

Exploring the role of parental food environment in shaping the eating habits of children aged 3-5 years old: A qualitative study

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ABSTRACT

Introduction: Processed food consumption—including sweet snacks, sugary beverages, salty snacks, fatty foods, and instant noodles—remains prevalent among children under five in Jakarta. The 2023 Indonesian Health Survey and 2022 Indonesian Nutritional Status Survey reported high rates of consumption and a significant number of wasting cases, potentially linked to poor dietary intake. These trends are especially concerning in urban areas like Jakarta, where children are increasingly exposed to a complex food environment filled with highly accessible and aggressively marketed unhealthy foods. Understanding the role of parental food environment is critical to addressing early childhood nutrition challenges. **Methods:** This qualitative study was conducted in two densely populated subdistricts of Central Jakarta. In-depth interviews were carried out with 16 mothers of children under five, while triangulation was achieved through additional interviews with three grandmothers. To enrich the narratives, mothers were asked to recall their children's snack consumption over the past month, and observations of nearby food outlets were also recorded. All data were analysed thematically using NVivo 14. **Results:** Most mothers allowed processed food consumption due to children's preferences or difficulty refusing requests. Local shops and mini markets frequently tempted children with sweets, leading some mothers to attempt restrictions. However, inconsistent enforcement, particularly by fathers and grandmothers, undermined these efforts. Marketing strategies such as mascots, discounts, and repeated exposure further reinforced children's demands. **Conclusion:** Mothers struggled to manage children's snack demands due to high accessibility, but regulating purchases with consistent support from all household caregivers can help reduce unhealthy food consumption.

Keywords: child nutrition, food environment, parental strategies, processed foods, snack consumption

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INTRODUCTION

The 2022 Indonesia Nutrition Status Survey reported that Central Jakarta ranked third, after North Jakarta and Seribu Islands, for wasting among under-fives in Daerah Khusus Ibukota (DKI) Jakarta. Childhood malnutrition is influenced by multiple factors, including dietary patterns and the broader food environment, as reported by the Ministry of Health (2022). The 2023 Indonesia Health Survey indicated that over 50% of children aged 3-4 years frequently consumed processed foods, such as sweet foods, sugary drinks, and over-seasoned foods, while children aged 5-9 years often consumed fatty and instant foods, such as noodles (Ministry of Health, 2023).

Consumption of processed foods, particularly those that are energy-dense but low in essential nutrients, reflects limited dietary diversity among children and is strongly influenced by feeding practices. Such dietary patterns are often a result of the food environment that does not support optimal child nutrition and well-being. This condition can increase the risk of wasting as they contribute to short-term dietary insufficiencies and heightened susceptibility to illnesses.

According to the United Nations Children's Fund (UNICEF) framework, an unhealthy food environment is a key driver of both undernutrition and overnutrition, which are shaped by genetic, behavioural, and environmental factors. In the urban slum areas of Jakarta, mothers often depend on energy-dense, ready-to-eat foods from small shops and street vendors instead of home-cooked meals, thus reinforcing unhealthy dietary habits (Sufyan *et al.*, 2019). Parents, as primary food providers and role models, play an important role in shaping children's eating behaviours, particularly at the ages of 2-5 years (Savage, Fisher & Birch, 2007).

Environmental factors such as home setting, neighbourhood food access, and aggressive food marketing further influence children's food choices.

The objective of this study was to explore parents' experiences regarding the role of food environment in shaping the eating habits of their children aged 3-5 years. Understanding parents' perceptions of their food environment is necessary to develop targeted interventions, policies, and educational programmes that promote better nutrition and healthier dietary practices at the household level.

METHODOLOGY

This study employed a qualitative narrative approach to describe experiences from individuals gathered through a collection of stories (Butina, 2015). Data were primarily collected through in-depth interviews (IDIs), supported by simple tools that helped mothers recall their children's snack consumption and thereby enrich the narratives. Written informed consent was obtained from each participant prior to data collection, which was conducted from February to March 2024.

Participants were mothers of children aged 3-5 years, residing in two conveniently selected subdistricts, Gelora and Kebon Kelapa, in Central Jakarta. They were apparently healthy, lived with the child, and served as the main caregiver responsible for providing food for both the child and the family. Mothers caring for children with comorbidities requiring special diets were excluded. Although fathers were part of the initial inclusion criteria, the study participants were all mothers. Nevertheless, mothers' accounts revealed indirect yet valuable insights into paternal involvement in child feeding and food decisions.

