



Mothers' perceptions of the influences on their child feeding practices – A qualitative study



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ABSTRACT

Children's diets are important determinants of their health, but typically do not meet recommendations. Parents' feeding practices, such as pressure or restriction, are important influences on child diets, but reasons why parents use particular feeding practices, and malleability of such practices, are not well understood. This qualitative study aimed to explore mothers' perceptions of influences on their feeding practices, and assess whether an intervention promoting recommended feeding practices was perceived as influential. The Melbourne Infant Feeding, Activity and Nutrition Trial (InFANT) Program was a cluster-randomised controlled trial involving 542 families aiming to improve child diets. Following the trial, when children were two years old, 81 intervention arm mothers were invited to participate in qualitative interviews, and 26 accepted (32%). Thematic analysis of interview transcripts used a tabular thematic framework. Eight major themes were identified regarding perceived influences on child feeding practices. Broadly these encompassed: practical considerations, family setting, formal information sources, parents' own upbringing, learning from friends and family, learning from child and experiences, and parents' beliefs about food and feeding. Additionally, the Melbourne InFANT Program was perceived by most respondents as influential. In particular, many mothers reported being previously unaware of some recommended feeding practices, and that learning and adopting those practices made child feeding easier. These findings suggest that a variety of influences impact mothers' child feeding practices. Health practitioners should consider these factors in providing feeding advice to parents, and researchers should consider these factors in planning interventions.

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1. Introduction

The diets of young children are an important determinant of their immediate health, and are also likely to impact upon their health across their lifespan (Biro & Wien, 2010). However, evidence suggests that the diets of young children are high in discretionary foods (such as soft-drinks and high fat snacks), and low in fruits and vegetables (Cowin, Emmett & ALSPAC study team, 2000; Department of Health and Ageing, 2007; Lioret, McNaughton, Spence, Crawford, & Campbell, 2013; Siega-Riz et al., 2010). Such dietary intakes are detrimental to child health in both the short- and long-term, and contribute to high obesity rates (Australian

Bureau of Statistics, 2013; Department of Health and Ageing, 2007). It is therefore important to understand influences on children's diets, in order to inform nutrition and health promotion efforts.

Maternal feeding practices are likely to be important determinants of young children's dietary intakes, based on evidence from longitudinal and mediation studies (Jarman et al., 2015; Rodenburg, Kremers, Oenema, & van de Mheen, 2014; Spence, Campbell, Crawford, McNaughton, & Hesketh, 2014). Feeding practices associated with healthier child diets include parental modelling of healthy eating (Cooke et al., 2003; Spence et al., 2014; Vereecken, Keukelier, & Maes, 2004), eating family meals together (Cooke et al., 2003), and promoting child control of their eating (Kröller & Warschburger, 2008; Patrick, Nicklas, Hughes, & Morales, 2005). Conversely, feeding practices which have shown associations with less healthy child diets include higher parental control and pressure on children to eat (Kröller & Warschburger, 2008; Patrick et al., 2005; Wardle, Carnell, & Cooke, 2005) and

Abbreviations: InFANT, Infant Feeding Activity and Nutrition Trial.

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use of material or food rewards to encourage eating (Kröller & Warschburger, 2008; Spence et al., 2014; Vereecken et al., 2004).

In recent years there has been increasing research interest in parental feeding practices. For example, a 2012 review identified 21 tools to assess feeding practices with children aged 0–5, many of which were published in the preceding 10 years (de Lauzon-Guillain et al., 2012). However, there has been little investigation of the influences on parents' choice or use of these feeding practices, *why* parents use particular feeding practices, or *why* some practices might be more amenable to change through interventions than others.

The few previous qualitative studies of influences on feeding in early childhood have focussed more on what, when or how much to feed (Chaidez, Townsend, & Kaiser, 2011; Johnson, Goodell, Williams, Power, & Hughes, 2015; Synnott et al., 2007), rather than feeding practices. Other studies have focussed primarily on one or two pre-determined influences on feeding practices, such as the influence of 'positive (healthy) feeding goals' (Kiefner-Burmeister, Hoffmann, Meers, Koball, & Musher-Eizenman, 2014), parental beliefs (Redsell et al., 2010), motivations (Carnell, Cooke, Cheng, Robbins, & Wardle, 2011), or aspirations and challenges (Herman, Malhotra, Wright, Fisher, & Whitaker, 2012), rather than exploring a wider variety of potential influences. Furthermore, no previous studies are known to have qualitatively explored how the influence of a feeding practices intervention is perceived by mothers or how this might interact with other influences on feeding. Such information is useful to inform future interventions aiming to improve feeding practices.

