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Snack foods for babies: What is driving the increasing use of processed baby snack foods in the UK?

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ABSTRACT

Snacks play an important role in children's overall diet quality and calorie consumption. The early years (0–2 years old) is a critical time for establishing healthy eating habits as food preferences and eating patterns formed in this period tend to track into later life. This study aimed to identify drivers of using processed baby snack foods. A mixed methods study was conducted in 2022 in the UK with parents and primary caregivers of children aged 6–23 months. It comprised a national online survey (n = 1237) and five focus groups (n = 22) in London. Over 87 % of survey participants gave their babies and toddlers processed baby snack foods on a regular basis as a snack between meals. Nearly 64 % of infants were 6–11 months old when first given these products and 30 % were under 6 months. Under 14 % of participants correctly identified 12 months as the minimum recommended age to introduce snacks, with 72 % believing it to be younger. Focus group findings reinforced the normalisation and pervasiveness of processed baby snack foods. Chosen for their convenience, these products were frequently used in non-nutritive roles, to quieten or entertain young ones. Brand communications and on-pack claims played a key role in guiding parents' product choices. Greater transparency and regulation of on-pack marketing, ensuring messaging aligns with public health advice, could help parents make healthier food choices for their babies and toddlers. Highlighting the risks of habituating babies to snacking in response to non-hunger cues could also support healthier snacking behaviour.

1. Background

Snacks (small eating occasions between main meals) play an important role in children's overall diet quality and total calorie consumption. Estimates from the US, Australia and Europe suggest that the contribution of snacks to children's daily calorie intake ranges from 25 % to 42 %, although data are not available from the UK (O'Kane et al., 2023; Wang et al., 2018; Warde & Yates, 2017). Patterns of snacking in children in the UK and other western countries show fruit and vegetables to be popular, but energy dense snacks, typically high in free sugars, also contribute significantly to overall energy intake (Gage et al., 2021; O'Kane et al., 2023; Shriver et al., 2018). The UK market for processed baby snacks, worth £129 million in 2023, has grown significantly in the past ten years and is predicted to rise further (Mintel, 2024). Between 2013 and 2019 the number of snack food products or 'finger foods' (the term used by manufacturers) marketed for infants and young children (<36 months) rose from 42 to 185 (Garcia et al., 2020).

Infants' and young children's diets in the UK generally do not meet national recommendations, exceeding free sugar and salt limits and overall calorie consumption (Public Health England, 2020). This is problematic for three reasons. Firstly, currently 20 % of children have developed overweight or obesity by the time they start school at 4–5 years old (NHS England Digital, 2023). Secondly, diets high in free sugar increase the risk of dental decay (Chi & Scott, 2019). In England nearly 24 % of children have experienced dental decay by the age of 5 years and for 6–10 year olds, dental decay is the leading cause of hospitalisation (Office for Health Improvement and Disparities, 2023). Thirdly, the early years is a critical time for establishing healthy eating habits as food preferences and eating patterns formed during this period tend to track into later childhood and even adulthood (De Cosmi et al., 2017). Policies

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supporting healthy eating and good oral health during the early years of life are therefore essential.

In England, the National Health Service (NHS) provides best practice guidelines for infant and young children's snacking. For infants the advice is: '*Babies under* 12 months *do not need snacks. If you think your baby is hungry in between meals, offer extra milk feeds instead*' (NHS Digital, 2019a). For young children over 12 months old, three meals are recommended each day and NHS guidance for snacking is: *'They may also need 2 healthy weaning snacks in between'* (NHS Digital, 2019b). Fruit, vegetable sticks, toast, bread or plain yoghurt are provided as examples of healthy snacks.

Processed baby snack foods (defined in this study as shop-bought finger foods labelled as suitable for children under 36 months old, excluding purees and pouches and hereafter referred to as baby snack foods) are readily available in supermarkets and include items such as puffs and wafers. Designed to be easy to grip and melty, these products are marketed to infants from as early as 6 months old and promoted as ideal for developing self-feeding skills. Manufacturers use on-pack claims and imagery highlighting only positive product attributes and thereby often giving the impression that these products are healthier than is the case. Known as the 'health halo effect', there have been calls in the UK and elsewhere to introduce legislation to restrict this practice and ensure greater transparency in labelling (Public Health England, 2019; World Health Organisation, 2022). The mismatch between the marketing messages and public health guidance may be confusing for parents and may be undermining policies to support healthy dietary patterns in infants and young children.

Snacking in infants and young children deserves attention given its contribution to overall diet quality and the importance of the early years for establishing future dietary behaviours (De Cosmi et al., 2017; Paroche et al., 2017; Scaglioni et al., 2018). This study aimed to identify the drivers of giving processed baby snack foods to infants and young children and to provide insight into how parents and primary caregivers choose which products to buy.

