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Integrating Local Food into Early Childhood Nutritional Caregiving Practices among Working Parents: A Case Study of the Real Food Program

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ABSTRACT

Background of the study: Nutritional caregiving among working-parent families is increasingly influenced by dependence on ultra-processed foods (UPFs), driven by time limitations, convenience-oriented lifestyles, and changing family routines. Previous studies have mainly discussed local food within cultural preservation and nutrition education contexts, while limited research has examined its role as a practical feeding strategy for working families in early childhood education settings.

Aims and scope of paper: This study aimed to examine the implementation of the Real Food Program as a local food-based integrative approach to strengthening nutritional caregiving practices among working-parent families in an early childhood education setting.

Methods: This study employed a qualitative approach using an instrumental case study design conducted at KB Cahaya Tazkia Surabaya, Indonesia. Participants consisted of 30 working parents with children aged 3–6 years enrolled in the program. Data were collected through classroom and lunchbox observations, semi-structured interviews, and food photography documentation during program implementation. The data were analyzed using reflexive thematic analysis to identify patterns of parental feeding practices, food choices, and behavioral changes related to children's nutrition.

Results: The findings revealed that prior to the implementation of the program, children's lunchboxes were largely dominated by ultra-processed foods selected for practicality and time efficiency, resulting in limited dietary diversity and inadequate nutritional balance. The Real Food Program encouraged significant changes in parental feeding practices through the increased inclusion of local foods, including traditional snacks and root crops (*polo pendem*), alongside improved food variety and nutritional quality. The program also fostered behavioral changes among working parents, including more intentional meal planning, reduced dependence on instant foods, and greater awareness of balanced nutrition within modern family lifestyles. Furthermore, the integration of local food strengthened children's familiarity with culturally rooted food practices while promoting healthier eating behaviors.

Contribution: This study proposes a contextual local food-based feeding ecology model that explains how family routines, parental feeding practices, school initiatives, and local food integration interact in shaping healthier eating behaviors among young children.

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INTRODUCTION

Early childhood represents a critical golden age period in the human life span, as biological, cognitive, and socio-emotional growth and development occur intensively during this stage (Santrock et al., 2014). Success during this phase is highly dependent on adequate nutritional fulfillment, as inappropriate complementary feeding practices may trigger growth disorders and nutritional deficiencies with long-term consequences (WHO, 2023). Globally, evidence indicates the emergence of a dietary crisis among young children that threatens the future health of upcoming generations (UNICEF, 2021). In Indonesia, this urgency is becoming increasingly evident because nutrition plays a fundamental role in optimizing every stage of child development to achieve a better quality of life (Nasution et al., 2024). Therefore, nutrition should not merely be viewed as a biological necessity but also as a strategic investment in the development of human capital.

However, nutritional caregiving in early childhood currently faces major challenges due to changes in family structures characterized by the increasing dominance of working parents, which creates a dual food environment between the home and early childhood education institutions. This condition is reflected in the differences in feeding practices between family and school environments, both of which are increasingly influenced by the demands of modern lifestyles. Limited time often forces parents to choose practical lunchboxes based on Ultra-Processed Foods (UPFs), which dominate children's daily energy intake despite their low natural nutritional value (Monteiro et al., 2019; Ródenas-Munar et al., 2024). Such non-comprehensive feeding practices are associated with increased consumption of ultra-processed foods and declining dietary quality among young children (Monteiro et al., 2019; Ródenas-Munar et al., 2024). Feeding practices that prioritize convenience over nutritional balance have become a serious contextual issue experienced by the majority of urban families and working parents (Anwar & Sakti, 2025). This condition demonstrates that nutritional problems in early childhood are not only related to food availability but also to the capacity of families to manage healthy food choices amidst the pressures of modern life.

Recent literature recognizes infant and young child feeding practices as major determinants of long-term health outcomes that extend beyond mere caloric fulfillment (Berti & Socha, 2023). The effectiveness of these practices is strongly influenced by parenting styles and parental feeding decisions that shape children's eating habits from an early age (Ventura & Birch, 2008; Vidal et al., 2022). Appropriate feeding parenting styles not only support physical growth but also protect children from the risk of malnutrition (Kim-Herrera et al., 2021). Furthermore, systematic nutritional interventions during preschool years have been proven to significantly enhance children's cognitive development (Roberts et al., 2022). Thus, nutritional caregiving should be viewed as an integrated educational process involving both parents and the school environment.

