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What shapes parental feeding decisions over the first 18 months of parenting: Insights into drivers towards commercial and home-prepared foods among different socioeconomic groups in the UK

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What shapes parental feeding decisions over the first 18 months of parenting: insights into drivers towards commercial and home-prepared foods among different socioeconomic groups in the UK

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Abstract

Infants born into families experiencing socioeconomic disadvantage follow a high-risk trajectory for obesity and poor health in later life. Differences in early childhood food experiences may be contributing to these inequalities. This study aimed to explore the factors that influence parental decisions on when, how and what food to introduce over the first 18 months of their child's life and identify differences according to families' social position. Particular attention was given to social and environmental determinants within and outside the home. This research utilised a longitudinal qualitative methodology, with interviews and photo-elicitation exercises completed by participants when their children were 4–6; 10–12 and 16–18 months of age. Participants were parents (61 mothers; 1 father), distributed across low, medium and high socioeconomic position (SEP). During analysis, observable differences in factors directing parents to home-prepared or commercial foods were identified. Factors that undermined the provision of home-prepared meals included lack of time after returning to work, insufficient support from partners, uncertainty around infant and young child feeding (defined as the introduction and provision of solids) and an implicit trust in the messaging on branded products. These factors directed parents towards commercial foods and were most persistent among families experiencing socioeconomic disadvantage due to barriers accessing formal childcare, less flexible working conditions and fathers being less involved in infant feeding. To facilitate an enabling environment for healthy infant and young child feeding practices and address dietary inequalities, immediate steps that policy makers and healthcare providers can take include: i) changing the eligibility criteria for shared parental leave, ii) aligning claims on commercial infant food labels with international best practices, and iii) improving access to formal childcare.

Keywords

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Infant feeding, childhood obesity, longitudinal qualitative analysis, policy research

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1. Introduction

Obesity prevalence has doubled in over 70 countries since 1980, with 107.7 million children classified as obese in 2015 (Forouzanfar et al., 2016; Institute for Health Metrics and Evaluation (IHME), 2023; Reilly & Kelly, 2011). In 2019/2020, around a quarter (23%) of 4 – 5 year olds and a third (35%) of 10 – 11 year olds were affected by overweight or obesity in the UK, with children living in poorer neighbourhoods experiencing a significantly greater burden than those from more affluent areas (Office for Health Improvement and Disparities, 2023). Obesity in childhood is a predictor of obesity in adolescence and adulthood, (Simmonds et al., 2016) with evidence also suggesting an association with increased risk of cancer, type 2 diabetes and other physical and psychological disorders (Prospective Studies Collaboration, 2009; Renehan et al., 2008; The Emerging Risk Factors Collaboration, 2011).

Dietary exposures in early life (Shloim et al., 2015) often become established food preferences that persist into adulthood (Birch & Doub, 2014; Liberali et al., 2020; Mikkilä et al., 2005). Findings from the UK's Gemini cohort study, a longitudinal population-based twin study of 4,680 children, found timing of breastfeeding cessation and introduction of solid foods to impact infant growth rates, suggesting wider environmental exposures exert a stronger influence on weight gain in infancy than genetic factors (Johnson et al., 2014). The foods that infants and young children consume are shaped by factors both within and outside the home environment (Birch, 2016; Swinburn et al., 2004). Food advertisements and marketing, product branding, proximity to food retailers and produce price and positioning on supermarket aisles, alongside wider cultural, environmental, social and structural factors all play a role on the foods that infants consume (Anzman et al., 2010; Appleton et al., 2018; Bąbik et al., 2021; Coleman et al., 2022; Ventura & Birch, 2008). Nevertheless,

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it is not known how these factors interact and direct parental feeding decisions, such as when to introduce solid foods or whether home-prepared or commercial foods are more accessible.

While not all home-prepared recipes are healthier than their commercial counterparts (Carstairs et al., 2016), commercial fruit and vegetable pouches and purees often exceed recommended sugar intake levels. Commercial foods are also often promoted as savoury meals for the early stages of introducing solid foods and frequently advertised as 'healthy' and 'natural' (Garcia et al., 2020; Hutchinson et al., 2021; Mooney & Feeney, 2021). Similarly, some 'healthy' snacks contain high free sugar content from ingredients such as fruit juices, purees and concentrates, or high levels of salt (Public Health England, 2019). In addition, many commercial products are ultra processed, with ultra-processed food intake linked to dietary nutrient imbalances, increased energy intake and how taste preferences and dietary habits are developed (Childs & Sibson, 2023).

Evidence indicates that commercial foods for infants can encourage the introduction of solid foods before the recommended age (around six months). Commercial foods also increase consumption of foods or ingredients such as free sugars in an amount or frequency not recommended as part of a healthy diet for this age group (Public Health England, 2019). With this in mind, an infant's diet is likely to be healthier if it included only a limited amount of commercial products. Commercial products, however, can offer parents convenience and reassurance during a very stressful period (Isaacs et al., 2022),

There is strong evidence for an inverse relationship between socioeconomic position (SEP) and early-life nutrition (Cameron et al., 2015), although most studies to date have focused on dietary intake in later childhood and adulthood rather than infancy.

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A 2020 systematic review of 20 studies, examining the association between SEP and dietary practices among children and youth (up to 18 years), found children from lower SEPs to consume less healthy diets when compared to their higher SEP counterparts (Mekonnen et al., 2020). Factors that mediated SEP differences in dietary practices included self-efficacy, food preference and knowledge, availability and accessibility of unhealthy foods at home, household food rules and parental education (Mekonnen et al., 2020). There is a gap, however, in understanding exactly how these factors influence the foods young children consume according to their families' socio-economic position (SEP) and what the impact of very early feeding experiences might be.

The aim of this study was to explore how social and environmental factors determine when, how and what foods young children consume over the first 18 months of life, focusing on differences by families' levels of SEP. As the research was initiated after the start of the Covid-19 pandemic, exploring family food practices within this context was integral to the study. Whilst food shopping practices changed significantly during the first lockdown(Connors et al., 2020; Wentworth, 2020), overall experiences related to food during the pandemic (from April 2020 to October 2021) were "variable, including time, space to spare, health, employment and financial status, existing food habits, geography and trust in food businesses and systems" (*The COVID-19 Consumer Research | Food Standards Agency*, n.d.). Following the COVID-19 pandemic we have seen global economic repercussions, with families across income ranges worse off in real terms than before the pandemic (The Food Foundation & City University of London, 2023). Reduced household income, along with increased energy costs, have seen households increasingly turn to cheaper meal options which typically means purchasing fewer raw ingredients (The Food Foundation & City University of London, 2023). Rises in zero-hour contracts and workers in the gig

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economy (*Zero Hours Contracts Hit Record High | GMB Union*, n.d.) also mean people have less free time to purchase and prepare meals using healthier ingredients.