2. Methods

This convergent parallel mixed-methods study comprised a quantitative online survey and qualitative in-person focus groups (Moseholm & Fetters, 2017). The online survey was designed to gather quantitative data on usage of baby snack foods to determine how widespread usage of these products is, as well as the age at which they are first introduced to babies' diets. The focus groups were designed to add more nuanced insight into usage behaviour and to explore perceptions and beliefs about these products. Quantitative and qualitative data were collected and analysed separately. In the interpretation and reporting of the results the qualitative and quantitative findings were afforded equal status.

2.1. Online survey

2.1.1. Study design and participants

An online survey was carried out with parents and primary caregivers (hereafter referred to as parents) of infants aged 6–23 months in October and November 2022. The survey was developed based on gaps in existing literature and areas of policy interest, with input from a PPI group of parents of infants and young children. The survey included questions about infant feeding and snacking in general and the use of baby snack foods specifically, covering occasion (i.e. in between meals or as part of a meal), age of introduction and rating of factors influencing infant snack choices. The survey also included an experiment involving different pack labelling of infant foods, which is not reported here. Baby snack foods were described to participants as 'shop-bought savoury or sweet finger foods' and examples such as veggie puffs, fruit puffs and oaty bars were provided to further define the category. The full online survey can be found in Supplementary File1.

Participants were recruited via a market research consultancy (Censuswide) from their online panel using previously collected information. Quotas were set to ensure that the sample was representative for socioeconomic gradient based on occupational level of the household chief income earner (according to UK Census 2020). All participants were aged ≥18 years, living in the UK and could read English. The sample was split evenly between participants with children aged 6–11 months and 12–23 months. No further inclusion or exclusion criteria were imposed. A power calculation for the experiment element of the online survey was conducted to determine a sample size of 1236 participants.

2.1.2. Statistical analysis

IBM SPSS version 26 was used to analyse the data. Descriptive analyses were undertaken and patterns explored.

2.2. Focus group discussions

2.2.1. Study design and participants

Five focus group discussions were held at two children's centres in Southeast London in November and December 2022. These children's centres were chosen as they are used by parents and caregivers from a wide range of socioeconomic and ethnic backgrounds. Participants were recruited via posters in the children's centres and adverts in the children's centres' newsletters inviting parents to join an in-person discussion group about 'marketing and labelling of baby foods'. Participants received an information sheet and provided written informed consent. They completed a short online screening survey to provide contact details and ensure they met the recruitment criteria. All participants were parents of an infant aged 6 to 23-months, living in the UK, aged ≥18 years, and able to speak English. In the week before attending the focus group, participants were asked to share photos of baby food products that caught their interest with the research team. Participants were offered a £25 shopping voucher for taking part.

2.3. Procedure and analysis

A topic guide was created to explore current attitudes towards and usage of processed baby foods, including snacks (Supplementary File 2). The focus groups started with an ice-breaker discussion prompted by photos of interesting or favourite baby food products participants had provided during the week prior to the focus group. Participants were then asked to sort 20 commonly available products into 'everyday' and 'treat' foods, which prompted further discussion of how snacks were being chosen and used. Finally feeding recommendations from the NHS website were discussed including 'Babies under 12 months don't need snacks. If you think your baby is hungry between meals, offer milk feeds instead.'

RC (PhD) moderated the focus groups, with FS (PhD) taking notes. RC has children and FS does not. Both RC and FS are white female health researchers, trained in qualitative methodology, who were previously unknown to participants and described as researchers. Discussions were audio recorded and transcribed. AR (PhD) thematically analysed the transcripts in NVivo 20 (Braun & Clarke, 2006), developing the coding system and the proposed themes. RC reviewed the proposed themes, any differences in researchers' opinions were explored until consensus was reached and the final themes were agreed between AR and RC.

3. Results

3.1. Participant characteristics

3.1.1. Survey

The online survey was completed by 1237 participants. Participant characteristics are shown in Table 1.

Table 1
Online survey and focus group participant characteristics.

