

Understanding maternal food choice for preschool children across urban–rural settings in Vietnam

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Abstract

Improving diet quality of preschool children is challenging in countries undergoing food environment and nutrition transition. However, few studies have sought to understand how mothers in these countries decide what and how to feed their children. This study aims to explore maternal experiences, perspectives and beliefs when making food choice decisions for preschool children in urban, peri-urban and rural areas in northern Vietnam. Two focus group discussions and 24 in-depth interviews were carried out and analysed using thematic analysis. The results showed that mothers across the urban–rural spectrum shared the intention to feed children safe, nutritious food for better health and weight gain while satisfying child food preferences to improve appetite and eating enjoyment. These food choice intentions were embedded within family food traditions, whereby mothers emphasised nutritious food and adopted strict feeding styles during lunch and dinner but were flexible and accommodating of child preferences during breakfast and side meals. These intentions were also embedded within the physical food environment, which provided a mix of healthy and unhealthy food through informal food retailers. Despite these intentions, mothers faced financial constraints and difficulties in managing children's refusal to chew, changes in eating mood and strong eating temperament. These findings support policies to limit the presence of unhealthy food in informal food retail and encourage meal-specific feeding strategies to help children enjoy nutritious food, transition from soft to textured food and become more cooperative during mealtime.

KEYWORDS

child eating behaviours, child feeding, food environment, maternal food choice, meal occasions, nutrition transition

1 | INTRODUCTION

Good nutrition during early life is vital for healthy growth and development throughout the life course (Adair et al., 2013; Cunningham et al., 2014). However, Vietnam is facing a rapid increase in childhood overweight and obesity with a persistently high level of child stunting. In 2017, overweight and obesity prevalence among children under five reached 5.9% while the prevalence of child stunting was still as high as 20% (Global Nutrition Report, 2020; Phan et al., 2020). Both childhood overweight and child stunting are linked to deficiencies of key micronutrients such as iron, zinc and vitamin A (García et al., 2009; Millward, 2017), which are prevalent among children under five in both urban and rural areas (Le Nguyen et al., 2013).

Improving nutrition during early childhood in Vietnam is both enabled and constrained by the country's rapidly changing food system and food environment. On the one hand, fresh produce has become more available and accessible through sustained growth in agricultural production and ever-expanding food retail (Raneri et al., 2019; Trinh et al., 2020). On the other hand, commercial snacks and sugar-sweetened beverages have also become more accessible due to a rapid increase in manufacturing and marketing of commercial food (Baker & Friel, 2014). Additionally, food prices in Vietnam have increased for most categories of fresh food such as eggs, meat and fruits while sugar has become more affordable over time (Harris et al., 2020). Increased public concern about pesticides and preservatives in fresh produce may also affect caregivers' decisions to purchase nutritious fresh food for their children (Nguyen-Viet et al., 2017). These changes in the food environment, coupled with improved living standards and accelerated urbanisation, may prompt Vietnamese caregivers to prioritise cost, taste and convenience over health and nutrition (Ruben et al., 2020).

Empirical work that examines caregivers' food choice behaviours in countries undergoing a changing food environment like Vietnam is limited, since most studies of maternal food choice were carried out in high-income countries. These studies showed that food choice decision-making involved competing considerations such as child health, child hunger, child preference, monetary constraints and time pressures (Boak et al., 2016; Pescud & Pettigrew, 2014). For example, Australian mothers from low-income households often experienced guilt and felt conflicted when deciding between feeding their children healthy food, keeping them satiated and securing their affections (Pescud & Pettigrew, 2014). Similarly, Dutch mothers recruited from daycare centres also opted for unhealthy food options due to high food costs and time scarcity despite initial intentions to feed children healthy food (Damen et al., 2020). Literature detailing maternal food choice decision-making is far more limited in low- and middle-income countries (LMIC). Studies of food insecure, rural farming households in Ethiopia and Tajikistan suggested that mothers emphasised satiety over nutrition and prioritised feeding children filling, starch-based cereals (Haileselassie et al., 2020; Kukeba et al., 2021), while studies of urban households in Nepal and Sri Lanka showed that mothers across different socio-economic backgrounds often prioritised child preferences over health concerns (Sharma et al., 2019; Sirasa et al., 2020).

Key messages

- Mothers' choice of food and feeding styles varied by meal occasions.
- Mothers desired to feed children safe, nutritious food but also wanted to accommodate child preferences to increase appetite and eating enjoyment.
- Mothers had difficulties in managing children's refusal to chew, changing eating mood and strong eating temperament.
- Meal-specific feeding strategies are needed to help children enjoy nutritious food, transition from soft to textured food and become cooperative during mealtime.

Theoretical models of caregiver's food choice behaviours are also limited. The food choice process model was developed in 1998 to explain how life course events and sociocultural context influence individuals' cognitive food choice process, which involves negotiations between conflicting values such as health, time and cost (Furst et al., 1996). Although this model has been used widely to study food choice behaviors, it is difficult to translate it to practical strategies and messages in nutrition programmes due to its broad scope and general application. In contrast, a recent gastronomic system research model was developed in 2020 as a toolkit to support policies and programmes (Cuevas et al., 2017). It points to the prominent role of cultural food traditions in shaping eating occasions, which in turn determine the type of dishes, food ingredients and consequently diet and nutrition, and thus provides a road map to gather a baseline understanding of local food choice and diet. However, both models target adult behaviour and lack a discussion on caregiver-child relationships. This aspect is elaborated in the children's food choice process model developed in 2012 (Holsten et al., 2012), which also agrees with the gastronomic system research model that diet and food choice behaviors are specific to time and occasions.

