhance outcomes.

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
	Banks 2012 + Sabin 2007 –	UK - Bristol Hospital obesity clinic/Primary care Hospital obesity clinic (only)	RCT (Banks) + UBA (Sabin) – Behaviour change, diet and physical activity vs no intervention. Duration: 12 months Assessment: 12 months Attrition: 24% (Banks) 34% (Sabin).	Family 76 (Banks) & 137 (Sabin) children aged 5-16.	• Pre-post reductions in zBMI score at 12 months. • No significant difference between outpatient vs primary care groups.		
Y W8	**CI Research 2009 –;** **Pittson 2011 PE; Pittson Unpublished PE** [3 studies]		Cross sectional.		Parent satisfaction Barriers: • Negative views of scheduling as disincentive to join programme. • Low parental motivation as barrier to joining LWMP. • Low parental motivation as barrier to adhering to LWMP. • Concerns that weight management won't be sustained after the LWMP without professional support. • Misc_intervention perceived to be boring. Enablers: • Goal setting and rewards. • Group sessions with peers. • Confidence in sustaining weight management post-intervention. • Perception that LWMP improves children's psychological wellbeing. • Perception that LWMP leads to children making friends. • Parents' motivation as facilitator to uptake of LWMP.		

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					• Misc_intervention perceived to have improved weight loss.		
	Pittson 2010, 2011 –	UK, Telford and Wrekin, W Midlands Local education college	UBA –. Behaviour change - parenting skills, diet and physical activity 48 families of children aged . Duration: 3 months. Assessment: 3 months. Attrition: 19%.	Family 48 families; children aged 8-13.	• Significant pre-post reductions in mean BMI at 3 months.		
Families for Health	**Robertson 2009** **PE**			Family	*Participants* Barriers: • Negative aspects of scheduling and suggestions for improvement. • Negative views of the venue. • Would like a longer programme. Enablers: • Intervention the right length. • Family involvement in programme. • Monitoring and feedback. • Good facilitation of group sessions with peers and shared experiences beneficial. • Positive views of providers' approach. • Positive views of the venue.		Many more enablers than barriers noted and confidence in providers' approach and family support could explain sustainability. High skill of the novel intervention providers in behavioural techniques could explain the effectiveness of the intervention.

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					• Suggestions for recruiting families. • Perception that LWMP improves children's psychological wellbeing helps develop friendships and self-responsibility. *Providers* Enablers: • Have separate parent and child sessions. Intervention fidelity: • Intervention was broadly implemented as intended. • Researches assessed that both dieticians undertaking the programme were highly skilled in behavioural techniques (e.g. scoring highly on patient-centeredness, empathy, collaboration, and pace of interviews).		However, increasing zBMI reduction with time could be related to higher attrition at 24 months but generally low attrition rates. Responding to scheduling suggestions could enhance outcomes.
	Robertson 2011, 2008 –	UK leisure centres.	UBA –. Behaviour change focusing on physical activity and diet. Duration: 3 months. Assessment: 6, 12, 24 months. Attrition: 18.5%, 18.5%, 30%.	Family 27 children/adolescents aged 7-13 and parents, from 21 families.	• Significant pre-post reductions in zBMI at 6, 12 and 24 months; Increasing reductions with time (unusually).		
MEND	**Staniford 2011 ++** *Probably same sample as R1 study.*		Qualitative	Family	*Participants* Barriers: • Family members work against or sabotage weight management attempts. • Concerns that weight management won't be sustained without professional support, lack or/barriers to post-intervention support.		Many more enablers identified than barriers, in particular positive perceptions of the programme and confidence in the

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					Enablers: • Family involvement in programme & parental support. • Appreciation of group sessions with peers. • Perceptions that intervention promotes self-responsibility and goals include improved health, wellbeing, friendships, social acceptance. • Intervention tailored to personal needs and age of children and positive views of the venue. • Professional support after LWMP is wanted/ helpful. *Providers* Enablers: • Provide training for post-intervention.		providers. Mixed views regarding family support. May explain moderate rather than high attrition rates.
	Sacher 2010 +	UK, London Community	RCT+. Behaviour change focusing on diet and physical activity plus physical activity sessions vs wait-list control. Duration: 6 months Assessment: 6,12 months Attrition: I = 38.5%, 32%; C = 20%, 30%.	Family 11 children aged 8-12.	• Significant pre-post and reductions in zBMI at 6 months, maintained at 12 months. • Significant intervention vs control reductions in zBMI at 6 and 12 months.		
SCOTT	**Stewart 2008**				*Participants* Barriers: • Negative views of providers. • Intervention does not promote self-responsibility. • Family members work against or sabotage weight management attempts.		Mixed views regarding providers and family support but some negative perceptions may have impacted on sustainability and attrition in the longer term.

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					Enablers: • To have a longer programme. • Goal setting and rewards/realistic approach. • Monitoring and feedback. • Providers as different voice of authority to parents and support highly regarded. • Perceptions that intervention promotes self-responsibility, health, friendships; goals include wellbeing. • Health profs' raising awareness/referring to, LWMP and post-intervention support. • Family support for children.		
	Hughes 2008 +	UK, Glasgow and Edinburgh hospital outpatient.	RCT +. Behaviour change focusing on diet and phys activity vs usual (dietetic) care. Duration: 4.5 months Assessment: 6,12 months Attrition: I = 29%, 34.8%; C = 26.2%, 36.9%.	Family 134 children aged 5-11.	• Significant pre-post reductions in zBMI for intervention group only at 6 months; non-significant pre-post changes for intervention group at 12 months and control group at both time points. • No significant difference between intervention and control groups at 6 and 12 months.		
GOALS	**Watson 2008 PE; Watson 2012; Watson 2012b PE;** [8 papers, 3 studies]				*Participants* Barriers: • Perception intervention too short/long. • Negative aspects of programme (scheduling, poor quality/content of written materials and goal setting. • Negative expectations/perception of negative impacts of programme. • Low parental motivation to joining/adhering. • Concerns that weight management won't be sustained after the LWMP without professional support.		Numerous barriers and enablers identified (briefly summarised here). Very mixed views including some negative perceptions of participants and barriers noted by providers may explain high attrition.

