The feasibility of using Narrative Messages to Improve Parents' Experience of Learning that a Child is Overweight

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Abstract

Background

Providing feedback to parents that their child is overweight often elicits negative reactance.

Aims

To investigate the acceptability and feasibility of providing theoretically-informed narrative messages to reduce negative reactance, alongside National Child Measurement Programme (NCMP) feedback informing parents when their child is overweight.

Methods

A mixed-methods design: interviews with parents of primary school-aged children explored responses to the narratives; a pilot randomised trial examined the feasibility, acceptability and promise of enclosing narratives with NCMP feedback.

Findings

Interview participants found the narratives acceptable and indicated they could help lessen negative reactance. Pilot study data suggested 65% of parents could identify with the characters, with evidence of elaboration (applying the story to one's own situation) evident in 47% of those reading the accounts.

Conclusion

Although the findings are limited by the low response rates typical in this population, narrative messages were acceptable to parents, feasible to deliver and show promise.

Introduction

Childhood overweight and obesity is a public health concern in many countries, with prevalence rates among school-aged children of approximately 25% in European countries and 30% in North America (Wang and Lim 2012). These high rates are of concern as having overweight or obesity as a child is a strong predictor of having overweight/obesity in adulthood, which in turn puts people at higher risk of non-communicable diseases (such as type 2 diabetes) and social disadvantage from the stigma associated with overweight (Herman et al. 2009; Reilly and Kelly 2010).

In 2004, the UK government acknowledged a need to stop the rise in levels of childhood obesity (Ells et al. 2010). In order to monitor progress towards this goal, the National Child Measurement Programme (NCMP) was introduced in 2006; this involves school nurses measuring the height and weight of children in their first (reception) and final (year 6) years of primary school (aged 4-5 and 10-11, respectively). The NCMP was primarily intended to inform local planning and ensure weight management services can be appropriately targeted (Department of Health 2006). Since 2008, parents in most local authorities have also been sent feedback letters as part of the NCMP, informing them of their child's measurements and weight status (according to body mass index (BMI): underweight, healthy weight, overweight or very overweight), and directing them to resources aimed at supporting parents to help their child achieve and maintain a healthy weight(Public Health England 2018). This feedback was intended to raise parents' awareness of unhealthy weight in their families (HM Government 2008) as research has shown that parents of overweight children typically underestimate their child's weight status (Nemecek et al. 2017; Parkinson et al. 2017). However, there is little evidence that informing parents has had a positive effect; the uptake of services that are recommended to parents through NCMP letters is low (Falconer et al. 2014; Sallis et al. 2019) and negative responses are frequently reported

among some parents (Gainsbury and Dowling 2018; Kovacs et al. 2018; Nnyanzi et al. 2016; Syrad et al. 2015).

Parents objecting to NCMP letters typically report feelings of anger, anxiety, guilt and annoyance (Gillison et al. 2014; Kovacs et al. 2018; Nnyanzi et al. 2016). Such negative emotional reactions might be indicative of psychological reactance, an unpleasant arousal state that occurs when people experience a threat to their freedom and which motivates them to restore their freedom (Steindl et al. 2015); this can result in people undertaking behaviour in the opposite direction from that intended (Puhl et al. 2012). Reactance is often triggered when policies are perceived to infringe on personal liberties, raise anxiety, or fail to reflect people's values and priorities (LaVoie et al. 2017; Varava and Quick 2015). As obesity is a stigmatised condition, reactance can also result from a defence mechanism to feeling labelled within an undesirable and stigmatised group (Thompson and Kumar 2011). These negative responses could help explain parents' lack of engagement with the resources and services that the NCMP feedback letters signpost (Falconer et al. 2014). Indeed, Gillison and colleagues (2014) found that, among parents of children with overweight, external resources and child weight management services were viewed as unwarranted interference in family-life by the state. Further, these parents feared triggering eating disorders or damaging their children's self-esteem by taking action for weight management, despite some acknowledging that their children were bullied for having overweight. In order to encourage more parents to make positive lifestyle changes for their children with overweight there have been calls for more effective ways to communicate NCMP feedback (Falconer et al. 2014; Nnyanzi et al. 2016).

