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Authors	Kelleher, Emily;Davoren, Martin P.;Harrington, Janas M.;Shiely, Frances;Perry, Ivan J.;McHugh, Sheena M.
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Barriers and facilitators to initial and continued attendance at community-based lifestyle programmes among families of overweight and obese children: a systematic review

E. Kelleher,¹ M. P. Davoren,¹ J. M. Harrington,¹ F. Shiely,^{1,2} I. J. Perry¹ and S. M. McHugh¹

¹Department of Epidemiology and Public Health, University College Cork, Cork, Ireland, and ²HRB Clinical Research Facility, Mercy University Hospital, Cork, Ireland

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Address for Correspondence: Emily Kelleher, Department of Epidemiology and Public Health, University College Cork, 4th Floor, Western Gateway Building, Western Road, Cork, Ireland.
E-mail: emily.kelleher@ucc.ie

Summary

The success of childhood weight management programmes relies on family engagement. While attendance offers many benefits including the support to make positive lifestyle changes, the majority of families referred to treatment decline. Moreover, for those who do attend, benefits are often compromised by high programme attrition. This systematic review investigated factors influencing attendance at community-based lifestyle programmes among families of overweight or obese children. A narrative synthesis approach was used to allow for the inclusion of quantitative, qualitative and mixed-method study designs. Thirteen studies met the inclusion criteria. Results suggest that parents provided the impetus for programme initiation, and this was driven largely by a concern for their child's psychological health and wellbeing. More often than not, children went along without any real reason or interest in attending. Over the course of the programme, however, children's positive social experiences such as having fun and making friends fostered the desire to continue. The stigma surrounding excess weight and the denial of the issue amongst some parents presented barriers to enrolment and warrant further study. This study provides practical recommendations to guide future policy makers, programme delivery teams and researchers in developing strategies to boost recruitment and minimise attrition.

Keywords: Attendance, childhood, obesity, review, treatment.

Introduction

Childhood overweight and obesity is a significant public health issue. While acknowledging that some researchers have shown that childhood obesity is not declining (1), there is a multitude of work showing a slowing down and possible decline in its prevalence (2–4). The current plateau is at an unacceptably high level (5) and the costs for children, their families and health services remain substantial (6).

The problems associated with childhood obesity have been widely documented (7–9). An obese child is not only at an increased risk of chronic disease later in life but is also at risk, in the short term, of developing a range of comorbidities, as well as several orthopaedic and neurological conditions (8,10,11). Obese children are also more likely to develop emotional and psychosocial problems, including low self-esteem, the associated feelings of anxiety and isolation, as well as the subsequent involvement in risky

behaviours (8,12,13). Given these problems, developing effective interventions to prevent and treat childhood overweight and obesity is vital.

International evidence suggests that family-based programmes (14) that combine healthy eating, physical activity and behavioural components are efficacious in treating childhood obesity (15). However, the success of these programmes relies on family engagement (16). Families who initiate treatment for childhood obesity can benefit in several ways, such as, availing of the opportunities to identify any underlying health issues, as well as gaining the support they require to make long-lasting positive lifestyle changes (17,18). Despite these benefits, the majority of families referred to treatment decline the invitation (18,19). Moreover, for those who do attend, the programme-related benefits are often compromised by high programme attrition which is a common occurrence; up to 75% of participants and their families who enrol in these programmes drop out before programme completion (16). While non-attendance or drop-out directly impacts upon the children and their families, it also has negative consequences for the health service. Drop-out is usually preceded by missed appointments, leading to a loss of work time which in turn decreases the productivity of practitioners (17,20,21), contributes to increased delays for families already on waiting-lists (17,22) and increases overall health service expenses (17,20,21).

Some of the factors that influence families' decisions to engage or disengage with childhood weight management programmes may be modifiable and potentially preventable. Therefore, there is a need to identify these factors so that strategies to enhance recruitment and retention rates can be developed. Recently, Dhaliwal and colleagues (23) published an integrative review documenting the various predictors of, and reasons for, attrition in paediatric weight management programmes delivered in clinical or research institutions. While few consistent predictors of attrition were reported, the most commonly reported reasons for terminating care included logistical barriers and unmet family needs (23). Skelton *et al.* examined the reasons given by families for discontinuing outpatient paediatric weight management programmes prematurely, and reported similar findings (16). While these reviews reveal important reasons for attrition from childhood weight management programmes, they do not address the factors influencing attrition from community-based programmes, nor do they focus on the factors influencing initiation. As in clinical settings (16,23), an improved understanding of the factors influencing attendance at community-based programmes will lead to enhanced programme development, marketing and delivery, and subsequently improved recruitment and retention rates (16,23).

