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Research Article

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A Qualitative Study of Mothers' Perceptions of Weaning and the Use of Commercial Infant Food in the United Kingdom

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Abstract

Background: Commercially produced infant food has a different taste profile and nutritional content to homemade baby food and its consumption is now very widespread. This change in early food experience may lead to a reduced dietary variety and a decreased microbial load exposure.

Objective: The purpose of this study was to gain insight into parental perceptions of complementary feeding, specifically opinions of commercially produced baby food, using qualitative research methods.

Methods: Four focus group discussions took place (n = 24), with mothers of infants aged 4-7 months. Half of participants were first time mothers and a third had experience weaning infants with symptoms of cows' milk allergy. Participants were prompted with questions about complementary feeding and shown several different products to stimulate discussion.

Results: Thematic analysis of focus groups indicated that three distinct groups of mothers exist; "relaxed", "concerned" and "balanced", which may be influenced by parity, socioeconomic status and previous experience of weaning. The majority of mothers commenced the weaning process using homemade foods, but transitioned to include commercial baby foods after 3-6 weeks. Commercial baby food was perceived as more convenient to homemade baby food by the majority and as superior and "safer" by some mothers. Although there were concerns raised about the identity of ingredients, few concerns were expressed regarding nutritional quality or allergen content, even by mothers with experience of weaning an infant with food allergic symptoms.

Conclusion: Overall complementary feeding was viewed as a natural process with the goal of enjoyment of food and development of a broad palate. Opinions on readymade baby food were influenced by parity, education level and previous experience of weaning.

Keywords: Infant feeding; Commercial baby food; Weaning; Complementary feeding

Introduction

The introduction of solid food to infants' diets, known as complementary feeding, is a significant milestone that has nutritional, developmental and health implications. This period, known as "weaning" in the United Kingdom (UK), should ideally provide a gradual transition from a solely milk-based diet to a mixed diet based on family foods. Complementary feeding enables infants to meet their nutritional requirements and regulate their appetite, whilst becoming exposed to new tastes and textures in a staged and progressive manner. The World Health Organisation (WHO) recommends exclusive breastfeeding until six months, with introduction of solid food at six months [1]. In the UK this advice has been adapted slightly with recommendations stating that introduction of solid food should take place at around six months, with the caveat that solid foods should never be given to babies under 17 weeks old [2]. The use of home-prepared rather than commercial baby foods is also encouraged [3]. However despite these recommendations, the timing, type and method of complementary feeding have been at the forefront of dialogues in the scientific world and media over the past few decades. Specific topics that have been debated include: the most appropriate age of introduction of solids, particularly allergenic foods [4], crucial times for introduction of different tastes and textures [5,6], use of organic or non-organic foods [7] and employing a baby-led weaning approach or not [8,9]. The use of homemade versus commercially produced infant foods is central to all of these discussions. However, parental awareness and concerns about these issues have not been studied.

The use of commercial infant food in the UK is widespread. Data from a national infant feeding study indicates that on the day prior to the questionnaire, a greater proportion of infants aged 4-6 months were fed ready-made baby food than homemade baby food (38% compared to 28%) [10]. In addition, almost half (45%) of mothers of 8-10 month-old babies use commercially prepared baby foods at least once a day, with infants aged ten months or older more likely to be included in family meals [10]. Similarly, in the United States (US), it has been reported that 73-95% of infants between 4-12 months consume commercially produced baby foods [11]. Usage of these products may be influenced

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by maternal age, method of feeding, presence of other children in the household, region and food availability [12]. Data from the UK has noted that differences exist according to maternal occupational status and ethnicity [10].

There are several concerns regarding the increased reliance on commercially produced infant food, specifically reduced dietary variety, taste profile, differing nutritional content and reduced microbial load [13,14]. Together these factors cumulatively create a significant change in early food exposure, with potential implications for the development of non-communicable diseases, namely allergy [15,16] and obesity [17]. It is possible that an increase in consumption of commercial infant foods may reduce the diversity of foods and tastes introduced during the weaning period. By way of example, a study of commercial infant food in Europe demonstrated that most meals were based on carrot [18] and a UK study indicated there is a lack of seafood based meals [19]. A longitudinal UK study reported that feeding home-cooked fruit or vegetables during infancy was associated with increased uptake and variety of fruit and vegetables eaten at the age of seven years, whereas feeding ready-prepared fruit and vegetables during infancy was not [20]. A proposed explanation for this was that commercially prepared fruit and vegetables are likely to have a uniform taste and texture, whereas those cooked at home or eaten raw will vary according to whether it is in season and the cooking method. By incorporating a wide variety of fresh foods, ideally complementary feeding should provide a platform for establishment of balanced taste preferences. However, recent studies by Garcia et al. [13,21] reported that nearly two thirds of commercial baby foods are sweet with a distinct lack of bitter vegetables used. Their study of 479 commercially available products concluded that the majority of products investigated would not enhance the nutrient density and diversity of taste or texture in infants' diet.

