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Title: **Getting the balance right: qualitative evaluation of a holistic weight management intervention to address childhood obesity**

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Abstract

Background: Childhood obesity is linked to a range of health and social problems. Solutions include the delivery of appropriate weight management interventions for those aged 16 and under. The 'Balance It! Getting the Balance Right' programme appears to be effective for those who complete the intervention, but the non-completion rate remains high. A qualitative evaluation was undertaken to explore the views of key stakeholders in the programme and identify possible reasons for non-completion.

Methods: Semi-structured interviews were conducted with a purposive sample of 16 NHS and local authority staff, and with 20 children (aged 4-16 years) and their families. A mosaic methodology was used, involving visual and verbal techniques employed to enable children of all ages to take an active role in expressing their opinions.

Results: Key themes included the challenges of approaching overweight children; positive outcomes for some families; and issues relating to communication and coordination. Participants spoke positively about the multi-disciplinary approach of 'Balance It!', but felt it could better meet the needs of its target population.

Conclusions: Structured interventions help to ensure consistency and coherence in terms of approaches to childhood overweight and obesity. Whole family approaches may be most effective in enhancing the user experience.

Key words: obesity; children; lifestyle intervention; evaluation; qualitative research

Introduction

The societal and economic impacts of surplus body weight are well documented; however, it is a common misconception that the physical consequences of obesity only occur later in life. Hyperlipidemia, hypertension, and abnormal glucose tolerance are more frequent in obese children, as are sleep apnoea, *pseudotumor cerebri* (increased intracranial pressure) and orthopaedic complications.[1-3] Childhood obesity also increases the likelihood of emotional and social problems, such as negative self-image and declining self-esteem associated with loneliness, anxiety and risky behaviours.[4,5] Around 80% of obese children and adolescents become obese adults, and obesity-related behaviours are known to persist from childhood to adulthood in the absence of intervention.[6,7] Reviews of the research literature indicate that weight management programmes aimed at children and young people can provide significant improvements in weight and self-esteem.[8-10] However, the overall success of non-surgical approaches has been disappointing.[11-13] A possible explanation is that adverse environmental factors overwhelm the behavioural and educational techniques that constitute the majority of weight management programmes.[5] The National Institute for Health and Clinical Excellence (NICE) recommends that commissioning organisations in England and Wales implement a comprehensive strategy to prevent and manage obesity in the local population.[14] This includes weight management for young people, with the overall aim being "to create a supportive environment that helps overweight or obese children and their families make lifestyle changes" (p.34).

A childhood weight management programme was established in a metropolitan borough council in northern England characterised by high levels of deprivation. The programme was initiated in 2005 after an audit revealed that referrals of obese children to local dietetic services increased by 150% (from 20 to 50 per annum) between 2001 and 2003. Of these referrals, less than 15% completed treatment and 44% were discharged due to failure to attend the clinic.[15] The 'Balance It! Getting the Balance Right' programme is part of a holistic care pathway whereby health professionals refer overweight and obese children (4-17 years) into appropriate lifestyle interventions. These interventions include dietary advice from a school nurse or dietician (depending on the level of overweight), free access to leisure facilities run by local authority staff, incentive 'fun days', and specialist support from consultant paediatricians and clinical psychologists. Analysis of the first 21 months of the programme demonstrated its effectiveness in reducing body mass index in children who complete the intervention.[16] However, the rate of failure to attend remained high, with 49% of children exiting the intervention before 12 months, particularly from the most deprived areas. High dropout rates have been observed in similar weight management programmes, with

reasons including the perceived acceptability of the intervention, accessibility and transport issues, family problems, and lack of motivation.[9,17]

The aim of our study was to examine the experiences of four stakeholder groups – children and young people, parents and guardians, NHS staff, and local authority staff – in attending, implementing or delivering the 'Balance It!' programme. We specifically sought to include the voices of overweight and obese children, which tend to be missing from the existing literature, and explore perceived barriers to accessing the programme. Our intention was that the findings would add to existing knowledge on childhood weight management, as well as informing future development of 'Balance It!' to increase effectiveness and retention.