Review aim

The aim of this systematic review was to synthesise the findings of quantitative, qualitative and mixed-methods research investigating the predictors of, and factors influencing, attendance or non-attendance at community-based lifestyle programmes among families of overweight or obese primary school-aged children. Within this overall review question, we specifically sought to identify the barriers and facilitators related to both initial and continued attendance.

Methods

Design

To facilitate a comprehensive understanding of programme attendance, quantitative, qualitative and mixed-methods studies were included in the review, and a narrative synthesis approach, as developed by Popay *et al.*, was chosen (24). This process is not to be confused with the narrative descriptions that accompany many reviews. A narrative synthesis '*refers to a process of synthesis that can be used in systematic reviews focusing on a wide range of questions, not only those relating to the effectiveness of a particular intervention*' (p.5) and '*whilst narrative synthesis can involve the manipulation of statistical data, the defining characteristic is that it adopts a textual approach to the process of synthesis to 'tell the story' of the findings from the included studies*' (p.5). Furthermore, according to the authors, the approach is particularly suited to analysing factors influencing implementation (24).

Search strategy

A comprehensive literature search was undertaken utilizing a range of electronic databases including PubMed, EMBASE, CINAHL and PsychINFO. No time limit was placed on the search, and search terms (overweight, obesity, paediatric, child, attendance and interventions) were comparable between databases. Example strategies used in EMBASE and CINAHL are presented in Table S1. The reference lists of all relevant studies were also hand searched for additional articles.

Study selection

Articles published in English were included in the review if they (i) were original research studies; (ii) included children aged 4–12 years; (iii) had a primary focus on paediatric weight management that (iv) incorporated lifestyle components (i.e. diet, physical activity, behavioural); and (v) reported on the factors influencing initial and/or continued attendance at family-focused programmes

delivered in the community setting. Articles were excluded from the review if the study population were not overweight or obese, if studies had a primary focus on adolescent or adult obesity, if studies were based in hospital or research-based institutions, if it was a commentary paper or if the study was not available as a full text.

After initial scoping searches and consultation with a University librarian, one reviewer (EK) selected the search terms. All studies were assessed against the inclusion criteria. Once duplicates were removed, studies were excluded in the first instance if there was evidence in the title that they were not related to childhood overweight or obesity. Subsequent studies were excluded if they were deemed ineligible following inspection of the abstract. The final step involved reading the full text of each article in order to identify the final group of studies to be included. A flow diagram presents the results of the search in Fig. 1. It follows the Preferred Reporting Items for Systematic Reviews and Meta Analyses: The PRISMA Statement (25) in an effort to standardize the method of reporting the selection process in conducting a systematic literature review.

Quality assessment

Two reviewers (EK, JH) conducted quality assessment, and Bowling’s quality checklist (26,27) was used to appraise

the articles. This checklist allowed us to assess and compare study aims, design, methods, analysis, results, discussion and conclusions. Studies were not excluded on the basis of the quality assessment. Tables 1–3 show the data extracted from all studies and the methodological issues which emerged.

Data extraction

A preliminary synthesis was conducted by tabulating the relevant data into separate data extraction tables, according to their study design. Three reviewers (EK, SMcH, FS) extracted the following data: author, publication year, location and setting, study methodology, sample characteristics, variables associated with attendance and/or the barriers to and facilitators of attendance, overall study findings and indicators of study quality. Textual descriptions and information regarding study quality were also included in the data extraction tables.

Data synthesis

Data synthesis was informed by guidance in the conduct of narrative synthesis in systematic reviews compiled by Popay *et al.* (24), and the following steps were followed: (i) preliminary analysis; (ii) exploration of relationships, and (iii) assessment of the robustness of the synthesis. Theory