This study aims to build on these theoretical models to understand how mothers in Vietnam make food choice decisions for their preschool children across urban-rural settings. Food choice decisions were defined broadly to encompass decisions of what food, how much and how to feed children as all of these decisions were interrelated and consequential to child diet and nutrition. Maternal experiences across the urban-rural spectrum were documented to develop a more comprehensive understanding of their shared experiences and perspectives.

2 | METHODS

2.1 | Study settings and design

This study was part of the CGIAR research programme on agriculture, nutrition and health (A4NH) in Vietnam (de Haan et al., 2020). In each

district of Cau Giay (urban), Dong Anh (peri-urban) and Moc Chau (rural), eight in-depth interviews (IDI) were carried out. Additionally, a focus group discussion (FGD) was held in each of the rural and peri-urban districts. Cau Giay district (22,000 persons/m²) is situated at the centre of the capital city of Hanoi and has recently emerged as a major commercial hub of the city. Dong Anh district (216 persons/m²), located on the outskirts of Hanoi, is an agricultural area characterised by recent development in agriculture, services and tourism. Moc Chau (105 persons/m²) is a mountainous district in Son La province located in the northwestern region of Vietnam, where the primary economic activities are agriculture and livestock production. Unlike Cau Giay where less than 1% of households were living under the poverty line, 3% of the households in Dong Anh and 7% in Moc Chau were living under the poverty line (Huynh et al., 2021). All interviews and discussions took place from June to August 2019.

2.2 | Recruitment and participants selection

Participating mothers were selected from the sampling frame of the A4NH programme, which used probability proportional to size sampling to select 30 hamlets from each district and a random sample of low- and middle-income households in each hamlet. For the current study, the research team contacted all A4NH hamlet coordinators, who were the head of the hamlet responsible for disseminating information and organising communal activities. Two hamlet coordinators in each district were then invited to support the present study. The hamlet coordinators made the first contact with mothers from the sampled households and referred interested mothers to the lead author, who explained the details of study participation in Vietnamese. Oral consent for study participation and permissions for audio recordings were obtained and formally recorded before conducting interviews or discussions. Ethical approval was obtained before the data collection.

2.3 | Data collection

Mothers were asked about their perceptions and experiences in food acquisition, feeding practices, child eating behaviours and child eating routines pertaining to all of their children between 6 months and 6 years of age. In several interviews, participants also recalled and reflected on their experiences feeding their older children when these children were less than 6 years of age. As these past experiences were relevant and meaningful to understanding mothers' food choices, we also incorporated these data into the analysis.

Interviews were conducted at the participants' homes or hamlet's community halls. The research team consisted of the lead author and a research assistant. The lead author conducted the interviews and moderated the discussions while the research assistant took notes and managed audio recordings. The interviews lasted between 30 and 60 minutes and the FGDs lasted approximately 60 minutes each.

After each interview, the lead author wrote memos to reflect on the major or unexpected issues discussed by the participants. The interview guide was adapted based on salient issues brought up in earlier interviews. All audio recordings were transcribed in Vietnamese by the lead author and then translated into English by professional translators.

2.4 | Data analysis

All translated interviews and FGDs were deidentified and imported into MAXQDA, a qualitative data management software (VERBI Software GmbH, 1989). Thematic analysis using the inductive (data-driven) approach was used to identify patterns and nuances based on participants' experiences (Braun & Clarke; Chun Tie et al., 2019). In the first step, three independent coders including the lead author read and coded a set of six transcripts, which included two purposely selected transcripts from each interview site. Through a series of analytical meetings, the three coders discussed their codes and developed the codebook, which included code definitions, inclusion and exclusion criteria and code examples. In the second step, the lead author applied the codebook to all the transcripts while the other two coders applied the codebook to a subset of two transcripts. The inter-rater agreements between the three coders were calculated to identify areas of disagreement and modify code definitions to improve the rigour of the codebook. In the third step, the lead author extracted text segments for each code, wrote code descriptions, identified code relations and made comparisons between urban, peri-urban and rural subgroups. Memos were written throughout to document evolving thoughts and ideas, which were shared with other coders and senior authors to ensure the objectivity of the interpretation. Theme saturation was reached since no new themes were obtained after analysing two FGDs and 18 in-depth interviews.

2.5 | Ethics statement

This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving research study participants were approved by the Emory University Institutional Review Board, United States (IRB00111930) and the Institutional Review Board at Hanoi School of Public Health in Vietnam (019-3251DD-YTCC). Verbal consent from participating mothers was obtained before enrolment. Verbal consent was witnessed and formally audio-recorded.