Methods

Participants and recruitment

NHS and local authority staff were purposively sampled to ensure representation from the various teams involved in delivering the 'Balance It!' programme. It was anticipated that the response from service users would be low; therefore all families listed on the programme database (~250) were invited to take part in the study. In order to comply with research ethics and data protection legislation, study information packs were addressed by clerical staff within the NHS trust and distributed by post. These packs contained an invitation letter from the 'Balance It!' programme lead, an information sheet for parents and guardians, separate information for children and young people, a reply slip, and pre-paid envelope addressed to the research team. Recruitment continued until a sample of at least 15 staff and 20 families was achieved.

Ethics

Ethical approval was granted by the NHS Research Ethics Service (ref.: 07/H0904/98).

Data collection

Qualitative methods were used to enable stakeholders to express their views and experiences of childhood obesity and weight management. Semi-structured interviews – based on a topic guide developed in collaboration with the 'Balance It!' steering group and informed by the existing literature – provided a framework for comparisons between interviews, as well as allowing participants the freedom to raise additional issues.[18] The

interview format was kept flexible to enhance comfort and foster openness. All staff chose to be interviewed within their workplaces, either on a one-to-one basis (n=9) or in small groups (n_1=2 and n_2=5). Service users were offered the option of taking part in individual or family interviews, as children often feel safer and more relaxed with their parents or guardians present. Furthermore, family interviews can provide insight into family dynamics and assist in discovering the shared meanings that emerge with a health episode.[19] Interviews with 17 families took place in their homes (n=16) or a local café (n=1), and involved the child, at least one parent or guardian, and often with siblings present. Feedback from 3 additional families was obtained during individual interviews with parents (n=2) or via email (n=1), according to the participants' preferences. The duration of the interviews ranged from 15 minutes to one hour, although children were told they could leave at any time to ensure they were not wearied by the experience.

Given the range of ages involved, and therefore the variation in the communicative abilities of the children and young people, a mosaic methodology was used.[20,21] This is a multi-method strength-based approach, resting on the underlying principle that children are experts in their own lives.[22] By bringing together several visual and verbal methods, the aim was to enable children to take an active role in expressing their views and experiences of the 'Balance It!' programme. They were offered resources to take photographs, draw pictures or produce maps, which were then used as the basis for discussions with the researcher (SV, who was not known to the participants in any capacity). The discussions and interviews were audio-recorded and transcribed verbatim, with all identifying information removed. Field notes were also written up in an attempt to capture contextual data. Utilising a combination of techniques enabled the research team to effectively capture the views of all participants and enhance the reliability of the study through the process of triangulation.[23]

Data analysis

Transcripts and notes were analysed using thematic framework analysis, which is a comprehensive, systematic approach that allows between- and within-case comparisons.[24] The framework used to classify and organise the data was based on the interview topic guides, with additional categories developed from the participants' narratives (Box 1). Trustworthiness of data interpretation was addressed by having both members of the research team (SV and LG) independently analyse the transcripts to draw out the key concepts across the sample.[23] This process took place manually to ensure the researchers' continued immersion in the data and to create a more sensitive, nuanced analysis. Highlighter pens were used to colour-code important text and the resulting codes were then

sorted into themes, concepts and categories using tables within Microsoft Word. The results of this process are presented below.

Results

Sixteen professional stakeholders were sampled to the study from the local authority (n=3), NHS acute trust (n=4) and primary care trust (n=9). Of the 28 families who returned completed reply slips, a total of 20 consented to take part in the research. Reasons for non-participation included family bereavement and not responding to follow-up letters or telephone calls. The final sample represented the diversity of the target population according to key criteria such as age and sex of the child, area of residence, and programme outcome (Table 1). Key themes arising from the interviews are illustrated below with the use of direct quotations and pictures drawn by the participants (Boxes 2-5, Figure 1). No discernible differences were observed in terms of the feedback from the various stakeholder groups, including families who had completed, withdrawn from or were still attending the programme. However, this result needs to be interpreted with some caution due to the small size of each sub-group. A more in-depth analysis is provided in the full evaluation report.[25]