A theoretical framework for understanding behaviour and designing interventions is the COM-B system component of the Behaviour Change Wheel by Michie and colleagues (Michie, Atkins, & West, 2014; Michie, van Stralen, & West, 2011). The COM-B model suggests that it is capability (i.e. physical and psychological capacity), opportunity (i.e. physical and social environment) and motivation (i.e. reflective and automatic processes) which interact to determine behaviours (Michie et al., 2011, 2014). Application of the COM-B framework to understanding influences on feeding practices is relevant to determining key areas/types of influence and hence informing future intervention design.

The aims of this paper are to describe mothers' perceptions of influences on their feeding practices amongst a sample of mothers who participated in an intervention promoting healthy child feeding practices, and to consider whether there are any influences consistently identified by mothers as most important. As this intervention primarily involved mothers rather than fathers, maternal perceptions are the focus of this study. Given this study intends to inform future interventions promoting healthy child feeding practices, findings will be considered in relation to the COM-B framework (Michie et al., 2011, 2014).

2. Methods

The Melbourne Infant Feeding Activity and Nutrition Trial (INFANT) Program was a cluster-randomised controlled trial conducted in Melbourne, Australia, involving 542 families with children aged 4 months at baseline and 18–19 months at intervention conclusion (Campbell et al., 2008; Campbell et al., 2013). This health promotion intervention was delivered to first time parents and included six information sessions over 15 months, with content corresponding to child developmental stage. A key focus of the intervention was on improving child dietary intakes and parent feeding practices, with the discussion of feeding practices centering on division of feeding responsibility (Satter, 1995) (especially promoting child control of quantity consumed), healthy role modelling and family meals, and also the avoidance of using foods as rewards.

This was therefore a relevant sample amongst whom to investigate influences on feeding practices because it also allowed exploration of parents' views about the potential for an intervention to influence their feeding practices.

Mothers were eligible for this qualitative study if they had participated in the intervention arm of the Melbourne INFANT Program, remained enrolled at the conclusion of the trial, and had provided complete post-intervention data for the main study by February 2010. In total, 81 mothers from 16 of the 31 intervention groups were invited to participate. Mothers were mailed a cover letter, plain language statement, consent form and reply-paid envelope, and were asked to provide consent by reply mail. Mothers were offered a \$10 gift voucher and a child's lunch-box in appreciation of their time. Ethics approval for this extension to the Melbourne INFANT Program was granted by Deakin University Human Research Ethics Committee (ID: EC 175-2007).

Demographic data were collected from the Melbourne INFANT Program surveys, which participants had already completed, and details of these surveys have previously been reported (Campbell et al., 2013).

2.1. Interviews

Individual telephone interviews were conducted to allow for flexible interview times. Flexibility was a priority to promote participation amongst this population group of women with young children. Telephone interviewing is also minimally intrusive, maintains greater participant anonymity, and is recognised as an effective method of data collection (Musselwhite, Cuff, McGregor, & King, 2007; Neuman, 2006; Novick, 2008).

Interviews were conducted by two researchers with experience in qualitative interviewing. Interviews incorporated both process evaluation of the Melbourne INFANT Program (Lunn, Roberts, Spence, Hesketh, & Campbell, 2015), and exploration of influences on child feeding practices - this paper discusses the latter. The relevant portion of the interview was approximately 10–15 min in length. The interviews were semi-structured and used a series of seven open-ended questions to assist parents in identifying their use of child feeding strategies and the influences on those. Questions were developed in consultation with experts in the area and based on relevant literature. Questions included: *Do you have any rules about food or meal times? Are there any times when meals are more challenging, and how do you respond? Can you think of any reasons why you do those things?* Set prompts were also prepared to promote consistency between interviewers, for example, *"Is that how you were brought up, or what your friends or family do, or what you've found 'works'?"* As a further consistency check the interviewers observed one another undertaking their first interview, and discussed and refined the process. Interviews were tape recorded, then transcribed verbatim, before being collated for analyses.