One means of conveying health information to people who are expected to be resistant is through narrative messages (van Laer et al. 2014). Narrative messages convey information about health or social issues by describing how a real or fictional character interacts with their social and physical environment to respond positively to a health

challenge (Kreuter et al. 2007). By embedding the message within a story, such accounts go beyond the provision of information to provide examples (models) of how a positive response to the information, and its implications, is feasible to a character with whom the reader can identify (Hinyard and Kreuter 2007). Substantial literature supports the use of narratives to reduce reactance (Moyer-Gusé and Nabi 2010; Niederdeppe et al. 2011; van Laer et al. 2014). Narratives have been shown to: reduce counter-arguing and perceived invulnerability (Moyer-Gusé and Nabi 2010; Niederdeppe et al. 2015); be more effective than didactic messages in changing attitudes to increase support for obesity prevention policies in adults (Niederdeppe et al. 2011; van Laer et al. 2014; Zebregs et al. 2015); and render complex health information more comprehensible to people with lower educational levels (Durkin et al. 2009). They operate through several key psychological processes including 'transporting' individuals into a narrative world (Green and Brock 2000), promoting empathy and identification with a character (de Graaf et al. 2012) and modelling behaviour to increase self-efficacy (Campbell et al. 2015). Importantly, narratives may also play a role in reducing the perceived stigma of obesity through broadening peoples' causal attributions to incorporate wider societal-level determinants of weight status (Niederdeppe et al. 2013; Niederdeppe et al. 2014; Niederdeppe et al. 2011). Reducing perceived stigma and blame can thus increase the perceived legitimacy of obesity-related policies, reducing overall negative emotional responses.

While past research suggests that narrative messages have the potential to influence many of the factors associated with parents' negative responses to receiving children's weight feedback, this has yet to be formally tested. This study uses mixed methods to explore the feasibility of using narrative messaging to improve the acceptability and impact of weight feedback to parents.

Methods

Design

Using narrative messages constructed from previously collected parent accounts (Gillison et al. 2014; Gillison et al. 2017), the present study followed a mixed-methods approach combining (i) qualitative, semi-structured interviews of parents' responses to the narrative messages, and (ii) a quasi-experimental trial to investigate the feasibility, acceptability and promise of enclosing the narrative message cards with standard feedback to parents whose children were categorised as having overweight or obesity (termed very overweight in communications to parents) through the NCMP.

Participants

The interview study involved parents of children aged 7-11 years, whether or not they identified their child as having overweight. The sample pool for the quasi-experimental trial were parents of all Year 6 children categorised as having overweight or obesity following NCMP measurement for the duration of the trial in two participating local authorities.

Procedure

The two studies took place in parallel during the 2017/2018 academic year.

Interview study

Study information and recruitment advertisements were sent to all primary schools (n = 85) and parenting groups (identified through the local Council and Internet searches, n = 11) in a large city in the south west of England. Advertisements sought parents who would be interested in discussing how child weight issues could best be communicated to parents and invited them to email the researcher for more information. A snowballing technique was also employed, asking participants to inform other parents about the study.

Interviews were conducted in parents' homes or in local community settings by HM, a Nutrition, Physical Activity and Public Health MSc student with experience of working with families in community settings. Before each interview, HM explained her background and that she had not been involved in the design of the narratives. Participants provided written consent and reported their age, ethnicity, marital and employment statuses, educational attainment, number of children they had and their children's ages and weight statuses.

The interviews followed a schedule constructed based on past research exploring the impact of narrative messages and health information resources (Grey et al. 2018) and research with parents around issues of childhood obesity and NCMP activities (Gillison et al. 2017). Questions were refined through pilot testing. The schedule started with two broad questions on children's weight and the NCMP, then participants were given three narrative message cards (see additional file 1) to read before answering further questions directly related to their perceptions of the messages (e.g. 'Of the three narratives, were there any that you felt strongly about? Why is that?'; 'Do you relate to the story? Why/why not?'). Interviews lasted between 40 and 70 minutes and were audio recorded and transcribed verbatim for analysis.