In light of this situation, this study examined factors that facilitate healthier diets, such as preparing and cooking food from scratch and eating together as a family, (home-prepared). These practices were compared to those that facilitate less healthy diets, such as a reliance on ready meals (commercial) and disjointed mealtimes, all in the context of significant change and constraints on parents' time that accompany having a baby. Longitudinal qualitative research allows for analysis over a period of transitions, as well as at specific points in time which is appropriate for assessing age-related changes in food intake over the first 18 months of life (Tuthill et al., 2020). This paper builds on our previous analysis of the role of commercial, packaged foods and snacks (Isaacs et al., 2022).

2. Methods

2.1 Participant recruitment

Participants were defined as any parent or caregiver in England with an infant aged 4 – 6 months at time of recruitment. The study period was one year, by which time children were 16 – 18 months. The study was commissioned before the Covid-19 pandemic; however, all interviews took place after the pandemic had begun. The first interview was mid-July 2020, thus after the first lockdown and initial issues with food shortages. Recruitment was via social media platforms (e.g., parent and baby Facebook groups), with study details and a survey link provided via an online advertisement. Demographic data was used to calculate SEP (Kininmonth et al., 2020) and approximately 20 participants each from low, medium and high SEPs were recruited. Participants received a gift card worth £40 for phase 1 and £20 each for phases 2 and 3 for their choice of Amazon, Love2Shop or a supermarket.

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2.2 Data collection (interviews and photo-diary)

Interviews were conducted when infants were 4 – 6 months (phase 1: July to November 2020), 10 – 12 months (phase 2: January to May 2021) and 16 – 18 months (phase 3: July to November 2021). These interviews were conducted via phone or videoconferencing owing to the COVID-19 pandemic. Interviews (40 – 70 mins) followed a semi-structured interview guide (see Appendix 1) that aimed to elicit information on the social and environmental factors that influence feeding decisions in the context of life with an infant/ young child. Interviews comprised a semi-structured component and a photo-elicitation component. In the first phase, these interviews took place a week apart; in the second and third phases they were combined into one interview to reduce the time burden on participants. For the photo-elicitation component, participants were asked to spend the week preceding each interview photographing factors both inside and outside of the home environment that influence feeding decisions. The meanings associated with each photograph were then discussed (see Appendix 1). Photo elicitation incorporates photographs into research interviews to capture aspects of people's lives that may not otherwise come to mind during the question-and-answer format of an interview. Thus photo elicitation can allow the participant to reflect in a different way on their lived experience or illustrate their narrative with examples. (Harper, 2002; Meo, 2010). As the participant chooses what to photograph and how, it allows them more control of the narrative (Bignante, 2010). In this study, the photo elicitation component helped participants to reflect on their daily lives and grounded the interviews in the here-and-now of what people were doing. The discussions elicited by the photographs were analysed, rather than the photographs themselves.

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2.3 Data analysis

Analysis of interview transcripts followed an adapted version of Braun and Clarke's five-stage process of reflexive thematic analysis (Braun & Clarke, 2006, 2021). This aimed to enable two individuals to analyse the large amount of data while still retaining the constructivist and reflexive approach advocated by Braun and Clarke. A loose coding framework, allowing for inclusion of new codes, was developed by KN and AI following open-coding of three interview transcripts and three photo-elicitation transcripts (representing one low, medium and high SEP participant). All transcripts were then coded by KN and AI for interviews 1 and 2, and by KN for interview 3, adding new codes where relevant and making notes in a participant sheet to summarise key details for each participant. Codes were consolidated and grouped together to create specific themes and a coding framework. This framework is shown in Table 1.

Table 1. Categories and themes that guided the longitudinal analysis

Category	Themes	Description
Advice and information	Information and guidance on infant/ young child feeding from commercial sources	Information and guidance provided to parents, from commercial products and associated websites and branded information, and perception of that guidance
	Information and guidance on infant/ young child feeding from health professionals	Information and guidance provided to parents from health professionals, health visitors and NHS sources, and perception of that guidance
Family routines	Cost of commercial foods and competing products	The prices of products, as well as parents' perceptions of affordability relative to other products
	Family mealtime routines	The values that parents considered most important when

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		deciding what and how to feed their infant/ young child during family mealtimes
	Work routines	The perception and / or availability of time depending on work patterns
Food environment	Access to childcare	When infants/ young children were not looked after by either one of their parents
	Food available out-of-home (cafes and restaurants)	Food consumed when not in the home environment, such as snacks or picnics made at home for consumption outside, or purchasing food or drink in a café or restaurant for the infant / young child to eat or drink
	Perception of branded products	A belief that infant brands were safe and appropriate
	Product packaging and labelling	The design and information on the front of a product's packaging that make it look appropriate and attractive
	Trust in supermarket baby aisles	A belief that products sold on the aisle where all infant / young child food is grouped must be highly regulated and therefore safe and healthy
Social support and norms	Influence of grandparents	The foods and food routines that grandparents had control over
	Influence of older siblings	The influence that older siblings have on shaping what the infant/ young child ate and drank
	Role of male and female partners	The role male and female partners had in buying, preparing, cooking and giving food to the infant/ young child

The longitudinal analysis was conducted by KN and PC, following the methodology of Grossoehme and Lipstein (Grossoehme & Lipstein, 2016). This approach focused on how the factors changed over time by organising data into matrices, with one matrix per unit of analysis. Specifically, factors were grouped on the Y-axis and time

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(interviews 1, 2 and 3) on the X-axis, providing one column per unit of analysis. The longitudinal analysis focused on how these factors changed or did not change over time, as well as exploring variation by SEP. Field diaries, participant sheets and interview transcripts were reviewed again when specific examples were needed.

During the longitudinal analysis, observable differences in how factors directed parents to either home-prepared or commercial foods were identified, in particular noting variations by SEP. Subsequent analysis thus focused on factors that drove the provision of commercial foods over the first 18 months of child development. During the analysis factors which enable and/or inhibit the preparation of foods at home were also incorporated. Home-prepared foods were defined as meals that involved use of fresh and raw ingredients (including frozen fruits and vegetables), while commercial foods included, but were not limited to, products such as baby pouches, snacks, ready meals, frozen meals, fruit purees and smoothies. All analysis was conducted using NVivo 12.

2.4 Ethics

Ethical approval was sought and obtained from the School of Health and Psychological Sciences research ethics committee at City, University of London. Written informed consent was obtained from all participants at the start of the study and this was re-established verbally at the start of the stage two and three interviews. All identifiable data has been removed and pseudonyms allocated.