2.2. Analyses

Thematic analysis was undertaken by one assessor (AS) using an approach similar to that described by Neuman (2006). Multiple passes of the transcripts were made to identify themes and then all relevant statements were coded in a tabular thematic framework to facilitate analysis. In this framework, each interview corresponded to one line, and each theme corresponded to one column, similar to the approach described by Carnell and colleagues (Carnell et al., 2011). A second assessor, experienced in the area of child feeding practices as well as qualitative research (KC), reviewed the coding of three interviews with complete agreement, and also thereafter assisted in resolving any uncertainties in coding. Identified themes

were then mapped onto the COM-B framework (Michie et al., 2011, 2014).

Where possible, the feeding practices described by parents were classified, informed by current feeding literature, as 'recommended' or 'not recommended', in order to then classify influences as having a 'positive' or 'negative' effect on feeding practices. Recommended feeding practices include those advised by experts, such as division of responsibility (Satter, 1995), and those practices associated with healthier child diets, such as modelling of healthy eating (Cooke et al., 2003; Spence et al., 2014; Vereecken et al., 2004), eating family meals together (Cooke et al., 2003), promoting child control of their eating (Kröller & Warschburger, 2008; Patrick et al., 2005), and avoiding use of food as a reward (Kröller & Warschburger, 2008; Spence et al., 2014; Vereecken et al., 2004). The opposites of these were considered as 'not recommended' practices.

Twenty-six mothers agreed to participate in a telephone interview (32% of those invited), from 16 different mothers' groups in the intervention arm of the Program. Participants had attended a variable number of the intervention sessions, from attending only one to attending all six (eight participants had attended fewer than three sessions). All participants had completed the intervention at least three months prior to their interview.

3. Results

3.1. Sample description

The mean age of participants was 34 years, and their children were approximately two years of age at the time of the interview. Twenty-five of the participants were first-time mothers, while one had a teenage daughter in addition to the two year old. All mothers but one were married or living in a de facto relationship, and 16 were employed. Four participants reported an education level of high school or lower, four had certificate or trade qualifications and 18 had tertiary qualifications.

3.2. Themes identified

All parents identified numerous influences on their feeding practices, and the amalgamation of many learnings and experiences was described as providing a combined influence. One parent articulated: *'It's probably a combination of, you know, what you experience when you grow up and what you read and what you see and, you know, your whole attitude to food, and then certainly information you're provided with during programs like InFANT'* (#10).

Eight major themes were identified regarding parents' perceived influences on their child feeding practices. Utilising the COM-B framework (Michie et al., 2011, 2014), these were mostly related to opportunities and motivations. The Melbourne InFANT Program; practical considerations; the family setting; and information sources (health professionals, media, literature) could all be primarily considered as opportunities, though most of these would also impact motivations and potentially capabilities. Parents' own upbringing; learning from peers, friends and family; learning from child and experiences; and parents' beliefs would primarily be considered as motivators. Results are presented under these COM-B headings in order of most to least frequently reported.

3.3. Opportunities influencing feeding behaviours

3.3.1. Exposure to feeding messages: The Melbourne InFANT program

Parents' participation in the Melbourne InFANT Program was the theme most often discussed, with 21 parents naming specific

practices they had learnt from the Program. Division of feeding responsibility (Satter, 1995) was a key message of the Program, operationalized by the slogan *'Parents Provide, Children Decide'*. This concept was the most frequently recalled by parents, with 16 discussing related feeding practices, including 10 spontaneously remembering the slogan, for example: *'The thing that I've taken away as the strongest point was "Parents Provide, Children Decide" (#23)*. Parents reported being receptive to this message, even if it was new to them, for example, *'Being told that allowing children to determine quantities was ... a complete change to what I had grown up with – so that was useful and new to me'* (#9).

Importantly, as well as recalling these messages, parents reported that the intervention had promoted changes in their behaviours and feeding practices. For example: *'I keep thinking about what you guys have taught us – that basically we provide it and they decide what they're going to eat, (so) I try and let it go and not force feed ...'* (#3). Furthermore, examples were provided of the influence of the intervention overriding other influences: *'Parents Provide, Kids Decide – I hadn't heard of that before. When I was feeding (my child), (my Mum) would say "she's gotta finish her food", and I'd be like "no ... she doesn't have to finish it"'* (#17).

In addition to messages regarding division of responsibility, parents described learning and then enacting other key messages from the Melbourne InFANT Program including: the importance of eating together and family modelling (eight parents), continuing to offer previously rejected foods (six parents), and not showing stress/emotion around meals (five parents). For example, some parents had started eating with their child following discussions during the intervention, and reported resulting improvements in their child's eating and eating behaviour: *'Before we would feed (our child) and then put him to bed and then have dinner ourselves. But (the InFANT dietitian) said start giving him what you're eating and eat with him, and from that day on, we have eaten with him every time and it worked so much better for all of us, and that is the best thing I got from the sessions'* (#16). Parents also described how their actions were different to what they might have been without the intervention, for example: *'One thing I found useful was about fussy eating ... (to) just keep offering it for a number of days ... because I would have only gone for probably three or four offers before leaving it for a few months but ... they were suggesting going more for like ten offers'* (#12).