Previous studies also indicate that early childhood feeding practices are strongly influenced by parenting patterns, in which the quality of feeding practices directly correlates with children's eating behavior (Agustin & Rahmawati, n.d.; Anwar & Sakti, 2025). In addition, sensory characteristics and repeated eating experiences play important roles in shaping children's preferences for healthy foods from an early age (Forde & de Graaf, 2022). In the Indonesian context, traditional foods have begun to be introduced within early childhood education as part of culturally based learning (Astini & Maisyaroh, 2023), yet their integration into family nutritional caregiving practices remains limited. Contextual approaches in early childhood education have also been shown to contribute to various aspects of child development, including language development (Prameswari et al., 2024). These findings reinforce the importance of integrating local contexts into multiple dimensions of early childhood learning and caregiving. In other words, most previous studies still position local food within the domains of cultural learning or cultural introduction rather than as a practical strategy for everyday nutritional caregiving among working-parent families.

Despite the well-established theories of nutrition, there remains a research gap regarding the integration of local food into modern parenting practices among working parents. Many nutritional programs continue to overlook the potential of local food and traditional food biodiversity, despite their high nutritional value and contribution to sustainable food systems (Kennedy et al., 2022). The utilization of food biodiversity and traditional knowledge is urgently needed to transform modern food systems that are excessively dependent on industrial products (Kennedy et al., 2022). In regions such as Madura, traditional eating concepts have been shown to strongly influence eating behavior and stunting prevention, yet these concepts are rarely adapted into practical programs for busy families (Diana et al., 2022). Few intervention models successfully bridge working parents' need for practicality with the use of authentic local foods. This gap indicates that local food integration has not yet been positioned as an applicable nutritional intervention strategy within modern family life.

Unlike previous studies, which generally positioned local food within the context of cultural introduction or local wisdom-based learning in early childhood education (Astini & Maisyaroh, 2023; Prameswari et al., 2024), studies exploring local food as a practical strategy in daily nutritional caregiving among working-parent families remain highly limited. Most early childhood nutrition studies focus on feeding practice education, nutritional status, or generalized interventions without integrating the practical realities of modern families with the utilization of local food resources (Abdul Rahim et al., 2025; Agustin & Rahmawati, n.d.; Anwar & Sakti, 2025). Meanwhile, previous findings indicate that children's eating patterns are strongly shaped by feeding environments and family caregiving routines (Vidal et al., 2022). This gap has not been sufficiently addressed, particularly regarding how local food can be adapted into practical, nutritious, and contextually relevant feeding practices for time-constrained families. Therefore, this study positions local food not merely as a medium for cultural introduction but as an applicable solution for early childhood nutritional caregiving practices among working-parent families. The novelty of this study lies in the integration of nutrition, practical modern caregiving, and local food biodiversity into a contextual intervention model systematically implemented through a nutritional caregiving program in an early childhood education institution. This approach also extends previous findings concerning the importance of contextual approaches in early childhood education (Prameswari et al., 2024) by positioning local food contexts as part of implementable and sustainable nutritional caregiving practices.

This study aims to analyze the implementation and changes in nutritional caregiving practices through the "Real Food Program" at KB Cahaya Tazkia as an innovative solution to address these gaps. The program integrates local foods, such as polo pendem (root crops) and traditional snacks, into children's daily lunchboxes through systematic weekly guidance sheets communicated digitally to parents, 90% of whom are working parents. The primary focus of this study is to demonstrate that local food-based nutritional caregiving can be implemented practically by busy families without compromising nutritional quality. Through this approach, the study seeks to develop a nutritional caregiving model that not only improves early childhood nutritional quality but also preserves local food biodiversity as a foundation for sustainable health. Specifically, the study is directed toward identifying the initial conditions of children's lunchbox practices, the process of integrating local foods through the implemented program, and changes in parental behavior following the intervention.