3 | RESULTS

A total of 24 IDIs and 2 FGDs were carried out. Of all participating mothers, approximately one-third were farmers who cultivated a range of crops for sale and home consumption while others engaged in sales and services such as breakfast vendors and bus drivers or

professional work such as school teachers and government officers. Most mothers, close to 80%, had children between 2 and 6 years of age while the remaining mothers either had children between 6 and 23 months of age or had children in both age groups. Over half reported living with or close to their biological parents or parents-in-law while others resided in different towns from where their parents lived (Supporting Information: Table 1).

The key themes emerging from the interviews were arranged into broad categories of contextual influencers, food choice intentions and food choice constraints (Figure 1). The key themes are summarised in Table 1 and elaborated below with support from short quotations provided in-text or long quotations listed as block quotes.

3.1 | Contextual influencers

3.1.1 | Physical food environment

Mothers' accounts revealed a heterogeneous food environment that provided a range of fresh food and commercial food products in close proximity. Typical sources of fresh food included food markets, backyard gardens, neighbours and family relatives, and to a lesser extent the wild environment such as rivers or wild fields. Fruits were considered more expensive than vegetables and seafood was more expensive than pork. On the other hand, common sources of ready-to-eat food and commercial products such as fresh milk, formula milk, sweets and sodas were supermarkets, home shops, street food vendors and restaurants. Soft drinks were considered affordable while sweets had a range of different products varying in price, quantity and quality. Hard candies or lollipops were sold in a small package at cheap prices but sponge cakes were more expensive.

Food markets and backyard gardens are the most common sources of daily fresh food. All urban participants relied on nearby food markets for fresh food while their rural and peri-urban counterparts grew some or most of their fresh produce. Food markets existed in several forms, including formal supermarkets that sell premium local and imported food products, semi-formal food markets selling more affordable local food products or spontaneous markets ('toad markets') established along small streets selling fresh produce directly from farms.

Backyard gardens were also a convenient, affordable source of food in the peri-urban and rural areas. Leafy green vegetables were commonly grown produce and often available year-round for consumption. Local fruits such as bananas, avocados, pomelos and watermelons were also grown by some families but their availability was often seasonal. To a lesser extent, several families raised poultry was raised for egg and meat while pig and fish were farmed for meat only, although they required a growing period before they are ready for butchering and consumption.

Food sources varied in many aspects such as the ease of acquisition, perceived affordability and perceived safety risks, which provided a range of options to suit different budgets and preferences. For example, several mothers frequented markets closest to their home for better proximity and convenience, several opted for large, commune markets to have a wider variety of choices and some preferred 'toad markets' due to the perceived affordability and safety:

[The toad market] was on my way [to work] and the prices are reasonable, better than here. And because it is fresh from the farm so they are not industrially raised (IDI-05, peri-urban, mother of a 4-year-old)

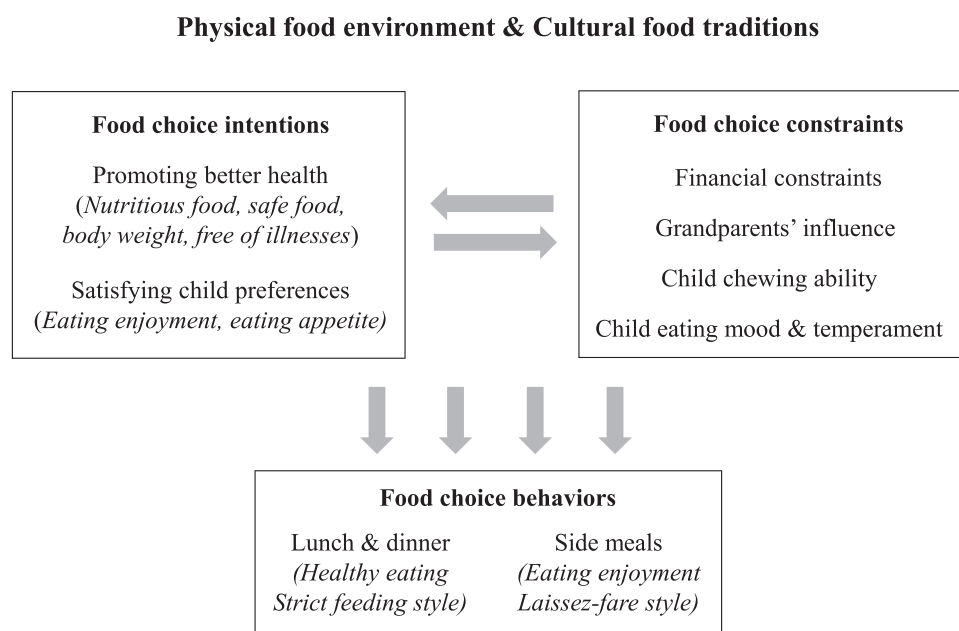


FIGURE 1 Conceptual model of intentions and constraints underlying maternal food choice for children