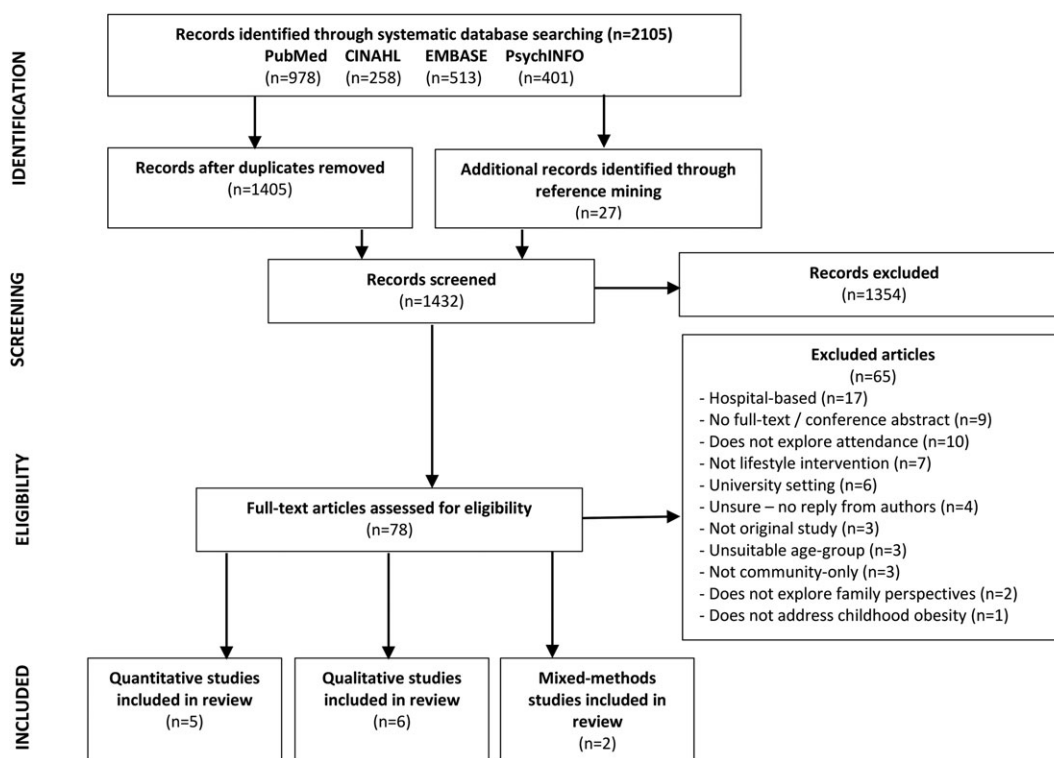


Figure 1 Flow chart of studies screened, excluded (with reasons) and included in the review.

Table 1 Characteristics of quantitative studies

Reference	Country	Design	Sample size (% male) • Age range • Mean age [SD]	Programme description	Focus on attendance	Quality (score)
Fagg <i>et al.</i> (2015) (30)	United Kingdom	Quantitative before and after study	<ul style="list-style-type: none"> • 21,088 (*N/S) • 7–13 years • *N/S 	MEND 7–13 programme is a community group-based, 10-week behaviour change intervention for children who are overweight or obese.	Explored predictors of attendance	No major quality issues identified (9/13)
Welsby <i>et al.</i> (2014) (41)	Australia	Quantitative before and after study	<ul style="list-style-type: none"> • 2,499 (45.2%) • 7–13 years • 10.2 years [1.7 years] 	Go4Fun is a community-based, multi-disciplinary group family obesity programme run as a 20 biweekly (i.e. 10 weeks) after school programme.	Explored predictors of attendance	Results from the qualitative feedback survey not adequately reported. (8/13)
Stockton <i>et al.</i> (2012) (37)	United States	Data drawn from RCT	<ul style="list-style-type: none"> • 303 (0%) • 8–10 years • *N/S 	GEMS is a two-year family-orientated, group-based obesity prevention programme for children and their primary caregiver. Interventions are run weekly for the first 14 weeks and then reduced to once a month for remainder of intervention.	Explored barriers and facilitators to attendance	External validity reduced because of the African–American population of girls (8/13)
Williams <i>et al.</i> (2010) (42)	United States	Quantitative before and after study	<ul style="list-style-type: none"> • 155 (42.6%) • *N/S • 5.77 years (*N/S) 	6-month community-based family-focused intervention (14 sessions of 1-h duration). Frequency of sessions varied from weekly during intensive phase (sessions 1–8) to biweekly (sessions 9–12) and then monthly (sessions 13 and 14).	Explored predictors of attendance	Small number of variables were considered. (8/13)
Gronbaek <i>et al.</i> (2009) (31)	Denmark	Quantitative prospective trial	<ul style="list-style-type: none"> • 100 (44%) • *N/S • 10.9 years 	Community-based, family-focused 18-month treatment consisting of a 6-month intensive period and a less intensive 1-year follow-up. Intervention consisted of individual and group-based sessions.	Explored predictors of and barriers to attendance	No control group thus weakening the quality of the study (9/13)