An important factor to take into consideration when examining the usage of commercial baby foods is the parental experience of weaning and reasons for choosing and introducing particular foods. Commercial baby foods are, in general, an accessible, non-perishable and portable option of feeding. The increase in their usage may be a reflection of modern lifestyles becoming busier, with less home cooking taking place, leading to an overall increased reliance on ready-made foods across all ages [22]. A greater understanding of parental needs regarding weaning will enable Health Care Professionals (HCPs) to tailor their advice and potentially inform industry to develop more suitable products. Therefore with this in mind, the aim of this study was to use focus group discussions to gain insight into parental perceptions of complementary feeding, specifically opinions on commercially produced baby food.

Materials and Methods

A qualitative approach was adopted to collect data on parental concerns and reasons for using commercially prepared baby foods. Data was collected using focus groups because they enable interaction and a range of views to be discussed.

Participants

The sample of mothers was split into groups according to socioeconomic status, parity and experience of food allergies, shown in Figure 1. All participants were either on maternity leave or not employed outside the home. The group was composed of both married and single mothers.

Recruitment strategy

Participants were recruited by a market research company (Reveal Solutions). Recruitment took place from an existing consumer panel held by the market research company, in addition to "snowballing" of contacts and recruitment from mother and baby groups. All participants were screened using a questionnaire to confirm they met the inclusion criteria. The specific study topic was obscured in the screening questionnaire in order to reduce recruitment bias. Participants from the existing consumer panel were not eligible for recruitment for this study if they had participated in a study in the last six months or if they had ever participated in a study about infants or diet. The study was approved by the University of Portsmouth Ethics Committee. Participants gave permission for their quotes to be used in future presentations and publications. Participants were paid a small fee as compensation for their time.

Procedure

The focus groups took place in two towns in Surrey, in the South of England in March 2011. Four separate focus group, each composed of six part.cipants were held. Focus groups were conducted by a professional market research company. Two researchers, both dieticians; one from the University of Portsmouth (CV) and one independent dietician (SS) decided the aims of the study, and collaborated with the market research regarding the recruitment strategy, format and content of the focus group discussions. An external market research company conducted the focus groups as the use of dieticians as facilitators may have biased and influenced the discussions. Each focus group was moderated by the same two experienced facilitators from the market research company; one facilitator who led the discussion and a second facilitator who took notes. All discussions took place in English and were audio recorded.

Focus groups were conducted in a semi structured interview format. Participants were assured of confidentiality and encouraged to participate in discussions as much or as little as they wanted to. After an initial icebreaker session to encourage interactivity, participants were prompted with questions about complementary feeding and commercial infant foods. They were shown several different baby food products with a range of textures, prices and packaging to stimulate discussion. Specific questions that were asked are included in Table 1.

Data analysis

Verbatim transcriptions were undertaken by two experienced qualitative researchers from a professional market research company.

	**C1C2	*ABC1
First Time Mums	Babies with cows' milk allergy	No experience of food allergy
Subsequent Mums	No experience of food allergy	Babies with cows' milk allergy

Figure 1: Grouping of participants according to socioeconomic status, parity and experience of food allergy. *ABC1: upper middle class, middle class, lower middle class. **C1C2: lower middle class and skilled working class.