Quasi-experimental pilot trial

The trial was conducted in partnership with two local authorities in south west England. It is standard practice in each local authority for parents to receive a letter prior to the NCMP measurements informing them that it is taking place and providing information on how to opt out. For the present study, parents were also advised in this letter that they would be invited to take part in a research study following the NCMP measurements but that it was not compulsory. The NCMP process was then conducted as usual, except that a narrative message card (see Intervention and Additional file 1) was sent to half of the parents receiving

feedback that their child was categorised as having overweight or obesity. School nurse teams assigned schools to either the narrative intervention condition or control, so that all parents meeting eligibility criteria at one school would be in the same condition. In line with the preferences of local authority partners, in one of the local authorities (Area 1), a single narrative message (told from a child's perspective, 'Mark's Story') was enclosed, and in another (Area 2) all three alternative formats of the narrative message were enclosed.

Two weeks following the initial mailing of the feedback, parents of children categorised as having overweight or obesity (both those who received the narratives and those who did not) received an information sheet and invitation to take part in the research, a questionnaire with prepaid return envelope, and details of how to respond online. The front page of the questionnaire (and first page of the online version) comprised a consent form that parents were asked to sign and return. No follow up letters were mailed, as a non-response was assumed to indicate lack of desire to take part. Six months later, all parents originally contacted, regardless of whether or not they responded at Time 1, were again mailed a questionnaire to explore whether their views had changed after having had time to reflect on the information about their child.

Intervention

The narrative messages were based on real-life accounts obtained from parents involved in previous research studies relating to the NCMP (Gillison et al. 2014; Gillison et al. 2017). These were developed into three 400-word narratives with input from parent 'peer researchers'. One narrative was written from a child's perspective, in which the child is aware of having overweight and is anxious about it, so is disappointed when their parent does not talk to them about their NCMP feedback. The other two were from the perspective of mothers, in which the mothers express their initial anger or sadness at receiving the NCMP feedback before describing why they decided to act and what action they took (one mother

talks from the perspective of having overweight herself). In line with narrative communication theory (Green 2004; Kreuter et al. 2007; Niederdeppe et al. 2014), each narrative included elements designed to:

(1) Engage the reader in the story through highlighting the similarity between them and the characters (to enhance perceptions of relevance and empathy), and introducing elements of novelty (i.e., an unexpected angle on the NCMP)
(2) Provide a positive example/role model of parents concerned about their child
(3) Provide a different perspective of the NCMP process, whether on the part of a child, or public health professional (i.e., to engage parents through presenting novelty)
(4) Endorse the view that childhood obesity is a challenge for everyone, and while it is not a parent's fault that a child gets overweight, they may be the best-placed person to do something about it. This element was included to try to reduce perceived stigma.

The narratives were professionally printed in a postcard style, with a photograph on the other side that did not implicate a child's weight (e.g. an image of a child's feet kicking a football, a blurred image of a family sitting together around a dining table). See Supplementary File 1.

Pilot trial measures

The primary outcomes for the feasibility study were participation and retention rates, in addition to acceptability of the narrative messages. The primary outcome measures piloted for the main trial were parents' immediate intentions towards making changes to children's physical activity and diet, and self-reported change 6 months later. Secondary outcomes piloted included parental perceived confidence and importance of making behaviour changes, and items to assess the theoretical model of effects of the narrative messages in promoting engagement in the health message, and reducing reactance and stigma.

Participants with more than one child were asked to complete the questionnaires in relation to their Year 6 child. At Time 1 (2 weeks after receiving NCMP feedback), all participants provided demographic information about themselves and their children and reported on their experiences of receiving the NCMP feedback (whether they agreed with the assessment that their child has overweight and how they felt after receiving the feedback).

Parents reported on 10-point scales how important physical activity, diet and weight were for their child's health and how confident they felt at being able to influence these factors (1 = not at all important/confident, and 10 = very important/completely confident). They were asked to indicate, on 5-point scales (1 = strongly agree, 5 = strongly disagree), the extent to which they agreed or disagreed with four statements on: i) the helpfulness of the NCMP, ii) parents' ability (in general) to judge the weight status of their children, iii) social perceptions (stigma) of being a child with overweight and iv) social perceptions (stigma) of being a parent of a child with overweight. Finally, participants were asked whether they were planning to make any changes as a result of the feedback and, if so, whether there were any barriers stopping them from making these changes. At Time 2 (six months after NCMP feedback) the all questions except those relating to the narrative messages were asked again.

