

Providing healthy diets for young children: the experience of parents in a UK inner city

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ABSTRACT

Objectives: There is a consistent body of evidence to demonstrate that obesity in very early childhood tends to continue into adolescence and through to adulthood. Parental practices in relation to food can have an effect on this trajectory, however existing studies reporting on interventions for treating obesity suggest there is a need to involve populations from demographically diverse backgrounds childhood obesity research. **Design/Methods:** A qualitative study was carried out using semi-structured interviews with parents in a deprived inner city area. **Results:** Although parents had good intentions towards providing a health diet for their children, a number of barriers emerged. Findings were reported in relation to the following themes: *information and education; barriers (having a child with special needs, children's food preferences and using food to promote desirable behaviour)* and techniques (*household rules & routines, setting limits and parameters, modelling and food preparation*). **Conclusion:** Parents and carers would benefit from targeted interventions based on improving techniques around food parenting practices, with a focus on equipping parents with the skills to overcome barriers encountered not only in early childhood, but as children progress to school age and through to adolescence.

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Introduction

Over the past 30 years, the prevalence of obesity in developed countries has risen appreciably, particularly in areas of comparably high deprivation (Lobstein et al., 2015; WHO, 2017). The significant and abiding consequences of obesity are widely evidenced and include physical co-morbidities such as diabetes and heart disease (Huang et al., 2015; Martinez, Milagro, Claycombe, & Schalinske, 2014). In addition, associations between obesity, particularly in childhood, and psychological disorders such as depression and emotional and behavioural disorders have been found (Rankin et al., 2016; Yang, Donaldson, Marshall, Shen, & Iacovitti, 2004). Obesity has remained a significant and costly public health issue in the UK for a number of years (Wang et al., 2015) and there is now a considerable and consistent body of evidence to demonstrate that obesity in childhood tends to continue into adolescence and through to adulthood resulting in adverse consequences for physical morbidity and possibly premature mortality (Reilly & Kelly, 2011). This trend begins in very early childhood often at the pre-school stage, suggesting that behaviours conducive to the development of obesity can begin before children start school (Ventura & Birch, 2008).

There are a number of complex and interacting explanations for the growing rise in obesity, including the influence of large corporations and advertising and social and environmental factors impacting on food choices and reduced opportunities for physical activity, in addition to individual characteristics relating to choices and behaviours. The higher incidence of obesity in more deprived areas suggests that cost and household income are also significant contributing features of its development. Rather than focus on one particular cause or element, research suggests the most useful approach is to consider the reciprocal nature of the interaction between the individual and the environment and contexts in which they operate and co-exist (Roberto et al., 2015). A number of non-medical strategies and interventions have been proposed with the aim of targeting the antecedents of obesity and reversing the growing epidemic, including large public health interventions, such as the NHS's "Live Well" (UK NHS) programme and the UK government's "sugar tax" (Sarlio-Lähteenkorva & Winkler, 2015) and behavioural interventions focusing on promoting healthy diets, and increasing physical activity e.g., (Mastellos, Gunn, Felix, Car, & Majeed, 2014; Shaw, Gennat, O'Rourke, & Mar, 2006; Waters et al., 2011). However, despite a small number of successes, once established overweight and obesity

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is notoriously recalcitrant and difficult to treat in adults. It seems appropriate therefore to focus prevention efforts on early childhood, when health promoting habits can be established and benefits carried into adulthood (Caballero, 2004).

The evidence base around what works in promoting healthy lifestyles in young children is limited and tends focus on school-based interventions (Lobstein et al., 2015). Whilst these interventions are important and have the potential to play a part in an overarching anti-obesity strategy, children can develop a tendency towards overweight and obesity before they reach school age (Mech, Hooley, Skouteris, & Williams, 2016; Ventura & Birch, 2008), with parental practices in relation to food having an effect on this trajectory (Golan, Weizman, Apter, & Fainaru, 1998; Heinberg et al., 2010; Spruijt-Metz, Lindquist, Birch, Fisher, & Goran, 2002; Ventura & Birch, 2008). However, studies reporting on interventions for treating obesity in children may produce results which cannot be generalized to the general population. For example, a recent Cochrane review of family based interventions found that issues relating to middle-class participants were over-represented due to sampling issues (Oude Luttikhuis et al., 2009). As implications for practice cannot be directly extrapolated from one study population to another, the authors included in their recommendations that contextual factors such as family, cultural and societal characteristics should be taken into account in future studies. There is therefore a need to involve populations from demographically diverse backgrounds in research around childhood obesity prevention.