Parental characteristics		Online survey and experiment (n = 1237)	Focus groups (n = 22)
		n (%)	n (%)
Relationship to infant	Mother	920 (74.4)	20 (90.9)
	Father	311 (25.1)	2 (9.1)
	Other main caregiver	6 (0.5)	0 (0.0)
Age	18–24 years	146 (11.8)	0 (0.0)
	25–29 years	262 (21.2)	1 (4.5)
	30–34 years	365 (29.5)	8 (36.4)
	35–39 years	274 (22.2)	10 (45.5)
	40–44 years	124 (10.0)	3 (13.6)
	45–59 years	66 (5.3)	0 (0.0)
Ethnic background	White	1021 (82.5)	15 (68.2)
	Asian	93 (7.5)	2 (9.1)
	Black	56 (4.5)	3 (13.6)
	Arab	8 (0.6)	1 (4.5)
	Mixed	57 (4.6)	1 (4.5)
	Prefer not to say	2 (0.2)	0 (0.0)
Education level	Low: None – vocational levels	250 (20.2)	3 (13.6)
	Medium: A levels- HNC, HND	462 (37.3)	2 (9.0)
	High: Bachelor – postgraduate degree	525 (42.4)	17 (77.3)
Household income[a]	Low	236 (19.1)	2 (9.0)
	Medium	653 (52.8)	5 (22.7)
	High	328 (26.5)	15 (68.2)
	Prefer not to say	20 (1.6)	0 (0.0)
Household status	Married/Civil Partnership/Living with partner	995 (80.4)	17 (77.3)
	Single parent	240 (19.4)	5 (22.7)
	Other	2 (0.2)	0 (0.0)
Number of children	1	494 (39.9)	14 (63.6)
	2	499 (40.3)	7 (31.8)
	3 or more	244 (19.7)	1 (4.5)
Infant characteristics			
Sex	Female	619 (50.0)	9 (40.9)
	Male	611 (49.4)	13 (59.1)
	Prefer not to say	7 (0.6)	0 (0.0)
Age	6–11 months	619 (50.0)	15 (68.2)
	12–23 months	618 (50.0)	7 (31.8)

[a] Online survey: low: <25 k pounds per year, medium: 25-55 k pounds per year, high: >55 k pounds per year. Focus groups: low: <30 k pounds per year, medium: 30-60 k pounds per year, high>60 k pounds per year.

3.1.2. Focus groups

An independent sample of 22 parents took part in five focus groups. Each focus group comprised between 3 and 5 participants. Participant characteristics are shown in Table 1. A total of 30 participants completed the focus group screening, 3 of whom did not reply to post-screening communications, and 5 of whom were unable to attend on the day. The focus groups lasted a mean of 74 min (range 68–84). Most participants were mothers (n = 20/22; 90.9 %), and the sample was diverse in terms of socioeconomic background and ethnicity.

Results are structured under two sections, with relevant results from the survey and focus groups presented under each: (1) Giving baby snack foods and (2) Choosing between baby snack food products. Baby snack foods are defined as shop-bought finger foods, labelled for under 36 months old, excluding purees and pouches.

3.2. Giving baby snack foods

3.2.1. Survey

Table 2 shows the percentage of survey participants giving their babies and toddlers baby snack foods.

Overall, 84.2 % of survey participants were currently giving or had regularly given baby snack foods to their child as a snack between meals. Excluding those who had not started weaning, this figure rose to 87.5 %. At the youngest end of the age spectrum (6–7 months) nearly three quarters of participants were giving baby snack foods to their infants as snacks between meals (73.8 %). This figure rose to 90.1 % for those with toddlers aged 12–23 months. The split between savoury and fruit-based snacks was relatively even. Over half of participants (50.6 %) were also giving these products to their babies and toddlers as part of a meal (not tabulated).

Table 2
Survey participants regularly giving their child (now or when younger) baby snack foods between meals, percentage (n).

Current age of baby	6–7 months (n = 210)	8–9 months (n = 227)	10–11 months (n = 182)	12–23 months (n = 618)	Total sample (n = 1237)
Not yet weaned	7.6 % (16)	4.0 % (9)	7.7 % (14)	2.1 % (13)	3.7 % (46)
Any baby snack foods	73.8 % (155)	78.9 % (179)	83 % (151)	90.1 % (557)	84.2 % (1042)
Savoury baby snack foods	59.5 % (125)	64.8 % (147)	65.4 % (119)	78.7 % (477)	70.2 % (868)
Fruit baby snack foods	57.6 % (121)	66.5 % (151)	72.5 % (132)	81.2 % (492)	72.4 % (896)

The majority of babies (64.3 %) were between 6 and 11 months old when first introduced to baby snack foods, although nearly a third of babies (29.6 %) were introduced to these products at 5 months or younger. Only 13.5 % of survey participants correctly identified 12 months as the recommended minimum age for introducing snacks between meals, with 72 % identifying the recommended age as younger than 12 months.

In response to the statement 'if my baby/toddler was crying and I needed to make a phone call, I would give them a snack to keep them quiet', 64.5 % agreed, including 10.3 % strongly and 30.4 % slightly, on

a seven-point Likert scale.

3.2.2. Focus groups

Three themes regarding parental drivers of giving baby snack foods were identified: 'giving baby snack foods is normalised and pervasive'; 'snacks are not just for hunger' and 'baby snack foods are more convenient'.