METHOD

Research Design

This study employed a qualitative approach using an instrumental case study design to gain an in-depth understanding of early childhood nutritional caregiving practices within working-parent families through the implementation of the Real Food Program. This approach was selected because it enables the contextual and holistic exploration of phenomena in real-life settings, particularly within the interactions among parents, children, and caregiving institutions (Creswell & Creswell, 2017; Merriam, 2009). The case study design was used to investigate the dynamics

of children's feeding practices within a specific early childhood education setting, thereby providing a more comprehensive understanding of the phenomenon under study. The instrumental case study design aimed to explore a specific phenomenon related to nutritional caregiving practices in a particular context, not for broad generalization but for obtaining a deep and contextualized understanding. Unlike lunchbox practices in many early childhood education institutions that are still dominated by instant and ultra-processed foods, KB Cahaya Tazkia consistently implements a natural and local food-based approach as part of its school culture and family engagement practices. This setting is theoretically important because it demonstrates how early childhood education institutions can contribute to the development of healthy eating habits amidst the increasing consumption of ultra-processed foods among young children (UNICEF, 2021; Kennedy et al., 2022; Monteiro et al., 2019).

Research Setting and Participants

The study was conducted at KB Cahaya Tazkia Surabaya and involved 30 working parents with young children as participants. Participants were selected using purposive sampling, which involved selecting individuals based on specific criteria relevant to the study objectives, such as working-parent status and children's involvement in daycare environments. This technique was employed to obtain rich and in-depth data from participants with direct experience related to child feeding practices in working-family contexts (Palinkas et al., 2015). The inclusion criteria included parents who were actively employed, had children aged 3–6 years, and participated in the daily lunchbox program at the early childhood education institution.

Researcher Role and Reflexivity

In this qualitative study, the researcher served as the primary research instrument and was directly involved in the processes of data collection and analysis. The researcher was also involved in the implementation of the program, resulting in close engagement with the research context. To minimize bias, the researcher continuously reflected on personal positions, assumptions, and experiences that might influence data interpretation. Reflexivity was maintained through field notes and discussions with peers to ensure analytical objectivity.

Data Collection Procedures

Data were collected through observations, semi-structured interviews, and documentation. Observations were conducted to identify the types and nutritional quality of children's lunchboxes before and during program implementation. Semi-structured interviews were used to explore parents' experiences, perceptions, and challenges in preparing local food-based lunchboxes. In addition, food photography documentation was utilized as a visual monitoring tool to capture children's lunchboxes, as it effectively provided authentic representations of children's dietary patterns and eating habits in everyday contexts.

The Real Food Program was implemented over eight weeks through active collaboration between the school and parents. Parents received weekly sheets containing guidance on natural and local food-based lunchbox menus, recommendations for food variety, and simple reflection forms related to children's responses, food acceptance levels, and parental challenges during program implementation. Monitoring was conducted daily through observations and photographic documentation of children's lunchboxes. The evaluation focused on food diversity, reduction of ultra-processed foods, and parents' consistency in applying real food principles throughout the program (WHO, 2023; UNICEF, 2020).

Classroom Observations

The intervention in this study consisted of the implementation of the Real Food Program, a natural food-based lunchbox program emphasizing the use of local foods such as traditional snacks and polo pendem (root crops). The program was designed as an alternative to the dominance of ultra-processed foods by considering aspects of availability, affordability, and cultural relevance within children's nutritional caregiving practices.

Observations were conducted systematically by recording the types of food, nutritional composition, and daily variations in children's lunchboxes as part of the program evaluation. Observations also documented children's engagement during mealtime and their responses to the local food variations provided throughout the program.

Semi-Structured Interviews

Semi-structured interviews were conducted with parents to explore their experiences, perceptions, and behavioral changes related to children's lunchbox preparation during the program. Interviews were guided by flexible open-ended questions, allowing for in-depth exploration of participants' responses. All interviews were audio-recorded and transcribed for data analysis purposes.