3.3.2. Practicality, convenience and ease

Seventeen parents stated that practical reasons within the family and household were influences on their use of particular rules or practices. Twelve parents reported at least one appropriate or recommended feeding practice to be the 'easy' option, the most common being eating together: *'(We eat together) because it's much easier than cooking separately for her and feeding her separately – it's just easier to do it all together'* (#19).

However, 10 parents also reported at least one 'not recommended' practice which was the 'easy' option. This was most common around practical challenges with timing of family meals: *'Dinner – I guess it's hard because we're both working full time. We're exhausted when we come back. My priority is to make sure that he is fed ... our dinner tends to be made later'* (#18). Also, when food was eaten out of the home, such as when visiting friends or eating in a café, parents frequently reported having different expectations around their child's eating. For example, *'(when eating out) I'd be more lenient with what he was allowed to eat ... if he wasn't eating his dinner, and ... he wanted (dessert), I would let him if we were out'* (#6). Use of food to control behaviour was also reported by a few parents: *'He sort of says, "Can I have a biscuit", and I'll give him a biscuit, especially if it's that sort of day where he's cranky ... it's just easier to give him a biscuit 'cause it shuts him up'* (#16). Finally, one parent mentioned she found it harder to follow recommended

feeding practices since having another child. She knew that the strategies she was using were not ideal, but practical challenges were an over-riding influence: *'A lot of (my first child's) feeding practices have ... declined since I've had another child, ...finding techniques ... to get them to eat without resorting to using the television as a distraction, when you've got two kids to manage, it's just not feasible.'* (#9).

3.3.3. Family setting

The influence of the family setting includes the people who make up the household, expectations regarding interactions around food, and the extent to which parents concur or support each other with regard to child feeding practices. In particular, eating meals together as a family was a practice mentioned by thirteen parents, and the importance placed on the social context of meals was the main influence reported for those who ate with their child. For example, *'... it's important to have that opportunity to be able to just not only eat but also have a family time together to just share what happened in the day ... it's not just the eating the food, it's also about the whole engagement'* (#17). In many cases, the social importance of having family meals was the only reported reason for eating together and eating away from the television.

Nine mothers also reported on their partner's role and influence in either supporting or hindering various practices within the family setting, with the amount of support mothers perceived from their partners varying greatly. Support was occasionally reported in the form of prioritising family meal times: *'It helps (to have dinner together) that my husband is committed to getting home early'* (#14), and committing to changing personal habits to model healthy eating: *'My husband probably has struggled with it (eating more vegetables) ... but he's used to it now too, which is good for us as a family as well because I think we're eating a lot better ourselves'* (#24). Additionally, one mother reported her partner had been willing to learn about recommendations from the Melbourne InFANT Program: *'He (partner) just said "I'll do whatever you want", and went with it ... he watched the DVDs and read all the newsletters and all that'* (#11).

However, more commonly when partners' influences were reported, they were in relation to difficulties or differences or perceived lack of support. Partners' working hours were commonly reported to limit opportunities for children to share meals with their parents: *'Dinner time ... I wait for my husband to get home from work and he's often late ... and (my child) is in bed by that time ... so that's why I feed him earlier'* (#22). Occasionally mothers also reported disagreements with their partners in relation to other feeding practices: *'I think in some ways it was easier for me when I was on my own (eating without partner) because I was very strong about this (not pushing child to finish meal), and, sometimes we kind of have arguments between each other as parents about what to do, and that didn't work well'* (#14). Another mother gave an example of a practice which her partner utilised even though she disagreed with it: *'I generally don't get too fussed about it (child not eating) ... that's a different response to my husband ... sometimes he's been forcing her to have food ... she doesn't respond very well at all – she'll end up in tears'* (#1).

3.3.4. Information sources – health professionals, media and literature

A further opportunity influence was that of other information sources beyond the Melbourne InFANT Program, with some parents reporting that they actively sought out information from health professionals, media and literature. Seven parents reported 'reading' as a source of information about child feeding. The internet was also mentioned by three parents: *'You've got to love the Better Health Channel, and just Google in general'* (#12), and

sometimes a combination of such sources: *'If not InFANT it was usually the internet ... and also, actually, a book I've read recently'* (#19). Television programs were also mentioned by two mothers. Parents didn't report whether they had considered the reliability of these other sources.