3. Results

3.1 Participants

In total, 62 participants took part in interview 1, 58 in interview 2 and 47 in interview 3. Participants were recruited across the socioeconomic spectrum (Table 1). Loss to follow-up was greatest among parents experiencing low SEP (27.8%) compared to

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medium and high SEP (22.7%). Most participants were female (98.4%) and were living in a multi-parent household (93.5%). Over half of participants had at least two children at the time of recruitment (54.8%). As there was only one male participant, the analysis has excluded data from this participant to focus on mothers' experiences. All mothers did, however, discuss perceptions and practices of both parents throughout the study, which have been reported here.

Table 1: Participant characteristics

Participant information	**Interview 1** Number (%)	**Interview 2** Number (%)	**Interview 3** Number (%)
Number of participants	62 (100)	58 (93.5)	47 (75.8)
Socioeconomic position			
Low	18 (29.0)	16 (27.6)	13 (27.7)
Medium	22 (35.5)	20 (34.5)	17 (36.2)
High	22 (35.5)	22 (37.9)	17 (36.2)
Gender			
Male	1 (1.6)	1 (1.7)	0 (0)
Female	61 (98.4)	57 (98.3)	47 (100)
Ethnicity (self-reported)			
White British	43 (69.4)	41 (70.7)	33 (70.2)
White	5 (8.1)	4 (6.9)	3 (6.4)
British	9 (14.5)	9 (15.5)	8 (17.0)
Irish	1 (1.6)	0 (0)	0 (0)
Indian	1 (1.6)	1 (1.7)	0 (0)
Black Caribbean	1 (1.6)	1 (1.7)	1 (2.1)
Norwegian and Greek	1 (1.6)	1 (1.7)	1 (2.1)
South Asian	1 (1.6)	1 (1.7)	1 (2.1)
Older sibling			
Yes	34 (54.8)	32 (55.2)	25 (53.2)
No	28 (45.2)	26 (44.8)	22 (46.7)
Single parent family			
Yes	4 (6.5)	3 (5.2)	2 (4.3)
No	58 (93.5)	55 (94.8)	45 (95.7)

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3.2 4 – 6 months

Figures 1 and 2 describe shifts in infant and young child feeding practices during the period of the study among families of high and low SEP, and the factors that led to home-prepared and commercial foods. During the first six months of the study (when infants were aged six months to one year), there was a strong desire among all families to provide what was best for their infant. This desire was typically defined as a combination of nutritious, safe (in terms of texture and ingredients) and appropriate (in terms of texture, portion size and ingredients) foods, with home-prepared fruits and vegetables given a high priority.

"I didn't want his first food to be shop-bought food, like in tins or coming in jars and stuff. I wanted it to be proper food. Because I think that's when you end up with fussy eaters, maybe, if you don't have a good start with veg and fruit when you're little." Maya, low SEP

There was also desire across the socioeconomic spectrum for mealtimes to be communal and less time-consuming, and for the infant to participate in existing family food practices, which meant eating at the same time as the rest of the family, liking the same foods as parents and older siblings and not being 'fussy' eaters.

"I just wanted him to fit in with us. I don't really want mealtimes to be [baby's name] eats and then we have to eat separately and having to cook two meals." Gillian, high SEP

However, this perceived preference for home-prepared foods was often undermined by uncertainty around the practical elements of infant and young child feeding, which increased the appeal of commercially prepared foods. Uncertainty around when to introduce different foods, ideal consistencies, and how to prepare and store them was partly felt to be driven by a perception that there was insufficient information on feeding practicalities from sources such as the NHS Start 4 Life website (www.nhs.uk/start4life/weaning/).

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"The Heinz one it's such a big pouch of apple and strawberry and I don't know when you're supposed to give that, is that in place of a meal? Or is that a dessert or is it as a snack? It's such a massive amount of fruits, when do you give it? And is it okay for them to have fruit for a meal because they're only babies, do they have to have something savoury?" Regina, high SEP

Parents therefore favoured branded products which provided age recommendations on the front-of-pack (showing when it was suitable to give the food) and simple recipe and preparation suggestions in associated marketing.

"Ella's Kitchen pouches, I've been trying him with because I can see all the ingredients. I don't have the confidence or the time, really, to make stuff myself." Alice, low SEP

The role of brands in providing information was most notable amongst parents who lacked confidence in their own food preparation and cooking skills. The female participants also reported that their partners (almost exclusively male) had less confidence than themselves in knowing what to feed, how to prepare meals or deal with specific dietary demands.

"He doesn't really like the idea of feeding in case he chokes, he doesn't like it at all. But he did feed him porridge one time and it went okay." Leanne, low SEP

Particular infant/ young child brands were mentioned by almost every parent. Together with associated marketing and feeding guidance, these brands were considered to be sources of reliable information and guidance. This trust in brands was associated with the purchasing of these and other commercial foods by both the participants and their partners.

"I quite like the Ella's Kitchen … they do so many different flavours. I wasn't put off by the ingredients as such. I find the organic pouches have got lovely ingredients in them. I don't worry. I don't think, oh, there's too much sugar in this or there's an E number or anything

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like that. I was always quite careful about picking, well let's put it, the fancy pouches that I felt had natural ingredients in." Astrid, high SEP.

Parents also displayed a high degree of trust in products sold on the baby aisle, with an assumption that UK regulations are sufficiently strict, and products sold on the baby aisle must therefore be safe and appropriate for infants.

"I must admit, I don't look at the ingredients, purely because I probably just presume that, as it's in the baby aisle, it's less processed than what the other stuff is." Clara, medium SEP.

For those with less confidence, commercial foods were seen as a safe and suitable option for the infant. Claims such as 'no salt' or 'no nasties' were highly valued and gave the impression that products must be healthy. Parents actively sought products that included phrases such as 'pure', 'simple', 'no hidden ingredients', 'organic', and 'free from sugar, salt, and preservatives' on the front label. This trust in product labels was reinforced by the belief that ingredients were presented clearly and 'honestly' on infant products.

Snacks branded as 'melt-in-the-mouth' were particularly popular, as they were perceived as a method of self-feeding that did not present a choking risk and created limited mess. In these instances, parents chose snacks for developmental benefits, rather than nutritional reasons (Isaacs et al., 2022), and were thus less likely to scrutinise packages for nutritional content. Instead, they focused on positive imagery or text on the product label. For example, claims such as 'encourages self-feeding' gave the impression of helping infants to develop motor skills, which was viewed positively by parents.

"Yes, she can pick up and they go all soft and gummy, so she's able to eat them all by herself. I don't really have to worry about choking, because they soft dissolve over time." Carol, low SEP

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Parents also relied on commercial brands' age recommendations, although this created confusion when products were stated as suitable from four months, rather than the six months recommended by the UK government. When out of the home, packaged baby snacks were popular options across the socioeconomic spectrum as they were portable and convenient. This practice was particularly true during phases of lockdown when businesses were closed, but continued to be the case when businesses were open again. If families were having a treat such as an ice cream, infant snacks were offered as an infant-safe alternative.