Document Analysis

Documentation in this study consisted of food photography, which was analyzed as visual data to identify changes in children's lunchbox patterns before and after program implementation. Document analysis involved categorizing food types, variations, and nutritional balance in each lunchbox. Visual documentation was also used to strengthen observation and interview findings through data triangulation, enabling changes in children's feeding practices to be observed more concretely and consistently.

Data Analysis

Data were analyzed using reflexive thematic analysis to identify patterns, categories, and meanings emerging from the qualitative data (Braun & Clarke, 2006). The analysis was conducted inductively through stages of data familiarization, initial coding, categorization, and construction of major themes based on participants' experiences during program implementation and recurring patterns of meaning. The analytical process was iterative and conducted simultaneously with data collection. To enhance methodological rigor, coding processes and theme development were discussed with peers through peer debriefing to build interpretative consensus and minimize researcher subjectivity (Braun & Clarke, 2022; Byrne, 2022; Nowell et al., 2017).

Trustworthiness and Rigor

The trustworthiness of the data was ensured through several techniques, including source triangulation (observations, interviews, and documentation), member checking with participants, and discussions with peers. In addition, the researcher maintained dependability and confirmability through systematic documentation of the research process.

Ethical Considerations

This study adhered to ethical research principles by ensuring that all participants provided informed consent before data collection commenced. Participants' identities were kept confidential, and all data were used solely for academic purposes. The study did not involve any harmful risks to participants and was conducted in accordance with ethical principles for social research. Participation was voluntary, and participants had the right to withdraw from the study at any time without consequences. The study also obtained official research permission from KB Cahaya Tazkia Surabaya under permit number: 11/KB.CT/III/2026.

RESULTS

The findings of this study are presented based on thematic analysis that identified patterns and changes in early childhood nutritional caregiving practices among working-parent families. The results were organized into several major themes representing the initial conditions of children's lunchbox practices, parental perceptions, behavioral changes following program implementation, and challenges encountered during the intervention process.

Table 1. Summary of Research Findings

Theme	Conditions Before the Program	Changes After the Program	Influencing Factors
Lunchbox feeding practices	Dominated by instant and ultra-processed foods (UPFs)	More diverse lunchboxes incorporating local foods	Time constraints and family habits
Parental perceptions	Instant food perceived as practical and modern	Increased awareness of the importance of natural foods	Program education and child observation
Nutritional diversity	Limited vegetables and protein sources	Improved balance of carbohydrates, protein, and fiber	Increased nutritional awareness
Parenting behavior	Lunchboxes prepared quickly and routinely	Parents began meal planning and food preparation	Motivation to maintain children's health
Implementation challenges	Dependence on instant foods	Inconsistent implementation of healthy feeding practices	Children's preferences and work-related pressures

First, the findings revealed that children's lunchboxes at KB Cahaya Tazkia Surabaya were initially dominated by instant and ultra-processed foods (UPFs). Observational data indicated that most parents provided foods such as nuggets, sausages, packaged bread, and instant snacks as daily meals for their children. These food choices were primarily driven by practicality, ease of preparation, and children's preferences. The findings suggest that practicality served as the dominant factor influencing parental decision-making regarding children's lunchboxes.

In addition, the nutritional composition of the lunchboxes was generally limited and did not adequately reflect the principles of balanced nutrition. Vegetables and protein sources were relatively scarce, whereas foods high in refined carbohydrates and fats were more prevalent. Visual documentation further demonstrated that children's lunchboxes tended to be monotonous and lacked diversity across observation periods. This condition indicates nutritional imbalance that may negatively affect children's daily dietary intake.

Analytically, these findings demonstrate that feeding practices among working families are shaped not only by nutritional knowledge but also by work-related routines and urban convenience-oriented lifestyles. Several parents perceived instant foods as a "safe solution" because children were more likely to consume them, thereby reducing concerns regarding food refusal at school. One parent explained:

> "In the morning, when everything is rushed, nuggets or sausages are the easiest option. My child will definitely eat them, so I do not worry about the lunchbox being left unfinished." (P3)

This statement indicates that the decision to provide instant foods was influenced not merely by economic limitations or lack of nutritional knowledge, but also by psychological concerns regarding children's eating behaviors. These findings support previous research suggesting that children's sensory preferences significantly influence parental food choices.

