

ORIGINAL ARTICLE

Feeding Practices of Caregivers Among Under-five Children in the Urban Poor Communities in Kuala Lumpur, Malaysia: A Qualitative Study

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ABSTRACT

Introduction: Poor feeding practices can result in malnutrition, which may have long-term negative effects on children's physical and cognitive development. There is limited qualitative research exploring feeding practices among caregivers of urban poor, even though their children are highly vulnerable to undernutrition. **Aim:** This qualitative study aimed to explore and compare the feeding practices, barriers and coping strategies of caregivers of well-nourished and undernourished children aged three to five years living in public low-cost housing in Kuala Lumpur, Malaysia. **Methods:** Semi-structured in-depth interviews were conducted among 27 caregivers. Caregivers were purposively selected using purposive sampling and categorized into two groups based on their children's growth status: families with well-nourished children (FWWC; n=15) and families with undernourished children (FWUC; n=12). Thematic analysis was conducted. **Results:** Two main themes emerged: feeding practices and barriers and coping strategies to feed children. FWWC caregivers demonstrated certain unique yet beneficial practices. They emphasized responsive feeding techniques, such as using nutritious snacks, promising outdoor activities, and involving children in meal preparation at home as effective strategies to increase children's food intake. Contrarily, FWUC caregivers practiced less responsive feeding techniques, such as forcing, ignorance, and distraction. Caregivers from both groups experienced similar barriers (child barriers and family barriers) and applied comparable coping strategies (ignorance, distraction, pressure and force, compromise, and creativity). **Conclusion:** Understanding feeding practices of caregivers of healthy and undernourished children can guide the development of culturally tailored interventions and policies. These efforts can help address barriers and improve child nutrition through responsive feeding, ultimately preventing undernutrition.

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INTRODUCTION

Individuals experience different nutritional requirements essential for growth, development, and living at each stage of life, resulting in diverse eating behaviors and dietary preferences. When children enter toddlerhood and preschool stages, they expose to external food environments and begin to gain autonomy in terms of their food choices. However, their dietary habits remain largely influenced and determined by caregivers, thus highlighting the essential role of caregivers in determining the quality, quantity, and nutrient density

of children's diets during this critical growth period [1]. Their feeding practices are important in shaping the food environment and influencing children's food acceptance [2], food preferences, eating behaviors [1, 3], dietary intakes, and overall development [2].

Feeding practices refer to the specific techniques, strategies, or behaviors applied by adults that may affect children's food intake [4], either facilitating or restricting their food consumption. In the past, researchers have attempted to conceptualize feeding techniques in different context. For example, Baumrind's four parenting styles were incorporated into the context of feeding [5], giving rise to four feeding styles (authoritative, authoritarian, indulgent, and uninvolved) [6]. Shloim et al. [7] summarized common feeding practices from previous literature, including modelling, restriction,

pressure to eat, rewards, and home food availability.

Available evidence from previous quantitative studies has consistently shown a significant relationship between parenting style, feeding style, and feeding practices with children's eating behaviors that subsequently influence their nutritional status [8–11]. However, previous studies have predominantly focused on breastfeeding and complementary feeding practices [12–15]. The importance of parenting and feeding practices of caregivers, particularly among children above two years old and their potential impact on children's eating behaviors, dietary intake, and nutritional status is less emphasized in Malaysia. Hence, it is imperative to understand the feeding practices of caregivers using qualitative approach, as undesirable practices, such as non-responsive feeding by pressuring children to eat, may contribute to inadequate dietary intake and potentially lead to child undernutrition. Given the high prevalence of child undernutrition (21.2% stunting, 15.3% underweight, 10.1% wasting) [16] and considerably slow progress in tackling these issues in Malaysia, there is an urgent need for comprehensive research that can generate an in-depth understanding of feeding practices, a critical determinant of child nutrition, among under-five children.

Feeding children to meet their nutritional needs for optimal growth becomes even more difficult for caregivers in urban areas with insufficient income to cope with the high cost of living [17, 18]. This disadvantaged group, known as the urban poor, is facing growing health disparities as urban populations continue to expand globally, especially in developing countries [19]. In response to these challenges, there has been a shift in focus among stakeholders towards achieving nutritional equity, which has led to increased recognition of under-five children and their caregivers among the urban poor population as an equally underprivileged group as their rural counterparts [19].