3.2.2.1. Theme 1: giving baby snack foods is normalised and pervasive. Participants regarded processed baby snacks as a normal part of a baby's/toddler's diet. Most participants talked about giving these products on a regular, often daily basis and always carrying them when out of the home with their child. Those with toddlers at nursery reported that these snacks were often being given when picking up children from nursery. Some participants were also giving them to their babies and toddlers at home as snacks throughout the day or sometimes as part of a meal.

> I'd say oat bars [Piccolo Oaty Bars] I give every day to my toddler (#7)

> In the day I would give him puffs [Ella's Kitchen Strawberry and Banana Puffs] or melty sticks [Organix Melty Sticks] or wafers [Kiddylicious Blueberry Wafers] between meals or sometimes the rice cakes [Organix Banana Rice Cakes] (#18)

> I give her one almost daily only when we're outside (#2)

> We have snacks in the pram, when I don't have a snack I'm cursing myself that I don't have a snack (#22)

> A parent the other week gave us half of his child's snack because [son's name, 23m] came out of nursery screaming, 'Snack, snack, snack.' (#22)

The widespread and frequent usage of these snack products was underpinned by the view that as products designed specifically for babies and toddlers and found in the baby aisle at supermarkets, they were a good choice, safe in terms of minimising risk of choking and certainly preferable to giving general snack products (i.e. those aimed at older children or adults). Indeed, there was a common belief that unlike general snacks, the ingredients and production of baby snack foods would adhere to strict regulations. When alerted to the high sugar content in some of these products, many participants reacted with strong emotions of shock and feeling deceived.

> I think it's also because in the UK there are such strict rules about the baby food which you kind of automatically would think they wouldn't put anything harmful for children (#5)

> If I'd have known that high contents of sugar in, I would have never have given that to him at two months. Never. (#4)

The age at which parents had introduced these products to their infants varied but was typically before 12 months old. For many, the decision was made based on a combination of on-pack labelling and their own assessment as to whether their child was ready and could safely eat these snack products without the risk of choking.

> I don't really look at the ages with my children because, my second child, because I look at the product and think is it a choking hazard? (#7)

A small minority of participants were more questioning about or critical of the normalisation of baby snack foods and tried to limit their usage, favouring fruit and other unprocessed or less processed snacks. Not only did these participants worry about the ingredients and processing of baby snack foods, but they were also concerned that the textures and flavours of these products were habituating their children to crisps, sweets and other processed snack foods containing preservatives and additives.

> It is not even just the sugars, it's the e numbers or the palm oil and stuff in the puff things and how they've done it and how they've hydrolysed it or changed it (#13)

> Do you want to teach your children that every day you need a gummy … the message they are giving is every day you can have candy (#10)

3.2.2.2. Theme 2: snacks are not just for hunger. Most participants acknowledged that baby snack foods were frequently given to distract, entertain, treat or simply out of habit. As such, their usage seemed to be prompted by an activity such as a bus journey, or a mood, rather than at scheduled snack times.

> He has some days gone through three oat bars in a row on a train because you are just out of your wits (#22)

> I think they are a convenience food you give them to keep entertained (#10)

> I find things like this, these two little ones [Kiddylicious Crispy Dippers and Kiddylicious Fruit Wriggles] and these really helpful when you need something to shut them up. I know it sounds awful, but you know like … (#7)

> Also I find that children need to be stimulated so snacks is a distraction or stimulation (#14)

3.2.2.3. Theme 3: baby snack foods are more convenient. One of the key reasons for choosing baby snack foods over fruit, vegetables, yoghurt and other snack foods was their convenience, particularly for use outside of the home. Not only did they have a long shelf-life and were often resealable, so could be stored in a bag, pram or car for whenever parents felt they were needed, but also they tended to be seen as easier to hold and less messy for babies and toddlers to eat.

> So, if you give them a strawberry, they will squash it and get it everywhere if you give them one of these there is not much damage done (#10)

> Do you think about mess as well? That's where my mind goes a lot now is how messy is this thing? Like can I give it to her in a pushchair, it's going to be completely covered all over her or is it going to be easy to clean up (#7)

3.3. Choosing between baby snack food products

3.3.1. Survey

Fig. 1 shows, in rank order, the importance of factors influencing survey participants' choice of snack for their child. Good for (my baby's/toddler's) health and good for (my baby's/toddler's) development were considered to be the most important factors, closely followed by the ingredients claims typically seen on-pack - no additives, contains fruit/vegetables, natural ingredients and no added sugar.

3.3.2. Focus groups

Five themes or factors influencing choice of baby snack foods were developed (themes 4 to 8). A primary theme was 'wanting the best for my baby/toddler'. Two further themes: 'brand communication' and 'on-pack claims', linked to this theme in that they helped participants to determine which products were 'best' for their child. A further two factors: 'peer group influence' and 'price', could influence a purchasing decision, in some instances forcing a compromise to what is best for their child.