An understanding of health behaviours and the development of relevant interventions can be enhanced through the application and inclusion of psychological theory in research design, analysis and interpretation (Craig et al., 2013; Elder, Ayala, & Harris, 1999; Michie et al., 2005). Theory can be used to understand motivation, volition and barriers around health promoting behaviours (Armitage & Conner, 2000) and the interaction between the environment and individuals in a number of contexts, and can enhance replicability of research in multiple settings and ensure any resulting interventions or recommendations for practice have robust evidence base (Craig et al., 2008). For example, theories such as the theory of planned behaviour (Ajzen, 1991) and trans theoretical model (Prochaska & DiClemente, 2005) help to understand why parents who report being motivated around providing healthy diets for their children may not carry out specific behaviours that result in implementation of these intentions. In addition, research has been carried

out to explore and understand parenting practices specifically related to food (Gerards & Kremers, 2015; Gevers, Kremers, de Vries, & van Assema, 2014; Kiefner-Burmeister, Hoffmann, Meers, Koball, & Musher-Eizenman, 2014; Vaughn et al., 2016), which may provide a generalizable framework in which to understand some of the challenges parents face when trying to feed their children a healthy diet in an environment which may promote conflicting behaviours.

The city of Manchester in the UK has been ranked first as having the highest number of lower super output areas (LSOAs) in the 10% most deprived nationally for health and disability and 40.8% of Manchester's LSOA's are in the 10% most deprived nationally overall (including all domains measured) (Department of Communities and Local Government, 2015). Manchester's population is highly mobile, with a large migrant population. In addition, Manchester is culturally and ethnically diverse; in 2011 33.4% of the total population were from non-white ethnic groups (Bullen, 2015). The National Child Measurement Programme (NCMP), an organization responsible for measuring the weight of school children in England found that prevalence of overweight and obesity in children in reception classes (aged 4 and 5 years) and in year 6 (aged 10 and 11 years) were both higher than the national average in Manchester and that this trend had a particularly marked increase in Black and South Asian ethnic communities. Manchester therefore presents an opportunity to engage with a culturally diverse and relatively deprived population, underrepresented in existing studies relating to interventions for childhood obesity, while experiencing a significantly larger than average child population exposed to health risks associated with obesity. A qualitative study, informed by literature relating to health psychology and issues associated with childhood obesity was therefore carried out with parents attending stay and play services in central Manchester. The aim of the study was to explore parent's experiences of providing a healthy diet for children of pre-school age (under 5 years). Through achieving an understanding of the factors contributing to the ways in which parents feed their children, we can apply existing theory and research to identify mechanisms and techniques that promote healthier feeding practices.

Methods

A qualitative study design using semi-structured interviews was used.

Participants

An opportunity sample of 20 participants were recruited from two Sure Start children's centres and

one community parent and toddler group set in a church, all situated in central Manchester. This setting was chosen as it provides a service for parents of pre-school children (0–5). Some parents had older children and this was reflected in their interview responses but data relating to number and ages of children over 5 years were not collected. Table I outlines the demographic characteristics of parents interviewed, including the ages of all children in their household under the age of 5 years. A ranking of area deprivation was generated based on the LSOA'S (Lower layer super output areas) in England, a division of geographical location into smaller areas by population size of 1500 by the Office of National Statistics. LSOA's are used to measure Indices of multiple deprivation, to give a more accurate reflection of specific areas of deprivations. The score is based on measurement of 7 different domains, including; income, employment, education, health, crime, housing and living environment, to give an overall measure of deprivation. A ranking of the area based on postcode was generated out of the 32,844 LSOA's in England. For ease of interpretation, this score has been divided into three layers to provide insight on the overall level of deprivation in the area the parents and children live (high, medium and low).

Parents were aged between 23 and 44 years, however some parents declined to give their age. Most of the parents interviewed were mothers, as well as one father and one grandmother. Parental status has not been indicated to preserve anonymity. Nine participants had been raised in the UK and 11 participants had been born and spent at least some of their childhood outside the UK. Parents were asked about or volunteered information relating to having been raised in a country other than the UK, however data relating to parents ethnic and cultural background (other than that volunteered during interviews) or

length of time resident in the UK were not collected. All participants could speak English to a good level.

Interviews

Interviews were carried out face-to-face in a quiet area of the venue where participants were recruited. Interviews were audio recorded and typically lasted 20 minutes. Topic guides were informed by relevant literature and divided into topics: the first topic explored issues relating to decision making around feeding children, the second topic focused on lifestyle issues, the third on sources of information and influences on feeding practices with the final topic asking about barriers and facilitators to providing a healthy diet. Transcription was carried out by one of the authors (NA) to enhance familiarity with the data set.

Data analysis

Thematic analysis (Braun & Clarke, 2006) was used to identify emerging issues and themes from the data using an inductive approach. Use of the constant comparative method (Glaser, 1965) helped to ensure that the analysis was consistent and based on evidence from the data. Coding and analysing data was initially carried out by NA, parallel to conducting interviews and again following completion of interviews by JG to enhance the credibility of findings. Themes were refined through discussion with a third author (RC) who had read selected transcripts or quotes. Analysis was completed when no further codes or themes emerged from the data. These data were organized using NVivo (QSR International). An audit trail at all stages of analysis, for all researchers involved, was kept to maximize the trustworthiness of findings (Lincoln, 1995; Mays & Pope, 2000).