Reports on urban low-income families in Malaysia have highlighted that children of the urban poor are particularly vulnerable to undernutrition because their families may compromise on meal frequency and quality to cope with financial hardship and resource-limited settings in the big cities [20, 21]. A UNICEF report in 2018 found that the prevalence of underweight, stunting and wasting among under-five children living in low-cost flats in Kuala Lumpur, was as high as 15%, 22% and 20%, respectively, compared to the national prevalence of 14%, 21% and 12% [20]. Caregivers in these areas faced significant challenges in providing nutritious meals due to high food prices and insufficient income [20, 21]. Interviews with these caregivers revealed that they often resorted to limiting food consumption as a coping mechanism [21], which negatively impacted children's dietary intake and nutritional status. This issue is further exacerbated by suboptimal feeding practices

of caregivers, which contribute to the development of unhealthy eating habits and inadequate nutrition. Given these challenges, there is an urgent need to gain a deeper understanding of the feeding practices within this urban poor population group.

Feeding practices have often been assessed quantitatively through self-reported questionnaires [22]. However, these practices of caregivers are complex and multidimensional in nature [22], making them difficult to fully capture with numerical data alone. Unlike quantitative methods, qualitative approaches offer an in-depth and dynamic exploration of caregivers' experiences and perspectives through interviews and open-ended questions. This allows for the capture of rich narratives and provides a more comprehensive understanding of the complexities of feeding practices. This level of depth is difficult to achieve through quantitative methods. Additionally, understanding the specific barriers caregivers face and their coping strategies in feeding their children requires a deeper exploration of their personal experiences, which standardized questionnaires may not fully capture. Given the complex and multidimensional nature of feeding practices [22], particularly among urban poor communities, more in-depth qualitative research seems necessary.

Although feeding practices of caregivers are critical to child nutrition, little is known about the differences in feeding techniques or behaviors between caregivers of healthy children and caregivers of undernourished children in the urban poor communities. Gaining further insights into these differences could help in identifying locally appropriate feeding practices tailored to meet the specific needs of children in the urban poor areas, ultimately improving their overall well-being. Therefore, this study applied a qualitative method to explore feeding practices of caregivers of children under five living in public low-cost housing in Kuala Lumpur with the specific aim of comparing the differences in feeding practices, barriers and coping strategies between caregivers of healthy children and undernourished children.

MATERIALS AND METHODS

This study is reported in accordance with the 'Standards for reporting qualitative research: a synthesis of recommendations' checklist [23].

Study setting and subjects

A qualitative study involving semi-structured in-depth interviews with caregivers of children aged three to five years old was conducted from March to July 2022. The caregivers were recruited through purposive sampling from public low-cost housing in Kuala Lumpur, the capital city of Malaysia. They were classified as the low-income group if they earned a monthly household

income of less than RM 4,850 ($\approx$ USD 1,149 as of July 2022) [24]. Caregivers who were Malaysians, aged 18 years old and above, cared for children aged three to five years, could be mothers/fathers/grandmothers/grandfathers, and living in public low-cost housing under the People's Housing Program in Kuala Lumpur were included in this study. In contrast, caregivers whose children were overweight or obese (weight-for-height z score $> +2SD$), babysitters, and caregivers who were not parents or grandparents of the children were excluded. Additionally, caregivers with low literacy skills that affected their ability to read and fully understand the study information on the consent form, complete the screening form, or understand the questions during the interviews were also excluded.

The ethical approval of this study was obtained from the Universiti Putra Malaysia Ethics Committee for Research

Involving Human Subjects (JKEUPM; Reference no: JKEUPM-2020-349) and adhered to the 1964 Helsinki Declaration. This study was also registered at ClinicalTrials.gov (Identifier: NCT04688515) on 29 December 2020.

Sampling and sample size

A list of public low-cost flats in Kuala Lumpur ($N=69$) was first obtained from the Kuala Lumpur City Hall. A systematic review suggested that a sample size of 9 to 17 interviews was required to achieve the saturation point in a qualitative study [25]. Since this study intended to obtain comparable information from two groups, the sample size required was approximately 18 to 34 informants. Figure 1 shows the recruitment flowchart of caregivers participating in this study.