Narrative message effects

Participants in the intervention group completed three measures to estimate the effects of the narrative messages at Time 1 only. Items were phrased generically (e.g. 'the characters') and participants in the local authority that sent all three messages only completed the measures once (rather than separately for each narrative).

(1) Identification with the characters was measured using an 11-item scale (2012).

Respondents are asked to rate, on 5-point response scales (1 = not at all, 5 = very much),

the extent to which the items reflect what they felt, e.g. “I felt emotionally involved with the character's feelings”.

(2) Cognitive elaboration (the degree to which the narratives triggered parents to think more about the message) was assessed using a four-item measure (Igartua 2010). Respondents rate, on 5-point response scales (1 = not at all, 5 = a lot), how much they thought about the narrative, e.g. “I have reflected on the topic dealt with in the account”.

(3) Reactance was measured with the counter-arguing scale (Moyer-Gusé and Nabi 2010), which comprises four items such as “While reading the story, I sometimes found myself disagreeing with what was being said”. Respondents rate their agreement on 5-point response scales (1 = not at all, 5 = a lot).

Analysis

Anonymised interview transcripts were uploaded to NVivo software (v.11 (QSR International PTY Ltd. 2012)) for analysis. Thematic content analysis (Elo and Kyngäs 2008) was conducted by HM. Transcripts were initially read multiple times to ensure familiarity with the content. The text was then coded to explore parents’ perceptions of the narratives and, more broadly, of children’s weight. After the first two transcripts had been coded, the coding scheme was reviewed and refined by FG (who had also read the transcripts) in discussion with HM. Analysis was iterative, following constant comparison techniques to ensure codes were used consistently and reflected the data. Using a combined inductive and deductive approach to identify issues of importance to parents as well as narrative communication processes, clusters of codes on similar issues were organised into themes, which again were checked against the raw data. Final codes and themes were agreed between HM and FG.

Survey results from the pilot trial were analysed in SPSS version 22 (IBM Corp. 2013) using descriptive statistics to examine participation rates and parents’ responses to the narrative messages 2 weeks and 6 months after receiving them. Potential effects of the

narratives were estimated using t-tests and effect sizes to compare groups; effect sizes were interpreted as small ≥ 0.2, medium ≥0.5 and large ≥ 0.8. Open responses were coded into categories and total numbers of responses per category calculated.

Results

Interview Study

Ten participants (6 female, M age = 44, SD = 4.97, range = 35-50) took part in the interview study. Two of the female participants (P2 and P3) opted to be interviewed together (though were not known to each other beforehand) for logistical reasons (i.e. both being available at the same time). The majority were white (90%), married (60%), in employment (90%) and educated to university degree level or higher (80%); the working age population in this geographic region has an employment rate of 78%, with 49% educated to degree level or above (Bristol City Council 2019b). In the region, 84% of the total population is white (Bristol City Council 2019a). Participants had between one and four children, with most (70%) reporting that they had two children.

Only three of the participants had heard of the NCMP prior to the interview. None of the participants reported ever having been told that their children were categorised as having overweight or obesity, but one participant stated that she considered one of her children to be so. As the interviews progressed, however, several more participants went on to express concerns over their children's increasing or high weight and 'fussy' eating.

Findings from the interviews are summarised in Table 1. Overall, the narrative message cards were acceptable, with seven participants asking if they could take copies of the cards home. The images on the front of the cards were perceived to be eye-catching and the participants reported that they would be likely to read the cards if they were received with the NCMP feedback letter. All participants found the narratives to be written in an accessible

style, although some felt that they were too long and one person expressed a concern that less literate audiences might not understand the text.

The narratives appeared to successfully evoke identification with characters and transportation, which in some cases seemed to increase participants' confidence to make changes to their children's lifestyles:

> I've heard some rubbish news, that was niggling in the back of my head, a health professional has told me, I feel a bit of a failure and a bit rubbish, I want to be angry and I want to kick off at somebody and blame somebody, but you know what? This mum, wow, she turned it around, she made it into something positive, and everybody benefited, and I can do this, I can do this. (Mother, P7)

Although several participants showed some reactance to the narratives, this did not seem to prevent them identifying with characters or engaging with the messages.