Parents also stated the importance of infants enjoying and trying foods. Infants' enjoyment of food was the justification for occasionally providing what they knew were less nutritious foods such as chocolate or ice cream, with parents reporting pleasure in seeing the infant's reaction to these items.

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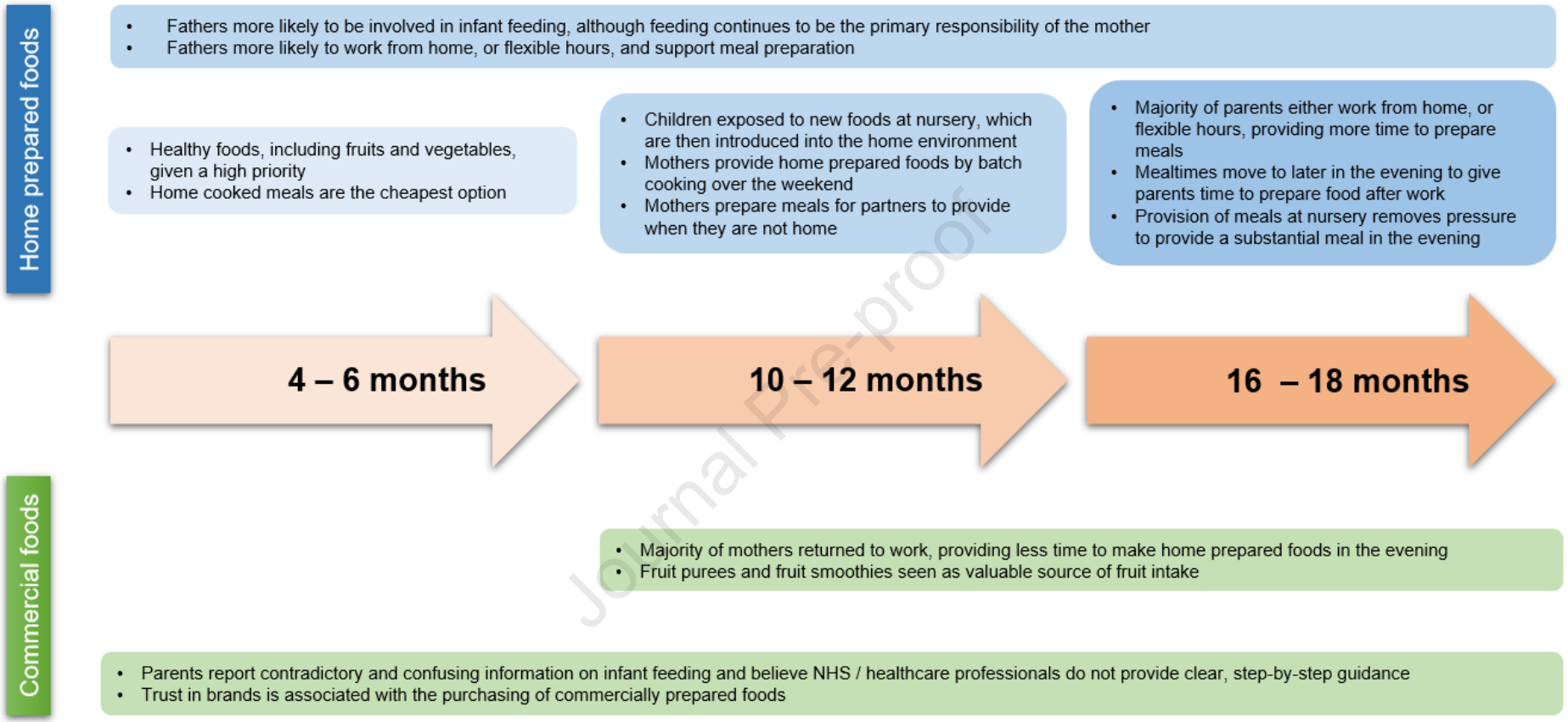

298

299 **Figure 1.** How interacting social and environment factors influenced what foods infants are exposed to during their 19 months in

300 families experiencing greater affluence.

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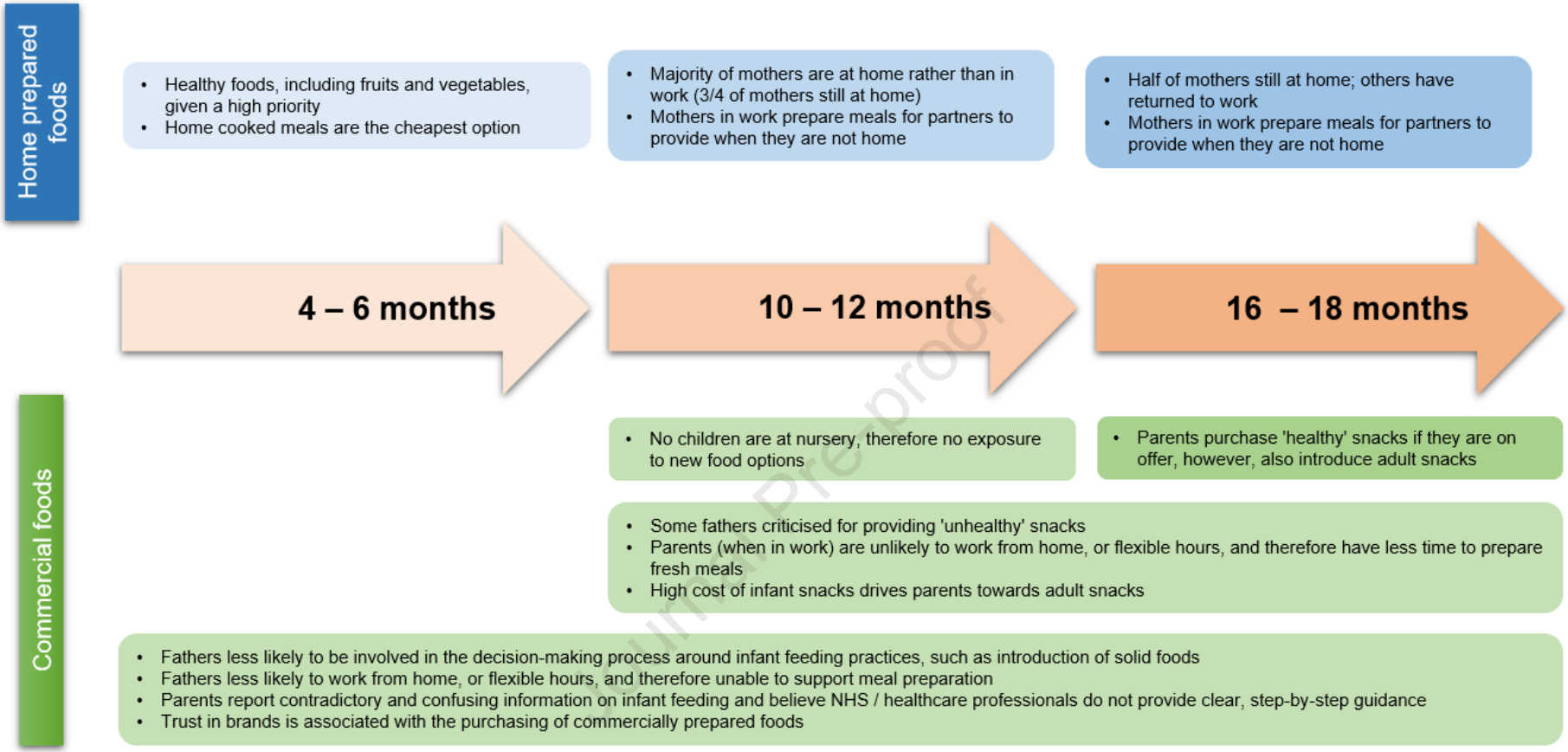