3.3.2.1. Theme 4: wanting the best for my baby/toddler. Wanting the best for my baby/toddler appeared to be the starting point in the purchasing

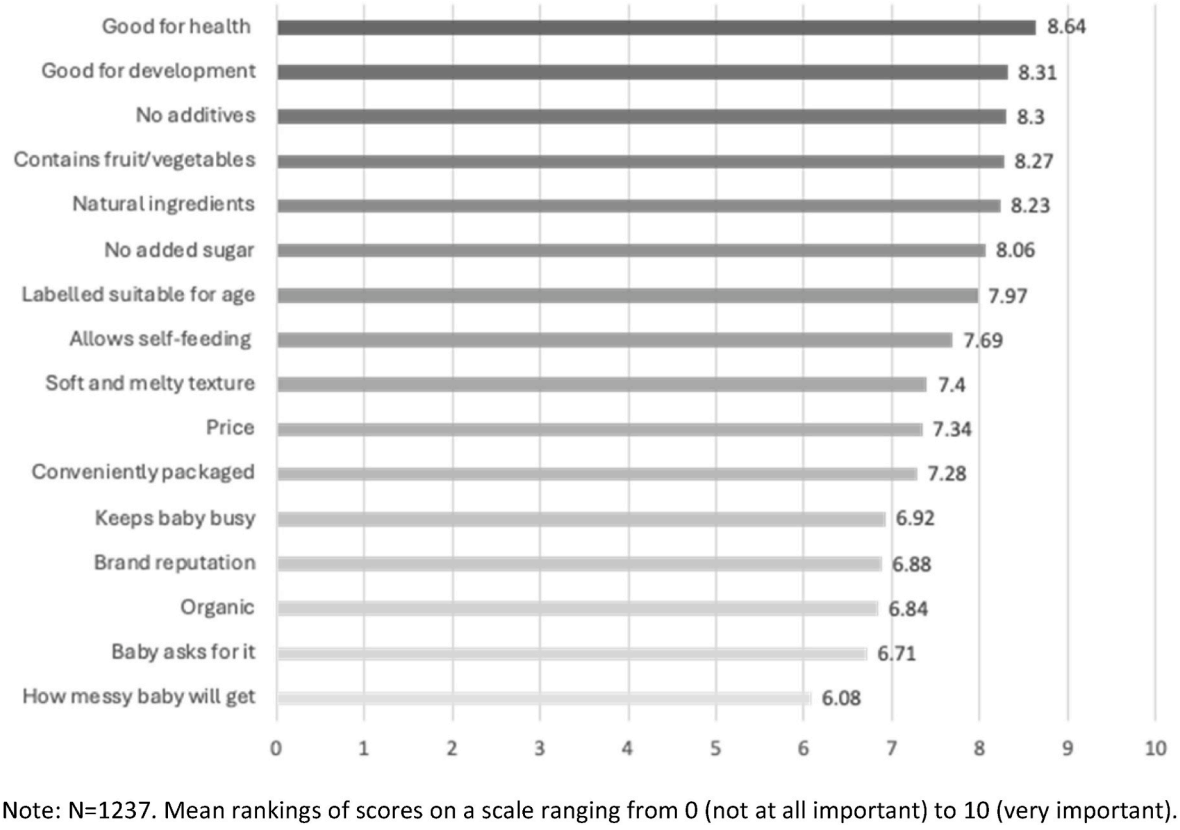

Fig. 1. Survey participants' rating of perceived importance of factors influencing snack choice for their child.
Note: N = 1237. Mean rankings of scores on a scale ranging from 0 (not at all important) to 10 (very important).

decision process for most participants and what drove them initially to buy baby-specific snacks rather than snacks marketed for children or older consumers, which were perceived as containing unsuitable amounts of salt, sugar and additives. Choosing a snack that was appropriate for their child's age and developmental stage was particularly important during weaning, to minimise the risk of choking. Indeed, parents could feel that these snacks were helping in the weaning process by developing self-feeding skills and introducing new flavours and textures.

> Yes, because they [Kiddylicious Blueberry Wafers] melt, they are supposed to be really good first finger foods because they just melt in a second (#20)

> I think oh is it a choking hazard? Can it melt in her mouth? (#7)

> They [Kiddylicious Blueberry Wafers] are marketed to help with baby-led weaning (#18)

Ingredients considered to be good quality and healthy were a priority, although participants with toddlers and older children noted that this waned with age.