Table 2 Characteristics of qualitative studies

Reference	Country	Design	<ul style="list-style-type: none"> • Sample size (% male) • Age range • Mean age [SD] 	Programme description	Focus on attendance	Quality (score)
Teevale <i>et al.</i> (2015) (38)	New Zealand	Semi-structured interviews with parents/ primary care-givers of obese children	<ul style="list-style-type: none"> • 42 (15%) parents • 36–45 years • *N/S 	FANAU FAB is an 8-week group community-based family-led lifestyle weight-management programme for obese children.	Explored barriers and facilitators to attendance	No major quality issues identified (10/13)
Lucas <i>et al.</i> (2014) (33)	United Kingdom	Semi-structured interviews with families	<ul style="list-style-type: none"> • 23 families (*N/S) • *N/S • *N/S 	MEND 7–13 is a group-based, family-focused 10-week behaviour change programme for children who are overweight or obese.	Explored barriers and facilitators to attendance	No major quality issues identified (11/13)
Grow <i>et al.</i> (2013) (32)	United States	Semi-structured interviews with parents	<ul style="list-style-type: none"> • 23 (4%) parents • *N/S • 40.3 years 	Strong Kids, Strong Teens is an 18-week community-based, family-focused group healthy lifestyle promotion programme	Explored barriers and facilitators to attendance	No major quality issues identified. (11/13)
Newson <i>et al.</i> (2013) (34)	United Kingdom	Semi-structured interviews with families	<ul style="list-style-type: none"> • 11 (27%) families • *N/S • *N/S 	12-month community-based programme split into three stages: Stage 1—intense 12 weekly 2-h group sessions. Stage 2—bimonthly individual follow-up sessions. Stage 3—follow long-term action plan	Explored barriers and facilitators to attendance	Small homogenous sample (9/10)
Visram <i>et al.</i> (2012) (40)	United Kingdom	Semi-structured interviews with families	<ul style="list-style-type: none"> • 20 families (N/S) • *N/S • *N/S 	Community based, individualised, multi-disciplinary support for children and their families	Explored barriers and facilitators to attendance	No major quality issues identified (10/13)
Twiddy <i>et al.</i> (2012) (39)	United Kingdom	Semi-structured interviews with families	<ul style="list-style-type: none"> • 23 families (N/S) • *N/S 	WATCH-IT, community-based, family-focused, multidisciplinary programme combining group and individual sessions. Families commit for 3 months with an option to renew 3 monthly for a year.	Explored barriers and facilitators to attendance	No major quality issues identified (10/13)

*N/S: not specified.

development was not carried out because of the exploratory nature of the research synthesised.

First, to develop the preliminary synthesis, the descriptive characteristics and complete result sections from each article were extracted in a table. These results were analysed by EK and MPD using the method for thematic analysis as described by Thomas and Harden (28) in the software package NVivo v10. Codes were assigned to units of meaning in the results section of each study. Codes were then

organised into categories of factors influencing programme attendance (both initial and continued). These categories were entered into synthesis tables and similarities, and differences across the studies were identified. Finally, idea webs were constructed to explore the relationships between the findings across the different studies. Idea webs, as described by Clinkenbeard (29), use spider diagrams as a method for visualising and exploring possible connections across study findings (24,29).

Table 3 Characteristics of mixed methods studies

Reference	Country	Design	Sample size (% male) • Age range • Mean age [SD]	Programme description	Focus on attendance	Quality
O'Connor <i>et al.</i> (2013) (35)	United States	Mixed-methods study within an RCT	<ul style="list-style-type: none"> • 40 families (20%) • *N/S • *N/S 	Helping HAND, a 6-month community-based, family-focused programme with individual sessions for parents and children.	Explored predictors and barriers/facilitators to attendance	External validity reduced because of the primarily Hispanic/low income populations (6/13)
Rice <i>et al.</i> (2008) (36)	United States	Mixed-methods study using the information collected via interviews of families	<ul style="list-style-type: none"> • *N/S • 7–17 years • *N/S 	12-month community-based, family-focused programme. First 3 months were group based, followed by 3-month transition phase, followed by 6-month maintenance phase.	Explored barriers and facilitators to attendance	Limited information on sample and methods (4/13)

*N/S: not specified.

Results

Our search strategy identified 2,105 articles. Of these, 1,405 remained after duplicates were removed (Fig. 1). Screening of titles and abstracts resulted in 78 potentially eligible studies. Of these, 13 peer-reviewed journal articles met the inclusion criteria (30–42). Qualitative methods were employed in five of the studies included (Table 1), quantitative methods in six (Table 2) while two studies used mixed-methods to achieve their aim (Table 3).

Five of the included studies reported on the non-modifiable predictors of attendance (e.g. gender, age and ethnicity) (30,31,35,41,42). Of these five, three examined the predictors of initial attendance (30,35,41) and four reported on the predictors of continued attendance (30,31,41,42). Ten studies reported on the modifiable factors influencing attendance (e.g. programme location and staff) (31–40). Out of these, eight explored the reasons behind both initial and continued attendance, while Rice *et al.* reported solely on the factors influencing initial attendance and Gronbaek *et al.* reported exclusively on continued attendance. These barriers to, and facilitators of both initial and continued attendance are summarised in Table 4, and discussed in the following section.