302

303 **Figure 2.** How interacting social and environment factors influenced what foods infants are exposed to during their first 19 months

304 among families experiencing economic disadvantage.

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3.3 10 – 12 months

By 10 – 12 months, most (76%) high SEP mothers and half (52%) of medium SEP mothers had returned to work (3 – 4 days per week). In contrast, only a quarter (25%) of low SEP mothers were working. Even after returning to work, meal planning, preparation and cooking continued to be the primary responsibility of the mother, who was more likely to have higher confidence in what to select and how to prepare food. Mothers returning to work reported difficulty in maintaining a work/ life balance and providing home-prepared meals.

"She's still breast fed… she's never taken a bottle… so I'm the only person that can settle her, so right now it's best if I just stay at home to save the stress." Antonia, low SEP

A number reported batch cooking meals over the weekend for consumption during the week, particularly among families experiencing high SEP (figure 1). Some mothers (across SEP) also reported preparing home-cooked meals for partners to provide to children for times when they would not be home.

"On the days that he looks after her I have to have all three of her meals prepared for him the day before so it is quite hard work. And then I do tend to make a batch of stuff, so if I'm making a pasta or something for her I'll make at least a few days' worth, so she does tend to have the same thing for a few days." Sophie, low SEP

Also observed by 10 – 12 months was an increase in the number of children attending nursery, particularly among families of medium and high SEP and coinciding with mothers' return to work. Infants were often exposed to a variety of new foods at nursery, which parents would then introduce at home. Parents displayed a high level of trust in childcare providers' knowledge of safe and appropriate food for the child's age. The fact that certain

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foods (e.g., toast, cereal) were given by formal childcare provided reassurance they were safe and appropriate for the child's age (figure 1).

"Nursery gave me a lot of confidence …. she's had some toast this morning, and I'm thinking, I never thought to give her toast, because I thought she couldn't eat it. So they actually have given me a lot of inspiration with what to feed her." Alexia, medium SEP

The presence of infant allergies was also associated with provision of home-prepared foods. Some parents avoided packaged foods because they contained allergens and finding suitable options was time-consuming and yielded few affordable results. Conversely, some parents did find packaged foods to be better for managing allergies or intolerances because they provided reassurance of the ingredients on the product label, and thus guaranteed the safety of the product.

"It was knowing that all the ingredients on the back of your label. It's a lot easier just to pick something up and go, I know that's safe, I can give her that." Maya, low SEP

While meal planning, batch cooking and influence of nurseries all supported the provision of home-prepared foods, the role of commercial foods was also more evident by 10 – 12 months. For most parents, this increased reliance on commercial foods coincided with an increasingly relaxed approach to mealtimes and increased provision of snacks and 'treats'. Fruit puree and smoothie pouches were popular because they provided parents with reassurance that the child was consuming fruit and nutrients, especially when many had started to refuse fresh fruits and vegetables. Parents from families of medium and high SEP were more likely to provide these commercial fruit purees and smoothies, often as a dessert following the afternoon or evening meal.

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"That's why I like the pouches as well, because he won't eat that much fruit and vegetables that I put in front of him. If I can still give him a pouch every day then he's getting some sort of … fruits and vegetables." Elizabeth, low SEP.

An increase in provision of 'adult' snacks was also observed at 10 – 12 months, particularly among families experiencing low SEP, although reasons underpinning this practice varied. Firstly, soft crisps and plain biscuits were seen as a way for the infant to be involved in family food culture, as the infant became more aware of what others in the family were eating and wanted to try the same foods as the rest of the family.

"He'll see her eating it, and want the same. If she's got something, he'll very much go over and try and get it and eat it, and she'll share things with him." Hayley, medium SEP

"I think that day I think it was actually [older child] was having some Wotsits and she gave him one and he liked it […] So, we always have [Wotsits] in our cupboard for a Friday." *Jacqui, low SEP*

Secondly, parents in families experiencing low SEP reported buying adult snacks (soft crisps and biscuits) because they were cheaper than infant snacks and were viewed by parents as being similar, in terms of composition, to infant snacks.

"I don't get the baby crisps anymore, because now he can have normal food. So I'll just get the little Mini Cheddars and things, just for a snack as I'm getting his tea ready. So, I'll make sure I've got little nibbles of food that he can feed himself with, like Quavers or something that he just snacks on instead of the baby crisps. Because it was just costing too much, the baby crisps, so we just buy the normal ones that we won't choke on, and things that he can handle." Leanne, low SEP

In families with an older sibling, meal and snack routines had already been formed around the first child, which meant the infant had to fit into established routines. By 10 – 12 months,

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infants were likely to be eating at the same time as their older siblings and more likely to be eating less nutritious snacks when compared to infants without siblings. This practice occurred because less nutritious food options were an established part of the family food environment and infants were seeing their older siblings consume these products.

Also, at 10 – 12 months, around half of parents across the socioeconomic spectrum reported grandparents providing foods they did not want their infants to consume, such as sugary yoghurts and chocolate. Where grandparents gave foods high in sugar that parents were uncomfortable with, it was often a difficult subject to navigate, particularly if the grandparents were on the partner's side of the family. These grandparents were also reported as believing they should be allowed to give grandchildren whatever food they like and providing treats high in sugar was seen as a customary part of spending time with grandchildren.

"You turn your back and she'll [Grandma] have Nutella in one of the kid's mouths guaranteed. Sweets and chocolates coming out of their ears. It doesn't matter how old they are." Jeni, high SEP

When eating in restaurants or cafes, children's menus often contained foods, such as chicken nuggets or other 'beige food', that parents were unhappy with. For this reason, parents reported bringing their own foods, such as pre-packaged pouches and snacks, which were considered convenient to transport and store in a bag. Alternatively, parents would share their own meal with the infant, or regarded foods such as chips or chicken nuggets as being acceptable as an occasional 'treat'. Packaged baby snacks were bought above all because of their convenience, which justified the higher price of these products.