TABLE 1 Summary of broad categories and key themes

Categories	Themes	Key findings
Contextual influencers	Physical food environment	<p>Food was available in many forms of retail establishments: supermarkets, commune markets, village markets and toad markets (self-organised markets along small streets).</p> <p>Food was also available through other sources: backyard gardens, neighbours and relatives and the wild environment (rivers and wild fields).</p> <p>Food sources varied in key characteristics: price, freshness, safety and hours of operation.</p>
	Cultural food traditions	<p>Family meals (lunch and dinner) were perceived to be important, nutritious, delicious, and the symbol of family union. They consist of rice, animal protein, vegetables and vegetable soup.</p> <p>Breakfasts were usually starch-based while side meals (afternoon snacks and evening desserts) provided a wide selection of fresh fruits, milk, yogurts, crisps, sweets and pastries.</p> <p>Family meals were often the occasions when mothers adopted strict feeding styles to promote nutritious food while side meals were occasions when mothers were flexible and accommodating to child food preferences.</p>
Food choice intentions	Promoting health	<p>Mothers perceived health in terms of weight gain and the absence of illnesses.</p> <p>Mothers wanted to provide nutritious food but showed concern for food high in pesticides, preservatives and additives.</p>
	Satisfying child preference	<p>Mothers expressed an innate desire to see children enjoy their meals and to improve children's appetite and thus satiety.</p> <p>Some mothers devised strategies to satisfy child preferences within a limited budget.</p>
Food choice constraints	Financial constraints	<p>Finance was discussed as a barrier to purchasing meat and fruits by some rural participants and to purchasing premium formula milk by some peri-urban and urban participants.</p> <p>Growing food for home consumption helped buffer financial constraints among rural participants.</p>
	Grandparents' influence	<p>Grandparents provided support in meal preparation and childcare.</p> <p>However, some mothers disagreed with grandparents about disciplining eating behaviours in children.</p> <p>Grandparent's eating preferences also influenced mothers' food purchase for children.</p>
	Child chewing difficulty	<p>Refusing to chew and having difficulty in chewing textured food was perceived as a common problem in children.</p> <p>Prolonged feeding of soft food such as porridge, meat broth, and ground meat was common in children over 2 years of age.</p>
	Child eating mood and temperament	<p>Children's mood for eating changed from day to day.</p> <p>Children also varied widely in how they asserted their food preference.</p>

3.1.2 | Cultural food traditions

Mothers frequently discussed their choice of food and child feeding style in the context of cultural food traditions, including routines, social values and types of dishes associated with each meal occasion.

Dinner and lunch

Dinner was often prepared at home and referred to as 'family meals.' Home-cooked meals with the presence of all family members were emphasised as an important tradition by most mothers, and often

perceived to be more affordable, nutritious and delicious than eating out. As a result, mothers prioritised time to prepare meals for the family with help from other family members such as husbands, parents and in-laws. Eating out was reported as a rare occurrence. Some mothers also referred to home-cooked meals as a symbol of family union:

In my opinion, having delicious food at home makes people want to come home, so I want to make sure that our home food is delicious and enough for

everybody (DA-02, peri-urban, mother of a 2-year-old and 5-year-old)

Lunch routines varied between families due to the differences in working hours and childcare arrangements. Some families took a midday break from work to come home for a home-cooked lunch while other families had lunch at work. Nevertheless, a proper lunch and dinner were usually perceived as having all four dishes: rice, animal protein, vegetables and vegetable soup. Vegetable soup was particularly emphasised as a required menu item:

Vegetable soup must be available every day. If there is no vegetable soup, no one will eat. Everyone likes eating vegetable soup (IDI-15, rural, mother of a 2-year-old).

Due to this meal structure, mothers primarily gave children rice, vegetables and meat for lunch and dinner and usually adopted various strategies, rules and tactics to pressure or encourage their children to eat sufficient food. Some mothers also attempted to accommodate their children's preferences by modifying their cooking, such as deep-frying fish 'until it is crispy' instead of making braised fish, or changing food options, such as making prawn dishes instead of pork dishes. Some established eating rules such as no snacks before dinner or finishing the bowls before leaving the table, while others used tactics such as sweet talk, letting children watch television, raising their voice at the children or hiding pieces of vegetables or meat in the rice bowl:

I also have to scream and scold him at length before he eats some food. And I have to cut pork and beef into tiny pieces and mix in his rice so he doesn't know, then he will eat (IDI-04, peri-urban, mother of a 4-year-old)

Breakfast and side meals

Unlike lunch and dinner, during which the menu was well structured and consumption was enforced, breakfast and side meals were more flexible and diverse. Children's breakfasts typically involved milk and a range of starch-based dishes such as porridge, sticky rice, noodles or Vietnamese baguettes, which could be cooked at home, served by breakfast vendors in the neighbourhood, or provided at daycares. During side meals such as afternoon snacks or evening desserts, there was a large range of fresh and commercial food options such as milk, fruits, fruit juice, yoghurt, sponge cakes, candies, crisps, soft drinks and ice-creams. While breakfasts are standard meals of the day, side meals were optional and dependent on family income and family daily routines.