Table I. Characteristics of participants.

Participant	Age of parent	Total number of children	Ages of children under 5	IMD Score	Parent raised in the UK
1	28	2	3 years old 9 months old	high	NO
2	Not given	1	9 months old	high	NO
3	36	3	3 years old	high	NO
4	43	1	2 ½ years old	high	YES
5	35	5	Twins 2 years old	high	NO
6	23	1	2 years old	high	NO
7	33	2	3 years old 4 years old	high	YES
8	Not given	2	5 years old	high	NO
10	Not given	1	5 years old	high	YES
11	Not given	2	1 year old 4 years 3 months old	high	NO
12	37	3	3 years old	high	YES
13	Not given	2	2 years old	medium	YES
14	44	3	2 ½ years old	high	YES
15	39	1	2 ½ years old	high	YES
16	39	1	2 years old	high	YES
17	37	1	Under 5	high	YES
18	40	3	16 months old	high	NO
19	35	1	16 months old	high	NO
20	31	1	20 months old	high	NO
21	23	1	18 months old	medium	NO

Analysis of techniques used by participants to try to implement healthy feeding practices was informed by the constructs suggested by Vaughn et al. (2016).

Ethics and consent

Ethical approval was obtained from the University of Manchester Research Ethics Committee (reference 2017–0139-1641). Written, informed consent was obtained from all participants prior to interviews commencing.

Results

Findings suggested that participants were motivated to provide healthy diets for their children and sought information from a variety of sources in the course of achieving this aim. Although participants were generally well informed about the nutritional content of food, advice and information given was sometimes conflicting. A number of barriers to providing a healthy diet for children emerged and there was often a gap between intentions to provide a healthy diet and having the appropriate skills to achieve this aim. In order to bridge that gap, parents reported using a number of techniques with varying degrees of success. Findings are presented, first to describe processes relating to obtaining information about providing healthy diets for young families (*information and education*). Subsequently, barriers to providing healthy diets for children (*having a child with special needs, children's food preferences and using food to promote desirable behaviour*) and techniques employed in overcoming these barriers to achieve aims around familial healthy eating will be presented (*household rules & routines, setting limits and parameters, modelling and food preparation*).

Information & education

Information relating to feeding children was accessed widely and participants reported friends and acquaintances, family members, the internet and health professionals as their sources of information regarding feeding practices. In addition, reading materials published as part of public health campaigns such as “change for life” were accessed incidentally in various public places such as clinic waiting rooms and Sure Start children's centres. Developmental milestones such as weaning and offering finger food were key times for parents to seek food-related information, as were children's health problems relating to food and digestion such as constipation and vomiting. Advice on healthy eating was widely reported as being given in these contexts and during statutory health visitor checks. Participants generally felt well-informed about the effects of certain foods on health; the harmful

effects of sugar (sugar intake in relation to oral health was cited particularly often), fat and junk food and the health-related benefits of fruit and vegetables were understood.

Participants reported their upbringing and family practices and habits as influencing and informing the ways in which they feed their children. Advice and habitual practices originating from family members was often supported by professionals, reinforcing positive messages about food preparation and cooking from scratch:

My mum told me, “make your own food, don't buy from a shop, always make at home”, that's why I make fruits, vegetables, I cook myself and that's why the doctor says, “your daughter is very healthy” (participant 11).

However, information given by professionals was not always accepted by parents. Participants who had been raised solely in the UK could be particularly sceptical of advice directly from health care professionals, preferring to access internet sources and consult with peers and family. In comparison, parents who had been born and lived overseas tended to report NHS staff as providing the most useful and comprehensive advice. The following participant (born in the UK) had disagreed with a health care professional over advice to take vitamins, and had carried out her own research relating to weaning and feeding her child:

I've been in Sure Start groups and stuff where they've sent people to talk about nutrition and weaning and stuff like that but I don't tend to listen to stuff like that I tend to do research, and like my sister did a nutrition degree and stuff so I talk to her and as a family we quite often talk about food (participant 12)

Many participants reported searching the internet regularly for sources of information particularly when they needed advice around providing or preparing food for their children. The NHS “Choices” website was cited as particularly popular amongst parents generally and the NHS Weaning Helpline had been subsequently accessed by a participant via this website. However, participants reported accessing other websites based on special interests and alternative language formats that may produce material not compatible with current UK guidance:

Where do you get your information about healthy eating from? (Interviewer)

Different ways, my own language websites, I am interested in yoga, detoxing and things like this, as I've been struggling losing weight (participant 19)

Barriers

Having a child with special needs

Parents of children with special needs reported particular difficulties in providing healthy and varied diets

for their children, particularly when their children had symptoms relating to behavioural reactions that were difficult to manage and difficulties swallowing or digesting certain foods. These children were reported as having more pressing health or behaviour issues that perhaps took precedence to conventional understanding relating to promotion of healthy eating and a modified approach was needed when dealing with individual children. Issues were exacerbated by a perceived lack of specialist information and advice on offer for children who had unusual dietary requirements or more extreme behavioural reactions to attempts to encourage healthy eating. Parents reported having to adjust to individual needs of children and accept different approaches to feeding in the context of their child's condition:

I think if she hadn't have had a medical condition I would have been obsessed with healthy eating, but I think because her palette is quite limited, her repertoire is quite limited, when she was discharged from the hospital she was given a list of food that we could try and it was like [chocolate with malted milk centre] and [salted potato starch-based snack], there was nothing healthy on the list, it was all kind of melt food, so I've become kind of less bothered (participant 16).