Second, parents generally perceived instant foods as practical solutions within the constraints of demanding work schedules. Participants reported that occupational responsibilities strongly affected the selection of children's lunchbox meals. Although many parents acknowledged that instant foods were not entirely healthy, they continued using them because of convenience and efficiency in preparation. This finding highlights a discrepancy between parental nutritional awareness and actual feeding practices. One participant stated:

> "I know instant food is unhealthy if consumed too often, but sometimes I do not know what else I can prepare quickly." (P5)

These findings indicate that behavioral change cannot be achieved solely through increasing nutritional knowledge, but must also consider the social realities of working families with limited domestic time. Furthermore, some parents perceived instant foods as more modern and appealing than traditional foods, reflecting the influence of contemporary food culture on

feeding practices in urban families. This finding aligns with studies indicating that dietary modernization contributes to increased consumption of processed and ready-to-eat foods within households.

Third, following the implementation of the Real Food Program, substantial changes were observed in the types and nutritional quality of children's lunchboxes. Lunchboxes increasingly incorporated local food-based items, including traditional snacks and root crops (polo pendem). Parents began including foods such as boiled cassava, sweet potatoes, processed bananas, and other traditional foods in children's daily meals. Moreover, lunchboxes demonstrated greater nutritional diversity and balance through improved combinations of carbohydrates, proteins, and fiber sources.

These findings indicate a shift from instant food-oriented feeding patterns toward more diverse and natural food-based practices. Visual documentation showed notable changes not only in food types but also in the nutritional composition of lunchboxes following program implementation.

More importantly, these behavioral changes emerged because the program successfully reconstructed parental perspectives regarding local food. Foods previously perceived as impractical or unattractive became recognized as healthy, affordable, and acceptable alternatives for children. One parent explained:

> "At first, I thought preparing healthy lunchboxes was complicated, but it turns out cassava and sweet potatoes can also be made attractive and children enjoy eating them." (P1)

This statement demonstrates a transformation in the meaning attributed to traditional foods. Behavioral changes occurred not only at the practical level of feeding practices but also in parents' conceptual understanding of healthy food within the context of family life. These findings reinforce prior studies emphasizing the importance of local food and traditional knowledge in developing healthier and more sustainable food systems.

Fourth, behavioral changes were also evident in the ways parents prepared children's meals. Parents became more attentive to nutritional content, reduced the use of instant foods, and demonstrated greater creativity in arranging lunchbox menus. Several participants also reported beginning meal preparation the night before to address time limitations.

One participant stated:

"Now I prepare some ingredients the night before so mornings are not too rushed anymore." (P7)

This finding indicates that increased nutritional awareness encouraged the development of adaptive strategies among working families. Parents began reorganizing domestic routines to maintain healthier feeding practices despite time constraints. Thus, changes in feeding practices were influenced not only by educational intervention but also by families' capacity to establish new health-supportive routines.

Fifth, several challenges remained throughout program implementation, particularly regarding consistency in preparing healthy lunchboxes on a daily basis. Time limitations, pre-existing habits, and children's preferences for instant foods continued to hinder sustained behavioral change. One participant explained:

> "When I am tired or come home late from work, I sometimes return to instant food because it is faster." (P2)

This finding suggests that behavioral transformation in feeding practices is a complex and ongoing process shaped by the interaction of knowledge, work conditions, family routines, and food culture. Although parents increasingly understood the importance of healthy nutrition, occupational pressures and longstanding habits continued to affect the consistency of implementation.

The findings demonstrate a transition in children's lunchbox practices from patterns dominated by instant foods toward more diverse local food-based feeding practices, accompanied by increased parental awareness regarding balanced nutrition. Nevertheless, the sustainability of these changes remained influenced by time constraints, work demands, and previously established feeding habits.

Conceptual Model of Local Food-Based Feeding Practices

Based on thematic analysis, this study developed a conceptual model illustrating the integration of local food into early childhood nutritional caregiving practices among working-parent families. The model was constructed from relationships among the emergent themes and explains the process of feeding practice transformation following the implementation of the Real Food Program.