Two people mentioned health professionals (other than those conducting the Melbourne InFANT Program) as a source of information about feeding their children. One mother reported input from her Maternal and Child Health nurse: *'I think the Maternal Child Health nurse encouraged family meals'* (#9). In one instance the family doctor was also reported as a source of information, because the parent had sought medical advice for a particular issue related to child eating.

3.4. Motivations influencing feeding behaviours

3.4.1. Parents' own upbringing

Nineteen parents reported that their own upbringing had influenced the ways they fed their children, and many wished to emulate their own parents' practices. Parents' own upbringing was mostly an example of following recommended practices such as eating meals together and healthy food availability at home. For example, *'We always used to have dinner when my dad and mum got home – we'd all sit down at the table and have dinner as a family, and I just remember that that was a really nice thing to do'* (#17). However, in one case, a mother reported that not wasting food was an important part of her own upbringing and Asian family culture which she had retained, despite her own observations that this wasn't helping her child eat better: *'It sort of runs in the culture ... you try your best to get the child to eat ... and not waste food ... even if they're full'* (#18).

Conversely, seven parents reported that they were consciously avoiding using some of the feedings practices that had been part of their own upbringing, primarily due to recalling negative experiences. Most of the examples provided were regarding not forcing children to finish their meal: *'My Dad ... wouldn't let me leave the table until I'd eaten what he'd told me I had to eat ... it was terrible – I used to be in tears crying going "I don't want to eat"'* (#2).

3.4.2. Learning from peers', friends' and family's experiences with raising children

Fourteen parents mentioned that their own child feeding practices had been influenced by their observations of friends or family raising children, or by discussions with peers. For example, *'I think my main reason for having an opinion on a way of doing something is from looking at my friends' older kids, and seeing something that I do or don't like ... and that makes me, I suppose, decide whether I want (my child) to do that or not ...'* (#6).

One parent reported observing a practice she wanted to emulate, that of ensuring routine and structure around meal times. However, it was much more common for parents to cite practices they had seen used by others that they wanted to avoid. Examples of this were provided by parents regarding: not wanting their children to be 'fussy' eaters (*'How I see my nephews and niece eating – they're very fussy, and they get their own way – so I'm trying to be strict'* (#13)); not offering alternatives when a food is rejected (*'I think I saw it from watching someone else ... someone who just kept offering their child different breakfasts and things, and I thought "I don't want to do that"'* (#5)); not using food as a reward or bribe (*'... actually watching friends of mine who've got children who are older ... to get them to do something the reward was going to KFC ... (so) I think I'm particularly conscious of not using food as a reward ...'* (#25)); and not using distraction to get children to eat (*'people give toys to play with to distract them while they quickly spoon in some food ... that sort of thing which I didn't want to do with (my child)'* (#26)).

Observing others was also cited as an influence for not making inappropriate foods available: *'I looked at a friend's child that would drink nothing but juice and cordial, once they'd been offered it, so I had it in my head not to give anything to (my child) other than water, as long as I can' (#6)*. Furthermore, desire to prevent unhealthy longer term outcomes was also mentioned: *'... a little boy I used to babysit and his mum banned all sugar completely ..., he turned 16 and discovered cake and sugar and went to the absolute extreme of just wanting chocolate and cake because he'd never had it before ... (so) I guess I probably always thought that I'd want (my child) to be exposed to all those kind of things' (#24)*.

While many mothers reported that peers were an important source of information, one mother reported that she found her friendship group to also be a source of some peer pressure with regard to allowing her child to eat unhealthy foods: *'... it is probably a little pressure as well because other mums let their kids eat cakes and chips and you don't want to be the one standing there going "No, no you can't have that"' (#24)*. Another person also identified that her friends weren't always the best source of information: *'I wouldn't have had any idea, just from observing all my friends, really what was the best thing to do' (#22)*.

3.4.3. Learning from their child and previous experiences

Parents commonly reported that previous experiences with their child influenced their feeding practices, and that they learnt from their child's actions. A number of parents' observations prompted them to undertake recommended feeding practices. For example, eight respondents noted that children wanted to eat what their parents were eating, and changes to parental modelling practices were therefore often reported in response to those observations: *'If we eat food we don't want her to eat, it's very hard to explain to her why she's not allowed to eat the foods that parents are allowed to, so we've decided not to (eat those foods)' (#19)*.