Section	Content
Introduction and warm up	• Facilitators introduce the research and explain the etiquette of group discussions (no rights/wrongs, confidentiality etc.) • Participant to introduce herself and her baby and briefly describe her baby's current food 'favourite' Vs 'dislike'
Focus on weaning	• Attitudes towards weaning, how do/did they feel about approaching this stage? • What concerns, fears if any did they have • What advice did they receive - from whom? Who do they trust most? • Awareness of current weaning guidelines - 4 vs. 6 months etc., • Knowledge of different stages of weaning? • Extent to which there is confusion over recommended guidelines • Level of confidence they feel? • How have they approached weaning so far/how do they plan to approach it - why? • What are they using to wean their babies- probe own food vs. baby food, vs. both, why? • Any differences this time round in terms of attitude, approach if 2nd time Mums?
Attitudes to prepared baby food	• What are the advantages of pre prepared baby food are there certain occasions where they tend to use it? What are the perceived disadvantages? • What are the advantages /disadvantages of preparing own food? • Note spontaneous mention of allergies and when subject brought up probe on what strategies are taken? • With regard to packaged baby food - what do they look for? • Role of labelling and symbols - how does this compare with what they look for in adult food? • How do they evaluate what is good/bad/best/worst? • As their baby gets older what do they think will be the key things that they will be concerned about diet wise?
Products	• How loyal are they to particular products? Why? • Ask respondents to sort the different products into groups • for each group identified • What are the shared characteristics • Strengths and weaknesses of products within each group • What is the role of factors such as organic ingredients, price, chef endorsement, etc., • What type of 'health' and 'taste' cues do they offer
Claims exploration	• Generic Claims (no colouring, preservatives or additives, organic, no salt, gluten free) • how important are these claims? • do all baby foods have them? • Specific claims- explore different claims on pack (allergen free vs., none of our ingredients contain ingredients known to cause allergy • Ultimately how much of focus do they feel there should be on 'allergy' vs. weaning vs. simple food, why?
Close	• Overall summary, thanks and close

Table 1: Structure and content of focus group discussion.

Thematic analysis was chosen as the approach to data analysis. It involves the identification and analysis of themes and similarity within qualitative research [23]. It is not grounded in any particular theoretical framework and can therefore be applied across a wide range of qualitative research approaches.

Thematic analysis was completed by the same two researchers. In brief, transcripts were read a number of times to identify recurring themes. Themes were clustered into categories and used to define typologies. Quotes were selected on the basis that they best supported each theme. Mind maps were developed to illustrate and summarise each theme. Themes, categories and mind maps were discussed with all co-authors.

Results

Sample

Twenty-four mothers took part in the focus groups. All participants were fluent English speakers and were of white British ethnicity. Twelve participants (50%) were first time mothers. Eight participants (33%) had infants with a history suggestive of cows' milk allergy. Maternal age was not recorded as the inclusion criteria were based on the age of the infant.

Defining typologies

Three distinct groups emerged from the analysis, which were labelled "relaxed", "balanced" and "concerned". Defining characteristics of these three groups are shown in Table 2. In summary, the "relaxed" mother typically has few worries about using baby food products or indeed concerns about what is in them. The "balanced" mother has some concerns about feeding 'the right food' especially in the early stages. The "concerned" mother typically seeks advice and guidance.

Weaning to eating

Although there were three distinct typologies, they all had an underlying common perspective; viewing the goal of weaning as enjoyment of food and development of a broad palate. The approach at the commencement of weaning for all mothers was to use single ingredients and baby rice, starting initially with small portions and progressing to self-feeding. The timeline of weaning was perceived to last from 4-6 months of age to 8-10 months old. This process is shown in Figure 2.

How and when to wean

There were two patterns with regard to timing of weaning. Second time mothers, usually those in the "relaxed" group, tended to be baby led, using cues such as changes in sleep pattern, finishing milk quickly, being more irritable and watching others in the family eat.

'He'd scream and stare at me when we were eating and he was a bigger baby so I went with rusks as not extreme'

In contrast, advice-led mothers, usually those in the "concerned" group, sought advice from Health Care Professionals (HCPs), the internet, books, their own mothers or friends. Those in the higher socioeconomic category were more likely to seek advice from HCPs.

'My mum said start at 4 months - she said she started with me at 3 months but I am waiting I have seen the health visitor and I am going to start at 18 weeks'

Anxiety and concerns about timing of weaning were exacerbated by conflicting advice.