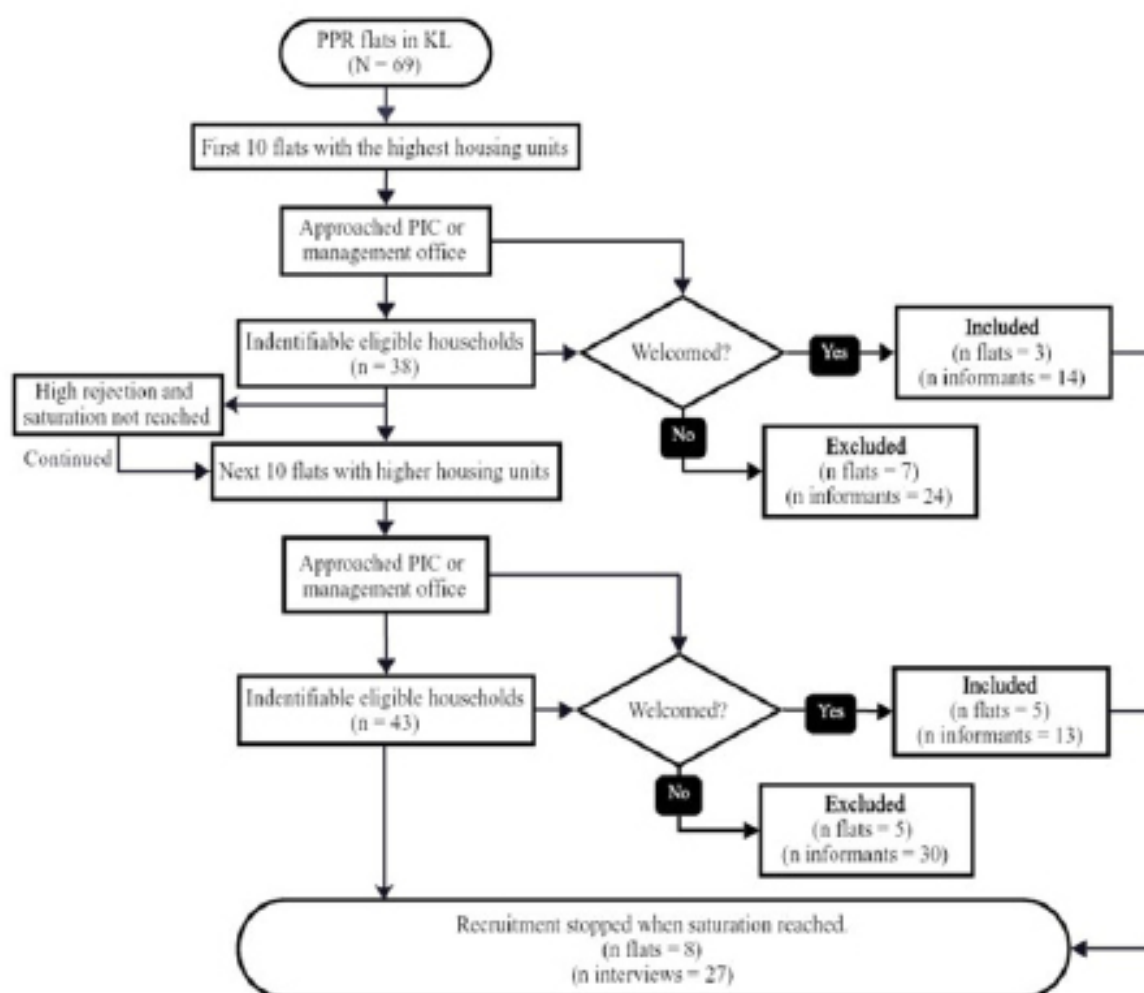


Figure 1: Recruitment flowchart of caregivers participating in this study. After arranging the flats according to the number of housing units, the first 10 flats were selected. A total of 38 households were identified as eligible, in which 14 of them were included and interviewed while another 24 of them were excluded due to no response or rejection. The recruitment process continued by choosing another 10 subsequent flats with higher housing units and underwent household visits. Another 13 eligible informants were successfully recruited and interviewed. After recruiting and interviewing 27 informants, saturation was reached and the recruitment process stopped.

The chairpersons or representatives of the housing committee of the selected flats were contacted to seek permission for entry and to recruit study participants. Home visits were conducted to identify households with children under five. Eligible caregivers were invited to participate in the study. A total of 27 caregivers from eight flats were recruited, with recruitment process ending when data saturation was reached, in which no new insights were being gained and the information collected was becoming repetitive. Written informed consent was obtained from all caregivers prior to participation.

Anthropometric measurements

Height and weight of children were measured using the SECA Body Meter 213 (SECA, Germany) and TANITA Digital Weight Scale HD662 (TANITA Corporation, Japan). The anthropometric data were analyzed using the WHO Anthro Survey Analyzer to generate relevant growth indicators such as z-scores for weight-for-age (WAZ), height-for-age (HAZ), and weight-for-height (WHZ).

Based on the nutritional status of the children determined during the screening, the caregivers were classified into two groups: Families with Well-nourished Children (FWWC) and Families with Undernourished Children (FWUC). FWWC referred to families with well-nourished under-five children who had normal growth indicators ($-2SD \leq Z \leq +2SD$ for WAZ, HAZ, and WHZ) while the FWUC were families with undernourished children who were either underweight, stunted, or wasted (WAZ/HAZ/WHZ $< -2SD$). The classification was solely for comparison purposes to understand the differences in caregivers' practices between families with well-nourished children and families with undernourished children.