A further four parents noted that children ate better when alternatives weren't offered, and that they had changed their feeding practices accordingly. For example, *'He's had two mouthfuls and refused to eat, and so, he's gone to bed with two mouthfuls of dinner, and I've actually found over time that, that's probably the most successful, because the next night he usually remembers he was still hungry the night before ... I've actually been able to get him to eat more vegetables and more of his main meal if he knows that's all he gets' (#22)*.

Other feeding practices noted by parents to be ineffective or detrimental were forcing children to eat, fussing about children not eating, and feeding in front of the television, for example: *'I wasn't really worried about it at the start, and I had the TV on, but now he's getting older, I find he just watches the TV and doesn't concentrate on eating, (so) usually I try to have the TV off' (#13)*. In most instances, inappropriate practices had been recognised by parents and replaced with appropriate alternatives. However, three parents reported that their experiences with their children led to feeding practices which were not recommended. For example, *'It's more just the strategies you learn from trial and error, (such as) distraction ... I'll get him reading a book or I'll put on a DVD ... and get vegetables in that way' (#9)*. A 'trial and error' type approach (*'if its worked I've stuck with it, if it hasn't, I've just moved on' (#22)*), may have resulted in either recommended or not recommended feeding practices, but what influenced whether parents persisted with a particular practice was the resulting behaviour or outcome for the child.

3.4.4. Parents' beliefs

Twelve parents reported that they held 'beliefs' or strong viewpoints about particular child feeding practices. For example: *'a controlling style of parenting that includes punishment and rewards ... I'm not doing this ... (because) I believe that it's the right way – I feel*

that it's right' (#19). While it is likely that other influences have shaped these beliefs, parents usually couldn't or didn't identify why they held these beliefs.

Parents reported beliefs in relation to a variety of feeding practices, including restricting particular foods: *'You can't be too strict on your kids that when they hit further up, that they just go absolutely bingeing on stuff because they're like ... "where was this all my life"' (#12)*, and availability: *'soft, drinks, sweets biscuits and stuff, I believe if it's available and it's there then you've got the opportunity to develop healthy decision-making processes around those foods' (#10)*. With regard to forcing children to eat, mothers expressed a range of views which influenced their practices. A couple of parents did not believe in forcing food, for example, *'So we don't go "you simply must eat this" ... I don't think that helps – I don't think that motivates you to eat at all' (#7)*. However, one parent believed that her child did need some level of encouragement to eat: *'I think he's too little, and he couldn't tell me if he was full. And then I think when he's older, even if he does tell me he's full, he might not necessarily be telling me the truth, if he just doesn't want to eat what's on his plate' (#6)*.

Five parents reported being reassured by having a child who they believed appeared healthy. For example, *'He'll eat when he's hungry, and he's not a sickly skinny child, so I'm not ... concerned that he's ever not eaten enough' (#15)*. Conversely, the few parents who were worried about their child's eating seemed to find it harder to follow feeding recommendations: *'... you just want them to eat some nutritional food, so it's kind of like "You've only had two bites, try and just have some more", because you know that he's growing and he needs it because he does really eat like a bird' (#3)*.

Feeding practices were often affected by short-term outcomes, such as whether the child would eat a meal, rather than long-term outcomes. Very few parents specifically mentioned beliefs or expectations regarding their child's health outcomes as reasons for using particular feeding practices, though one parent articulated her view of food and eating as a component of health: *'I guess I'm taking a wider view of health, really, not only is it about the ingredients on his plate, but it is also about his attitude to eating and, you know, the times that he eats and the sort of appetite that he develops' (#10)*.

4. Discussion

This qualitative study found that this sample of first time mothers perceived there to be a variety of influences on their child feeding practices: their participation in The Melbourne InFANT Program, practical considerations, family setting, other information sources, parents' own upbringing, learning from friends and family, learning from child and experiences and parents' existing beliefs about food and feeding. Few mothers reported any one influence as being most important, and many found it difficult to distinguish influences on individual feeding practices, stating that they had probably compiled a number of different factors and experiences to inform how they fed their child. This highlights the complexity of factors likely to influence health related behaviours.