Non-modifiable predictors of initial and continued attendance

Gender influences attendance in weight management programmes. Three of the included quantitative studies reported on the predictors of initial attendance (30,35,41), and all found that families with overweight or obese girls were more likely to enrol in weight management programmes than families with overweight or obese boys. Similarly, out of the three quantitative studies that examined the association between gender and completion, two found that families with overweight or obese girls were also more likely to complete treatment than those of boys (30,41).

Three of the four quantitative studies which examined the association between ethnicity and drop-out reported that those families of ethnic minority were more likely to discontinue care prematurely (31,41,42). Two of the included qualitative studies support this finding with some families dropping out of treatment as a result of language difficulties (31,38), or because they felt the programme was '*culturally inappropriate*' (38).

In terms of other non-modifiable predictors of attendance, three of the included studies examined family structure and socioeconomic background (30,41,42). Results suggest that lone-parent families (30,42) and those families living in lower socioeconomic areas (30,41) were more likely to drop out. Similarly, Lucas *et al.* reported further difficulty in recruiting families from deprived groups or neighbourhoods (33).

Baseline child body mass index (BMI) and age were not found to be associated with attendance. Two studies examined weight status and found that child BMI was not

Table 4 Summary of facilitators and barriers to initial and continued attendance

	Predictors of attendance	Facilitators	Barriers
Initial attendance	- Gender (28, 33, 39)	- Parental concern for child's psychological wellbeing (30–32, 35–37) - Social interaction (30, 32, 35) - Lifestyle-focused approach (30, 32, 35) - Family-centred approach (30, 36)	- Stigma (30–32, 38) - Denial (30, 32, 38) - Personal and programme logistics (29, 30, 32–34)
Continued attendance	- Gender (28, 39) - Ethnic minority (29, 39, 40) - Lone parent families (28, 40) - Families living in lower socioeconomic areas (28, 39)	- Social interaction and support (30–32, 34, 36, 38, 39) - Practical sessions (30, 35, 36, 38) - Family-centred approach (30, 31, 33, 36, 38) - Programme staff (31, 36, 37)	- Personal circumstances and logistics (29–33, 36) - Programme staff (31, 37)

associated with drop-out (30,42). While child age was not examined as a predictor of initial attendance by any of the included studies, Fagg *et al.* found that it was not associated with continued attendance (30).

Modifiable factors influencing initial attendance

Facilitators

Parental concern for child's psychological wellbeing

Parents were the primary decision-makers when it came to whether or not their family would enrol in a childhood weight management programme and more often than not, children '*just went along*' without any particular reason or interest in attending (31,32,37). Parents were motivated to enrol largely because of their concern for their child's health (32,34,37,38,40) and more specifically a concern for their child's psychological wellbeing (32–34,37–39). In two studies, parents enrolled specifically because their child had been bullied (33,38). For example, in the 10-week MEND programme evaluated by Lucas *et al.*, parents were aware of occasions of '*bullying*' or '*social isolation*' experienced by their child and so when deciding whether to enrol or not, they often prioritised any benefits to their child's psychological health over weight loss (33). In another study, some children noted that the experience of being '*bullied a lot*' motivated them to take action (33). The perceived positive psychological benefits of attending, including the opportunity to improve their child's self-esteem (34,37,39) and self-confidence (34,39), as well as mitigating any adverse social experiences their child might be experiencing (32,33,38), encouraged parents to enrol their children.

Social interaction

Children participated in childhood weight management programmes primarily for the social interaction they appeared to offer, and many enrolled simply '*to have fun*' and '*make friends*' (32,34,37). The studies included in this review focused

primarily on group-based programmes which offered children the opportunity to play games and exercise with others of similar age (32,34,37). Newson *et al.* highlighted the opportunity for social interaction as an incentive for parents also; parents enrolled with the expectation of meeting and gaining the support of other parents in the group (34). Some parents who participated in this study felt it was good to attend and '*speak to other parents who are trying to change things*' while their children '*could make friends with other kids*' who could '*play on the same level*' as their own child (34).

Lifestyle-focused approach

Three studies reported parent's interest in programmes that focused on lifestyle (i.e. incorporated nutrition, physical activity and behavioural components) as a factor influencing enrolment (32,34,37). While all of the included studies reported on programmes that promoted lifestyle change through physical fitness, healthy eating and psychological support, Grow *et al.* reported that several of the parents they interviewed specifically mentioned that they did not want their child to '*be put on a diet*' and favoured programmes that took a more holistic approach to healthy weight management rather than those that focused on weight loss or dieting alone (32). Parents were interested in the '*informative part of the program*' and liked that the programme '*encompassed everything, the nutrition, the motivation and the exercise*' (32). Furthermore, parents cited the opportunity to learn new skills and enhance their knowledge on lifestyle-related behaviours as further motivating factors (32,34).