'They have now gone back to saying 4 months - if you leave it too late they can be iron deficient'

	Relaxed	Balanced	Concerned
General approach to weaning	Mothers in this group were very practical and matter of fact about weaning. They were often second time mothers, therefore not so concerned about the process. They were often mothers from a lower socioeconomic group.	Mothers in this group had a balanced approach to weaning, and often explored food labels to identify ingredients contained in a product.	Mothers in this group were anxious about weaning either because they were a first time mother and had limited knowledge or they were a second time mother who had been exposed to 'horror' stories about weaning. They often sought advice and guidance from experts.
Approach to commercial baby food	Mothers in this group viewed commercial baby food as good (if not better) than homemade food.	Mothers in this group viewed home-made baby food as ultimately the optimum, but their opinion was balanced by knowing they couldn't always provide home-made food.	This group viewed home-made baby food as optimum, but some mothers in the group thought commercial baby food had the potential to be safer.
Quote	*"Well I have done it before so I know what to do and they all get to eating well in the end"*	*"I look on the labels – you can tell a lot from the ingredient list if there are additives in it" (second time mum)*	*"I started with fruit puree. I did not use baby rice as the health visitor said not to" (second time mum)*

Table 2: Characteristics of the three defining groups of participants.

Besides the timing of weaning, the process of weaning (i.e., the risk of choking and using a spoon) was another source of worry, particularly for those in the "concerned" group. For the majority of mothers these concerns were very short lived. Once weaning had started concerns over when and how to wean were almost instantly overcome. However, concerns over what to feed and how quickly to introduce new favours and foods into the diet were more variable between mothers.

Initial use of home cooked foods

Generally mothers commenced the weaning process with excitement and good intention of cooking home-made foods. In the first three weeks all mothers behaved in a similar way (i.e., preparing home cooked foods), because they could not buy single ingredient baby food. However, this phase was very short-lived.

'You want to kick things off in the first stage - simple and single'

As they overcome many of their other initial concerns, many mothers report they start to introduce a multitude of new flavours and start to buy commercial baby food, composed of mixed ingredients.

'He was hungry - he loves food so I moved him really quickly on to different jars"

Even those who did a lot of home cooking reported that preparing fruit purees could be "hassle".

'I did make myself to start but I got lazy so I moved to jars after the first few weeks'

It was felt that prepared baby foods were composed of simple, safe ingredients. Indeed they were viewed by some mothers (across all three groups) to be superior to home-made foods especially if they were organic, prepared by better cooks and used better ingredients.

'I don't buy organic veg at home so this might even be better than me doing it'

'It just looks so lovely - the kind of stuff you would almost like to eat yourself'

Use of commercial baby food: where and what?

Pre prepared baby food was seen as convenient when outside the home. It was noted that it was convenient, "sealed and safe" and easy to carry. When probed, there were many occasions cited when it would be also be used at home (e.g., when the rest of the family are having a meal not perceived as suitable or to combine with home-cooked foods), or when there was a lack of time to prepare food due to being occupied caring for other children.

'We might have curry so I could not do anything for him'

'I use a meal one like a casserole and then I add my own fresh veg to it so he gets the fresh stuff as well'

Choice of what pre prepared baby food to use was driven by three key factors: "taste", "goodness" and "the truth". Mothers in the "relaxed" group were more driven by the taste of the product, whereas mothers in the "concerned" group were more driven by the healthiness of the product. "Taste" was characterised mainly by the description of the ingredient and recipes. "Goodness" helped mothers decide whether the product was healthy. Finally, mothers were keen to know the "truth" about prepared baby foods (i.e., what exactly was contained in the food and what was hidden). Specifically, they were keen to discover whether the products contained milk, eggs, gluten and nuts, in addition to preservatives, colouring and salt. A thematic map summarising several aspects of this study is illustrated in Figure 3.

Food allergies

There was very little spontaneous mention of food allergies by participants in the focus groups, despite that fact that some participants had experience of feeding an infant with a food allergy. When probed, mothers in the "pragmatic" and "concerned" groups showed some concerns, but the vast majority thought that food allergies are very individual and that exposure to a variety of foods early in the weaning process was important to identify any issues.

'I have heard that you shouldn't give wheat before 6 months as babies can't deal with it and some baby foods have gluten and egg in'

Overall weaning was not viewed as a clinical process and therefore participants wanted the process to be simplified, rather than medicalised. This view was held even amongst mothers whose infants had a history of milk allergy. They did not want to use commercial baby foods products that were overtly pharmaceutical in appearance or to be reminded that the product was prepared in a clinical allergen-free environment.