"I bought the Ella's Kitchen Puffs, and they seem to be one of her favourite things. If she drops it on the floor, she literally cries. Again, I've bought them based on ingredients and

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age. They've all got good ingredients in. So they're very handy just to take out. The Kiddylicious wafers are in little individual packs so they're easy to keep in my bag if we go out for a coffee or whatever, they keep her entertained and away from my hot coffee. Otherwise she wants my coffee." Abigail, high SEP

3.4 16 – 18 months

The impacts of work commitments on infant and young child feeding practices continued to be observed at 16 – 18 months, with all parents of medium SEP, 94% of high SEP parents, and half (46%) of the parents experiencing low SEP, returning to work. Mealtimes often moved to later in the evening. Parents of high SEP were more likely to be able to work from home, or to have more flexible working hours, allowing time to provide home-prepared meals in the evening (figure 1). Differences in flexibility of working conditions between parents of high and low SEP were particularly evident due to impacts of the COVID-19 pandemic, with many parents of low SEP employed in sectors where home working was not an option. Most parents reported wanting the family to eat together and to provide the infant/ young child with a balanced diet with plenty of fruit and vegetables, however, this often was not possible due to a lack of time and work commitments.

"She loves the ham and cheese one in the pasta. That is really easy because most evenings I am not here …. My partner, obviously, struggles to cook, so something like that pasta is great for him because he can just put it in the saucepan and for her, that is a meal. She is quite happy to sit and have that as a meal." Jade, low SEP

Half of young children were in formal childcare at least one day a week; however, this was predominantly among families of medium and high SEP. Only 4% of those of a low SEP attended nursery (figure 2). Parents' experiences when their children were 16-18 months were similar to those at 10 – 12 months: the majority were happy with the nursery's food,

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felt that exposure to new foods at nursery influenced the home food environment and felt their children were learning motor skills from other children at the nursery.

"We've noticed the way that she eats, she's obviously been exposed to other children eating. So, I think she's learning things from nursery about not throwing things on the floor, for example. So, it's interesting to see that I think she's picking up on habits from the other children which sometimes is good, sometimes is not so great." Zoe, high SEP

In addition, the knowledge that the child was having ostensibly nutritious meals at nursery took the pressure off parents providing healthy meals at home and meant children often only required a small meal/ snack in the evening, such as fruit and yoghurt. In some cases, the snack was a packaged infant snack due to the small size, convenience and perceived healthiness of these products.

For many families experiencing low SEP, inflexible working conditions and an inability to work from home continued to place increased stress and pressure on parents to find time to make home-prepared meals (figure 2), making commercial foods an appealing and convenient option. This situation resulted in many families, particularly from low SEPs, increasingly relying on foods requiring minimal preparation, such as frozen foods. Even amongst medium and high SEPs, toddler ready meals were bought by numerous parents as a 'back-up' option for days where both parents were working. Commercial foods (pouches and ready meals) were also considered useful for the days when the mother was working and had limited time to cook.

"If [infant] has a convenience meal, then it's usually a night when either I'm out or we've decided to have a takeaway later on in the evening. Or if I'm just short on time, we'll give him his dinner first and do his bedtime routine, and then we'll have our dinner later on."

Gabi, high SEP

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Fathers continued to be reported as having less confidence in what to feed their children and were more likely to provide packaged foods, packaged purees and treat foods, such as chocolate. The provision of treats by fathers was most common among families of low SEPs.

"My partner will only really give [child] something very easy. He would never look in a recipe book or make him a recipe that would always be what I do." Maddy, low SEP

Four mothers (all of high SEP) mentioned their own poor relationship with food as a reason to not restrict the child's diet and use neutral language around food, instead of terming foods as 'good' or 'bad'. Conversely, another four mothers (two high SEP, one medium SEP, one low SEP) cited having an unhealthy relationship with food as a reason for giving only healthy foods and restricting intake of foods high in sugar to avoid the infant getting a 'sweet tooth' or 'becoming a chocoholic' like them. One of the mothers of high SEP in this group chose packaged baby snacks because they made her 'feel good as a mum' as she perceived them as the healthiest option.

"*Because I was overweight as a child … I'm not going to force her to eat lunch or say that we're not doing this till you've eaten … because I just don't want her or my son to have any issues with food*." Julia, high SEP

Finally, by 16 – 18 months, parents had become more relaxed about grandparents' provision of treats. Parents did not want to raise it as a problem and initiate an argument. The influence of older siblings also continued to be reported, with children continuing to be provided with less nutritious snacks or drinks, such as biscuits, crisps, squash or juice, they had requested after seeing them being consumed by their older sibling. These snacks had usually been purchased specifically for the older sibling.

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"Now that he's a little bit older, I think because I'm a little bit more relaxed about the variety of food that he eats and I don't mind him having the odd sweet or chocolate or things like that, I feel like my mum's taken that and run with it. So now, not every time, most times she comes to look after him, she'll bring him some treat of some kind, or something new for him to try" – Sarah, High SEP

4. Discussion

This longitudinal study, which explored infant feeding over the first 18 months of life, identified critical factors that direct parents either towards provision of home-prepared or commercial foods. Mechanisms such as parental leave and access to nursery support parents by facilitating the provision of home-prepared foods (both at home and at nursery) and through exposure to new foods in nursery. These mechanisms are more accessible to higher-income families. Conversely, the high degree of trust that parents hold in the nutritional value of branded infant and toddler products, alongside lacking time after returning to work and lower confidence in what foods and how to offer infants make commercial foods an appealing, convenient and logical option for many parents.

It is important to note that no infants or young children in this study were exposed to only home-prepared or commercial foods. Rather infants and young children ate a combination of both based on various contextual factors. The decision to offer a certain food type over the other is multifaceted and driven by social, cultural, and economic factors that change over time. For example, parents may prioritise commercially available foods due to their convenience and accessibility, whilst incorporating home-prepared foods to ensure a diverse and balanced diet. Conversely, parents can prioritise home-prepared foods while incorporating commercially available foods as treats, a way to provide fruit and vegetables more conveniently, or on occasions when time is limited. Understanding the multiple factors

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493 that shape what infants eat is critical to develop effective interventions that will improve
494 infants' and children's diets.

495 **4.1 Gender roles**

496 As recognised in previous work (Swanson et al., 2017), mothers across the socioeconomic
497 spectrum undertook most of the food-related work and caring for children in their family.
498 The participants of higher SEP families reported that the fathers had greater flexibility and
499 security in their jobs than those living in more disadvantaged families which enabled them
500 to be more involved in food activities with their children. However, these fathers would
501 typically offer 'simple' meals, or meals that had previously been prepared by the mother.