Barriers

Stigma

The stigma surrounding the issue of excess weight and associated treatment programmes was reported as a significant barrier to initial attendance for both children and parents in four of the included studies (32–34,40). Parents reported that children were reluctant to attend a programme for '*fat*

kids either because they did not identify themselves as carrying excess weight or did not want others to identify them as being overweight (32). Similarly, Lucas *et al.* identified several children who reported that they were hesitant to attend because they believed they were not 'fat' or because they disliked being identified by others as 'fat' (33).

The stigma surrounding the issue also appeared to influence whether or not parents engaged with a programme (33,34,40). They appeared to be influenced by the perceptions held by close friends and family and were more likely to refuse referral if they expressed negative comments (34). Additionally, three of the studies reported that parents were afraid of raising the subject of weight with their child out of fear of causing upset to them (32) or that involving them in such programmes would be harmful to their self-esteem (34,40). For example, in a qualitative study conducted with 20 children and their families, Visram *et al.* reported parental concerns about their child being labelled as overweight or obese and the negative impact on the child's self-esteem (40).

Parental denial

Parental denial was another barrier to initial attendance (32,34,40). Parents sometimes relied on their own visual observation of their child rather than that of a health professional to justify rejecting a place on the associated weight management programme (34,40). These parents refused to accept their child was carrying excess weight with many referring to their child as 'stocky' or 'broad' (40), or believing they 'would grow into it' (34). Grow *et al.* found that others compared their children to peers of similar build stating that they are 'normal, just like other children' (34). This denial led to their perceived lack of need for such a programme and subsequently their refusal of the referral.

Personal and programme logistics

Finally, changing family circumstances such as moving school or relocating and scheduling conflicts were a challenge for many families (31,32,36). Parents often found it hard to prioritise time for the programme when they had 'so many other things to do' in the evenings (34). For others, programme logistics proved too difficult to overcome when deciding to enrol in a programme (32,34,36). For example, in terms of location, both safety (34) and distance from home (32,36) were important factors influencing programme enrolment (32,34,35).

Modifiable factors influencing continued attendance

Facilitators

Social interaction and support

While parents were key to initial attendance, their children were the main drivers behind continued attendance. Once

enrolled in a programme, having fun (32,33,36,41) and making new friends (32–34,38,40) motivated sustained engagement. Children particularly enjoyed the opportunity to play with children of a (i) similar age, (ii) weight status or (iii) activity level (32–34,38,40). Lucas *et al.* captured this point in the following quote where a participant expressed comfort in being surrounded by those of similar capability 'I found them fun because I was surrounded by different people who were in the situation that I was in, in terms of being overweight and finding exercise difficult.' (33). The majority of the studies reported on group-based programmes whereby children spent time exercising and playing games together while parents participated in the educational component. Visram *et al.* who evaluated an individual-based programme, as opposed to a group-based programme, reported that participating children stated they were keen to meet other children in similar situations and recommended this as an area for improvement (40).

Parents returned to programmes primarily for the group support they received (32–34,38). The shared experience often reduced feelings of 'isolation' (33), and many parents valued the 'social acceptance' of a group describing shared problems which often resulted in the knowledge that they are not alone (33,38). While normalising the issue for many, these group-based programmes also offered further social support through the exchange of personal 'struggles and triumphs' (38), personal tips and tricks as well as holding each other accountable. The parent-only session included in these programmes (32–34,38) allowed parents to discuss problems they may be experiencing in relation to their families positive lifestyle change with others on a similar journey that would not otherwise be possible in individual-based programmes.

Practical sessions

Programmes which offered practical sessions further boosted continued attendance (32,37,38,40). These sessions, whereby parents tried new hands-on activities such as cooking demonstrations (32,38), healthy food shopping expeditions (38), visualising portion sizes (38), outdoor activity sessions (40) or community-field trips (37), motivated families to continue attending. Parents appreciated 'those kind of things, like the portion sizes... instead of maybe if the plate is this big, but actually show portion sizes to the parents so they can see it for themselves, see it being done' (38). Results from Teevale *et al.* suggest that parents were more interested in the practical aspect of the programme as opposed to the theory behind it. For example one mother reported that '...you don't want to hear theory when you're a mum. You want to hear real-life experience and what's practical for us' (38). Similarly, the parents participating in the study conducted by Stockton and colleagues reported that the field trips provided practical ways of experiencing the theoretical objectives of the GEMS programme (37).