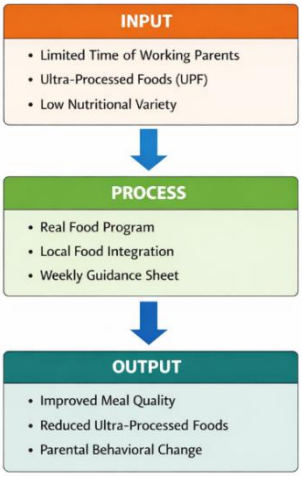


Figure 1. Conceptual Model of Local Food-Based Feeding Practices

Conceptually, the model consists of three interconnected components: input, process, and output.

Input: Initial Feeding Conditions

The first component represents the initial conditions of children's feeding practices prior to program implementation. The findings showed that working parents experienced substantial time constraints in food preparation, leading to dependence on instant and ultra-processed foods (UPFs) as daily lunchbox options. Beyond practicality, parents also perceived instant foods as modern, more acceptable to children, and safer in preventing food refusal.

Consequently, children's lunchboxes demonstrated limited nutritional diversity, low vegetable and protein content, and excessive reliance on refined carbohydrates and fatty foods. These findings reveal a discrepancy between parents' understanding of balanced nutrition and their actual feeding practices.

Process: Real Food Program Intervention

The second component describes the transformation process facilitated through the implementation of the Real Food Program, which integrated local foods into children's lunchboxes. The intervention was supported through weekly meal-planning sheets, digital communication with parents, and the utilization of culturally relevant and accessible local food resources.

The findings demonstrate that the program's practical and contextual approach facilitated parents' adoption of healthier feeding practices. Beyond improving nutritional knowledge, the program reconstructed parental perceptions by positioning local foods as healthy, affordable, and attractive alternatives for children. Within this process, school support functioned as an important reinforcing factor through habituation, lunchbox monitoring, and realistic menu examples that could be implemented by working families.

Output: Changes in Feeding Practices

The third component represents the outcomes of the intervention, reflected in improvements in the diversity and nutritional quality of children's lunchboxes, reduced reliance on ultra-processed

foods, and increased parental awareness and involvement in providing healthy meals. In addition to changes in food types, parents demonstrated behavioral transformations such as engaging in meal preparation, paying greater attention to nutritional balance, and utilizing local foods as practical alternatives for daily lunchboxes. These findings suggest that integrating local food not only improves children's nutritional intake but also contributes to the formation of healthier family eating habits. Nevertheless, the study also found that the consistency of these behavioral changes remained influenced by work routines, established family habits, and children's preferences for instant foods.

DISCUSSION

The findings of this study indicate that the dominance of ultra-processed foods (UPFs) in children's lunchboxes is a common phenomenon among working-parent families. This condition is consistent with global reports showing that UPF consumption among young children continues to increase and contributes to the development of taste preferences characterized by high levels of sugar, salt, and fat (UNICEF, 2021). Furthermore, Berti and Socha (2023) emphasized that feeding practices in early childhood are not merely intended to fulfill energy requirements, but also play a critical role in shaping long-term dietary habits and health outcomes. Children's preferences for instant foods can also be explained through repeated eating experiences and the sensory characteristics of food, as children tend to favor foods with familiar tastes that are easily accepted from an early age (Forde & de Graaf, 2022; Vidal et al., 2022). These findings are consistent with international studies demonstrating that children who are frequently exposed to ultra-processed foods early in life are more likely to develop preferences for foods high in sugar and fat, thereby reinforcing unhealthy dietary patterns over time (Nicklaus & Remy, 2013).

The limited nutritional diversity and imbalance identified in children's lunchboxes further reveal a gap between parental nutritional knowledge and actual feeding practices. This finding can be understood through the concept of parental feeding practices, where children's eating behaviors are strongly influenced by parental decisions and constraints (Kim-Herrera et al., 2021). The findings also suggest that nutritional knowledge alone does not necessarily translate into optimal feeding practices, particularly when parents face time limitations and pressures associated with domestic responsibilities and work-related demands (Ventura & Birch, 2008; Vidal et al., 2022). In line with Agustin and Rahmawati (2025), suboptimal feeding practices are associated with unhealthy eating behaviors among children, indicating that knowledge alone is insufficient without consistent implementation in everyday family routines.