Furthermore participants with children with special needs cited a lack of understanding around how difficult providing a healthy diet for their children can be, given the context of their individual requirements. Although parents had received advice from professionals and felt well informed about the nutritional content of different foods, techniques for successfully feeding healthy foods to their children were not available in the context of challenging behaviour:

Has [feeding child fruit and veg] been difficult? (Interviewer)

It sort of has, I mean, she's an autistic child as well so she knows what she wants and if she doesn't get it then it can be hard work (participant 7)

Have you had any help with that, with managing that? (Interviewer)

We've been to them, the weight management clinic, but it's alright people telling you what to give them, but her doing it and her wanting to do it is different (participant 7)

Similarly, advice from peers and family who did not have experience of having a child with special needs was not considered helpful due to a lack of practical knowledge and understanding around how to manage issues associated with particular needs. Thus another potential source of help and support could be diminished:

He's a special needs child so he doesn't fit into their category because their kids are "normal" (participant 10).

Children's demands for preferred food

Parents reported children of all ages clearly making their food preferences known in various ways, with the most desirable food associated with high sugar, salt and fat content such as sweets, cakes and fast food such as chicken nuggets and chips. In addition, children frequently refused to eat certain foods, particularly vegetables, and would accept only a small number of preferred, familiar foods. Some parents accepted these limitations and continued to allow children to eat the preferred foods:

I try to give her like broccoli and stuff but she just won't touch it, she literally gags on it so, she eats what she wants to eat (participant 7)

However, for other parents feeding their children a limited range of food could become a source of anxiety which made mealtimes stressful:

He's a fussy child, he doesn't like coriander, he doesn't like this, he doesn't like that, like if I make pasta for him and I put tomatoes in then I struggle with him, he doesn't like that (participant 5).

Issues around children wanting to eat only their preferred food were reported as posing particular challenges for parents as their children got older. This was reported as largely due to exposure to food outside the home, such as fast food and food eaten by peers, which may have been restricted or avoided by parents in the family home. Situations where older children had rejected their parent's (healthier) choices for school packed lunches, demanding crisps and other food eaten at lunchtime by their peers were described. These influences were exacerbated by older children's attempts to become more autonomous in general, including making decisions around the food they eat.

With the little one it's alright, she seems to eat everything, but as they get older it seems that they get more picky and want to have a bit more control, so it's a constant battle to try to give them the stuff that I want to give them (participant 12).

As children became older, they were considered more susceptible to fast food advertising and marketing, which was viewed as having a significant influence on their food preferences. In particular the inclusion of toys in inexpensive treats such as chocolate eggs and fast food meals aimed at children were particular sources of contention between parents and children. For the following participant, this was seen as a phenomenon particularly relevant to their children's generation, therefore they were unable to draw on techniques used by their parents or family in overcoming this barrier.

How can I persuade my children to have [healthy home cooked meal]? Like we had when we were

children, but it's harder for this generation ... I think it's all the advertisement they get on TV, the media, and all the fast food that they get on there, we never had that ... well it's the toys for me at the moment, so she's like, "well I get a toy [with a fast food meal]!" (participant 4)

Using food to promote desirable behaviour

Food items favoured by children were used to control negative behaviours such as crying and tantrums and to promote desirable behaviour such as sitting down in order to be safely strapped into a pushchair. This technique was reported as used most often when with others or out with children in public spaces. Parents described using preferred foods such as biscuits, sweets and rice cakes to prevent or interrupt crying and tantrums, in attempt to avoid potential judgement or attention from strangers and to adhere to perceived social norms. Consequently contexts such as travelling on public transport, where strangers are in close proximity could be challenging to parents attempting to restrict the amount or type of foods available to their children:

So do you just give in [to demands for more food] then? (Interviewer)

Yeah, well in public especially, not so much at home, but in public yeah because you just want him to be quiet, if we're on the bus or whatever and he's screaming for more rice cakes, you're just like, "oh go on then", you don't want to upset all the other passengers do you? (participant 17)

Participants reported that the demonstrated short-term results of giving preferred food, in the context of the daily challenges inherent in raising children can be an obstacle to restricting sugary, salty or high-calorie food in their children's diets. The prospect of having a small amount of time free to complete a task or have some quiet time to themselves could be viewed as more important than the negative effects of giving the preferred food.