Sixteen mothers were purposively

Table 1. Maximum variation of the study

No	Variations	Groups
1	Child's gender	Boy Girl
2	Number of children	Having one child Having >1 child
3	Type of family	Nuclear Extended
4	Mother's occupation	Working Housewife
5	Family income (indicator by regional minimum wage based on Central Bureau of Statistics, 2023)	<Rp4.901.798 ≥Rp4.901.798
6	Children are in preschool or kindergarten	Yes No
7	The accessibility of food outlets	Walkable (≤800m) Less walkable (>801m)

recruited using maximum variation sampling to reflect diverse caregiving contexts and food environments (Table 1). Recruitment was assisted by *Posyandu* cadres and included ten with 3-year-olds, five with 4-year-olds, and one with a 5-year-old, along with three grandmothers for triangulation. Recruitment ceased once no new insights emerged.

Data were collected using in-depth interviews and observations of some nearby food outlets. Informants were individually interviewed for approximately one hour. All interviews were conducted in the Indonesian language (Bahasa Indonesia) and audiotaped with the informants' permission. Field notes were taken by a trained research assistant. The interviews took place either at the informants' residence or the community hall.

To facilitate mothers' recall during interviews, a simplified food frequency questionnaire and a list of common packaged food products were used as prompts. Informants were asked to state the source of foods consumed by their children. Each food source consumed was recorded in terms of its frequency in the past month. Mothers were also

asked to check pictures of packaged food products that their children had eaten and frequently consumed. There were 96 food item photos categorised into eight food groups: biscuit and bread products, root and tuber products, peanut products, meat products, fish products, milk products, sugar and confectionary products, and beverages.

Alongside interviews, food outlets that were within 500-800 metres of the informants' homes (Le, Stringer & Muhajarine, 2016), including food markets, mini markets, shops, small diners, small shops, mobile street food vendors, and mobile greengrocers, were observed. These complemented the interviews by mapping neighbourhood food environments that may influence the eating habits of children aged 3-5 years.

This study involved two types of analysis: field analysis and desk analysis. In the field, data analysis was conducted concurrently with data collection. This process helped the researchers identify the key ideas from the informants and select additional participants. Recorded IDIs were transcribed verbatim and then transferred to Microsoft Excel for content analysis. To ensure completeness, all

transcripts were carefully reviewed. At the desk, data coding and reduction were performed using NVivo 14 for Windows (QSR International Pty Ltd., Melbourne, Victoria, Australia); data were labelled and findings were organised to identify themes and connections.

Food items and food products were analysed using Microsoft Excel. Data were analysed by calculating how many types of foods and packaged food products were eaten by the children. Average, minimum, and maximum values were determined.

In this study, the home food environment was conceptualised and explored through a set of observable and reported indicators. These included (1) the availability and visibility of processed or packaged snacks within the household, (2) parental purchasing patterns for snack and meal items, (3) household rules and restrictions on snack access or consumption, (4) the placement and accessibility of food items to children (e.g., snacks stored at eye level), (5) the presence of cooking practices versus reliance on prepared foods, and (6) strategies used to introduce food variety at home. These indicators were identified through IDIs, triangulation with grandmothers, and environmental observations around participants' homes and surrounding food outlets. Responses from the food frequency questionnaire also supported the assessment of foods commonly present in and around the home.

The study was fully approved by the Health Research Ethics of the Faculty of Medicine, Universitas Indonesia, on January 12th, 2024 (approval number 69/UN2.F1/ETIK/PPM.00.02/2024).

RESULTS

Socio-demographic characteristics

The mothers' educational backgrounds varied, ranging from elementary and

junior/senior high school to diploma and bachelor's degrees, with the majority having completed high school. Additionally, ten of the mothers were identified as housewives. Most of their children were enrolled in kindergarten. Their access to food outlets was mostly within walking distance, at less than 800 metres from their residence.

Parents' perspective on children's preferred foods

Children consistently expressed strong desires for sugar and confectionery products, such as sweets, ice cream, chocolate, and high-sugar probiotic drinks. There was a mother who seemed to have a lack of awareness about sugar and confectionery products and considered these products to be her children's favourite foods, so she immediately bought them.

"It is just the food he wants because he likes it; it's not a problem, right?" (Mother#3, elementary school graduate, 2 children)

However, some mothers admitted that these snacks were not suitable for their children, but they felt compelled to buy them because of their children's constant complaints. Additionally, they mentioned that they did not buy them often, usually only 2-3 times a week.