Fruits were often served during side meals and, unlike meat and vegetables, were usually considered nonessential and supplementary. For many rural and peri-urban families, fruits were typically served one to three times a week while most urban mothers attempted to provide fruits to their children daily:

Fruits are an only side dish, just for dessert, but we cannot live without main dishes of rice, meat, vegetables. So, we still need fruits but it is just for the sake of having enough nutrients, for the sake of this and that (FDG26, rural, mother of a 4-year-old)

During side meals, mothers were more flexible and accommodating to their children's preferences. Mothers perceived side meals as occasions to keep children satiated between the main meals and to satisfy children's cravings. As a result, some mothers prioritised cookies and cakes over fruits and some let their children choose what to eat on these occasions:

After the dinner, I let them eat cookies, cakes, candies, milk, ice-cream. Usually I will give them what they like (IDI-11, urban, mother of a 4-year-old).

3.2 | Maternal food choice intentions

3.2.1 | Promoting better health

Promoting nutritious, safe food

All mothers emphasised feeding children safe, nutritious food to prevent illnesses and promote weight gain. Mothers commonly believed that vegetables, meat and milk are nutritious, but had different thoughts about fruits, sweets and sugar-sweetened beverages. While fruits were generally considered nutritious, vitamin-rich, and important for preventing constipation, some fruits were thought to upset an empty stomach and to be avoided after naptime or before dinner. Similarly, while some mothers restricted cookies and cakes due to the concern of added sugars, other mothers encouraged their children to consume biscuits and sponge cakes, believing that they are a good source of nutrients. Likewise, some mothers believed that sugar-sweetened beverages were unhealthy for children due to their high sugar content, but other mothers were unsure about their nutritional values:

If he likes drinking [soft drinks], we have to buy it for him. I myself do not want to let him drink it, perhaps they are not so healthy (IDI-18, rural, mother of a 3-year-old)

Most mothers were greatly concerned about food safety, which was commonly discussed in relation to the use of additives in commercial products like sweets and crisps or the use of pesticides, growth hormones and preservatives in meat, fruits and vegetables. Low-priced commercial products such as lollipops or soft drinks sold by street vendors were perceived as carrying higher food safety risks than premium candies sold in supermarkets. Fresh produce that was industrially farmed, sold by middlemen, and sold off-season was also

believed to have a higher content of harmful chemicals than seasonal produce grown by in small-scale farms and sold directly by farmers. Despite these concerns, few mothers reported limiting their purchase of meat or vegetables unless during times of a foodborne disease outbreak; rather they avoided high-risk fresh produce, such as watermelons or tomatoes, diversified their sources of food or obtained food directly from farmers.

Promoting weight gain

According to mothers, body size was an indicator of healthy growth in children and having large children was socially desirable; as one mother commented, 'Of course everybody wants their children to be big and healthy'. Body size was often discussed using language related to weight such as skinny, thin and chubby and was judged by comparing their children to other children including cousins, classmates and neighbours. When a child was perceived to be thin, mothers often became worried and attempted to feed their children more formula milk or starchy food. For example, a breastfed mother wanted to supplement her 9-month-old boy with formula milk to support weight gain, '[He] is a bit under-weight, so I plan to buy formula milk for him'. Another mother described giving her 2-year-old daughter more cookies because she wanted her to gain weight: 'I give her more cookies because I think cookies have some starch for her. I think she is still thin'. Mothers of thin children also encouraged or pressured their children to eat more while mothers of normal weight children were more relaxed:

FGD-29: Your boy's weight is within the growth standards, so you don't have to pressure him too much. It's only the skinny ones that are worrying.
FGD-32: Yes, that's why it's up to him to decide how much he eats (FGD-29, mother of a 3-year old & FGD-32, mother of a 2-year-old, peri-urban)

Preventing illnesses

Many mothers described health as the absence of sickness. As a result, falling sick often signalled mothers to re-evaluate health risks. For example, mothers' decisions to avoid fruits that carry high risk of chemical contamination, such as apples and watermelons, depended on their experiences of catching foodborne illnesses. Similarly, despite the common beliefs that sweets could lead to tooth decay and ice cream could cause a sore throat, some mothers did not restrict sweets and ice cream because their children had never experienced these symptoms:

FGD-28: Thank goodness my boy tried ice-cream several times but he was fine, so I don't worry about it.
FGD-29: Probably my boy has a weak throat, I don't dare let him have [ice-cream] (FGD-28, mother of a 4-year-old & FGD-29, mother of a 3-year-old, peri-urban)

3.2.2 | Satisfying child preferences

Mothers also expressed intentions to satisfy their children's food preferences to ensure that their children enjoyed and consumed the meal. Children nevertheless differed widely in their food and taste preferences. Some refused meat but enjoyed fruits, some preferred meat to vegetables, and some showed little interest in food other than milk. Many enjoyed sweet tastes but some did not like 'too much sweet stuff' and did not enjoy sugary cookies. Some children craved fast food while others preferred home-cooked meals over fast food or restaurant food.

Ensuring eating enjoyment

'What I want for my child is to be happy and healthy', a mother smiled as she explained why she often accommodated food requests from her 2- and 4-year old boys despite her precarious financial situation. Her quote reflects mothers' innate motivation to bring joy to children by satisfying their wants. This motivation was also reflected in other mothers' emphasis on eating enjoyment when buying food for children, as one mother commented, 'He won't enjoy eating if I force him to eat because it will be tasteless'. When mothers were asked what they would buy if they had surplus income, many indicated intentions to buy 'delicious', 'rarely-seen', or 'luxury' food for children to try the taste.