The narrative describing a child's perspective (Mark's story) seemed to be particularly engaging, with several participants expressing a preference for it or stating that they felt it had most 'impact'. This might have been due to the novelty (for a parent) of considering an issue from a child's point of view but also because this narrative seemed to be the most emotive, with all participants expressing sympathy for Mark. On the other hand, identification with the parent protagonists in the other two narratives was highlighted as important for overcoming potential reactance towards the NCMP feedback:

> You just automatically get defensive I think, and you wouldn't necessarily engage with it. But if they talk about how you feel in the first place, I think you'd be more likely to read it (Mother, P3)

Table 1. Interview study findings in relation to the communication targets of the narratives

Communication target	Evidence from interviews	Example quotes
Acceptance	Narratives were generally perceived as credible, which helped to reduce reactance and encourage further engagement	*I think the, you know, the reaction, yeah, one says that she's angry and the other says she's upset, that sounds completely plausible. That's what I think probably would be a first reaction. (Father, P3)*
Identification	All participants expressed empathy with parent protagonists	*…where it says that they feel like they've been neglecting… You know, that must be hard, you know, to hear. I can relate to that. That must be tough. (Father, P10)*
Transportation	Participants expressed emotional responses to the storylines, particularly towards the child (Mark) in one of the narratives.	*What struck me the most was Mark's. He was aware of things himself, he just wanted some help so it was quite… so yeah, I thought that would probably pull on the heartstrings, people want to help their children. (Father, P5)*
	Participants were able to consider alternative viewpoints or issues that they had not considered before.	*I think for me at the bottom of Mark's one where it talks about it might actually improve their sense of wellbeing, I thought that was really helpful 'cause I will go home and think about that anyway because I do worry that maybe [daughter] comfort eats a bit as well … But so trying to focus on eating more healthily… trying to actually improve her sense of wellbeing, trying to see if there's anything I could do to help her with. (Mother, P2)*
Self-efficacy	The narratives provided positive role models/examples that seemed to increase some participants' confidence to take action.	*Yeah, maybe, maybe I'll talk to [GP]. We'll talk to her, or write her a letter… 'cause it does bother me, it does worry me 'cause [son] hates it [being overweight] about himself. (Mother, P9)*
Reactance	Several participants felt that the narratives failed to acknowledge the challenges to making changes to children's lifestyles, including expense and resistance from children.	*The third paragraph down with 'why don't we just do the whole thing as a whole family', that's kind of a bit kind of perfect 'cause so many people aren't just in a whole family situation where everybody's going to say, 'Oh yes, let's all go and get the carrots out and the fruit'. (Mother, P2)*
		And it's like they're very positive, it's almost like you know, it's almost like it doesn't feel as real. (Father, P1)

Stigma	All parents acknowledged both social-environmental causes of and a parental role in childhood obesity. There was no evidence that the narratives reduced any feelings of stigma around parents of children categorised as having overweight or obesity, and a couple of participants endorsed views that weight can easily be controlled.	*It's really, really easy to eat healthily, cheaply, fantastically and, you know, you've just got to, just have to do it. There's no excuse…There's nothing difficult about it whatsoever. (Father, P4)*

In summary, the interview findings indicated that the narratives have the potential to help parents consider the issue of child weight from alternative perspectives, think about making healthy changes to their children's lifestyles and build their confidence to take action.

Quasi-experimental trial

Participation rates and demographics

Questionnaires were mailed to 1121 participants (Area 1: 199 in the control group, and 357 in the intervention group; Area 2: 285 in the control group, and 280 in the intervention group). Of these, 75 responded at Time 1 (7%) and 47 (4%) at Time 2, although only 21 of those responding at Time 2 had also responded at Time 1 giving a total of 101 responses from different households (see Supplementary file 2). Sample demographics are displayed in Table 2.