> It is interesting isn't it, basically you really monitor what your kid's eating until they're about one and then it's like, oh well, a big birthday cake for their first birthday and from then on, it's like anything goes (#6)

3.3.2.2. Theme 5: brand communication. Brand appeared to be a way in which participants determined product quality and what they thought would be best for their child. Ella's Kitchen and to a lesser extent Little Freddie and Babease were all mentioned as good quality, reliable brands, whereas fewer participants had faith in supermarket own label products. Perceptions of brand quality and attachment to a brand seemed to be based on strong brand stories and brand engagement through social media, websites and email newsletters.

> All I buy is Ella's Kitchen because like [#17] said you know what you are going to buy and they do test their products from what I've heard (#16)

> I really trust this brand [Ella's Kitchen] very much like anything that's in them and I really love the ingredients labels, and I like the little actual picture of the fruit (#22)

Information about weaning and recipe ideas on their websites or social media channels reinforced the perception that these brands were infant feeding experts.

> I like Ella's Kitchen because of the person that makes the products. She herself is a mum, she herself has tested these things on her children. She designs the recipes, like when you can follow her on Instagram and see (#4)

Little Freddy's, I've known them through a nutritionist I follow on Instagram because she has partnered up with Little Freddy's (#15)

> It's [Babease] got Midwife Pip and that again makes you more trust the brand if you know a bit of background information and that's what made me buy it (#15)

3.3.2.3. Theme 6: on-pack claims. On-pack claims such as "100 % natural fruit", "one of your 5 a day" and "no nasties" were another important way in which participants judged which snacks were best for their child. These claims reassured parents that they were giving their child a healthy snack, designed specifically for babies and toddlers. Pictures of fruit, and pack colours were important in conveying impressions of natural goodness. Participants praised labels they perceived as simply presented ingredients lists and claims such as no additives and

no added sugar which implied an openness and honesty, thus reinforcing trust in the brand.

> Because it says one of the five a day as well on there [Kiddylicious fruit wriggles], so you will think, oh okay they are getting one of their five a day as well (#11)

> Looking at the packaging, it already lets me know that it's organic maize. It also lets me know that there's no added sugar in there and the packaging shows that it's designed for children (#4)

> I'm always drawn to Ella's Kitchen so everything he had was pretty much that because it was organic and because the labelling was so simple, it showed the vegetables and showed the percentage and that was it there was nothing else in it (#22)

Age recommendations also reassured some participants that a product was appropriate for their child's developmental stage.

3.3.2.4. Theme 7: peer group influence. Participants reported that other parents and individuals they followed on social media could influence their product choice. Choice was also driven by the toddlers themselves on some occasions.

> In the playground if somebody has got a bag of veggie straws even if you've got 16 other snacks, they will all want veggie straws. So, you end up buying whatever the mums in the playground have (#20)

> Yes I've given them [Kiddylicious Smoothie Melts] to him a few times because he has seen them in the shop and grabbed them and I've been like, 'Yes okay.' But I don't love them (#22)

3.3.2.5. Theme 8: price. Baby/toddler-specific snacks were generally regarded to be expensive and while participants were prepared to pay a premium for them, they were price sensitive. As such, many talked about switching between products or brands according to what was on promotion or special offer and stocking up when prices were lower. Only a small minority claimed to buy the cheapest snacks – typically supermarket own label products.

> So say if there's an Ella's and an Aldi, I'd go for the Aldi just because it's cheaper but I consider it to be the same product (#6)

> I will just look at what deals are on as well (#8)

4. Discussion

This mixed methods study combined survey responses of 1237 parents with focus group findings from an independent sample of 22 parents to provide insight into the drivers of giving, and choosing between, baby snack foods. Integrated results showed that these snacks are widely used in the UK and regarded as a normal part of a baby's/toddler's diet from 6 month old and younger, despite public health recommendations that snacks should only be introduced from 12 months onwards. Chosen for their convenience, baby snack foods are being given not only to satisfy hunger but also to entertain, distract, bribe and treat, and they are often given out of habit. Choice of snack is driven by a desire to do what is best for babies' health and development and this is largely shaped by brand communication and on-pack claims.