Identifying overweight and obesity

Staff reported difficulties in approaching children and families who might benefit from attending the 'Balance It!' programme, largely due to the sensitive and potentially emotive nature of discussing body weight. An obese child was felt to be easier to identify visually than an overweight one, where the excess weight might be dismissed as "puppy fat". This resulted in a higher proportion of obese children on the programme than might be expected from the local prevalence of childhood obesity. The existence of co-morbidities or nascent health problems – both more common amongst obese children – also appeared to increase the likelihood that families would accept the invitation to attend the programme. A high proportion of families declined to attend and staff felt this was due to them either lacking knowledge about the consequences of obesity or being in denial about their child's weight problem. This view was supported by the family interviews, where several parents expressed shock that their child had been identified as overweight or obese (Box 2). Some refused to accept these labels and instead referred to their child using adjectives like "stocky" or "broad". Several examples were given of other health and social care professionals reinforcing these ideas and appearing to contradict the 'diagnosis' of excess weight made by the dietician or school nurse. There were also concerns that being labelled as overweight or

obese could have a negative impact on the child's self-esteem, which were borne out during discussions with some of the children and young people. Whereas parents were more likely to report concerns for their child's current or future health, children were more concerned with their appearance and how they are perceived by others. These concerns acted as both a motivating factor and a barrier to accessing the weight management programme.

Individual and family outcomes

Participants reported a range of positive outcomes which they attributed to attendance on the 'Balance It!' programme (Box 3). Staff were able to objectively demonstrate success (measured by reductions in BMI) but also provided anecdotal evidence of children growing in confidence and beginning to enjoy exercise. Parents confirmed the view that 'Balance It!' can impact on whole families, in terms of eating more healthily, exercising together or accessing other lifestyle interventions. Children reported making healthier choices and subsequently losing weight, which led to them feeling more confident, becoming independent and experiencing less bullying. There were a minority of cases where the programme was perceived to have had little or no impact, largely because families did not feel they had received sufficient support. This was linked to issues regarding communication between programme staff and service users.

Coordination and communication

On the whole, the multi-disciplinary approach of the 'Balance It!' team was perceived to be an asset in terms of facilitating the delivery of holistic interventions. Service users appreciated the ability to tailor the programme to their primary concern (i.e. dietary advice or physical activity). Staff spoke positively about the opportunity to work with colleagues in other agencies, although it was acknowledged that multi-agency working can be difficult to coordinate (Box 4). School nurses in particular did not feel their input was valued, while other stakeholders felt there was a lack of commitment from this group, reportedly due to a lack of support at managerial level as well as competing priorities and targets. These challenges were compounded by personnel changes resulting from the recent NHS structural reorganisation. Some families reported issues regarding communication with and between the partner agencies, which resulted in uncertainty as to whether they were still on the programme (Table 1). Those who had taken part in more structured interventions (i.e. regular appointments with a dietician and frequent use of local leisure facilities) tended to have the most positive experiences. There were particular concerns regarding the physical

activity component of the programme, with families experiencing a number of practical access barriers and difficulties in contacting local authority staff. The ‘Balance It!’ team acknowledged that there had been ‘teething problems’ and described the programme as an evolving one, which was continually adapting to better meet the needs of its users.

Areas for improvement

Staff and service users agreed that the ‘Balance It!’ programme could be improved by taking a more structured, cohesive approach, while maintaining the flexibility to meet different user needs (Box 5). Parents felt that involving families in decision-making and maintaining regular communication could help to sustain motivation. They also felt the retention rate could be enhanced by employing a whole family approach and providing free activities for the child’s siblings and parents. This would remove some of the financial barriers that particularly affect low income families, as well as helping to reduce stigmatisation. Some parents also reported that there was a lack of provision for children with physical and learning disabilities. The gym-based interventions offered by ‘Balance It!’ were not felt to be suitable for everyone, particularly younger children and those who are body conscious. Staff felt that the programme had the potential to reach more families across the borough and recognised the need to address various access barriers, including cost, timing and transport. However, further expansion of the programme was perceived to be constrained by available funding and limited capacity within the team. Offering group-based interventions was one suggestion for making better use of the available time and resources, as well as providing opportunities for peer support. Children were keen to meet others in similar situations and particularly enjoyed the outdoor activity days offered as part of the programme. As well as more regular ‘fun days’, they wanted to take part in a wider range of health-promoting activities (Figure 1).