You know parents; you have to get through the day, so they will often give treats and stuff, just to aid the day along (participant 12).

Techniques

Household rules and routines

Rules and routines relates to structures set in place by parents to ensure families know what is permitted and what to expect regarding food and mealtimes in the family home. This varied from complete restriction of certain foods brought into the family home to designated snack food being provided at regular times. Restricted food was reported as being high in sugar and salt, such as sweets, biscuits and crisps and was not permitted in the home. Participants described restricting food as desirable in the context of parents

having a responsibility to control and monitor what their children eat:

I think, if you don't want them to eat things you don't introduce them in the first place, none of my grandchildren drink juice, they don't even know what it is, they never have it ... it's us that introduce the food, we're in charge of what they eat, not them (participant 13)

Older children were given information around healthy eating in order to rationalize restriction of certain foods within the household and to justify parent's decision making in the context of different rules being applied to their friends:

The more they eat the more they're going to get that taste and sometimes they say, "Mum, please I want to take that to school". I say, "No" and sometimes they come back from school and say, "my friend has got coke or juice". I say, "No water is the best, you don't need those things" (participant 18)

Routine meal and snack times were also used by parents to limit not only the type of food given, but when food was to be consumed. In addition to three main meals of breakfast, lunch and dinner, snack times typically were allocated to take place in the afternoon, between school finishing and dinner being served.

I've been doing that for a long time, you know since I had my babies ... giving them fresh fruit, you know, like say at 4 or 5 o'clock (participant 5)

Setting limits and parameters

Setting limits and parameters relates to the boundaries implemented by parents regarding the consumption of high calorie food or quantities of food eaten and degree of flexibility afforded to these boundaries. This theme differs from *household rules and routines* in that limits and parameters are extended to situations outside the home and are often flexible according to situation and context. Participants frequently described designating food high in sugar, salt and fat as "treat" food, permitted under certain conditions both in and outside the home. Treat food consumed in the home might be restricted to the number of times it could be consumed, such as chocolate once per day, takeaway once per week or for reserved for specific occasions such as birthdays and family time, spent typically watching a film.

We will have the odd treat night ... anything processed with sugar in I won't give them that, if they have sugar it's a treat (participant 12)

Unsurprisingly, convenience food, such as fast food marketed towards children and pre packed sandwiches, was more often eaten outside the home, when on outings and shopping trips. Treat food was reported as more likely to be consumed

when with other people, for example on an outing to the cinema or when entertaining or visiting:

Sometimes if guests are coming then I'll give 1 glass or 2 glasses [of fizzy drinks] and if we are visiting someone's house then I will give more as well (participant 11)

In response to children refusing food from outside their preferred range, parents described relaxing or postponing offers of certain types of food, allowing children to consume their preferred foods within time-limited parameters. For example, parents described acquiescing to demands for certain food whilst waiting for their children to “go through a phase”, with plans to resume attempts to introduce new foods as their children progressed developmentally:

It's just a stage, he'll outgrow it, I mean that's what happened with the other two, you know they get older and they get past it (participant 14)

Some parents allowed their children autonomy in making choices regarding the food they ate. Participants had typically provided information around healthy versus unhealthy food and allowed children to make decisions based on this information. Choices were given within parameters pre-determined by parents, for example children could choose when they ate their daily treat or they might be asked to choose between a takeaway or treat and a more nutritious meal or snack. The following participant described how she managed requests from her children to take chocolate to school as part of their packed lunch through setting parameters while allowing them to choose between eating it at home or at school:

I do bring chocolates but I tell them, “Well it's up to you, are you going to have chocolate? When you go to school or when you come back and eat? So you decide”. So instead of having twice in a day, I give them once (participant 18)

Modelling

Parents understood that if their child saw them eating nutritious food such as vegetables and lean protein, they would be encouraged to do the same. Likewise many parents described experiencing difficulties in limiting food and drinks high in sugar and fat when they consumed these items in front of their children:

We have friends, you know, and let's say we've seen them doing this with their children, they are drinking coke and they say to the child, “oh you're not drinking coke it's not good for you”, well when the child sees you drinking coke then [they think], “how is it not good for me?” It's hard to say, “no”. If they see you eating fruits obviously they would like eating fruit, rather than sweets (participant 19)

Modelling good food-related habits tended to include having regular mealtimes, with parents and children sitting down together to eat the same food.