The baby snack food or finger food market has grown significantly in the past 10 years and growth is forecast to continue (Garcia et al., 2020; Mintel, 2024). In its 2019 report, Public Health England expressed concern that baby snack foods were being marketed to suggest they are 'an expected and appropriate part of an infant's diet' (Public Health England, 2019). In our study, nearly 88 % of survey participants who had started weaning gave their babies and toddlers baby snack foods in between meals on a regular basis. All but 6 % of these participants had started doing so before their baby was 12 months old, including nearly 30 % whose baby was under 6 months old. In addition, over 50 % of survey participants were also giving baby snack foods as part of a meal, indicating that their usage is deeply embedded in infants' diets. Our focus group findings provided further evidence of baby snack foods being viewed as a normal part of a baby's diet and typically introduced much earlier than the recommended minimum age of 12 months. Social norms have been shown to influence parents' choice of food for their children (Hogreve et al., 2021). In her review of social norms and their influence on eating behaviours, Higgs suggests that individuals are more likely to follow a norm when they are unsure as to what the correct behaviour is and when there is greater shared identity with the norm referent group (Higgs, 2015). This might help to explain why new parents, faced with the unfamiliar task of weaning, so readily embrace these products as a normal part of their baby's diet. And by following this norm, they may be reinforcing their self-identity as parents wanting the best for their baby/toddler (Gerber & Folta, 2022). However, whilst baby snack foods may support self-feeding, they are unlikely to contribute positively to diet quality (Hollinrake et al., 2024). The textures and flavours of these products are more akin to processed snack foods than real food and as such the normalisation of processed baby snacks may have problematic consequences for future taste preferences and eating habits.

A further finding from our study was that processed baby snack foods were frequently being used in response to non-hunger cues - to distract, quieten and entertain as well as out of habit – with nearly two thirds of survey participants agreeing that they would give their baby/toddler a snack to keep them quiet if they needed to make a phone call. Our focus group findings revealed the widespread habit of carrying these snacks when out and about to meet non-hunger related needs, with their ease and convenience making them preferable to using unprocessed foods for these oaccsions. These findings are consistent with other studies that have reported baby snack foods being used to manage behaviour or entertain rather than to provide nourishment (Fisher et al., 2015; Hollinrake et al., 2024; Isaacs et al., 2022; Killion et al., 2023). Given that the early years is a time when eating habits are established, habituating babies to snacking in response to non-hunger cues could lead to unhealthy eating patterns in later childhood and adulthood (De Cosmi et al., 2017). Using food to soothe or manage young children's emotions has been shown to be associated with poor diet quality, specifically lower intake of fruit and vegetables and higher intake of energy dense snacks (Rodenburg et al., 2014). At an even younger age, using food to soothe distressed babies has been shown to predict obesogenic eating behaviours and higher body mass index in later childhood (Jansen et al., 2019). Currently NHS advice around infant snacking implies that snacks are given in response to perceived hunger (NHS Digital, 2019b). The use of baby snack foods for non-nutritive purposes suggests that alerting parents to the risks of habituating babies to snacking in response to non-hunger cues may be helpful to promote healthy snacking behaviour.

Our research supports a previous study in suggesting the legitimisation of baby snack foods as an appropriate element of a baby's diet is being driven by baby food manufacturers. By promoting these 'finger foods' as weaning foods and offering parents advice on weaning and recipe ideas the manufacturers are presenting themselves as baby feeding experts (Isaacs et al., 2022). Many participants in our focus groups talked about the role these snack products played in helping their babies to develop self-feeding skills and exposing them to different tastes and textures. Moreover, many expressed the trust they had in the snack food brands as baby feeding experts by quoting brand stories and what they perceived to be endorsements by nutritionists or relevant healthcare professionals (e.g. midwives). A 2023 industry report advised brands to highlight expert involvement prominently on-pack and in marketing, as the perception that products are 'approved by nutritionists' is considered essential or preferred by 86 % of those buying baby foods (Mintel, 2023). As product endorsement contravenes the code of conduct for many professionals, including Registered Nutritionists in the UK, the perception that products are 'nutritionist approved' warrants

closer attention. The influence of brands is further evidenced by our finding that 72 % of survey participants thought the recommended age for introducing snacks was under 12 months, aligning with brands marketing their snacks for babies from 6 to 7 months old.

Findings from the survey and the focus groups built a consistent picture of the drivers of choice of baby snack foods. Brand communications and on-pack claims appeared to be the primary drivers in that they impact parents' decisions about what is best for their baby's/toddler's health and development. This too has problematic consequences as previous studies have shown that on-pack claims often imply that a product is healthier than it is. A 2019 study of UK foods marketed to children over 12 months old concluded that 41 % of products were less healthy than they claimed to be (García et al., 2019). The authors noted that fruit snacks typically had high sugar content but often used the 'one of your 5 a day' claim, thereby potentially confusing parents. Consistent with other UK studies, our research indicated that parents thought they were making a good choice by giving these snacks to their babies and toddlers, whether this be by providing beneficial nutrients or avoiding harmful ingredients (Hollinrake et al., 2024; Isaacs et al., 2022). The high trust in brands coupled with a belief that the baby food market is tightly regulated may suggest parents are being misled about the composition of products. The spurious nature of the 'health halo' surrounding baby snack foods has been highlighted before, and our study adds further evidence of parents making choices regarding baby snack foods based on misleading information (Public Health England, 2019; World Health Organisation, 2022).