Table 2. Demographic characteristics of respondents

	Whole sample (n=101)	Intervention (n=53)	Control (n=48)
Female gender (n (%))	94 (93)	49 (93)	45 (94)
*Age**			
Range	29 – 54	29 - 54	30 – 52
Mean (SD)	42 (4.95)	42 (4.84)	42 (5.09)
*Ethnicity*** (n (%))			
Asian/Asian British	9 (9)	8 (15)	1 (2)
Black/Black British	1 (1)	1 (2)	-
Mixed ethnicity	2 (2)	1 (2)	1 (2)
White British	80 (79)	39 (74)	41 (85)
White other	8 (8)	4 (8)	4 (8)
Marital status (n (%))			
Single	16 (16)	7 (13)	9 (19)
Stable relationship (unmarried)	9 (9)	5 (9)	4 (8)
Married/civil partnership	67 (66)	36 (68)	31 (65)
Divorced/separated	9 (9)	5 (9)	4 (8)
*Employment status**** (n (%))			
(Self-)employed, full time	37 (37)	22 (42)	15 (31)
(Self-)employed, part time	45 (45)	24 (45)	21 (44)
Student	1 (1)	-	1 (2)
Unemployed	12 (12)	4 (8)	8 (17)
Unable to work	4 (4)	2 (4)	2 (4)

Education (n (%))			
Up to age 16 or less	23 (23)	12 (23)	11 (23)
Up to age 18	33 (33)	21 (40)	12 (25)
Some additional	10 (10)	3 (6)	7 (15)
Undergraduate or higher degree	35 (35)	17 (32)	18 (37)
Number of children living at home			
Range	1 – 5	1 – 5	1 – 5
Mean (SD)	2.3 (1.03)	2.4 (0.94)	2.3 (1.13)

*Missing for 5 participants, 3 control, 2 intervention
**Missing for 1 control participant
***Missing for 2 participants, 1 control, 1 intervention

At Time 1, 55 (73%) respondents reported having tried to lose weight themselves (asked as a proxy for parent weight status), the majority of whom (60%) used commercial or celebrity-endorsed weight-loss programmes. Seven respondents (9%) reported having previously sought support to help their child achieve a healthy weight (n=5 in control group, n=2 in intervention group); the main form of support cited was child weight loss programmes run by local authorities (n=4, all in control group).

Responses at Time 1

Of those who responded at Time 1, 39 (52%) agreed that their child had overweight, 18 (24%) disagreed and 18 (24%) were unsure. Of those who agreed their child had overweight, 37 (95%) reported that they had already been aware of this (Table 3). Parents' free text descriptions of how they felt after reading the NCMP feedback letters are summarised in Supplementary file 3.

Table 3. Comparison of initial responses between control and intervention group at Time 1

	Control (n=37) n (%)	Intervention (n=38) n (%)	Effect size of difference (95% CI)
Agree that child has overweight	21 (57)	18 (47)	0.16 (-0.60, 0.30)
Already aware before receiving the letter	20 (54)	17 (45)	0.01 (-0.55, 0.56)

Planning to make changes as a result of the feedback letter	20 (54)	16 (42)	0.12 (-0.35, 0.57)
Report barriers to making changes	12 (32)	7 (18)	0.27 (-0.78, 0.29)
	Mean (SD)	Mean (SD)	
Rating of importance of weight for a child's health (scale 1-10)	8.16 (1.50)	8.34 (1.85)	0.10 (-0.35, 0.56)
Rating of importance of physical activity for a child's health (scale 1-10)	9.30 (1.24)	9.43 (0.99)	0.12 (-0.34, 0.58)
Rating of importance of a healthy diet for a child's health (scale 1-10)	9.30 (1.13)	9.14 (1.08)	0.15 (-0.60, 0.30)
Confidence in helping child to lose weight (scale 1-10)	7.18 (2.46)	7.57 (1.86)	0.18 (-0.28, 0.63)
Confidence in influencing child's physical activity (scale 1-10)	7.70 (2.26)	8.05 (1.94)	0.17 (-0.29, 0.62)
Confidence in influencing child's diet (scale 1-10)	7.64 (2.46)	7.97 (1.74)	0.15 (-0.30, 0.61)
It is helpful for the school nursing service to measure children's weight and report back to parents (scale 1-5)	2.03 (1.13)	2.25 (1.16)	-0.20 (-0.66, 0.27)
Parents are good judges of whether or not a child is overweight (scale 1-5)	2.39 (0.99)	2.62 (1.09)	0.23 (-0.68, 0.24)
People think badly of children who are overweight (scale 1-5)	2.49 (1.19)	2.38 (1.23)	0.09 (-0.37, 0.54)
People think badly of the parents of children who are overweight (scale 1-5)	2.06 (1.01)	2.27 (1.19)	0.21 (-0.65, 0.27)