Sometimes food was modified in order to make it acceptable for young children, however it was important that it appeared to children they were eating the same food as the adults:

He'd eat what we eat, but modified slightly, so less chilli ...we kind of always had in mind to just modify what we're eating and we never drink fizzy drinks, sugar, ... we used to drink cordials for ourselves but we stopped that when he got a few months older (participant 15)

Parents felt children were also influenced by their peers, who could act as role models in relation to food choices. Parents were able to point out and emphasize friends and younger family members who enjoyed eating nutritious food and encourage them to emulate these children. A parent described a situation at a stay and play group, where children were offered fruit as a snack and ate as a group. Watching other children eating fruit made the behaviour more acceptable to her child:

I think being around other children as well, when she comes here then she sees other children eating fruit and she thinks I want to do that as well and I can see her attitude's really different so it's really interesting to know (participant 16)

Food preparation

Participants described using methods of food preparation to promote the eating of high-nutrient food through reducing the amount of salt and sugar consumed in favourite meals to comply with perceptions of healthy eating, and replacing fried foods with other methods of cooking such as baking or grilling. This was typically talked about in the context of home-cooking based on family habits and traditions and cooking from scratch using fresh ingredients. Participants described making healthier alternatives to children's favourite takeaway food such as homemade burgers and wraps and disguising vegetables so they became them acceptable to their children. This typically involved the making of soups or smoothies, which disguised both texture and taste of food unpopular with some children, such as vegetables and protein. Methods of food preparation were also used to increase calories for children considered underweight:

We do have little techniques to boost the calories, like I will put a spoonful of oil in with her food to increase the calories ... I will put polenta in with her soup or couscous so she has more roughage (participant 16)

Some parents reported preparing food in advance such as sandwiches and fruit to take on outings to reduce the temptation of buying convenience and takeaway food whilst out of the home for prolonged periods. However, preparing fresh food from scratch was cited as time consuming and requiring a degree

of organization which could prove difficult to achieve, particularly in the context of other demands, such as work or studying. The following participant described the day-to-day stresses inherent in looking after a large family and the struggles around planning and preparation of family meals:

The hardest thing is to be on top of everything, every day, to make sure everything is done before they come home, is hard for me, like having 5 children isn't easy (participant 5)

Some parents encouraged their children to become involved in food preparation, in the hope it would encourage them to try different foods. Involving younger children in food preparation had the added advantage of providing an engaging activity for a period of time. Older children could be encouraged to take some responsibility for meal planning, preparation and cooking:

I make a routine from Friday to Saturday I do myself and Sunday I give to my husband and my daughter (participant 11)

Ok so they cook for you on Sunday? (Interviewer)
Yes (participant 11)

Discussion

Participants were motivated to give children food perceived as healthy and nutritious and received information regarding the nutritional value of food and possible effects on health from a variety of sources. Advice and information was most likely to be sought or received at key developmental stages, such as weaning, in response to medical conditions and following statutory health checks. Although participants felt well informed around the types of food that characterize healthy or unhealthy diets, there may be conflicting information obtained from different sources and some advice may not be based on the latest evidence relating to child and infant health.

By involving parents who were raised in the UK and overseas, this study was able to incorporate the perspectives of participants from different cultural backgrounds. Although those raised outside the UK were more likely to trust advice given by a health professional, barriers to healthy food-parenting practices and techniques described to attempt to overcome these barriers were similar. This suggests that the wider social and environmental context of urban areas of the UK impact on families from different cultural backgrounds in similar ways.

Although parents were generally well informed and motivated to feed their children food associated with promoting health, they faced a number of barriers. These barriers related to having a child with special needs, children's demands for preferred food and habitually using food to promote desirable behaviour. Parents of children with additional

developmental needs and disabilities felt they did not receive tailored advice relating to healthy eating in the context of their child's specific difficulty or condition and understandably, in the face of more immediate health-related issues reported prioritizing additional health and behavioural-related needs. Feeding problems, particularly gastro-oesophageal reflux, are commonly associated with children with developmental disabilities (Field, Garland, & Williams, 2003; Manikam, 2000). The specific issues faced by parents of children with special needs should therefore be taken into account when interventions around healthy eating are developed, and health professionals should provide appropriately modified advice.

Children's food preferences and the articulation of these preferences through behaviours or verbal demands was cited as another barrier to providing healthy food. This finding relates to a number of studies carried out on the aetiology of food preferences in children including biological factors such as genetic predispositions and evolutionary derived preferences for food high in sugar and fat (Birch & Fisher, 1998; Mennella, Bobowski, & Reed, 2016) in addition to other, social psychological antecedents, arguably more amenable to change. These include attitudinal, social and economic variables (Drewnowski, 1997), individual differences such as fussiness, enjoyment of food and food responsiveness (Russell & Worsley, 2016), extensive and irresponsible marketing aimed at children (Boylard & Halford, 2013) and parental control behaviours which reinforce consumption of snack or treat food (usually high in sugar or fat) in non-food contexts (Lu, Xiong, Arora, & Dubé, 2015). This literature has particular resonance with participants' descriptions of children's food-related behaviours as "picky" or "fussy", and older children in particular becoming increasingly influenced by marketing and advertising of fast food.