In families with limited financial resources, mothers also attempted to satisfy their children's preferences by working extra hours to buy snacks or buying lower quality and cheaper snacks:

If I have money I will buy Chocopie [a popular snack cake], but I don't have money so I bought cheaper biscuits instead (IDI-17, rural, mothers of a 3-year-old).

Increasing eating appetite

Satisfying child preferences might also be a practical means to get children to consume their meals. This approach was rooted in mothers' beliefs that children only ate what they liked. As a result, mothers often changed the menu to improve children's appetite or experimented with different dishes to discover the food that children liked:

Even if I give him nutritious food, it won't help if he doesn't eat it. I can only resolve this issue by buying food to cook and trying to change the menu to suit his taste buds (DA-03, peri-urban, mother of a 5-year-old)

Mothers' desire to get children to finish their food could be due to their emphasis on keeping children well-fed and satiated:

I have to ensure my kids are fully stuffed whereas sometimes I myself only have dinner at 10PM. I can only be at ease if my kids are full (FGD-29, peri-urban, mother of a 3-year-old)

3.3 | Maternal food choice constraints

3.3.1 | Financial constraints

Lack of finance was a prominent concern among rural and peri-urban mothers. Most mothers were not able to acquire fruits daily both due to the seasonality of fruits and their high price. In addition, a few mothers could not afford to have meat every day, usually due to housing debt or competing expenses such as utility bills or school fees. To these mothers, having farming assets such as backyards, livestock or fish ponds provided an important alternative. For example, one mother explained why she worked full time and also continued farming:

Everyone says what's the point to do farming if you have a job. But we have many children and our finances are tight, there are so many expenses that we cannot handle all. Therefore, whatever I can do I will do it (IDI05, peri-urban, mother of a 4-year-old)

In the urban and peri-urban areas, meat, fruits, vegetables and fresh milk were all considered affordable but some food such as seafood, imported fruits or premium formula milk were considered expensive:

I try to buy PediaSure formula milk for undernourished children for him to drink, but that one is quite pricy, so I quite hesitate (IDI-34, urban, mother of a 5-year-old)

3.3.2 | Grandparents' influence

Over half of the mothers reported living with or close to their biological parents or parents-in-law, who often helped with meal preparation and childcare. However, many mothers disagreed with their parents about disciplining children when they refused to eat or pestered for snacks. Additionally, grandparents' eating preferences might also influence mothers' food purchases for children. A mother noted that her father, who was in charge of food purchase and preparation, rarely bought fruits and usually served a limited variety of dishes for dinner that children may not like to eat. She often prepared extra food for the children while trying not to upset her father:

My father will scold me if I buy too many fruits [to keep in the fridge] ... He prefers fresh food so I try not buying too many (IDI-34, urban, mother of a 5-year-old)

3.3.3 | Child chewing ability

Many children were perceived as not liking to chew or having difficulty in chewing, a trait mothers associated with food refusal and picky eating. One mother was frustrated that her 4-year-old boy could not tear apart big pieces of meat and often refused to eat meat

or vegetables. Other mothers also shared similar sentiments, reporting that their children either swallowed food without chewing or held food in their mouths until the food became watery. As a result, many mothers made soft food for children by making broth or porridge, grinding, chopping or stewing while avoiding feeding children rice or whole pieces of meat or vegetables. This practice was also common among mothers of children aged two or beyond:

I usually buy meats or bones to make broth and boil them with vegetables. She is very lazy at eating full pieces of meat, [she] does not like chewing, so I always have to cook meat to make broth and mostly use the broth (FGD26, rural, mother of a 4-year-old)

3.3.4 | Child eating mood and temperament

In our framework, child eating mood refers to children's temporary, context-specific attitudes and feelings towards food and eating. In contrast, child eating temperament could be understood as children's habitual emotions and reactions towards food and eating. According to mothers, it is how strongly their children express their preferences, and not the preference itself, that prompted mothers to change their food choice for children. The manifestation of child temperament such as crying, throwing tantrums or pestering could lead to mealtime struggles:

She eats whatever dishes I make, but never touches any vegetables. If I insist that she drinks a bowl of vegetable soup she will cry for 15 min (FGD27, peri-urban, mother of a 2-year-old)

Eating temperament explains why child eating behaviours changed as children grew older; as a mother noted, 'Now it's not so bad but when he was two, he would whine [for snacks] whenever I brought him out'. On the other hand, child eating mood explains why child food preference varied from day to day. Several mothers noted that their children only had fruits or fruit juice when they were 'in the mood'. Eating mood could be influenced by external distractions such as playing:

Today they craved for fish so I bought fish, but many times I bought fish and they did not eat. Many times, they are too interested in playing that they only eat plain rice with vegetable soup and then continue playing (IDI-14, rural, mother of a 2-year-old and a 6-year-old)

4 | DISCUSSION

This study reveals important insights into mothers' intentions and constraints when making food choice decisions for their preschool children. Across the urban-rural spectrum, maternal food choice

decisions were embedded within the physical food environment and cultural food traditions. Such context facilitated mothers' dual intentions in feeding children nutritious food to promote health and weight gain and satisfying child preferences to help them enjoy their meals. However, many mothers were unable to realise these intentions due to various constraints. Some had difficulties in managing children's refusal to chew, changing eating mood and strong eating temperament. Some had disagreements with grandparents about feeding practices and, specific to rural and peri-urban areas, some faced financial constraints due to limited income and competing spending. As a result, mothers had to balance these constraints against their intentions to make decisions what and how to feed children.