Interview Instruments

The interview was conducted using a semi-structured approach guided by an interview protocol validated by experts. This protocol included an introduction script and a set of predetermined semi-structured questions related to feeding practices, for example, "How do you feed your child after the age of two until now?" and "What challenges do you face when feeding your child? and how do you overcome the challenge?". Probing questions, such as "Can you tell me more?", "Can you give examples?" and "Can you describe the situation in further detail?", were used during interviews to gain deeper insights.

To establish reliability and credibility of qualitative data, data triangulation was performed. The method used was to gather qualitative data from two sources, which were from the two different groups (FWWC and FWUC). Peer debriefing also performed through discussions and revisions of each part of the interview protocol with experts to ensure that the protocol could

effectively capture various perspectives and provide a comprehensive understanding of the issue.

Interview Procedure

Before starting the interviews, consent for audio recording was obtained from the recruited caregivers. A concise summary of the study was then presented, followed by introductions, and an ice-breaking session to provide transparency and build trust. Questions such as "Can you tell me about your background?" and "How many kids do you have?" were asked. During the interviews, the researcher took notes on the verbal responses of caregivers to help in later transcription and coding. Subsequently, guided semi-structured in-depth interviews were conducted by the researcher. The entire interviews were conducted in Malay language. At the end of each interview, the caregivers were thanked for their participation and for sharing their valuable insights.

Data Analysis

Verbal interviews were transcribed and analyzed using thematic analysis [26, 27]. All interviews were audio recorded and transcribed verbatim by the researcher to maintain accuracy and authenticity. Transcripts were anonymized to protect the confidentiality of participants. The transcription and coding process were conducted using computer-assisted qualitative data analysis software (CAQDAS), i.e. NVivo 12 (Melbourne, Australia). Researchers began by familiarizing and thoroughly reviewing all transcripts repetitively to generate an initial set of codes, repeating this process at least twice for each transcript. The codes were then systematically identified, grouped into subthemes and synthesized into broader themes. Saturation was reached when the generated codes and subthemes became repetitive, and no new ones emerged. The subthemes of each identified theme were compared between FWWC and FWUC.

The researcher who conducted the interviews had completed training in qualitative research and thematic analysis, and thereby served as the interviewer and the coder, carrying out the entire thematic analysis and theme comparison process. The transcripts, codes, subthemes and themes were reviewed and discussed repeatedly with other researchers to ensure integrity and reliability. For presentation purposes, the quotations, themes and subthemes were translated into English.

RESULTS

Sociodemographic characteristics

Table 1 shows the sociodemographic characteristics of the caregivers and growth status of their children. Among the recruited 27 caregivers, 23 of them were mothers, two were fathers, and two were grandfathers or grandmothers. Based on the child growth status, 12 caregivers were categorized as FWUC, and 15 were categorized as FWWC.

Table 1: Sociodemographic characteristics of children by type of family (n=27).

Sociodemographic characteristics	FWUC (n=12)	FWWC (n=15)
	n (%) or Mean $\pm$ SD	n (%) or Mean $\pm$ SD
Age (months)	45.33 $\pm$ 11.27	43.00 $\pm$ 9.12
Gender		
Boys	6 (22.2)	6 (22.2)
Girls	6 (22.2)	9 (33.3)
Growth status		
Weight-for-age z-score (WAZ)	-1.26 $\pm$ 1.49	-0.80 $\pm$ 0.67
Height-for-age z-score (HAZ)	-1.55 $\pm$ 0.89	-0.62 $\pm$ 0.60
Weight-for-height z-score (WHZ)	-1.53 $\pm$ 1.42	-0.36 $\pm$ 0.68
Household size (members)	5.42 $\pm$ 1.51	7.27 $\pm$ 3.39
Monthly household income (RM)	2437.50 $\pm$ 1666.12	2503.33 $\pm$ 755.57
Mother's education level		
Primary	1 (3.7)	1 (3.7)
Secondary	8 (29.6)	10 (37.0)
Tertiary	3 (11.1)	4 (14.8)
Father's education level		
Primary	0 (0)	2 (7.7)
Secondary	11 (42.3)	10 (38.5)
Tertiary	1 (3.8)	2 (7.7)

FWWC: families with well-nourished children; FWUC: families with undernourished children

Interview outcomes

Two main themes were identified: (a) feeding practices; and (b) barriers and coping strategies to feed children. Figure 2 illustrates the two main themes and their

respective subthemes with the comparisons between FWUC and FWWC groups.