Participants described using a number of techniques used to promote children's healthy eating; implementing household rules and routines, setting limits and parameters, modelling and food preparation. All findings relating to the theme "techniques" and "using food to promote desirable behaviour" which was identified as a barrier can be mapped on to, and support the taxonomy of food parenting practices identified by Vaughn et al (2016). This content map provides clear terminology and definitions of specific parenting practices relating to food within three overarching constructs: coercive control, structure and autonomy support. "Using food to control negative emotions" is associated with coercive control, which is a construct characterized by the use of strategies which are parent-centred. Parental control practices relating to giving food to produce normative behaviour in a non-food

environment are thought to have a negative effect on children's behaviours relating to the selection of healthy food and reinforce unhealthy food preferences (Lu et al., 2015).

Implementing household rules and routines and modelling relate to the "Structure" construct described by Vaughn et al. (2016). Indeed, "modelling", relating to the reinforcement of positive behaviours demonstrated by parents and peers, and "food preparation" are identified as specific sub-constructs with definitions analogous to the findings reported in this study. Salvy, Vartanian, Coelho, Jarrin, and Pliner (2008) found that social facilitation of eating occurs most readily when co-eaters are familiar, therefore the family meal setting affords an ideal opportunity for parents to model appropriate food-related behaviours. Involving children in food preparation also relates to the third construct of "autonomy, support or promotion" which identifies "child involvement" as a potential positive opportunity for children to become more familiar with new foods. In addition, involving children in preparation and cooking of food at home has been associated with higher incidences of preferences for fruit and vegetables and with higher self-efficacy for selecting and eating other healthy foods (Chu et al., 2013). Other sub-constructs; "meal and snack routines" and "food availability" (restricting the availability of unhealthy food) relate to the theme of "household rules and routines" reported by participants in this study.

Findings reported under the theme "setting limits and parameters" has resonance with both the "structure" and "autonomy support or promotion" constructs. Participants reported providing information around healthy eating and allowing children to make choices within negotiated parameters (sub construct of "nutrition education" and "reasoning") and the designation of some food items as "treats" only to be eaten at certain places or occasions (sub theme of "limited/guided choices"). In a review of relevant literature, Patrick and Nicklas (2005) argued that children's eating habits are influenced by environmental and social influences and call for researchers to develop interventions which target factors relating specifically to children's preferences, food availability and accessibility, parent's beliefs and attitudes, modelling and mealtime structures. Moreover, parents' behaviour relating to feeding their children is associated with cultural norms (Nowicka, Sorjonen, Pietrobelli, Flodmark, & Faith, 2014) Again, these findings have resonance with a number of findings described in this study, and a number of sub constructs identified in Vaughn et al's (2016) taxonomy of food parenting practices.

Although participants in this study reported being motivated to provide healthy lifestyles for their families, a number of parents described difficulties in

implementing specific behaviours to bring about the changes they desire. This finding is supported by other research using theory from health psychology to understand the gap between individuals' desire to make dietary changes, but do not implement behaviours conducive with bringing about that change (Giannisi et al., 2014). In addition, there is little guidance for researchers who wish to develop interventions to address gaps between motivation and volition. A recent systematic review of interventions to change both intentions and behaviours around healthy eating and physical activity offered some evidence around how to facilitate changes in intentions, however there was no evidence to suggest how behaviour change may be brought about following a change in intention (McDermott, Oliver, Iverson, & Sharma, 2016). This study may provide some insight into specific barriers parents face and an understanding of the ways in which food parenting practices can reinforce or overcome some of these barriers, thus contributing to the development of an intervention to change parenting behaviours in a way in which promotes healthier eating in similar populations.

In contrast to findings of previous research, cost and related availability of healthy food was not reported by participants in this study as a barrier, despite the relatively higher cost of providing a diet characterized by fresh fruit and vegetables (Rao, Afshin, Singh, & Mozaffarian, 2013). However this may be due to economics and cost not being the focus of this study, rather interview questions focused on sources of information and barriers and techniques around healthy eating relating to parent/carer and child interactions. Although parents with children under 5 were approached to participate in this study, many had older children and were thus able to articulate difficulties experienced at different stages of childhood, adding to the richness of the data.

Due to constraints on time and resources, the sample was limited to three stay and play settings in central Manchester. Of the participants interviewed, only two were not mothers: one was a father and another grandparent with a caring role. Further studies should look to include wider perspectives from fathers and those with regular caring responsibilities, such as childminders. The role of social desirability bias was considered in this study, as parents were asked questions relating to the upbringing of their children. It is therefore plausible that participant's under-reported undesirable behaviour and promoted perceived socially desirable behaviours.

In qualitative research, trustworthiness of findings can be established by exploring a number of concepts (credibility, dependability, confirmability, transferability and authenticity) (Kornbluh, 2015). Two researchers not involved in data collection were involved in the analysis, which helped to

establish the findings were grounded in the data, rather than the experiences or preconceptions of one researcher. Furthermore, all researchers involved in the analysis took a reflexive approach, acknowledging any preconceived notions regarding the study data or participants to ensure confirmability of findings. The credibility of the findings has been explored above, through triangulation and comparison with findings from other studies. Credibility of the findings could have been further enhanced through the use of member checking (Guba & Lincoln, 1994), however the scope of our ethical approval did not include contacting and returning to participants to share our findings. Transferability of the findings from this study is aided by the mapping of findings on to the food parenting concepts described by Vaughn et al. (2016), a technique which can be applied to other studies in order to compare findings from other cohorts. The extent to which the findings of this study are limited to the participants and study context is further explored below.