Seventeen participants (45%) in the intervention group read the narrative message cards included with their letter. Of these, eleven (65%) reported identifying with the narrative characters and eight (47%) reported that the narratives encouraged them to reflect on their own situation (i.e., engage in 'elaboration'). Eight (47%) participants also showed 'reactance' to the messages (i.e., disagreed with the story/found themselves arguing against it) which could have undermined the messages' impact, or could reflect an extension of their elaboration relating to similarities and differences between their own family and the one depicted on the cards (five people showed both elaboration and reactance). At Time 1, 36 parents (48%; 54% control group, 42% intervention group) reported that they were planning to make changes to their children's lifestyles as a result of receiving the NCMP feedback. Details of what changes parents are planning, captured in responses to open questions, are summarised in Table 4.

Table 4. Coded responses to optional open-response questions at Time 1

	n (%) of responses
What changes are you planning to make as a result of receiving feedback about your child's weight? (n = 36, 48%)	
Reducing child's sugary food or unhealthy snack intake	17 (47)
Providing more healthy foods for child	16 (44)
Reducing child's portion sizes	8 (22)
Increasing child's physical activity	15 (42)
Talking to child about weight	6 (17)
If there is anything stopping you making changes, what do you see as the most difficult to overcome? (n = 28, 37%)	
Lack of time	4 (14)
Being unable to control what my child eats all the time	8 (29)
Children's resistance to being active/eating healthy food	8 (29)
Cost of activities that children would enjoy	2 (7)
Having to manage different needs/preferences of other children in the family, who may not be overweight	2 (7)
Being unsure what to do	2 (7)

The responses on pilot measures for the control and intervention groups are presented in Table 3. As response rates were so low, we did not have sufficient data to compute meaningful statistical between-group comparisons.

Responses at Time 2

Of those who only responded at Time 2, 24 parents (51%; 54% of control group, 48% of intervention group) stated that the NCMP feedback had been useful. Thirty-three parents (70%; 71% in control, 70% in the intervention group) reported having made changes to their children's lifestyles to help them achieve a healthy weight. Only three of these parents (9%; 6% control group, 13% intervention group) reported accessing support or trying apps to help with making changes to their children's lifestyles.

Discussion

This work provides insight into a novel application of health communication theory, by investigating the acceptability and feasibility of using narrative messages to enhance parents' responses to NCMP feedback that their child has overweight. Given the persistence of high childhood obesity rates in the UK and elsewhere, developing new, scalable, effective interventions to reduce obesity and overweight is an important area of research.

The qualitative interviews showed that the narrative messages were acceptable and engaging to parents, and for most parents stimulated personal reflections through identification with characters and transportation into the stories, in line with the intended theoretical design. Thus, this provided preliminary support for the hypothesis that these effects could help to overcome or lessen reactance to NCMP feedback. Furthermore, the different perspectives presented and the positive actions modelled by the characters in the narratives seemed to help the interviewees consider taking action to make healthy changes to their children's lifestyles.

Forty five percent of respondents who received the narratives in the trial reported reading them, which limited the intervention's reach. Future work could usefully consider how to increase the proportion of parents reading the narratives; while we cannot assume from our study that reading the narratives leads to impact, increasing the proportion of parents who engage with the materials would provide a greater chance of detecting any impact. Some parents reported that the feedback letters upset or angered them or were seen as irrelevant and this could be a key barrier to parents engaging with the narratives if they are provided to parents at the same time, as they were in this trial. Nonetheless, given the reach of the NCMP to over 95% of the parent population, even small effects in enhancing existing practice could have a significant impact on population level health. For example, Sallis and colleagues (2019) found that the addition of both a visual aid for interpreting child weight status (the Map Me tool (Jones et al. 2017)) to NCMP feedback letters and a pre-populated booking form for child weight management services doubled the uptake of these services among families of obese children.