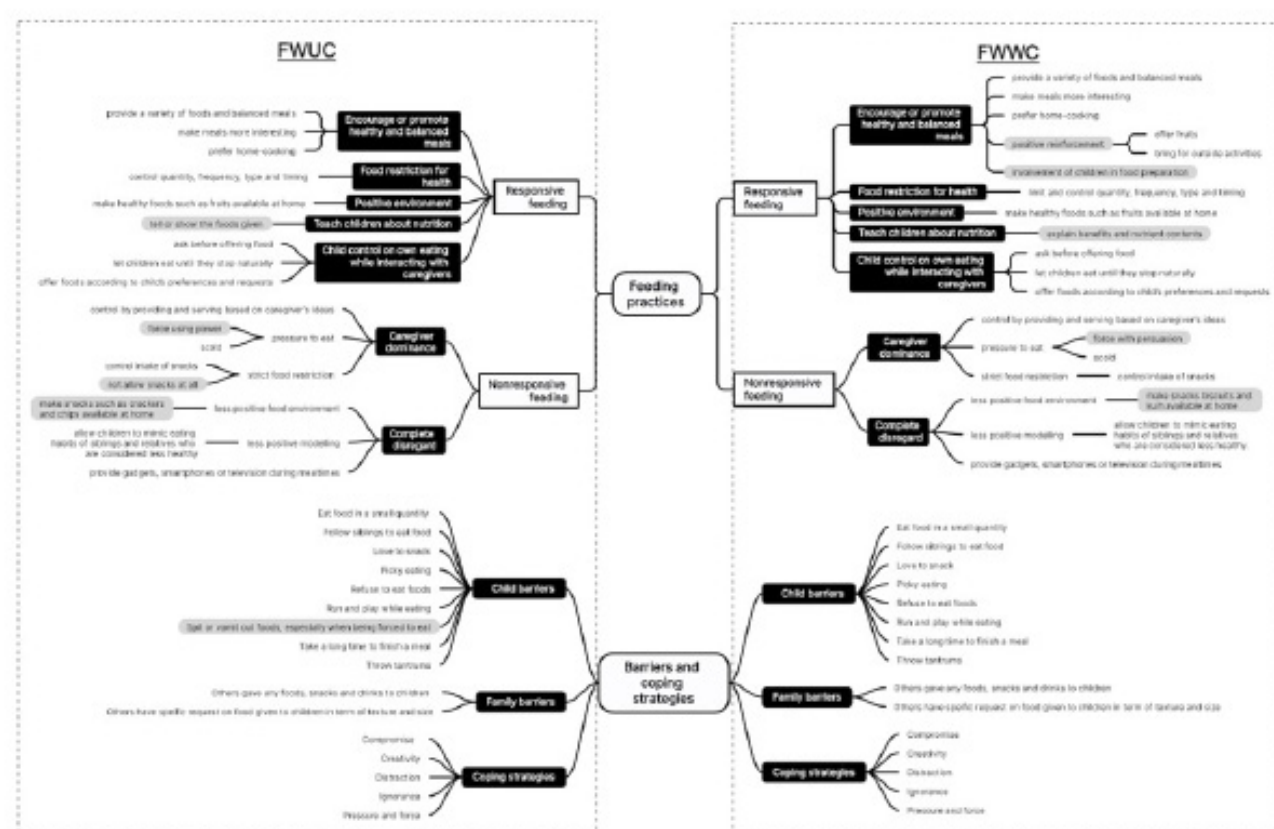


Figure 2: Two main themes and their respective subthemes with comparisons between FWUC and FWWC. The subthemes related to feeding practices for the FWWC differed slightly from those of the FWUC. Two practices highlighted by the FWWC but not the FWUC were the use of positive reinforcement by offering fruits as snacks and promising outdoor activities, and involving children in home food preparation. The subthemes for barriers and coping strategies in the FWUC were found to be similar to those in the FWWC.

Theme 1: Feeding practices

Two subthemes emerged for feeding practices: responsive feeding and nonresponsive feeding.

Subtheme: Responsive feeding

Caregivers used responsive feeding techniques. They responded promptly and supportively to their children while promoting autonomy and helping them recognize their own hunger and satiety cues. They actively engaged with their children during meals, using multiple strategies to encourage them to eat more or adopt healthier eating habits. For example, caregivers mentioned diversifying the range of foods in their daily meals as well as exploring and experimenting with different recipes found on the Internet to ensure nutritious and appealing meals. One caregiver stated:

"If my child does not want to eat the rice, I make some changes, such as making the rice into interesting shapes, like a panda, to get his attention and interest in eating the rice." (mother, 26 years; child, 3 years)

Positive reinforcement strategies were also used by the caregivers, such as offering fruits as a snack and rewarding them with outdoor activities to encourage their picky-eaters to try out food that they dislike. For example, one caregiver mentioned:

"I tell my child that if she eats more, I will take her to the playground. This works well. My child listens and eats all the food I give." (father, 37 years; child, 3 years)