A novel finding in our study is the variation in maternal choice of food and feeding styles by meal occasions. Quite often, mothers promoted nutritious fresh food and adopted a strict feeding style during lunch and dinner but were flexible and accommodating to children's preferences with a mix of fresh and packaged food during side meals. In other words, although cooking food separately for children was common in our study setting, food choices for children did not deviate far from, or at least not contradict, family meal routines. This finding emphasises the notion that an important aspect of child feeding is the gradual incorporation of family diet and eating routines (A. C. Klassen et al., 2019) and that eating behaviours are embedded within family food traditions (Cuevas et al., 2017). In Vietnam, lunch and dinner are home-cooked and involve a nutritious combination of rice, vegetables and protein dishes. Mothers in our study highly regarded the tradition of home-cooked meals and did not consider time as a barrier to meal preparation, which differs from earlier studies (Ann C. Klassen et al., 2019; Sharma et al., 2019). In contrast to lunch and dinner, side meals like afternoon snacks and evening desserts were occasions for children to enjoy the food they like, which ranged from fruits, and yoghurts to cookies and ice-creams. Some mothers preferred giving cookies rather than fruits due to the belief that cookies can help fill stomachs and that fruits can upset an empty stomach. These perceptions, combined with the high cost and seasonality of fruits, might explain the under-consumption of fruits among Vietnamese children and general adults (Bui et al., 2016; Huynh et al., 2021).

Our characterisation of meal-specific food choices and feeding styles has important implications for nutrition programming. Broadly, changing eating behaviours and feeding styles requires identifying culturally specific sets of eating occasions and understanding the routines, structures and social values of each occasion. Specifically, in our setting, interventions that promote fruits consumption in preschool children should frame their messages in the context of side meals, address myths surrounding fruits, emphasise the importance of fruits in child growth and advise mothers to replace high-sugar snacks with healthier but equally filling fruits locally available such as bananas and avocados. On the other hand, given mothers' strong emphasis on meat and vegetables in children's diet, interventions to promote meat and vegetables need not focus on health benefits but rather on responsive feeding strategies to

improve chewing ability, address food refusal and encourage positive eating behaviours.

Another key finding in our study is the prominent role of child eating behaviours in influencing maternal food choices. Many children were considered having a strong temperament, which manifested into tantrums, crying or pestering for food. These behaviours nevertheless reflect natural psychological changes during early childhood, a phase when children develop a sense of autonomy, learn to express their emotions and exercise their preferences (Walton et al., 2017). When dealing with these behaviours, a few mothers in our study employed responsive approaches such as explanation, encouragement and consistent discipline while the majority employed reactive approaches such as feeding children only the food they wanted, appeasing children with sugary food, raising their voice to enforce eating or distracting children with televisions. These reactive approaches have been documented in earlier studies in Vietnam and other LMIC (Do et al., 2015; Hurley et al., 2011) and could stem from mothers' innate desire to fulfil children's food requests to ensure that children have a good appetite, enjoy their meals and finish their food. These approaches might also reflect mothers' desire to help children gain weight, which was to mothers an indication of healthy growth (Flax et al., 2016; Waldrop et al., 2016). Future interventions on responsive feeding should raise awareness about optimal body weight in children and children's natural psychological development while devising strategies to promote enjoyment in eating.

Previous studies often discussed child eating behaviours in terms of taste preferences, but our study showed that chewing difficulty is also central to understanding food refusal and picky eating in children. According to mothers in our study, children had diverse preferences from liking to disliking sweets or from preferring fast food to enjoying home-cooked meals. Such diverse preferences were in contrast to the hypothesis about innate child preference for sweetness and against bitterness (Beauchamp & Mennella, 2009), but they were aligned with the notion that taste preference is continually moulded throughout early childhood under the influence of the social environment (Forestell, 2017). The maturation of oral-motor skills for effective chewing, however, has a shorter window of opportunity (Gisel, 1991). According to the Infant and Young Child Feeding guidelines, children should be transitioned from soft food to textured, family food by 12 months of age to ensure effective chewing (WHO, 2005). Many mothers in our study did not follow this recommendation and instead continued feeding their children porridge mixed with meat broth or ground meat beyond 2 years of age. Such prolonged feeding of soft foods has been documented in high-income settings and shown to be associated with feeding difficulty and low intake of fruits and vegetables (Coulthard et al., 2009; Tournier et al., 2021). In LMIC, the delay in giving complementary food has been documented, but the delayed progression from soft to textured food has not been well explored. Future work in Vietnam and LMIC should assess the prevalence of such feeding practices, the extent of child chewing difficulty and their effects on child diet.