Overall, this study suggests that parents in a deprived inner city area of the UK are relatively well informed on the benefits of healthy eating for their families. This may be an effect of many positive steps taken in deprived community areas in Manchester to educate parents about healthy eating. The use of Sure Start centres and regular health visitor interactions may have contributed greatly to the increased knowledge of parents of young children, and may be particularly valued by parents from minority backgrounds. This finding is contrast to research carried out in other contexts, which have found much lower levels of knowledge around nutritional content of food (Birch & Fisher, 1998; Mena, Gorman, Dickin, Greene, & Tovar, 2015; Rodriguez-Oliveros et al., 2011). It is possible that this research has taken place in areas which have experienced lower levels of investment in health education of parents. Findings from this study suggest that advice from a health professional or other trusted source of information may help to bring about intention to practice healthy food-parenting techniques, however a number of barriers exist. Parents and carers in deprived areas could benefit from targeted interventions based on improving techniques around food parenting practices, with a focus on equipping parents with the skills to overcome barriers encountered not only in early childhood, but also as children progress to school age and through to adolescence.

This study was undertaken using qualitative methodology in order to explore parents' experiences of providing a healthy diet for their children and has provided some useful data around techniques and policies that facilitate and inhibit healthy food behaviours. This could provide a starting point for the

development of interventions that could be delivered in schools and community settings, for example, as part of parenting programmes. However it does not tell us what policies, advice and techniques are effective in bringing about change in children's health outcomes. In order to bring about changes in the current global trends around child health we need a robust evidence base, supported by clinical trials, around what works. More development and evaluation work is therefore badly needed.

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Appendix 1

PARENT INTERVIEW SCHEDULE

1. Introduction:

“I’m going to ask you about the information you’ve had about health and well-being for you and your family, and any challenges you’ve faced in making healthy choices for your children. I’m going to talk as little as possible so that I can just listen to what you have to say. Sometimes I might ask you to repeat or explain something. That may be because the recorder might not pick up everything you say otherwise. We can stop at any time if you like or move on to the next question and you can ask me questions at any time”.

“Have you any questions before we start?”

2. Eating

First, I’d like to know about your child’s eating. All parents have to decide what their children eat. Therefore we are interested in knowing how parents choose what to give their children to eat and what influences their decisions.

Have you ever looked for advice about what your child should eat?

- Example prompts:
- When was this?
- Where did you look for advice?
- Who did you ask?
- What did you make of this advice and was it helpful?
- Did you follow the advice?

Was there another time when you looked for advice? [Keep prompting for multiple examples over time]

[Break questions down as necessary according to stages—e.g., weaning, introducing first foods, day to day eating now. Use general questions about the child’s eating as necessary to elicit examples. E.g., Is there something they particularly like(d) to eat?]

Prompt questions: What helped you? What else might have helped?}

Have you ever been offered advice on what your child should eat?

- Who has offered you advice?
- What did you make of this advice and was it helpful?
- Did you follow the advice?

Have you ever had concerns about your child’s weight?

Tell me about that. [Use prompts for full description].

Have you ever *been given advice* by someone that has made you concerned about your child's weight? E.g. a doctor or health visitor?

Tell me about that. [Use prompts for full description].

- How difficult is it to make lifestyle changes to diet and eating habits?
- What would be the main obstacles for you or your children?
- Would you know where to get advice or help with this?

[General prompt questions: Can you tell me more about that? Can you tell me why you describe it as {*use metaphor/simile/phrase that participant used*}].

[Prompt questions: Are there things that are particularly challenging? Why was that difficult?]

3. Exercise and lifestyle

I'd like to know about your child's play

What sort of activities does your child really enjoy?

- How much time does your child spend playing outdoors?
- Are there particular physical activities your child does each day?
- How about each week?

[Prompt for details; are these organized activities you do regularly? How important do you think this is?]

[General prompt questions: Can you tell me more about that? Can you tell me why you describe it as {*use metaphor/simile/phrase that participant used*}].

4. Local campaigns and advice

Have you noticed any advice on children's diet, exercise and well-being given by the Council or health service for example, in newspapers, leaflets, or in the media?

Can you think of the names of any health campaigns locally to help children's well-being?

5. "Thinking about being a parent bringing up a young child, what things have helped most?"

"What other things could have helped you?"

6. Concluding the interview:

"Are there things we haven't talked about that you think it is important for us to know about being a parent/caregiver trying to bring up a healthy child here?"

"Do you have any questions for me at all?"

[End interview: thank participant.]