The themes identified in this research around the giving baby snack foods and choosing which brands to buy broadly align with the seven factors deriving from mothers' beliefs and motives around complementary feeding identifies by Graf et al. in the development of their questionnaire on infant feeding processes - behavioural influence (e.g. helps baby fuss less), health promotion (e.g. keeps baby healthy), ingredients (e.g. contains no additives), affordability, sensory appeal, convenience and perceived threats (e.g. choking) (Graf et al., 2023). Our themes illustrate the complex interaction of individual, social and environmental influences on infant snacking behaviour, not least the influence of social norms, brand communications and an 'on the go' lifestyle. A review of studies exploring the determinants of childhood eating behaviours more generally identified individual, interpersonal, community and organisational factors, and concluded that the interaction of these multi-level factors means interventions targeting both individual behaviors and broader systemic influences are needed (Oudat et al., 2025).

5.1. Strengths, limitations and future research

This study combined a large-scale survey with in-depth focus groups, capturing the opinions of a diverse group of parents. However, there were limitations to our study. The survey did not collect data on frequency of giving different types of snack foods including baby snack foods or parents' motives for giving snacks. Such data would have provided valuable insight into the role of baby snack foods within the broader snacking repertoire and the frequency of snacking in response to non-hunger cues. Parents' food choice motives have been shown to be associated with young children's (aged 2–5 years) food preferences (Russell et al., 2014). Exploring the association between parents' snack choice motives and infant snacking behaviour could provide greater insight into the role of infant preferences in snacking choices. In addition, the survey did not explore potential co-variates such as parental and older sibling snacking behaviour and choices, and parent perception of their infant's appetite. The potential down-stream impact of developing both taste preferences for baby snack foods and snacking habits in response to non-hunger cues is concerning. As such further research into the nature of baby snack food drivers is warranted.

A further limitation of this study was that our focus group sample was biased towards more educated and more affluent parents and first time parents. Whilst the two children's centres in Southeast London were chosen for the diversity of the catchment areas, as is often the case with focus groups, it was more highly educated individuals who chose to take part. This may have implications for the generalisability of the findings. It also might explain why our findings regarding price-sensitivity contrasted with those of Gallagher-Squires et al. who reported that price promotions, low-cost and long shelf-lives meant baby snack foods were being used in preference to fresh fruit by parents from lower socioeconomic groups (Gallagher-Squires et al., 2023). Although our participants reported being swayed by promotions, there was little evidence of price being motivation for using baby snack foods over fresh food. The use of focus groups rather than individual interviews for the qualitative element of our study may have inhibited participants in sharing more personal information, such as price sensitivity, that might have resulted in them being judged by their peer group. The majority of focus group participants was first time parents (64 %) which might explain why the role of baby food snacks as a way to integrate infants into family rituals, identified by Isaacs et al., was not a prevalent theme in our research (Isaacs et al., 2022). There is evidence, albeit weak, that siblings have a negative effect on children's healthy eating behaviour (Ragelienė & Grønhøj, 2020). Future research could explore how older siblings might influence infant snacking behaviour.

6. Conclusions

Our study confirms that parents in the UK consider baby snack foods to be a normal part of a baby's/toddler's diet. Designed specifically for babies and toddlers and found in the baby aisle at supermarkets, these products are considered by most parents to be good for babies' health and development of self-feeding skills. Convenient to store and carry, baby snack foods are frequently being used for non-nutritive purposes, to calm or entertain bored or irritable infants. The potential negative consequences of habituating babies to snacking in response to non-hunger cues are significant, and as such raising parental awareness of these risks could support healthier snacking behaviour. Brand communications and on-pack claims are key drivers in the baby snack food purchasing decision and greater transparency and regulation here may help parents make more informed and healthier choices for their babies and toddlers. More broadly, if brands are presenting themselves as baby feeding experts, ensuring that their advice aligns with public health advice and that products are not being presented to parents as 'nutritionist approved' warrants closer attention.

CRediT authorship contribution statement

Alexandra Rhodes: Writing – review & editing, Writing – original draft, Formal analysis. **Clare Llewellyn:** Writing – review & editing, Conceptualization. **Ivonne P.M. Derks:** Writing – review & editing, Formal analysis. **Florence Sheen:** Writing – review & editing, Data curation, Conceptualization. **Andrea D. Smith:** Writing – review & editing. **Alison Fildes:** Writing – review & editing. **Andrew Steptoe:** Writing – review & editing. **Rana Conway:** Writing – review & editing, Supervision, Methodology, Formal analysis, Data curation, Conceptualization.

Consent for publication

Not applicable.

Ethical approval and consent to participate

The Ethical Committee of University College London approved all study procedures (ID: 23547/001). Informed consent was obtained from all participants.

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Declaration of competing interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.appet.2025.108203.

Data availability

Data will be made available on request.

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