'It's the baby that has the allergic reaction not the food. They need to be exposed to all food types as the grow, you can't keep them in a glass cage'

'We don't like to think about the food being made in a factory'

In terms of identifying food allergens and ingredients, mothers were predominantly interested in 3-4 key allergens, namely milk, eggs, wheat and nuts. There was a lack of credibility that certain foods (e.g., fish/soya) could cause adverse reactions and reference to other potential allergens was deemed inappropriate and unrealistic.

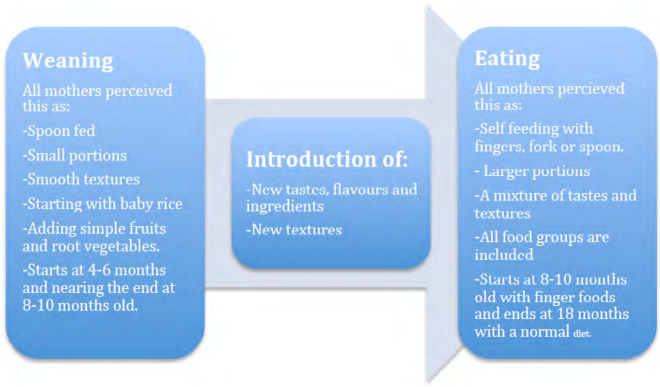

Figure 2: The process of weaning as perceived by participants.

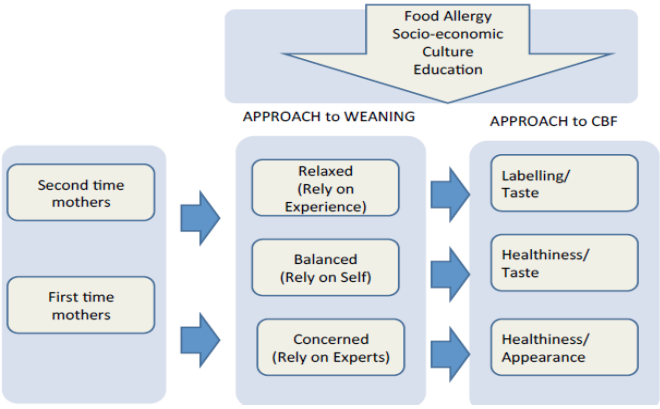

Figure 3: Factors influencing weaning and Commercial Baby Food (CSF) purchase based on maternal characteristics.

"Can't you be allergic to all sorts of things, my husband is to bananas but they say to give baby that'.

Discussion

This study set out to gain an understanding of maternal perceptions of complementary feeding, specifically opinions on commercially produced baby food, using qualitative research methods. The study was undertaken against a background of widespread use of commercial baby food internationally and concerns regarding the impact this could have on infant diet and long term health outcomes. Within the small group of mothers recruited, we demonstrated that three distinctive groups exist, "relaxed", "balanced" and "concerned", characterised by different attitudes to weaning and commercial baby food, which may be influenced by parity, socioeconomic status and previous experience of weaning. The majority of mothers commenced the weaning process using home-made foods. Commercial baby food was viewed as more convenient by most mothers and as better and "safer" by some mothers, particularly those in the "relaxed" and "concerned" groups respectively. Although there were concerns raised about the identity of ingredients, few concerns were expressed regarding nutritional quality or allergen content.

Before discussing the findings in detail, the sample and recruitment procedure and possible bias should be addressed. This study deliberately recruited mothers who were intending to use commercially produced infant food, either exclusively or in combination with home-made food. Mothers who were not planning to use commercially produced infant food were excluded from participation via the initial screening questionnaire. Their views were not obtained, meaning contrasting views could not be explored. The results therefore need to be interpreted with caution.

The recruitment strategy used, a consumer panel recruited via a market research company, could also potentially introduce bias. However, the objectives and specific topic of the study were disguised during the screening process and participants had never previously taken part in a study either about babies or diet. The facilitators of the focus groups were not health professionals, thus reducing a social desirability bias and were independent of baby food manufacturers. In considering possible bias introduced by the sample and recruitment strategy, it must be highlighted that many other published studies investigating mothers' opinions on complementary feeding have used either a self-selected or convenience sample, often recruited via online mother and baby discussion forums and often also limited to those who are using a specific weaning style [24-27].