These findings regarding influences on child feeding practices are novel, but consistent with previous research regarding other aspects of child feeding which has identified similar influences (Kavanagh, Habibi, Anderson, & Spence, 2010; Pocock, Trivedi, Wills, Bunn, & Magnusson, 2010; Synnott et al., 2007). For example, studies focussing on breastfeeding, timing of solids introduction, and choice of foods, highlight a range of influences similar to those identified in this study, namely time and convenience, family and friends, personal intuition/beliefs, internet, and other literature sources (Kavanagh et al., 2010; Synnott et al., 2007). Furthermore, a review of parents' perceptions of factors impacting

on behaviours associated with child overweight and obesity identified child factors, family dynamics, knowledge/beliefs and 'extra-familial influences' as important (Pocock et al., 2010).

When mapped to the COM-B framework for understanding behaviour (Michie et al., 2011, 2014), the influences identified were related to opportunities and motivations. However, the framework acknowledges that the COM-B components interact rather than operating discreetly, and therefore themes are not always uniquely associated with one component. In considering how these findings inform future intervention design, all nine intervention functions identified in the Behaviour Change Wheel (that is education, persuasion, incentivisation, coercion, training, restriction, environmental restructuring, modelling and enablement), address either opportunity to engage in a behaviour or motivation to achieve a behaviour (Michie et al., 2014). This highlights the importance of child feeding interventions developing and incorporating a variety of intervention functions in addition to the common strategy of education. For example, inclusion of positive role modelling via regular video presentations in the Melbourne InFANT Program.

Another important consideration for planning future interventions in this area is which practices might be more amenable to change through interventions than others. An example of an influence not directly amenable to change is parents' own upbringing. However, some mothers indicated that an intervention, and learning about currently recommended feeding practices, may be able to override influences such as upbringing or family. It is of interest that many mothers in the present study appeared to be highly receptive to new information regarding their child's feeding, even if it contradicted previous learnings or views. There were few instances where mothers indicated reluctance to trial new feeding practices, or change or adapt their practices. This supports the notion that mothers of young children are a group who are willing to learn and take on new information (Hesketh & Campbell, 2010). However, some mothers did not identify any influence of the Melbourne InFANT Program on their feeding practices. This may have been because these were mostly mothers who attended few (i.e. one or two) of the intervention sessions. Non-attending parents were sent the written materials, however, they missed the opportunity to share discussions with their peers around facilitators, barriers and strategies to achieve targeted behaviours.

Most mothers reported that they had learnt at least one feeding practice from the Melbourne InFANT Program, with division of responsibility in feeding (Satter, 1995) cited most frequently. The majority also reported how they used those feeding practices, and that they could see the effect on their child's eating. Given that mothers reported a combination of influences on their feeding practices, it is likely that uptake of advice from the intervention may have been greatest when it was also supported by other influences. For example, parents who started eating dinner as a family, following advice from the Program, often reported that their child's eating improved (influence of learning from experience with child), and that mealtimes were easier (influence of practicality), therefore it is the combination of these influences that is likely to determine whether they continue the practice.

It is interesting that the influences of mothers observing their peers, and also to some extent mothers' own upbringing, were commonly cited as reasons for *avoiding* rather than emulating practices they had seen or experienced. Similarly, other studies have found that mothers do not always agree with the child feeding advice of older generations (Zehle, Wen, Orr, & Rissel, 2007) or other family members (Redsell et al., 2010). However, a further study involving low-income parents reported that grandmothers were the strongest influence on the timing of introduction of solid foods (Baughcum, Burklow, Deeks, Powers, & Whitaker, 1998). It is possible that the strength of influence of family members differs

according to socio-economic circumstances, cultural background, or the topic of interest, and such differences would benefit from further exploration in future research.

Mothers gave few examples of observing others using positive child feeding practices, yet reported that discussions with their peers were a valuable influence. This finding emphasises the importance and benefits of conducting an intervention within social groups such as first-time parents' groups (Cameron, Hesketh, Ball, Crawford, & Campbell, 2010; Scott, Brady, & Glynn, 2001). That setting supports the learning from peers which parents value, but also allows for validation by an expert. However, this setting may not be feasible or of interest to some parents, therefore it is also important to explore other practical ways to deliver evidence-based information. Interestingly, health professionals (other than those involved in the Melbourne InFANT Program) were not generally mentioned as a source of information about child feeding practices, suggesting that without the intervention, many parents may not have accessed reputable information on recommended feeding practices. Therefore, supporting existing health professionals (such as Maternal and Child Health Nurses) to regularly deliver this information may be another intervention approach. Additionally, finding other methods of reaching parents which fit within the existing sphere of influences, such as creating evidence-based webpages or phone apps for parents to use instead of less reliable information sources, may also be useful interventions.