502 Over time, fathers were increasingly viewed as lacking in confidence on what foods to offer,
503 how to prepare foods and how to deal with dietary demands. This gender imbalance is
504 underpinned by complex historical and social factors, including the perception of fathers as
505 breadwinners and mothers as caregivers. Sociologist Arlie Hochschild argues in "The
506 Managed Heart: Commercialization of Human Feeling" (Hochschild, 2003) that Western
507 society views domestic labour and caregiving work as less important than paid work outside
508 the home. This devaluation of domestic labour is in turn associated with societal
509 perceptions of femininity and masculinity. In the context of labour around food, this
510 devaluation reinforces the perception that women should take on the majority of food-
511 related tasks, such as food shopping, meal planning, and cooking, while men are expected
512 to prioritise paid employment and other activities outside the home. The concept of "second
513 shift" describes the additional work that women perform when they return home from their
514 paid jobs, including food preparation and cleaning, and taking care of emotional wellbeing
515 of the family (Hochschild, 2018). This gendered imbalance around food is further
516 exacerbated by structural barriers to taking shared parental leave, with only 2% of eligible

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couples taking shared leave (Department for Business, 2013), a figure likely driven by societal views on caring for young children. Many fathers experiencing low SEP are not even eligible because of being self-employed, on zero-hours contracts or agency workers. For parents qualifying for shared parental leave there are significant financial disincentives, with a basic parental leave payment of £156.66 per week (after the initial six weeks) compared to a national average salary of £470.00 per week (after tax) (*Maternity Pay and Leave: Pay - GOV.UK*, n.d.).

Previous research has shown that shared parental leave results in fathers being more involved in childcare and other household activities. This family context in turn is associated with healthier child weight, improved cognitive development and educational attainment of the child, increased rates of breastfeeding, stronger father-child relationships, reduced likelihood of parental divorce and improved mental health of fathers (Boll et al., 2014; Canaan et al., 2022; Huerta et al., 2014; Nepomnyaschy & Waldfogel, 2007; Olafsson & Steingrimsdottir, 2020; Petts et al., 2020; Rahadian et al., 2020). Policy options to increase the father's role in cooking and preparing meals include greater equity in provision of parental leave, allowing both parents to take equal leave without facing financial disincentives, as observed in Sweden (Regeringskansliet, 2016). To increase fathers' involvement in their infant's care and mealtime activities, fathers from across the socioeconomic spectrum could also be offered tailored meal preparation guidance and training. Evidence to suggests that even relatively brief group intervention programmes can enhance father-child interactions around mealtimes (Doherty et al., 2006). Policy makers could learn from countries such as Sweden, which has one of the most generous and flexible parental leave systems globally, with each parent being eligible for 240 days paid leave up until the child turns 12 years old (no more than 96 days to be used after the child's fourth birthday), at about 80% of their salary (Regeringskansliet, 2016).

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4.2 Advice and information

Across the socioeconomic spectrum mothers reported inconsistent and contradictory information on when to introduce solid foods, how to prepare foods and how to store food. This finding was also observed in a previous systematic review (Harrison et al., 2017) and exploration of feeding practices across five European countries (Germany, Italy, Scotland, Spain and Sweden) (Synnott et al., 2007). The NHS Start 4 Life website (www.nhs.uk/start4life/) and healthcare visitors, in particular, were both perceived as providing inadequate information on infant feeding; while commercial products, websites and weaning guides were valued sources of information for all parents (to note, the Start 4 Life website has undergone changes to branding, structure and content since the research was conducted). It should be noted that criticism towards healthcare visitors in this study may in part be due to impacts of the COVID-19 pandemic, when data collection overlapped with in-person visits being replaced with self-assessment questionnaires. Trust in brands was reported alongside increased purchasing of commercial products, including baby pouches, snacks, ready meals, fruit purees and smoothies. Perceived inconsistent messaging regarding what foods and when to offer foods to infants and young children left mothers choosing the advice that made most sense to them, which was often that provided by friends and family, or in some cases, on commercial products.

Provision of clear and reliable information, from a trusted source, which supports parents in all aspects of infant and young child feeding is required. Policy makers could follow global examples, such as MomConnect, a South African maternal health platform developed by government, healthcare, university and private sector organisations (*MomConnect – National Department of Health*, n.d.). It provides a range of services including automatic registration with a health professional, weekly age-appropriate messaging over the first year of infant development and a virtual help desk (Seebregts et al., 2016). Development of

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similar platforms in other countries should follow WHO guidance on maternal and infant health checks over the first year of life and involve parents to ensure the language, framing and content is appropriate (World Health Organization, 2017).

4.3 Branding, Packaging and Labelling

Parents displayed a high level of trust in branded products on the supermarket infant foods aisle. Many parents assume that if a product was marketed towards infants, it must be sufficiently healthy, nutritious and age appropriate. Front of pack claims, such as ‘pure’, ‘encourages self-feeding’ or ‘no nasties’ were particularly trusted. Parents rarely reviewed the back-of-pack label, relying almost entirely on what was presented on the front label. This practice often resulted in confusion, with front-of-pack information seemingly endorsing the introduction of solid foods at four months of age which contradicts current healthcare advice to introduce at six months of age. Observations from this study indicate that products on supermarket baby aisles may not meet Food and Agriculture Organization (FAO) standards outlined in the Codex Alimentarius, a collection of internationally recognised standards, codes of practice and guidelines aimed at protecting consumer health (Food and Agriculture Organization of the United Nations & World Health Organization, 2023). Specifically, products on UK baby aisles may fall short of the requirement that “nutrition and health claims shall not be permitted for foods for infants and young children except where specifically provided for in relevant Codex standards or national legislation”. While the FAO’s Codex Alimentarius is a voluntary code, countries globally could work towards incorporating these recommendations into national legislation. This action would ensure that front of pack product claims accurately reflect the health benefits and age-appropriateness of the products.

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590 It is clear from the findings presented here that commercial products, including snacks and
591 treats, have an integral role both within and outside the home environment. Parents
592 reported selecting commercial infant snacks due to their perceived developmental benefits,
593 front-of-pack claims (e.g., choking risk-free'), portability and convenience. Given the
594 ubiquitous appeal of commercial baby foods, policy makers should consider action to
595 support reformulation of these products, therefore lowering sugar and fat content and
596 increasing vegetable content (Klerks et al., 2022), and revise exclusion of toddler foods
597 from current UK HFSS restrictions (Muir et al., 2023).