Caregivers also highlighted their efforts to create a positive food environment at home by ensuring that healthy food options such as fruits were consistently available and easily accessible at home. Caregivers often teach their children about nutrition during meals, such as explaining the types of vegetables served and their health benefits. Some also limit foods such as sweets, snacks, and carbonated drinks, taking time to explain the consequences of consuming these unhealthy options. For example, one caregiver shared:

"I tell my child that eating too many snacks is not good for their teeth and can cause them to fall out. But if they eat vegetables, it is good for them and will help them grow stronger." (mother, 25 years; child, 4 years)

Caregivers also applied more responsive approach by, engaging with their children while allowing them to control their eating. Caregivers let children choose the type, amount, and timing of their meals, seek their input before offering food, prepare meals based on their preferences, and allow them to stop eating when they want to. For instance, one caregiver stated that:

"I always ask my child before giving foods. For example, I ask if my child is hungry or if she wants to eat rice ... once my child feels full, I let her stop eating ... let her

eat until she decides to stop." (mother, 41 years; child, 4 years)

Caregivers perceived this self-regulation as an indication that their children were satisfied or fully satiated.

Subtheme: Nonresponsive feeding

Caregivers described using nonresponsive feeding techniques characterized by either caregiver dominance, or complete disregard for the child's cues. Some caregivers reported using a dominant and demanding approach, pressuring their children to eat despite expressed dislike or reluctance. They insisted on feeding their children, sometimes forcing them to open their mouths and reprimanding them if they spit out food. As shared by one caregiver:

"I take the spoon, place it near my child's mouth, and my child opens his mouth to eat." (mother, 26 years; child, 3 years)

Additionally, caregivers exercised control over their children's food intake, serving meals without regard to the children's preferences or the nutritional value of the foods. They imposed strict restrictions or complete prohibitions on certain foods, such as sweets, chocolates, or sugary snacks. For example, one caregiver expressed that;

"I do not give any sweets, candies, or any foods that are sweet to my child." (mother, 31 years; child, 3 years)

Some caregivers practiced nonresponsive feeding techniques that were child-dominant. They had minimal expectations for child engagement or ignored interaction altogether. They preferred to provide gadgets or allow screen time, such as watching videos or television, during meals. This approach was seen as a way to facilitate feeding, as children tended to eat whatever food was served while watching. For example, one caregiver shared:

"I give my child a gadget to watch videos. It is like I am using it to persuade him to eat. When he is watching, he will eat the rice I give him." (mother, 29 years; child, 3 years)

Comparison between FWUC and FWWC

In comparison to FWUC, FWWC caregivers demonstrated a higher level of responsiveness when feeding their children even though they were less demanding. They described two strategies that were not commonly practiced by the FWUC caregivers. Firstly, they encouraged their children to eat or complete meals by promising favorite fruits as snacks or by bringing them for outdoor activities after the meal. This incentive of good behavior motivated the children to eat more or finish their meals in anticipation of a reward. Secondly, FWWC caregivers also involved their children in meal

preparation at home to encourage their food intake. For example, one caregiver from FWWC shared:

"Sometimes when we go to the supermarket, my child will choose the vegetables she wants to buy, then we cook and eat the vegetables she chose." (mother, 37 years; child, 3 years)

By engaging children during grocery shopping and allowing them to select and decide on the type of foods, such as vegetables, the children were more likely to try and eat the food that they selected, hence fostering a sense of autonomy in the process.

In contrast, FWUC caregivers were less responsive. They pressured their children to eat through force or reprimands, imposed strict restrictions on certain foods, and made minimal efforts to create a healthy food environment at home, often leaving unhealthy snacks readily available to children. For example, a caregiver from FWUC stated that:

"My child knows where I keep the snacks, and he keeps going there to take them and eat." (mother, 26 years; child, 3 years)

Another caregiver from FWUC shared that:

"Sometimes, my child gets lazy and does not want to eat, so I have to either force him to eat or feed him. He also likes the set meals from fast-food restaurants, so if he refuses to eat or becomes lazy, I will buy him a set meal, and then he will start eating something." (mother, 37 years; child, 4 years)

Theme 2: Barriers and coping strategies to feed children

The barriers encountered can be categorized as child barriers and family barriers.