The utilization of local food in this study aligns with previous research demonstrating that culturally rooted food practices contribute significantly to the prevention of nutritional problems, including stunting (Astuti et al., 2024). Similarly, Diana et al. (2022) found that local food culture influences children's eating behaviors. However, unlike previous studies that mainly emphasized cultural preservation and general health promotion, the present study demonstrates that local foods can be integrated practically into the daily routines of working-parent families, making them more applicable within contemporary family contexts.

The implementation of the Real Food Program further revealed that integrating local food can serve as an effective alternative for improving the nutritional quality of children's lunchboxes. The inclusion of traditional snacks and root crops (polo pendem) not only enhanced dietary diversity but also supported the concept of a biodiversity diet, which plays an important role in meeting micronutrient needs (Kennedy et al., 2022). These findings strengthen previous evidence suggesting that local food diversity contributes positively to children's dietary quality, while also indicating that context-based interventions may represent more sustainable strategies than reliance on instant or processed foods.

Moreover, structured and consistent nutritional interventions have been shown to improve dietary quality and early childhood development, suggesting that relatively simple modifications in feeding practices can generate meaningful improvements in children's nutritional outcomes (Abdul Rahim et al., 2025; Roberts et al., 2022). This finding reinforces the argument that

behavioral change does not always require complex interventions, but can begin through strengthening simple family-based routines and habits.

Furthermore, the increased parental awareness regarding nutritional content observed in this study demonstrates that context-based interventions can significantly influence nutritional caregiving practices. This finding is supported by Roberts et al. (2022), who found that nutritional interventions during early childhood contribute to improved cognitive development outcomes. The behavioral changes observed among parents in this study indicate that educational interventions combined with ongoing support can enhance parental awareness and encourage healthier and more structured feeding practices (Abdul Rahim et al., 2025; Roberts et al., 2022). Therefore, the present findings reinforce previous research suggesting that parental behavioral transformation is a key factor in the success of early childhood nutritional interventions.

Nevertheless, consistency in implementation remained a major challenge, particularly due to the time constraints experienced by working-parent families. These findings suggest that although parents play a central role in shaping children's eating behaviors, feeding practices are also influenced by social conditions, family routines, and everyday food environments (Ventura & Birch, 2008; Vidal et al., 2022). From a socio-cultural perspective, children's food preferences are shaped not only by individual factors but also by habits and values embedded within the surrounding social environment (Sproesser et al., 2022). The findings also align with Tasnim et al. (2025), who reported that child feeding practices are strongly influenced by family conditions and parents' capacities to provide nutritionally appropriate foods for children.

From a systems perspective, the success of the Real Food Program also highlights the importance of environment-based approaches in promoting behavioral change. The Policy, Systems, and Environment (PSE) framework emphasizes that effective interventions should involve support from social and institutional environments rather than focusing solely on individual-level change (Abdul Rahim et al., 2025). Consequently, the findings of this study not only confirm previous evidence but also extend the understanding that integration between families and early childhood education institutions is a critical factor in the success of nutritional interventions. In this regard, local food integration should be viewed not merely as a cultural preservation effort, but as a contextual nutritional strategy adaptable to the realities of contemporary working families.

Implications

The findings of this study carry important practical and policy implications for the development of early childhood nutrition programs. Practically, the integration of local foods can serve as a realistic and sustainable alternative for working-parent families in providing healthy meals without compromising convenience and practicality. The study demonstrates that local food-based nutritional caregiving can be adapted to modern family routines through simple and contextual strategies such as meal preparation, weekly menu guidance, and school-family collaboration.

From a policy perspective, the findings highlight the need for stronger institutional support from early childhood education centers in developing integrated nutrition assistance systems involving parents and schools. Early childhood institutions should not only function as educational spaces but also as facilitators of healthy feeding environments capable of supporting family-based nutritional practices. Furthermore, these findings suggest the importance of incorporating local food utilization into nutrition education and early childhood health policies to strengthen food sustainability, preserve food biodiversity, and reduce dependence on ultra-processed foods among young children.