"She will cry later if her request, for example, her desire to eat chocolate or ice cream, is not granted". (Mother#5, Junior high school graduate, one child)

"Actually, the foods are not appropriate, ice cream and sweets, but it's okay, just once in a while". (Mother#6, bachelor graduate, 2 children)

How food environment contextualises mothers' food practices

Mothers' food practices based on walkable food environment

Table 2 presents mothers' cooking habits, which persisted despite the

Table 2. Thematic code for mothers' food practices based on walkable food environment

<i>Theme</i>	<i>Practice description</i>
Home cooking	Mothers regularly cooked meals at home, even when food markets or diners were nearby.
Buying cooked meals	Mothers purchased ready-to-eat meals from local diners or vendors (e.g., stewed eggs, fried chicken, vegetable soup).
Snack restriction (purchase)	Mothers intentionally limited how often they bought snacks for their children from nearby shops or vendors.
Snack restriction (consumption)	Mothers actively controlled or reduced their children's intake of unhealthy snacks despite their availability.
Food adaptation	Mothers asked vendors to include vegetables they brought from home in purchased meals.
Limited variety	Mothers frequently bought the same ingredients – even when not fresh—due to familiarity or availability.

proximity of small diners. While mothers valued diner foods for meeting children's needs and often purchased them, they also recognised the temptation posed by nearby shops and vendors selling snacks unlike home-made meals. As a result, some mothers adopted strategies to limit snack purchases, as elaborated in the following section.

Parental control over certain foods

Table 3 presents a range of parental practices in managing children's eating habits. For main meals, some practices reflecting mothers' efforts to instil healthy eating habits included substituting staple foods, adjusting portions, adding home-bought vegetables to purchased meals, and encouraging children to follow family menus. In contrast, grandparents often relied on instant foods and YouTube videos to make feeding easier and faster.

Regarding snacks, children were exposed to at least 17 brands of biscuit/wafer/bread/noodle and 12 brands of sugar and confectionery products. Mothers sought to instil healthier habits by offering home-prepared foods,

limiting snack purchases, and practising moderation by avoiding snacks themselves, while fathers were seen as more permissive. Grandmothers, as key informants for triangulation, reported sometimes restricting children's access to snacks by limiting outdoor play or citing lack of money, yet occasionally providing fruit or juice to support nutrition, even when the children expressed dislike for these options.

Mothers introducing new foods to provide varied foods to children

There were strategies from mothers to introduce new foods; for example, they ate the food first, then the child would imitate the mother, or the mother cut the food into small pieces to avoid the food being redundant.

"If I want to give her food, I'll give her a little taste first... I never give her a lot, because if there's a lot, I think she won't like it; I'm afraid it will be wasted". (Mother# 14, SHS graduated, one child)

"New food must be tried by his parents first so he can see first". (Mother#1,

Table 3. Thematic code from parents and other adults' practices to main meals and snacks for children

<i>Certain foods</i>	<i>Practices from parents</i>	<i>Practices from grandparents</i>
Main meals	<ul style="list-style-type: none"> • Parents found alternative dishes to encourage their child to eat, such as potatoes, vermicelli, and cassava. • Parents added more portions of food while the child watched TV. • Parents brought their own vegetables (e.g., frozen green peas and carrots) to the food seller. • Parents regulated their child to follow the family menu. 	<ul style="list-style-type: none"> • Grandparents used instant food and YouTube videos to make feeding easier. • Grandmothers provided instant food to simplify feeding.
Snacks	<ul style="list-style-type: none"> • Mothers provided snacks at home. • Mothers purchased snacks except for sweetened and salted options. • Mothers limited snack purchases to one type or once a day. • Mothers and fathers tried not to be seen snacking themselves. • Mothers bought snacks only for special events. • Mothers ensured their children ate at home before going out. • Fathers acted permissive by complying with their children's requests. 	<ul style="list-style-type: none"> • Grandparents prevented children from playing outside to avoid snack purchases. • Grandparents claimed they had no money to buy snacks for their grandchildren. • Grandmothers kept buying healthy fruit juice for their grandchildren, even though the children often refused to drink it, as they were determined to ensure the children's well-being and promote healthier eating habits.

elementary graduated, one child)

A mother had to show excitement at introducing new foods to her child, while another preferred to foster independency when introducing new foods.

"I never try to tell her she needs to taste a new food. I let her be curious herself by seeing those foods sold in the environment". (Mother#5, SHS graduated, one child)

Despite this, some mothers still struggled to introduce new foods to their children due to the children's highly selective, picky eating habits and unpredictable mood swings.