Subtheme: Child barriers

Nearly all caregivers experienced feeding difficulties with their children. They believed that these difficulties were due to their children's behaviors, such as spitting up food, playing or running during meals, being picky eaters, throwing tantrums, crying, or engaging in other disruptive behaviors. Other behaviors that interfered with feeding included an inability to finish food served, eating based on mood or preference, preferring snacks to main meals, and imitating the eating habits of others. For example, one caregiver described that:

"My child likes to run and play around while eating. As a result, she eats very slowly, often playing with the food in her mouth instead of swallowing it." (mother, 37 years; child, 3 years)

Subtheme: Family barriers

Interestingly, some caregivers mentioned that feeding difficulties came from other family members. For example, spouses or elders at home would criticize or

scold them for the food served to the children or the feeding methods used. This criticism partly originated from perception that feeding practices should be child-centered. As a result, some caregivers found these situations stressful and challenging, especially when trying to adopt a more responsive and healthier approach to feeding their children. For instance, one caregiver shared:

"I give my child any food because my husband tends to make many comments if I avoid giving certain foods, including junk food, or if I offer food in large pieces." (mother, 26 years; child, 3 years)

Subtheme: Coping strategies

The strategies that caregivers used to cope with the above challenges can be grouped into several sub-themes: ignorance, distraction, pressure and force, compromise, and creativity. Ignorance strategies involved caregivers simply allowing their children to eat or refuse food as they wished. One caregiver mentioned that:

"If my child does not want to eat, she would just not eat. I have to give her food based on what she wants. If she still does not want to eat, I just let it be. Later, if she gets hungry, she will ask for food on her own." (father, 46 years; child, 4 years)

Distraction strategies involved engaging children in activities such as watching television, watching online videos on platforms such as TikTok, and YouTube, or playing video games, especially during tantrums.

Some caregivers used force when children refused to eat certain foods or were picky eaters. Others chose to compromise by preparing special meals or offering foods that the children requested. For example, one caregiver stated that:

"Usually when my child asks for certain foods, especially when he is having a tantrum or crying, I just give him what he wants because he does not like to be forced to eat." (mother, 25 years; child, 3 years)

A few caregivers, however, preferred to be creative, preparing visually appealing and colorful dishes that combined foods their children disliked with some of their favorites in a single meal. They also experimented with different methods to encourage their children to try new foods. One caregiver shared that:

"I mix the foods she is picky about with other foods to confuse her. This usually helps to keep her from being so picky." (mother, 43 years; child, 3 years)

Comparison between FWUC and FWWC

Caregivers from both groups faced similar barriers and applied comparable coping strategies to feed children. Both of them encountered comparable child and family

barriers and coped using ignorance, distraction, pressure and force, compromise, and creativity strategies.

DISCUSSION

This study identified two main themes: feeding practices and related barriers and coping strategies. Regarding feeding practices, caregivers whose children were well-nourished (FWWC) were proactive in using responsive strategies. They offered fruit as a snack, took children outdoors to encourage food intake, and involved them in meal preparation to promote healthier eating. In contrast, caregivers whose children were undernourished (FWUC) were less responsive and relied on forceful feeding and strict restrictions. These findings suggest that responsive feeding is more likely to support proper growth and development, while less responsive feeding may contribute to inappropriate growth and development, subsequently causing child undernutrition.

Responsive feeding is characterized as the reciprocal interaction between caregivers and children that involves creating a positive feeding environment in addition to recognizing and responding to children's hunger and satiety cues. Caregivers who practice responsive feeding are more supportive and sensitive in facilitating healthy food intake [1, 28]. These practices have been proven to promote children's interest in food, awareness of internal hunger and satiety cues, and autonomy in expressing needs, ultimately promoting healthier eating habits and better nutritional intake for optimal growth and development [1, 29, 30].

FWWC caregivers from urban poor communities in this study found that the use of food rewards to be an effective feeding strategy. This is in contrast to previous research as food rewards are often considered an indulgent practice and are generally discouraged [28] to prevent emotional eating. However, FWWC caregivers perceived that offering healthier rewards, such as fruit, or non-food rewards, such as the promise of outdoor activities, helped increase their children's food intake. Cultural factors are likely to play an important role in shaping the reward practices observed in this study. The urban poor households in this study may have unique cultural and socioeconomic influences that affect how rewards are used. It appears that the practice of rewarding may be closely linked to values such as family bonding, obedience, or communal meal traditions where offering food as a reward is seen as a nurturing gesture rather than a coercive one. Rewarding may be seen as a way of expressing affection or reinforcing positive behavior, with different implications than in other cultural settings.

In low-income households living in urban areas or more known as urban poor, rewards may provide a manageable approach to common feeding challenges, such as food fussiness or limited access to a variety of

foods. Socioeconomic constraints may limit other forms of reinforcement, making food and simple non-food rewards, such as outdoor activities, viable and effective motivators. Although the use of reward, either food, non-food or conditional rewards, as an effective strategy remains debated, a stronger notion for rewarding strategy that would not encourage the override of children satiety clues might be needed. A culturally and locally adapted strategy might be the key. Since the participants in this study came from an urban poor community, some of the strategies articulated might be applicable to other caregivers within the same urban poor community, helping them to increase food intake and cultivate healthy eating habits in children.