Discussion

Main findings of the study

On the whole, children and their families reported positive experiences of taking part in the ‘Balance It! It’s Your Health’ programme. They appreciated having free access to local leisure facilities as well as advice on healthy eating, although parents identified a number of barriers to accessing this support. Whole family approaches were advocated as one way to overcome these barriers and avoid singling out a child who may already feel self-conscious about their weight. A key challenge to the success of ‘Balance It!’ was perceived to be the

inherent difficulty of raising the issue of overweight and obesity in children. Staff involved in delivering the programme acknowledged that there were a number of potential areas for improvement, such as the need for better communication between the various partner agencies. Parents also requested improved communication with programme staff, emphasising the need for family-centred approaches and the importance of ongoing support to sustain their child's weight loss efforts. In spite of these challenges, the holistic nature of the 'Balance It!' programme appears to make it a successful strategy for weight management amongst children and young people. Participants reported a range of benefits that extend beyond improvements in an individual child's weight, including changes in the whole family's eating habits, taking part in activities together and gaining confidence. Overall, it was felt that the programme was a success but that it had the potential to expand and better meet the needs of its target population.

Limitations of the study

Participants in this research were sampled from one weight management programme in northern England. This could render the study open to criticism in that they may not have been representative of all professionals and families attempting to deal with the issue of childhood obesity. The relatively small sample might also cause concern. We found it particularly difficult to recruit families who had withdrawn from the 'Balance It!' programme and therefore there exists an inevitable degree of selection bias. Those who agreed to take part in the study were likely to be a highly motivated sample of people who wanted to voice their opinions on this service. The sample was also lacking in participants from ethnic minority backgrounds, although this is more of a reflection of the 'Balance It!' programme than a limitation of the study. We achieved over-representation from certain localities, which, again, mirrors patterns of access to local services. As with any qualitative research, the findings presented here solely reflect the views of the participants and may not be generalisable to the wider population. Despite these limitations, we assert that the study sample and chosen methodology allowed for the collection of data of sufficient depth to address the research aim.

What is already known on this topic

Previous research has shown that professionals and lay people often find it difficult to recognise obesity in children, particularly with less extreme cases. [26-29] Stewart *et al.*[26] categorised parents of obese children as avoiders, deniers or seekers, in reference to the varying degrees of awareness regarding their child's weight. In families where excess weight

is a cause for concern, a number of barriers to action are reported, such as lack of time, financial resources or access to facilities.[30-32] Concern about the effects of overweight on self-esteem, the child's experience of bullying and a desire to fit in are important motivators for seeking help.[31,33,34] Many examples from the published literature suggest that multi-faceted interventions can result in a range of positive outcomes for overweight and obese children, including weight loss and increased self-esteem.[11,12,33,35] Successful interventions tend to be well organised, offer sessions at times and places that are accessible and convenient, and involve regular, practical support.[36,37] Some families have found these services too rigid in their approach, while others would appreciate more structured advice.[38,39] In general, parents and children report a need for ongoing support in their efforts to make and maintain weight-related lifestyle changes.[34,39,40]

What this study adds

Our study provides useful insights into the views and experiences of a range of stakeholders involved in addressing childhood obesity, rather than focusing on feedback from a particular group such as parents[30,31,38], children and young people[34,41], or primary care practitioners[42,43]. We have highlighted the potential for whole family approaches to increase engagement with – and retention on – weight management programmes. Our findings suggest that service users should be made aware of the benefits of such programmes in order to increase the likelihood that they will attend, given the various barriers to weight loss attempts that have been identified in this and similar studies.[25,32,34] Providing activities for the child's siblings, parents or guardians can also help to enhance motivation and create added value. A review by Berry et al.[11] suggests that this approach could improve health outcomes and result in favourable cost:benefit ratios because obesity risk tends to affect multiple family members. The potential to simultaneously treat and prevent obesity provides additional justification for a family systems approach that warrants further exploration.

An important finding of this study is the need for consistency and coherence in terms of approaches to childhood overweight and obesity. The multi-disciplinary and cross-agency nature of the 'Balance It!' intervention was viewed positively but families were aware of internal communication problems, which could potentially result in an erosion of trust in the programme. Furthermore, parents reported receiving mixed messages from health and social care professionals regarding their child's weight. These issues must be addressed in order to enhance the user experience and maintain service quality, particularly given the current changes to the structure of public health in England which will result in more inter-disciplinary working between staff in the NHS and local government to address health

priorities.[44] Participants expressed a desire for regular communication and structured interventions, whilst maintaining sufficient flexibility to ensure that the requirements of individual families and children were met. This links to the patient choice agenda, which is a key component of current UK health policy.[45] Availability, appropriateness, preference and timeliness are all vital characteristics of patient-centred services, which the 'Balance It!' programme has sought to address in adapting to the needs of its users.[46]

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Competing interests

None.