"My child doesn't have difficulty eating; just give him what he wants. However, the food is just the same". (Mother#4,

elementary graduated, two children)

Rice, corn, potatoes, and cassava were widely recognised as staple foods consumed by the studied children, indicating their common presence in the diet. The common sources of animal protein included chicken, eggs, and seafood, while freshwater fish and shrimp were less commonly consumed. Tempeh and tofu were notable sources of plant protein. Carrots and spinach were the most recognisable vegetables; familiarity with clear vegetable soup suggested a preference for simpler preparations. The study also indicated that the children consumed a variety of fruits, including watermelon, banana, orange, papaya, mango, melon, snake fruit, grape, dragon fruit, pineapple, pear, and apple.

Food marketing strategies affecting parental food choices for their children

Marketing and advertising have a significant impact on children's food preferences and demands. Parents often found themselves accommodating their children's requests, which are heavily influenced by media and promotional strategies. One mother said her child wanted food they saw on TV. Another mentioned her child wanted ice cream because of a funny mascot that the child always remembered. Another mother gave her child chocolate snacks because they were often on discount.

"I usually give my child chocolate for lunch; I only buy the chocolate when it's on discount. It's not bad". (Mother#6, bachelor graduate, 2 children)

DISCUSSION

The presence of numerous mini markets and small shops influenced mothers' feeding decisions, thus highlighting the complex interaction between parental control and children's preferences. Mothers often tried to balance their children's food requests while maintaining a healthy diet. Although persistent exposure to snacks, such as chocolate, ice cream, chips, and candies, triggered frequent demands from children, many mothers reported regulating the quantity and frequency of snack purchases to manage this pressure. Some avoided bringing their children to the store, limited their children's snack money, or set rules around when certain foods can be eaten. These strategies reflected how mothers actively negotiated between children's food demands and their intentions to promote healthy eating.

During the COVID-19 pandemic, various feeding practices were also observed among parents. A study identified five emerging themes: food

restriction, pressure to eat, giving explanations, child involvement, and modelling (Alfitri, Februhartanty & Nurwidya, 2022). However, these strategies did not necessarily translate into healthier food preferences. A study in Malaysia reported that snacks, including sugar-sweetened beverages, were viewed as more appealing than core food groups, which parents only occasionally offered. Yet, the study did not examine how parents managed the availability of foods and drinks at home (Yang *et al.*, 2022).

Despite occasional challenges, particularly when other caregivers, such as fathers or grandmothers, were more permissive, this effort to regulate purchases represents a practical strategy used by mothers to reduce children's consumption of unhealthy foods. Previous studies indicated that children have clear preferences for sweet foods (Kostecka *et al.*, 2021). One mother reported prohibiting excessive sugary foods but still giving them occasionally due to whining. This reflects the challenge of promoting healthy eating while managing children's immediate satisfaction.

A similar finding was reported in Cambodia. For all types of snack products, mothers stated that the main reason for giving them was that the child "likes it", while others mentioned that the child demanded and cried for it. These patterns did not differ between mothers who worked outside the home and those who did not, nor across socio-economic characteristics, including higher educational attainment (Pries *et al.*, 2016). Such behaviour reflects what is commonly known as *pester power*. This is a direct market effect, whereby children's persistent requests for marketed foods weaken parents' efforts to provide healthier options at home (ASEAN & UNICEF 2024). A related

observation was made in Sydney, where mothers reported that the ease of access to certain foods and drinks influenced their meal choices (Arora *et al.*, 2021). For instance, when children are at a shopping centre, they may request cake or ice cream as snacks, whereas at home, their choices depend on what is available. To address this, educational programmes, including interventions to reduce sugary food consumption, should equip parents with practical strategies, such as introducing new foods and managing snack consumption, to better navigate the influence of the food environment.

Meanwhile, cooking often plays a crucial role in children's food consumption. Cooking behaviour was found when homes were close to food markets; mothers could consistently cook even though small diners were very close to their house. A study highlighted the importance of mothers in preparing food for their families and the role they play in shaping their children's eating habits. It emphasised that mothers are responsible for ensuring that their children receive a balanced diet, which is essential for their growth and development (Ampansirirat *et al.*, 2022). A study conducted in Kendari found that while mothers felt confident in their ability to prepare main meals, they lacked snack preparation skills (Nirmala *et al.*, 2024), and children tended to prefer snacks over main meals.