Children involvement in meal preparation at home was also found to be beneficial in this study. Child participation in the selection and preparation of foods may foster a willingness to consume healthy foods without feeling forced or controlled. Similar findings were also reported in a qualitative study by Goodell et al. [31] that explored the strategies used by parents to influence their children to accept previously rejected foods. Involving children in meal preparation at home and using food as a reward were effective strategies for encouraging children to eat [31].

In contrast, previous studies have linked non-responsive practices, such as pressuring children to eat more or take only specific foods, with lower weight status in children [32–34]. A similar trend was observed in this study. According to Black and Aboud [28], pressured feeding may disrupt children's ability to recognize and self-regulate internal hunger and satiety cues, potentially leading to stressful mealtimes, frustrated children, and food refusal. In the long run, this may compromise children's dietary intake and nutritional status.

This study also identified feeding barriers from the perspectives of children and family members as well as the related coping strategies (ignorance, distraction, pressure and force, compromise, and creativity) among children under five from the urban poor. Nevertheless, positive strategies such as compliments, encouragement, and positive talk about foods as well as negative strategies such as reward, threat, punishment for not eating, and forced feeding recommended in previous studies [30, 31] are consistent with the findings in this study.

The barriers and coping strategies expressed by the caregivers in this study were consistent with the feeding techniques they used. Using less responsive feeding strategies may interfere with children's ability to recognize and self-regulate their internal hunger and satiety cues. As a result, children may exhibit autonomy-seeking behaviors and transition to self-feeding, which caregivers may misinterpret as challenges. The coping strategies caregivers use to manage these perceived challenges are likely to reflect the feeding techniques

they use. For example, if caregivers force children to eat they are concerned about low food intake, children may refuse to eat, leading to more difficult interactions. These interactions create barriers to promoting healthy eating and growth in children. Thus, early recognition of caregiver's feeding practices, along with identification of barriers and implementation of appropriate coping strategies, can promote healthier feeding practices and ensure proper nutrition and optimal growth for children in urban poor communities.

Strengths and limitations

This study has several strengths and limitations. One of the strengths is the use of semi-structured in-depth interviews, a well-established thematic analysis approach, and quality control methods such as triangulation provided a comprehensive insight into caregivers' feeding practices in the urban poor community in Kuala Lumpur. Additionally, by comparing the practices between caregivers of healthy and undernourished children, this study revealed vital local practices that may confer protective effects against child undernutrition. Given the limited research on local interventions for child undernutrition in urban poor communities, these findings can effectively guide the establishment of culturally tailored interventions aimed at addressing the specific needs of children of the urban poor and improving their overall wellbeing.

Nevertheless, there are limitations in using qualitative approach in this study. Potential biases may arise from the subjectivity and interpretation of researchers on the qualitative responses of caregivers, even though precautions were taken to ensure the integrity of this study. Besides, qualitative studies are often time-consuming and resource-intensive, typically involving small and non-random samples that limit generalizability and replicability. Furthermore, the inclusion of only children aged 3 to 5 years old may limit the generalizability of the results to the broader population. Moreover, this study involved a larger number of mothers as compared to fathers or grandparents, hence the results may not fully capture varying perspectives of feeding practices.

Implication for practice

A comprehensive understanding of caregivers' feeding practices is critical as it may affect children's dietary intake and nutritional status. Findings from this study can help to design targeted, culturally appropriate interventions and support systems that promote responsive feeding, such as including nutritious snacks and involving children in meal preparation. These practices can address the barriers faced by caregivers, particularly in urban poor settings, and improve child nutrition. In addition, the findings of this study can inform nutrition programs and policy development in Malaysia by highlighting the importance of culturally relevant and caregiver-focused interventions to optimize child nutrition and prevent undernutrition in urban poor

communities.

Future research should incorporate a combination of in-depth interviews, focus group discussions, observations, and quantitative methods to gain a more comprehensive insight into the mechanisms and relationships between feeding practices, dietary intake, and nutritional status of children of the urban poor communities. A mixed-method approach can minimize bias and provide more in-depth guidance to healthcare professionals and stakeholders in addressing child undernutrition.

CONCLUSION

Two main themes emerged from this study: feeding practices and the barriers and coping strategies associated with feeding. FWWC caregivers exhibited distinctive practices, using responsive feeding techniques such as rewarding children with healthy snacks and involving them in meal preparation strategies, that were not commonly used by FWUC caregivers. The findings could inform the development of locally appropriate interventions to address child undernutrition in urban poor communities. The study also highlighted the importance of addressing barriers to proper feeding and demonstrated how specific coping strategies can be applied to promote healthy eating to ensure adequate dietary intake and prevent child undernutrition in these communities.

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