Family-centred approach

All of the included studies reported on family-based programmes where both parents and their child were invited to attend the sessions. This simultaneous delivery of the programme to parents and their children appeared to further enhance retention for a number of reasons (32,35,38). Three of the included studies reported that both parents and children enjoyed the dedicated parent-child time that the programmes afforded (32,35,38) either because they provided the opportunity to do exercise together or provided the mutual support they needed to keep attending. One parent expressed their appreciation of having *'something like that where it's just her and I doing something together, just the two of us, I mean I thought that was great'* while another felt *'it was good opportunity for my child and me to do something together'* (32). Parents also placed value in a programme where both they and their child could attend together and therefore could actively participate and support each other (38). Parents noted how receiving the same information made them *'work together to help each other'* while others felt that *'it would be hard'* to do the programme by themselves. One parent described *'there was a time when my daughter would say, I don't want to go, 'cause they're telling me I can't eat this and can't eat that. And I go, No we'll go, 'cause they're telling me the same thing. When she saw it was difficult for me too and we started getting into a routine, she started wanting to go'* (38). Furthermore, inviting other family members to participate in these programmes boosted its acceptability (32,33,38,40). Three of the included studies suggested inviting siblings to come along as this sometimes alleviated the added cost of childcare (32,33,40).

Programme staff

Programme staff emerged as both barriers to (33,39) and facilitators of (33,38,39) programme attendance. Having staff who lack experience, enthusiasm or group management skills can hinder programme efforts and even result in some families dropping out of treatment. Conversely, a good staff-participant relationship was an important aspect of these programmes and viewed by some parents as vital for continued attendance (38,39). Staff *'who made it fun'* for children and those with personal experience in either parenting or healthy weight management (33) enhanced continued attendance. Furthermore, Twiddy *et al.* reported that the continuity of staff was important to the success of any programme as relationships can be built upon week after week (39). Regular communication between programme staff and families (38,40) where *'study people would ring and remind'* parents further facilitated continued attendance (38).

Barriers

Personal and programme logistics

In addition to programme staff, logistical issues created significant barriers to continued attendance. Changing family circumstances including moving home, family illness or pregnancy (31–33,38) and scheduling conflicts such as school holidays and after-school activities (32,33,35,38), and a lack of transport to programme location (32–35,38) were reported as reasons for families discontinuing care. For example, Lucas *et al.* reported that transportation to the programme location was problematic when public transport was not available and driving not an option (33).

Discussion

Childhood obesity is a public health priority worldwide, but the way in which programmes are delivered for its management has received little attention (17). This review explored the factors influencing attendance at community-based lifestyle programmes among families of overweight or obese children aged 4–12 years and has revealed several important findings. First, despite varying findings across the quantitative studies which examined predictors of attendance, two relatively consistent predictors emerged: (i) at the child-level, boys are more likely to refuse or drop-out of treatment than girls and (ii) at the family-level, those families of ethnic minority also more likely to disengage from care. This is consistent with research on hospital-based childhood weight management programmes conducted by Skelton and colleagues (16), and future research should focus on exploring the reasons behind these findings and developing strategies to improve retention among these groups.

Second, our results suggest that childrens' parents provided the impetus for programme initiation, and this was driven largely by a concern for their child's psychological health and wellbeing. More often than not, children went along without any real reason or interest in attending. Over the course of the programme, however, children's positive social experiences such as having fun and making friends fostered the desire to continue attending. These outcomes highlight the need for strategies employed to enhance recruitment to focus on parents and those to minimise attrition to focus on both parents and children.

Our review also revealed a number of personal reasons (e.g. prejudices, fears) and practical reasons (e.g. distance, transport, scheduling) behind their decisions to engage or disengage with community based intervention programmes. The stigma associated with being overweight or obese created a significant barrier to initial attendance. Research suggests that overweight and obese children are vulnerable to stigma and stereotyping from multiple sources (43) and in efforts to avoid or minimise this victimisation some families may refuse the referral to care. Puhl and colleagues

recommend that researchers carefully consider how messages are framed in programmes to address childhood obesity (43). Our review found that parents were motivated to enrol in programmes that focused on attaining a healthy lifestyle, rather than those which centred around weight-loss, and so a move away from labelling associated programmes as weight-related interventions may be useful. This finding is consistent with other research that recommends programmes have a focus on health rather than weight or thinness (43,44). Furthermore, the way in which health practitioners address the topic of weight with families is of critical importance as it forms the foundation of interventions to address the issue of childhood overweight and obesity. Many parents may feel blamed or judged by their health care provider and as a result may delay or even refuse to accept care (43). Practitioners should avoid using language that places blame on parents and should ensure they address the topic of weight in an appropriate, non-judgemental and sensitive manner. For example, in a study conducted by Puhl and colleagues, results suggest that the terms 'fat' and 'obese' were rated as the 'most undesirable, stigmatizing and blaming' (45).