Parents frequently referred to family mealtimes in discussion of their feeding practices – it was a topic in which they were interested and engaged. The importance placed on the social context of mealtimes was the main reason mentioned for following the recommended feeding practice of eating together, and the influence of parents' own upbringing also contributed. This finding adds to those from studies involving parents with older children. For example, of 902 adolescents' parents from the United States, more than 90% agreed that 'mealtime is a time for talking with the family' and bringing people together (Fulkerson, Neumark-Sztainer, & Story, 2006). Additionally, a qualitative study with parents of five and six year old children in Australia similarly found that parents considered family mealtimes as opportunities for family discussion (Campbell, Crawford, & Hesketh, 2006). Few mothers in this study or the others described above mentioned a positive effect on children's eating or health as a reason to eat together, despite the numerous reported benefits of this practice (Fiese & Schwartz, 2008; Neumark-Sztainer, Larson, Fulkerson, Eisenberg, & Story, 2010) including healthier diets (Woodruff & Hanning, 2008). These findings suggest that parents may be receptive to promotions regarding feeding practices at family mealtimes, but that such discussions may have most leverage by focussing more on parental motivators such as social context rather than health outcomes.

A further key influence identified within the family setting was that of partners. Partners' role and engagement in child feeding was variable, with some mothers feeling they were not supported by their partners in using recommended feeding practices. As fathers of young children are likely to be an important influence on their children's eating (Vollmer, Adamsons, Foster, & Mobley, 2015; Walsh, Cameron, Hesketh, Crawford, & Campbell, 2015), but can be a difficult group to engage (Edvardsson et al., 2011; Walsh et al., 2014), involving fathers in early childhood health promotion is likely to be an important but challenging part of future interventions.

Practical considerations within the family and household, such as parental time pressures, work hours and management of child behaviour, were the only influences which generally had a negative impact on child feeding practices. In particular, mothers reported that their own and their partners' work hours raised challenges for meal preparation and eating together. Such influences resulted in

parents choosing what they felt was the 'easiest' option, including children not eating meals with their parents, or children receiving food to keep them occupied. Practical challenges and lack of time have also previously been reported as barriers to having family meals with older children (Neumark-Sztainer, Story, Ackard, Moe, & Perry, 2000), and providing healthy foods to children (Jones et al., 2010; Slater et al., 2010; Synnott et al., 2007). To promote behaviour change, parents must perceive that the benefits of following recommended feeding practices outweigh the inconveniences (Gedrich, 2003). Inclusion of discussions regarding managing practical challenges is vital in any intervention aiming to improve feeding practices. Finding ways to engage and support those who do not attend sessions in managing practical challenges is likely to be particularly important, as they may be the most time-poor.

It is also important to note that some of the practical influences on mothers' use of feeding practices had a positive impact. For example, some mothers reported modelling healthy eating because it was easier than refusing their child any unhealthy foods that they themselves might eat and their child might therefore request. Such examples could be discussed in interventions, to highlight that a recommended practice can be the 'easy' option.

Participants in this study were mostly tertiary educated, and were all involved in the intervention arm of a health promotion trial, thus it is acknowledged that the findings are not necessarily generalizable to the broader population. Additionally, as participants knew the qualitative interviews were a follow up to their participation in the Melbourne InFANT Program, there may have been some bias to recalling more information about the Program, though the structure of the interview questions and the inclusion of participants with varying levels of engagement in the Program aimed to limit this. A strength of utilising this study population is that, in addition to identifying a variety of influences on maternal feeding practices, these results include discussion of the potential influence of an intervention and how this interacts with other influences on feeding practices.

5. Conclusions

Important influences on this sample of mothers' knowledge and use of appropriate feeding practices were varied and non-hierarchical, and included their participation in The Melbourne InFANT Program, practical considerations, family setting, other information sources, parents' own upbringing, learning from friends and family, learning from child and experiences and parents' existing beliefs about food and feeding. Most mothers reported that a combination of these influences, rather than one factor in particular, determined the feeding practices they utilised. These qualitative results demonstrate the influences of opportunities and motivations on these parents' behaviours, and serve to inform future interventions, in particular highlighting the variety of influences on a parent's choice of feeding practices which must be considered and addressed in intervention design. It is also important to include examples in interventions of how multiple influences can work together to support appropriate child feeding practices.

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