This study recruited mothers of infants aged 4-7 months who had either already introduced solid food or were imminently going to, therefore a proportion of this sample were not strictly adherent to current complementary feeding guidelines. None of the mothers recruited had returned to work at the time of the study, which may have some bearing on their approach and timing of complementary feeding. It is arguable that the sample is not reflective of all mothers, particularly those who wean their infants at six months and/or use a baby-led weaning approach. National data reports that the majority of mothers are not actually strictly adherent to the Department of Health (2003) guidelines. Although the number of infants in the UK introduced to solid food at four months had decreased from 51% to 30% from 2005 to 2010, in 2010 75% of mothers had introduced solids by five months. Rates were similar whether mothers had returned to work when their baby was between four and six months old (82%) or six to nine months old (80%).

Baby-led weaning, the process through which babies feed themselves small finger sized pieces of food and choose the pace of solid food introduction rather than being spoon fed, is thought to becoming a more popular approach [8]. Despite this, nationally representative data indicates that in 2010, only 4% of infants in the UK were given finger foods as their first food, with 94% fed mashed or pureed foods [10]. It is possible this trend has changed slightly between 2010-2015, however there is no large-scale nationally available data to confirm or support this.

The results of this study on the whole are broadly in agreement with previous qualitative studies. Perceptions of commercial infant food as convenient and preparation of home-made food as laborious have previously been reported in focus group studies in other European countries [27]. More recently, Betoko et al. [12] reported that increased use of ready-prepared vegetables and fruit purees was explained by an awareness of nutritional advice about infant feeding, but a lack of time and culinary skills to implement the advice. However it must also be noted that qualitative studies of contrasting weaning approaches, namely baby-led weaning, also report it to be simple, convenient and to require less meal preparation [8,24].

Some mothers in this study perceived changes in sleep pattern, appetite for milk and interest in others eating as cues to commence complementary feeding, whereas other mothers sought advice directly from HCPs, parents or peers. This contrast in when to commence complementary feeding has previously been reported to vary by

country [28-30]. A recent online questionnaire study of 3607 mothers, suggested that those who weaned early were more focused on putative signs of readiness, whereas those weaning later were more focused on the infant reaching the recommended age. Confusion felt towards official weaning guidelines was mentioned in this study, in agreement with O'Key and Hugh-Jones [31]. This confusion has previously been perceived as difficult and stressful [26]. As this was a qualitative study, we did not seek to quantify knowledge of infant feeding guidelines. However, it has been demonstrated that good awareness of guidelines regarding solid food introduction does not necessarily lead to adherence to said guidelines.

The wish to provide flavorsome and nutritious foods, characterized by the "taste" "goodness" and "the truth" factors, has also been reported previously [27,28], although the groups of mothers in their studies were not selected specifically on the basis that they were using commercial infant foods. The perception of commercial baby food as potentially superior and safer to home-made foods and possibly composed of better ingredients is, to our knowledge, a novel finding. In most other studies commercial baby foods were perceived negatively; as "bland" and "unauthentic" or only used in "an emergency". Similarly a study in the US indicated that many parents have a preference for fresh fruits and vegetables over jarred baby foods [32]. Garcia's study [13] comparing home-made baby food to commercial baby food confirmed that the nutritional quality of home-made baby food is generally superior; with the exception of rusks and biscuits, which were higher in iron and calcium than homemade versions, although also higher in sugar. A US study reported that may types of commercial infant and toddler foods had equivalent levels of sodium and sugar to products aimed at older children or adults [33]. Another recent study concluded that total daily intake of fat from the consumption of commercial complementary food may be in excess of the recommended guidelines if the intake of dessert and snacks are incorporated [34]. Inadequate essential mineral levels were also found, except for potassium in meat and vegetable based recipes, however both of these studies investigated only eight commercially available meals [35]. A German study comparing the nutritional content of homemade and commercially available baby foods, reported only minor differences [36]. However, there is a paucity of studies directly comparing the nutritional content of commercial and home-made infant foods.