The present study showed that it was feasible for local authority public health teams to deliver the narrative postcards alongside parent feedback letters. However, future research could explore when and how it would be best to deliver resources aiming to help parents make positive changes to their children's lifestyles. For example, it would be interesting to see whether combining the narratives tested in the present study with the resources tested by Sallis and colleagues (2019), and staggering their delivery before and after NCMP feedback is provided, could help to prepare parents for the feedback, prevent reactance and in turn increase uptake of support services. Further research could also try presenting the narratives in different formats (e.g. using videos, via a website). Interviewees highlighted that in the postcard format tested here the narratives might initially appear long and complex, which could be off-putting particularly to people with lower literacy. Using a different format could

help overcome this by breaking up the text with illustrations or providing accompanying audio clips, both of which have been found to help people with lower health literacy to comprehend and recall health messages (Houts et al. 2006; Meppelink et al. 2015).

The low response rate attained in the quasi-experimental trial highlights that future work to assess the effectiveness of the narratives, or other resources to support parents alongside the NCMP, require extensive work to increase parent interest and engagement in this topic and related research. Research into childhood overweight involving parents (particularly those of children with overweight) often has low recruitment rates, reflective of the sensitive nature of this topic (Falconer et al. 2014; Gillison et al. 2017; Sallis et al. 2019). It is likely that those who respond to research invitations on this topic are a self-selected sub-group, which might include those who object the most and may therefore use the research process as a means of trying to communicate these feelings back to those running the programme. However, this research may equally attract those who already have a greater interest in health and wellbeing.

Given the low response rate for the trial, and the low reported reading of the narratives by those who received them, no analysis of the between-groups differences is reported. Recruitment at a more regional or national scale is needed to conduct research with sufficient power to test effects. However, the pilot trial included in this study demonstrates that the measures used were well-completed, and thus sufficiently acceptable to parents for use, and provides information for use in calculating effect sizes as a base for future sample size calculations.

Limitations

The combination of interviews and a questionnaire study enabled an in-depth exploration of a novel approach to health communication in this setting. However, despite the large number of

invitations sent as part of recruitment, both studies were limited by their small, relatively homogeneous samples. It should also be noted that the allocation of schools to the two groups was not random and may have introduced bias. A further limitation of our interview study was that participants were not necessarily members of the target group for the narratives (i.e. parents of children with overweight). The decision to recruit parents without child weight status as an inclusion criteria was to avoid/reduce the known risk of under-recruitment when requiring parents to acknowledge their child has overweight (e.g. Gillison et al. 2017), but does mean that their responses to the messages may have been different from those of the participants in the quasi-experimental trial.

In conclusion, narrative messages about families receiving NCMP feedback that their child has overweight are acceptable to parents and feasible to deliver within existing systems. However, recruiting parents to studies of such resources is difficult and further research to assess whether the narratives improve parental perceptions towards making healthy changes to their children's lifestyles will need to identify ways to increase participation in research in this area. Future research should also investigate whether the narratives could have greater impact if delivered separately from NCMP feedback and whether they could enhance the behavioural effects found for existing additional NCMP resources.

Keywords

Child Measurement Programme; Parent; Childhood obesity; Narrative messages; BMI report card

Key Points

- Narrative message cards, informed by communication theory, were perceived as acceptable, relevant and sufficient to evoke identification with characters and produce reflection on one's own situation among parents of primary school aged children
- Narrative messaging describing children's experiences of having overweight may have potential for impact among parents by presenting a novel side to a familiar challenge
- A pilot study of narrative messages delivered alongside NCMP feedback was limited by a poor (n=75, 7%) response rate, but suggested only half of parents of children with overweight are already aware of that their child has overweight
- Pilot study data extended qualitative findings of the impact of narrative messaging effects on elaboration (47% agreed), identification with characters (65% agreed), and also reactance (47%) through the use of validated questionnaires
- Six months following NCMP feedback 51% of parents considered feedback that their child has overweight to be useful, and 70% reported making changes to their child's lifestyle in response, predominantly without professional support

Reflective questions

1. Why might parents react defensively to feedback that their child has overweight, and what could a school nurse delivering this information do to minimise this?
2. What is the uptake in your area of support for families of children with overweight and obesity? What factors may prevent this from being as high as uptake of other health promotion activities provided for children?
3. What methods of engaging with parents have you found to be effective on other health issues, and how could these be transferred to the topic of a child's weight?

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