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Author contributions

SV helped to design the study, recruited participants, conducted interviews, analysed the resulting data and wrote the paper.

TH developed the research question and objectives, led the commissioning of the research and commented on drafts of the paper.

LG contributed to obtaining funding, designing the study and analysing the data, as well as conducting interviews and commenting on drafts of the paper.

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Table 1: Service user sample characteristics

Characteristic	Number (total n=20)
Sex of child:	
Male	11
Female	9
Age of child:	
8 years or under	5
9 to 12	7
13 and over	8
Programme outcome:	
Still attending	12
Completed	3
Withdrawn	3
Uncertain*	2

*N.B. This label refers to families who found it difficult to answer the question of whether they were still attending or had completed the 'Balance It!' programme, largely because of a perceived lack of communication from programme staff.

Box 1: Interview topics

- Identifying overweight and obesity*
- Experiences of service delivery or service use
- Motivating factors
- Barriers and enablers to access
- Reasons for ongoing attendance or withdrawal
- Views on the multi-disciplinary team
- Whole family approaches*
- Perceived outcomes and impact
- Potential areas for improvement
- Sustainability

*These themes emerged during the interviews, whilst the others were included in the initial topic guides developed by the research team

Box 2: Theme 1 – Identifying overweight and obesity

Local authority staff

I think there is an element there that people don't want to actually accept that their child is obese. Because that means that they're obese and – do you know what I mean? So there's that whole kind of, "No, we're just"… you know, "We're quite happy doing what we're doing and we don't want any intervention". (Stakeholder 16)

NHS staff

We can't go up to a child and say "You're fat – do you fancy coming onto our programme?" Really, it's for… especially in secondary school, it's for them to like come to see us. And in primary school it's for the parents to contact us. (Stakeholder 11)

Parents and guardians

But how we found out about it was because we received a letter though the post to say that [name of son] was classed as clinically obese. Obese. And to go on this 'Balance It!' scheme. […] To me, [name] was never obese. And that's, you know… I'm not looking at him through rose-tinted glasses here. [Name] is quite an active child, but he's quite a broad child and he's quite tall as well. So looking at him, anybody would have said that he wasn't fat. (Family 16: mother of son age 7: programme status uncertain)

Children and young people

Interviewer:	How did you feel about someone telling you you're obese?
Child:	I was quite shocked, actually. And I was upset as well.
Mother:	I was upset when [the doctor] said it. And I know… If somebody says you're obese, you imagine…
Child:	Massive. Very big. Yeah… I would think it means I'm very big, being obese. And I feel quite upset when I think that. (Family 7: girl age 10: attending)

Box 3: Theme 2 – Individual and family outcomes

Local authority staff

There's some success with the weight loss side of things but I think just for the children, psychologically… Obviously they're shying away from PE and stuff at school and they're not getting involved in much social activity. And from when I first meet the families to when they keep on coming regularly, the difference I see in them psychologically… They've got a lot more confidence and you see a big difference in them. Obviously not all, but a big percentage of the kids on the [Balance It!] scheme. (Stakeholder 14)

NHS staff

I think just for me, personally, there have been individual families that have had great success in terms of – it's not just the child that's maybe changed but the whole family have made great, sort of, lifestyle changes. (Stakeholder 3)

Parents and guardians

I mean, we [the family] are all more aware and we're getting more exercise because I think that's… I mean, obviously we've done stuff with [her son's] portion sizes and everything like that and his sweeties and everything. But, you know, we do really try and make a bigger effort. Like I say, we're going as a family often to the gym and things like that. And we've all got bikes now. I never used to have a bike. (Family 17: mother of son age 10: completed)

Children and young people

I've started eating more, like, fruit and vegetables. I've started eating more, like, pasta and stuff that's healthy for me. So that's good. […] I'm more active now than I was because I've been going out with my mates all the time. (Family 14: girl age 15: attending)