Although mothers take on the primary role of regulating food choices, findings also suggest that other family members, particularly fathers, play a significant role in shaping children's eating behaviours. From the mothers' perspectives, fathers were often more permissive, frequently giving in to their children's requests for snacks or processed foods. This dynamic sometimes contradicts maternal efforts to enforce consistent food rules. Similar findings

were also revealed in other studies, in which food responsiveness from young children was more associated with fathers (González *et al.*, 2021), as fathers created fun activities (such as cooking) to be responsive to their children's needs (Meah, 2017).

The findings showed that some children ate various types of foods, resulting from the diverse strategies and ways mothers provide feeding to children before the current age. In a prior study, mothers used various strategies to feed their children, including encouragement, facilitating food intake, pressure, acceptance, negotiation, and reasoning. These strategies can be categorised into responsive and non-responsive behaviours, which have different effects on children's eating habits (Bernardo *et al.*, 2022).

A 2023 systematic review highlighted that unhealthy eating habits in children, characterised by high consumption of energy-dense, nutrient-poor foods and low intake of fruits and vegetables, are alarmingly prevalent worldwide and linked to adverse physical and mental health outcomes (Abdoli *et al.*, 2023). Consistent with these global findings, evidence from Southeast Asia showed that various unhealthy food groups were consumed by one-quarter to one-half of adolescents, with a greater proportion consuming instant noodles, sweets, processed meats, and salty snacks compared to adults (Pries, Feeley & Kupka, 2024). Meanwhile, in this study, children aged 3-5 years consumed a wide variety of fruits, up to 12 different types. Parents also often gave their children a variety of vegetables but not enough variety of animal protein. Parents must introduce children to healthy foods like vegetables to promote healthier intake patterns (Savage *et al.*, 2007).

Children aged 3-5 years have a strong preference for sweets. One mother noted that a funny mascot on an ice cream

brand seemed highly attractive to her child, leading to repeated requests for the product. A study from Virginia observed that well-known media characters exerted a greater impact on children's food choices, especially for high-calorie, low-nutrient foods, rather than healthier options like fruits or vegetables (Kraak & Story, 2014). Similarly, another mother took advantage of discounts to repeatedly purchase chocolate for her child, thus creating a dilemma: while excessive sugar consumption should be limited, the discounted prices made these products difficult to resist. This sales strategy has been linked to impulse buying, potentially leading to overconsumption (Furey, 2022).

Recent research has indicated that children are highly susceptible to persuasive food marketing tactics, forming strong emotional connections with unhealthy food brands. Despite some awareness of advertising, they often lack the cognitive defences to critically evaluate marketing messages, leading to increased preferences and consumption of unhealthy foods (Smith, 2021). Therefore, nutrition education for parents should focus on enhancing their knowledge to foster a healthier food environment at home (Februhartanty & Khusun, 2018).

Limitations of study

There might be a bias in recruiting participants who were all mothers without any involvement from fathers. Furthermore, this research focused heavily on the potential function of physical food outlets in the environment around the neighbourhood. As a result, the potential for buying and selling foods or other foodstuffs online was not exploited. The researchers did not continue the investigation because none of the mothers mentioned this during the in-depth interviews.

CONCLUSION

The present study underscored the delicate balance that mothers maintain between parental authority and children's food preferences. While accommodating requests for sweets, mothers also strived to promote healthier diets despite challenges like persistent demands. Cooking played a key role, particularly when mothers had access to food markets, helping ensure a balanced diet essential for children's growth. Mothers used various strategies, from encouragement to negotiation, to introduce varied foods, which is in line with prior studies suggesting the importance of familiarising children with healthy options.

Despite these efforts, there was often a lack of animal protein in the children's diets, and discounts on sugary products posed an additional challenge. The study highlighted children's inability to recognise unhealthy foods or critically interpret food marketing, emphasising the need for more structured and context-specific nutrition education. Interventions should be developed at the household level, where parents are supported in adopting structured parenting practices related to feeding. These include setting clear rules and limits, offering guided food choices, and consistently monitoring children's snack intake. Encouraging mothers and fathers to work together in maintaining these feeding structures is essential for helping children learn and sustain healthy dietary behaviours. Educational programmes should equip parents with practical strategies and enhance their knowledge and parenting practices to foster a healthier and more supportive food environment at home.

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Authors' contributions

Maulianti RRDA, principal investigator, conceptualised and designed the study, conducted the study, data analysis, and interpretation, assisted and prepared the draft of the manuscript, and reviewed the manuscript; Februhartanty J, advised on data analysis and interpretation and reviewed the manuscript; Hanisa N, advised on data analysis and interpretation and reviewed the manuscript.

Conflict of interest

There was no conflict of interest for this study.

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