One important finding in our study is that rural mothers who considered their families food insecure also desired to feed children delicious food or food that children crave, often by stretching their budget to buy cheap snacks. This finding was in contrast to studies of rural, food-insecure mothers in Ethiopia and Tajikistan, which showed that child satiety but not child preference and eating enjoyment was the key food choice intention (Haileselassie et al., 2020; A. C. Klassen et al., 2019). It is possible that the stronger economic growth in Vietnam relative to Ethiopia and Tajikistan has led to better purchasing power for most people, including the food insecure mothers in our study, and in parallel the wider presence of unhealthy snack food and thus higher children's exposure to these products in rural Vietnam. The allocation of the budget to unhealthy food in families where children did not have an adequate diet is undesirable for improving children's nutrition. Future work should examine child food preferences and eating behaviours in low-income, food-insecure households and assess how these factors exacerbate the impact of food insecurity on child diets.

All mothers in our study had physical access to a range of nutritious fresh food and nutrient-poor packaged products, which were supplied mostly through informal food markets, backyard gardens, home shops and street food vendors. Such heterogeneity in the food environment, which has been documented in other LMIC (Duong et al., 2022; Downs et al., 2020), helped mothers in our study procure food that fit their budget and preferences. This finding suggests a caution to the recent policy in Vietnam that aimed to modernise food retails, promote supermarkets and tighten regulations of informal markets, which could limit choices for mothers (MolIT, 2009; Moustier, 2006). Rather, more deliberate policies are needed to strengthen the existing informal food markets and, among communities experiencing food insecurity, promote home gardens or communal gardens to help families buffer the lack of financial means to purchase food. In parallel, informal food retailers such as home shops and convenience stores should be incentivized to limit the sales of unhealthy beverages and snacks to create a healthier food environment.

Our conceptual model leverages the strengths of existing food choice models while presenting a unique understanding of caregivers' food choice behaviours for preschool children. Our model is similar to the children's food choice process model designed specifically for food choice behaviours during adolescence (Holsten et al., 2012). Both models accentuate the role of caregiver-child interactions in shaping food choice and diet, but we identified key constructs unique to eating behaviours in preschool children such as chewing ability and eating enjoyment. The gastronomic system research model (Cuevas et al., 2017) and food choice process model (Furst et al., 1996) both target adult food choices and thus lack the component of caregiver-child interactions. While our study aligns with the gastronomic system research model's premise that food choice behaviours are specific to eating occasions and shaped by cultural food practices, our model also encompasses the cognitive factors including young children's ability to negotiate which food they consume. Similar to the food choice process model, our model also

emphasises that food choice decisions are ultimately a balancing act between many considerations. By complementing existing food choice theories, our model enables a better understanding of caregivers' food choices for preschool children and provides a framework for future research in this area while lending specific suggestions to nutritional programmes in Vietnam and similar country contexts.

A key strength of this study is the diverse sample of respondents across urban, peri-urban and rural households, which enabled the understanding of commonalities in maternal experiences and perspectives. However, the study is not without limitations. First, the fieldwork took place in the communities where food markets existed within walking distance and thus the results cannot be generalised to neighbourhoods which are without nearby markets. Second, due to the exploratory nature of this study, not all themes could be fully examined and conceptualised. For example, although we have documented the role of grandparents in influencing mothers' food choices and feeding styles, we lacked data on other aspects of social networks such as peers and community health workers. Previous research has shown that social networks inside and outside the family can play a vital role in nudging mothers towards more optimal child feeding practices (Reyes et al., 2022). How social networks affect mother-child dynamics should be a focus of future research. Lastly, due to logistical constraints, the FGD in the urban area was not carried out as planned, which might have limited the insights gathered from urban participants.

5 | CONCLUSION

Literature on child diet and feeding practices has often contrasted healthy and unhealthy diets and between responsive, authoritative and indulgent feeding styles. Our study suggests that mothers in northern Vietnam did not adopt a single diet or feeding style for their children, but rather changed their choices throughout the day. Nutritious food was emphasised and enforced during lunch and dinner while child preferences for unhealthy food were often accommodated during afternoon snacks or evening desserts. These practices reflected family food traditions in Vietnam and mothers' dual intentions in feeding children nutritious food to promote weight gain and satisfying child preferences to increase eating enjoyment. The reported food practices might also reflect mothers' attempts in managing child eating behaviours, including the refusal to chew, changing eating mood and strong eating temperament. These findings suggest the need to design meal-specific feeding strategies to help mothers and other caregivers increase children's enjoyment of nutritious food, respond effectively to children's mood and temperament, and encourage children to transition from soft to textured food.

AUTHOR CONTRIBUTIONS

Cam Duong, Usha Ramakrishnan, Phuong Hong Nguyen, and Tuyen Huynh designed the study and the survey tools. Cam Duong and

Tuyen Huynh managed the data collection. Cam Duong, Mica Jenkins, and Euisun Pyo analysed the data. Cam Duong, Mica Jenkins, Euisun Pyo, Melissa F. Young, and Usha Ramakrishnan interpreted the data. Cam Duong wrote the manuscript. All authors provided intellectual inputs to the manuscript, reviewed the draft contents and approved the final version submitted for publication.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data available on request from the authors.

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