Research Contribution

This study contributes to the growing body of literature on early childhood nutritional caregiving by proposing a contextual local food integration model that is adaptive to the realities of modern working families. Unlike previous studies that primarily focused on nutritional education or

cultural introduction to local foods, this study emphasizes the practical implementation of local food-based feeding practices within everyday family life.

Theoretically, this study extends the socio-cultural perspective of feeding ecology by integrating local food culture, parental feeding practices, and family work routines into a single contextual framework. The study also enriches existing discussions regarding the relationship between feeding practices, local food culture, and family social conditions in shaping children's eating behaviors. Furthermore, the conceptual model developed in this study offers an alternative framework for understanding how school-based interventions can support sustainable nutritional behavior change among working-parent families.

Limitations

This study has several limitations. First, the participants were limited to one early childhood education institution, which restricts the generalizability of the findings to broader contexts. Second, the study employed a qualitative approach, focusing primarily on behavioral and experiential changes rather than quantitatively measuring children's nutritional status or health outcomes. Consequently, the findings provide an in-depth contextual understanding of feeding practice transformation but cannot statistically demonstrate the effectiveness of the intervention on nutritional indicators.

In addition, the duration of the intervention was relatively limited, making it difficult to evaluate the long-term sustainability of parental behavioral changes. Future studies are therefore needed to examine the persistence of these feeding practices over extended periods.

Suggestions

Future research is recommended to employ mixed-methods approaches in order to measure the effectiveness of local food-based nutritional interventions more comprehensively, including changes in children's nutritional status, dietary intake, and health outcomes. Further studies could also involve broader geographical settings and diverse socio-economic backgrounds to examine the adaptability and sustainability of the proposed model across different family contexts.

Additionally, the development of digital-based nutrition support programs may provide promising alternatives for assisting working-parent families in implementing healthy feeding practices more consistently. Future interventions may also explore stronger collaborations between schools, health professionals, and local communities to create more sustainable and integrated early childhood nutrition ecosystems.

CONCLUSION

This study demonstrates that lunchbox practices among working-parent families were still largely dominated by instant and ultra-processed foods selected primarily for convenience, resulting in feeding practices that did not fully reflect the principles of balanced nutrition. The implementation of the local food-based *Real Food Program* successfully encouraged positive changes in the quality and diversity of children's lunchboxes, while also increasing parental awareness of the importance of nutrition during early childhood. The inclusion of traditional snacks and local root crops (*polo pendem*) provided healthier food alternatives and strengthened the connection between nutritional caregiving practices and local cultural contexts. The findings further indicate that local food integration can be implemented practically within the daily routines of working-parent families without sacrificing convenience.

Theoretically, this study proposes a conceptual model of local food integration in early childhood nutritional caregiving practices that illustrates the relationship between families' initial feeding conditions, the intervention process, and changes in parental feeding practices. The model positions local food as part of a contextual, adaptive, and culturally relevant nutritional caregiving strategy that aligns with the realities of modern family life. In this regard, the study extends the literature on early childhood nutritional caregiving by integrating health, food sustainability, and cultural relevance into a unified framework of feeding practices.

Practically, the findings highlight that sustainable improvements in children's feeding practices require continuous environmental support involving both families and early childhood education institutions. Although the program demonstrated meaningful behavioral changes, consistency in implementing healthy feeding practices remained influenced by time limitations and the demanding routines of working parents. Therefore, future early childhood nutrition programs should be designed to be more flexible, practical, and responsive to the everyday realities of modern families in order to sustain long-term behavioral change.

AUTHOR CONTRIBUTION STATEMENT

Riska Maratus Sholikah: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing – Original Draft, Visualization, and Project Administration. **Firda Ashlikhatul Kirom:** Methodology, Validation, Supervision, Writing – Review & Editing, and Resources. **Rachma Hasibuan:** Investigation, Data Curation, Validation, Writing – Review & Editing, and Supervision. **Ruqoyyah Fitri:** Formal Analysis, Visualization, Validation, Writing – Review & Editing, and Funding Acquisition.

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