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
					Enablers: • Family involvement in programme. • Positive views of providers' approach, quality of written materials and goal setting, tailoring to personal needs and ages of children. • Suggestions for improved scheduling. • Perception of positive impacts of programme. *Providers* Barriers: • Professionals faced staffing and time constraints, poor planning and coordination. • Language used as barrier to joining.		
	Watson 2011, 2009 –	UK, Liverpool Schools.	UBA –. Behavioural change, diet and physical activity. Duration:6 months Assessment: 6,12 months Attrition: 56.4%/62%, 78%.	Family 121 families of children aged 4-16.	• Significant pre-post reductions in zBMI score at 6 and 12 months for completers, with slightly less reduction at 12 compared to 6 months.		
PEACH Triple-P+	Perry 2008 ++				*Participants* Barriers: • Individual and family demands limit attendance and adherence to LWMP. Enablers: • Family involvement in programme. Intervention Fidelity • Audit of session integrity showed protocol was adhered to between groups and across sites. • About 50% of participants attended less than 75% of the scheduled sessions , for reasons external to the intervention.		Very little information from which to explore potential explanations. Apparent maintenance of weight loss could be attrition related.

Programme	Studies R2 R1 shaded	Setting	Study design, quality from R1 and R2 intervention duration, Follow up from baseline and attrition at follow up points from R1	Intervention characteristics - Target group and components from R1	Outcomes: Post intervention and long term BMI/zBMI from R1	Identified themes from R2 (target group and providers)	Explanatory variables? Outcomes vs local themes
	Magarey 2011 ++	Australia Children's hospital and medical centre.	RCT ++ Behavioural – parenting skills and intensive lifestyle education (PS) vs healthy lifestyle alone (HL). *No usual care control.* Duration: 6 months. Assessment: 6,12,18,24 months. Attrition: PS: 22.4%, 30.6%, 38.8%; HL: 16.7%, 23.8%, 35.7% at follow up (no data for 18 months).	Parents only 169 children aged 5-9.	• Significant pre-post reductions in zBMI score at 6 months, maintained to 24 months. • No significant intervention vs control group differences at 6 or 24 months.		

7. DISCUSSION

A broad range of barriers and facilitators were identified regarding participation in and delivery of lifestyle weight management programmes (LWMPs).

Findings could be organised within categories relating to children's personal factors, parental support, programme design, provider factors and organisational environment. Several strong themes emerged:

- Programme users had a broad range of motives for participating in LWMPs. While users and providers both acknowledged intervention aims of improved weight management, health and health behaviour; children and parents were also motivated by perceived opportunities for improved psychological wellbeing and social outcomes such as friendships and reduced bullying.
- Studies highlighted a lack of awareness of local programmes by potential users, and professionals. It was also evident that in addition to general apprehension prior to the start of interventions, programme users had different expectations (often negative misperceptions) of what the LWMP involved.
- A range of intervention features were highly regarded, including using a whole-family approach, group sessions with peers, user-tailored programmes and the use of goal setting and regular progress monitoring and feedback.
- Users wanted the location and scheduling of interventions to be convenient given competing demands for work, child-care and school, with sessions held in evenings and weekends.
- Establishing good user-provider relationships was highlighted. Participants particularly valued the child-friendly, encouraging and non-judgemental tone of providers, and their role as alternative voices of authority to the child's guardian.
- There was no clear consensus regarding the optimal duration of programmes. However, programme users commonly wanted longer lasting interventions. Providers held less positive views about extended programme durations.
- Users had wide-ranging motives for participating in LWMPs. A number of different individual demands and personal factors affected participant interactions, including insufficient or inappropriate support from parents or families, and presented differing and sometimes complex needs.

Strengths and limitations of this review:

This review was built on a comprehensive search strategy to find views-based studies of users and providers of UK-based child weight management interventions and other applicable countries. The literature search included a thorough attempt to identify relevant unpublished studies, and the overall evidence base was judged to have high applicability to UK settings.

A large number of studies were qualitative in design, and provided rich data for a detailed insight into the views of users and providers. Views of children, their parents / carers and programme providers were also well represented across the evidence base. However the available evidence

was extremely limited for programmes targeting children aged less than 6 years and for differential barriers and facilitators by population groupings such as gender, socio-economic status, ethnicity and special needs.

Several studies lacked sufficient detail on the exact nature of interventions included, such as the programme duration. It was evident however that across the included studies interventions there was a degree of heterogeneity in their design. Most interventions were conducted with either the family, or children alone and did not always provide age group information. Just one intervention was conducted with parents / carers only. The majority of studies provided behavioural or lifestyle education interventions – some with additional diet and /or exercise interventions. One study only delivered an exercise intervention and a further study provided only a dietary intervention.

A further weakness of the evidence base was the lack of clarity on when views and experiences of study participants were collected, and whether they reflected users who had been successful or not in managing their weight. Thus the views of those who did not engage with a programme, or dropped out early, may have been under reported.

8. INCLUDED STUDIES

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Braet 2010

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