598 **4.4 Time**

599 While mothers with medium and high SEP are most likely to report flexible working hours
600 and options to work from home, findings from the UK and USA suggest flexible working
601 may result in less free time, due to work-family boundaries becoming blurred and increased
602 multi-tasking (Chung & van der Horst, 2020; Schieman et al., 2009). This situation may in
603 part explain why mothers of medium and high SEP who benefit from flexible working hours
604 reported mealtimes moving to later in the evenings and increased reliance on frozen and
605 infant ready meals as their child got older. While rates of home working more than doubled
606 during the COVID-19 pandemic, this trend was not equally distributed across society.
607 Around 50% of workers in managerial and professional jobs reporting working from home
608 all of the time in 2020 (coinciding with interview 1 in this study) compared to 10% of workers
609 in lower paid jobs such as social care, retail and hospitality (Office for National Statistics,
610 2022).

611 Over half of the families experiencing medium and high SEP reported reduced pressure in
612 having to provide a substantial evening meal for their infant due to provision of a meal at
613 nursery. In contrast, only 4% of families experiencing low SEP had infants in formal

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childcare, possibly due to the complex and time-consuming application process for the UK's tax-free childcare programme (IFF Research, 2019). An assessment of nursery food provision was out of scope of this research, so whilst many parents perceived the food given as healthy, this was not possible to objectively measure. The benefits of reduced pressure to have to prepare and cook a main meal for the infants in the evening, however, increased the variety of foods eaten and improved fine-motor skills were only accessible to those who could afford childcare. Options to increase uptake of childcare among families experiencing low SEP include simplifying the application process and increasing eligibility to the UK governments' tax-free childcare programme, therefore ensuring all parents have equitable access to formal childcare. Recent increases in the offer of free childcare hours for working parents and the amount parents will be able to claim from Universal Credit to cover childcare costs are welcome initiatives (*Free Childcare: How We Are Tackling the Cost of Childcare - The Education Hub*, n.d.).

4.5 Limitations

There were several limitations to this study. Although we sought to recruit a socioeconomically diverse sample and were largely successful in doing this, we recruited very few participants who were experiencing significant financial difficulties. Second, the recruitment survey allowed participants to self-identify their ethnicity, which meant we were unable to determine whether those who identified as 'white' or 'British' were 'white British' or included other ethnicities/ backgrounds. The participant sample in this study was, however, relatively ethnically homogenous and so the voices of those from migrant and minority backgrounds are limited. In addition, the sample was relatively homogenous in terms of family makeup and does therefore not necessarily represent the diversity of families living in the UK. Fathers were very difficult to recruit, so this discussion is limited to the mothers reporting on fathers' behaviour.

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The research coincided with the onset of the COVID-19 pandemic and introduction of associated public health restrictions, including lockdowns, closure of eating establishments and reduced access to in-person healthcare. This situation likely influenced parents' infant and young child feeding experiences and the likelihood of working from home (particularly among high SEP participants); however, the study took place after the first lockdown, once food shopping practices were much less disrupted. Assessments of home-prepared versus commercial food purchasing and consumption were based on participants' accounts and not dietary intake records, thus it was not always possible to define specific ingredients of meals. The data collected in this study covered time and effort spent on preparation and cooking, as well as in-depth insights into family food and shopping practices. While the participants were recruited from geographically diverse locations across England, there may be limited generalisability in applying findings to other countries within the UK and internationally.

4.6 Conclusion

Despite a desire to provide infants and young children with healthy home-prepared meals, parents regularly offered commercial foods such as ready meals, snacks, pouches and treats. The factors underpinning infant diets are multi-faceted, complex and influenced by historical social norms, including a persisting gender imbalance in parenting. Nevertheless, findings from this study suggest that there are mechanisms, predominantly available to families of high SEP, which facilitate provision of home-prepared meals, including greater access to shared parental leave and to formal childcare. These environmental enablers are less accessible for families experiencing low SEP. All families, however, are directed towards offering their young children commercial foods because they are palatable, convenient and trustworthy against a backdrop of inconsistent information about what foods and when are best to offer young children. There are immediate actions that can be taken

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664 by governments globally to improve infant and young child diets, including changing the
665 eligibility criteria for accessing shared parental leave and incorporation of FAO guidance on
666 health claims on infant and children food products into national legislation.

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Author Contributions

Kimberley L Neve: Conceptualisation, Interviews, Formal Analysis, Writing, Review & Editing, Project Administration. Paul C Coleman: Formal Analysis, Writing, Review & Editing. Corinna Hawkes: Conceptualisation, Writing, Review & Editing. Christina Vogel: Review & Editing. Anna Isaacs: Conceptualisation, Interviews, Formal Analysis, Writing, Review & Editing.

All authors have approved the final article.

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Ethical statement

The study protocol was approved by the Centre for Food Policy Proportionate Review Ethics committee at City, University of London (ETH1920-1555). Informed consent was obtained from all subjects involved in the study.

Declaration of interests

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689 Christina Vogel has a non-financial research collaboration with a national UK supermarket
690 chain. This relationship is not related to the current study. There are no other conflicts of
691 interest to declare.

692 **Data availability**

693 Qualitative data is available through the UK data service.

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Table 1. Categories and themes that guided the longitudinal analysis

Category	Themes	Description
Advice and information	Information and guidance on infant/ young child feeding from commercial sources	Information and guidance provided to parents, from commercial products and associated websites and branded information, and perception of that guidance
	Information and guidance on infant/ young child feeding from health professionals	Information and guidance provided to parents from health professionals, health visitors and NHS sources, and perception of that guidance
Family routines	Cost of commercial foods and competing products	The prices of products, as well as parents' perceptions of affordability relative to other products
	Family mealtime routines	The values that parents considered most important when deciding what and how to feed their infant/ young child during family mealtimes
	Work routines	The perception and / or availability of time depending on work patterns
Food environment	Access to childcare	When infants/ young children were not looked after by either one of their parents
	Food available out-of-home (cafes and restaurants)	Food consumed when not in the home environment, such as snacks or picnics made at home for consumption outside, or purchasing food or drink in a café or restaurant for the infant / young child to eat or drink
	Perception of branded products	A belief that infant brands were safe and appropriate
	Product packaging and labelling	The design and information on the front of a product's packaging that make it look appropriate and attractive

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	Trust in supermarket baby aisles	A belief that products sold on the aisle where all infant / young child food is grouped must be highly regulated and therefore safe and healthy
Social support and norms	Influence of grandparents	The foods and food routines that grandparents had control over
	Influence of older siblings	The influence that older siblings have on shaping what the infant/ young child ate and drank
	Role of male and female partners	The role male and female partners had in buying, preparing, cooking and giving food to the infant/ young child

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Ethical statement

The study protocol was approved by the Centre for Food Policy Proportionate Review Ethics committee at City, University of London (ETH1920-1555). Informed consent was obtained from all subjects involved in the study.

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Declaration of interests

☒ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

☐The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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