I've lost quite a bit of weight, haven't I, since starting [the programme] last year. So, now, like when I'm wearing clothes I don't say it doesn't really suit me. So it's good to build up that confidence. (Family 19: boy age 15: attending)

Box 4: Theme 3 – Communication and coordination

Local authority staff

Certainly during the pilot phase of the programme, there was big buy-in. A lot of work went on, you know. Referral agencies were involved, school nurses were actively referring people through. I think possibly since the pilot ended, that hasn't been as good. (Stakeholder 15)

NHS staff

I think there's just the difficulty of co-ordinating meetings and things when you're working on three different sites. Trying to, you know, get dates and venues and things that everybody can make if they're not working at the same location. But I mean, we tend to communicate a lot via email and telephone calls and things in between. (Stakeholder 3)

Parents and guardians

It was very flexible of how often we went to see [the dietician] and everything like that. You know, we agreed together so there was no… there was nothing cast in stone that 'this is how it happens'. There was nothing regimental about it or anything. It was very flexible around us, which is really good. (Family 17: mother of son age 10: completed)

The 'Balance it!' programme, for us, there was nothing structured. It was just, "Okay, if you go to the gym, do this" and it was left to us to make sure we went. And we did go to the gym and we went swimming as well. […] She [her daughter] did lose her weight and what-have-you. But the only real benefit from it was that I didn't have to pay for her. We didn't get any back-up or, you know, sort of like follow-up or anything like that. (Family 13: mother of daughter age 15: completed)

Children and young people

Mother: He [her son] did say that when he goes to the gym, the [physical activity development worker] just sort of stands there and watches.

Child: I don't really have to do anything. You could sit down the whole session and he would just stand there. (Family 1: boy age 10: attending)

Box 5: Theme 4 – Areas for improvement

Local authority staff

I think it is successful, but I think it's got potential to be a whole host more successful. […] In terms of the number of people we could access, where activities can actually take place, how often those activities can take place – I think there's a massive scope to develop a bigger, wider programme than what's currently running. (Stakeholder 15)

NHS staff

I suppose I just see the main area for development as being a structured intervention. Something where people know what they're doing, know where they're going. The group element. But I think we have the… I think we have the sort of building blocks of a very good and broad intervention, working with what is actually quite a difficult client group. (Stakeholder 2)

Parents and guardians

Well, the suggestions that I would do would be to involve the whole family. For it to be taken as a holistic approach to the family – not just for the one child. Maybe if, you know, we [the parents] were offered a free swim as well, we would have went swimming a lot more as a group. (Family 16: mother of son age 7: programme status uncertain)

This sort of thing [evaluation] should maybe be involved with the programme at a much earlier stage – 3 months, 6 months, 12 months – and say, "Look, you know, is the programme working for you? Is it not?" (Family 15: father of daughter age 16: withdrawn)

Children and young people

Interviewer: Is there anything [about the programme] that you think is not very good?

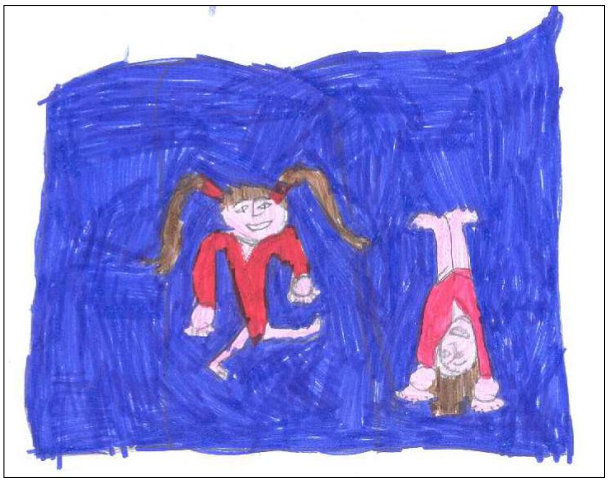
Child: Well, do you know about the activity days? They have them – they've only had like a few of them and I think there should be, you know, more. […] I was quite excited to see other people who's on the same plan as me. It made me feel a bit better. (Family 7: girl age 10: attending)

Figure 1: Pictures drawn in response to the following question: How do you think the 'Balance It!' programme could be improved?

(A) Gymnastics (Family 12: girl age 7: withdrawn)

(B) Football (Family 26: girl age 11: attending)

(A)



(B)