Eckstein and colleagues reported that successful health behaviour change cannot occur unless the health issue is recognised and acknowledged (46) and research has shown that parents are unlikely to implement changes to their child's lifestyle unless they recognise the need for such changes or perceive their child to be at risk (47). This review found that denial, or a lack of parental recognition of their child's excess weight, was a barrier to attendance at childhood weight management programmes. Parental misperception of child weight is common. Previous reviews found that $\geq 50\%$ of parents fail to correctly identify their child as overweight (48–51). However, little evidence is available on the reasons behind this misperception. Through qualitative research, Jain *et al.* and Rich *et al.* have offered some insight on the reluctance of mothers to acknowledge overweight in their children (52). Results suggest that a distrust of weight charts, fear of being blamed, unwillingness to label their child as overweight or believing they would grow out of it were key factors (52,53). As mentioned above, parents may not want to recognise their child is carrying excess weight or label their child as overweight in case their child is stigmatised (50). Furthermore, it has been suggested that parents may not recognise overweight in their children to avoid acknowledging and taking responsibility for their own overweight (54,55). Alternatively, given the prevalence of overweight children worldwide it is also possible that changing social norms mean that parents simply do not recognise overweight in their children (56,57). In a study conducted by Newson *et al.*, authors suggest that denial may be partly because of the 'normalisation' of childhood obesity within the context of today's society, which has permitted families to refuse referral on the basis that their child is

not different to others (34). The first step in the prevention/treatment process is to identify overweight. Therefore, strategies and campaigns to increase awareness of childhood overweight and obesity, and to simplify means of explaining measurement and classification are needed at a policy level. Additionally, a greater understanding of the reasons influencing parental misperception of child's weight status should be explored through further research.

Finally, in keeping with the reviews conducted on hospital and research based programmes, this review suggests that practical problems including transport, scheduling conflicts and changing family circumstances were an issue for all families and common reasons for attrition (16,23). Location, transportation and distance to treatment programmes can be important barriers for families participating in weight management programmes and highlight the need for similar programmes to be available locally or in sites easily accessible by public transport or with free onsite parking. Furthermore, many appointment times are during daytime hours, meaning children would miss school and parents would miss work in order to attend. For many parents, obesity is not seen as a 'disease' and, therefore, they may be less willing to miss school/work for treatment than for other conditions that are perceived to be more of a health issue (34,58). Evening or weekend appointments may address this barrier. However staff should spend time discussing and addressing any barriers to attendance before families initiate care.

Strengths and limitations

To our knowledge, this is the first systematic review of the barriers and facilitators associated with family attendance at community based childhood weight management programmes. This review included an extensive and systematic search of the literature and included quantitative, qualitative and mixed-methods research in order to facilitate a comprehensive understanding of programme attendance. To ensure reliability, quality check procedures were conducted including double screening and checking by independent researchers at the data extraction, coding and quality appraisal stages. However, it is important to acknowledge several limitations. First, while a good combination of countries are represented in this research, it is important to note that most of the evidence in the included studies is derived from European or Australasian-based research, thus limiting the generalizability of the results to other countries (most notably the United States). For example, insurance coverage may influence attendance in the US, but in countries with universal health care coverage (e.g. United Kingdom, Australia and New Zealand), other factors appear to be more pertinent (17). Second, because we did not include unpublished studies and studies that were published in a language other than English, some relevant

papers may have been excluded. The synthesis is therefore limited to published data which tends to range in quality and given the heterogeneity of study designs and programme characteristics, it was not possible to conduct a meta-analysis. In addition, many studies failed to adequately recruit those families who declined treatment, and so this group may be underrepresented. Future efforts should be made to elicit the barriers to attendance as perceived by those non-attenders.

Conclusion

Failure to attend and complete treatment is a common and worrying issue for health professionals and policy makers working in the area of childhood obesity treatment. While there is still some uncertainty as to what type of service is effective in treating and managing childhood obesity, one thing is certain—governments and the health service need to provide a service in a way that is acceptable and appropriate to families. Our review has found that the stigma associated with carrying excess weight, as well as low levels of recognition of the problem amongst parents, are important barriers to programme initiation and require urgent attention. However, once enrolled in a programme positive social interactions as well as good staff–participant relationships nurture continued engagement. Our findings have important implications for future programmes that aim to successfully recruit and retain participants for community-based childhood weight management programmes.

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Conflict of interest statement

The authors have no other financial disclosures to make.

Supporting Information

Additional Supporting Information may be found in the online version of this article, <http://dx.doi.org/10.1111/obr.12478>

Table S1. Sample EMBASE and CINAHL Search strategies.

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