A national infant feeding survey in the UK indicated that the use of ready-made foods was most common between the ages of five and ten months [10]. Our data from this study suggests a similar trend. Although it was not unexpected that mothers initiated the complementary feeding process by preparing home cooked fruits and vegetables, but soon transitioned to pre prepared baby foods, it is interesting that their decision to do this was based on the presence of single versus multiple ingredients and a desire to increase variety and tastes. There is conflicting evidence in the literature whether use of commercial baby foods is correlated with increased or decreased food variety. For example, a German study reported that a higher percentage intake of commercially produced baby food was strongly associated with a lower vegetable intake, even when controlling for socioeconomic status and early life factors [14]. This could be due to the specific combination of ingredients that may mask or interfere with learning about the particular flavor of single vegetables [28]. In support of this argument, Garcia et al. [13] investigation of commercially available infant foods in the UK found that 8.5% of savory products also had added fruit, giving them a sweet taste. Conversely in a low-income sample of infants who received commercial baby foods free of charge as part of a national public health initiative in the US, those who consumed commercial baby food consumed a greater variety of fruits and vegetables [37]. Evidently the development of taste preference is complex and multifactorial and it is not yet clear what role commercial infant food plays.

Although there was little spontaneous mention of food allergy, there were some concerns about checking food labels in the "balanced" and "concerned" groups, which may have been driven by previous experience of weaning infants with food allergy. Although other research studies have used focus groups to explore maternal attitudes and perceptions of infant feeding and weaning, to our knowledge this is the first qualitative study to explore this issue in relation to food allergen content. It has previously been reported that food-allergic individuals spend more time on grocery shopping in order to find safe products [38], however in our study it was interesting that mothers did not want baby food products to be labelled extensively (front of pack) with food allergen information or for the products to be appear "pharmaceutical". This is in contrast to other researchers, who have found food labelling information to be perceived as insufficient [39]. We speculate this may be due to the fact the infants included in this study with a food allergy history all had non IgE (delayed) allergy symptoms, with none having a history of anaphylaxis.

Besides the issue of accurate labelling and identification of food allergens in commercial baby foods; there are other concerns regarding the widespread and increased use of commercial baby food in relation to food allergy. Grimshaw et al. [16] reported that a diet low in commercial baby foods was associated with a reduced prevalence of allergy. This could be due to reduced microbial load, diet variety or nutritional content. The role of the micro biota in the development or allergic disease has been researched for some time, with data indicating differences between the gut bacteria of allergic and non-allergic infants [15]. The microbial load of commercially prepared baby food is negligible due to food safety requirements. However if home-cooked food is provided to infants, up to 65% of the daily microbial load can be provided by fresh fruit and vegetables. As previously discussed, consumption of commercial baby may affect food diversity in early life. Less food diversity in early life has been associated with increased risk of any asthma, atopic asthma, wheeze, and allergic rhinitis in a large birth cohort study [40]. Finally, it is important to consider the nutrient content of commercial baby food production in relation to risk of development of allergy. For example, some micronutrients are postulated to be implicated in food allergy development [41], however it is known that sterilisation during the manufacturing process can reduce micronutrient content. Although none of these issues were raised by the participants and may not be of concern to the general public, they are important factors currently being studied extensively in food allergy research.

Strengths and Limitations of Study

In addition to the recruitment strategy, this study has some other limitations. The focus groups were composed of mothers from the South of England, all of who were white British; therefore the views expressed may not be generalizable or culturally relevant to other regions of the country or the world. As we sought mothers who were already using commercial baby food, it is possible that their opinions were positively biased towards their usage. As a research group who are specifically interested in food allergy, we recruited some participants with a history of food allergy; therefore the proportion of these participants in this study is higher than would be typical in the general population. As with all focus groups, it is possible the discussion could have been influenced by the facilitator and dominated by one or two participants. However

to minimise this, we used experienced independent moderators to facilitate the discussion. We did not explore maternal diet, which has previously been shown to be highly influential in infant feeding decisions [42]. The strengths of the study are the insightful qualitative messages it has reported, the novel findings regarding food allergy and perception of readymade food as potentially "safer", the involvement of dieticians in the planning of the focus groups and the recruitment of both primiparous and multiparous mothers from different socioeconomic backgrounds.

Conclusion

It is clear that usage of commercial infant foods is prevalent and it is predicted that this trend will increase in coming years. Previous research has highlighted concerns of researchers and HCPs about the altered nutritional intake, reduced microbial load, sweet taste and reduced food diversity of commercial infant food and the effect this could have on long term dietary intake and health. However these concerns were not reflected by the mothers included in our focus groups. Perceptions of commercial baby food were influenced by educational level, parity and previous experience of weaning. It is therefore important for health professionals to be aware of this dichotomy of opinion between professionals and parents and for industry to improve infant foods to be more in line with complementary feeding guidelines.

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