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The Effectiveness of the Karamunting Genzi Parenting Monitoring Card Model for Undernourished Children Receiving Local-Based Supplementary Feeding

Zenderi Wardani[1], Ori Pertami Enardi[2*], Ratmawati[3]
[1,2,3]Department of Nutrition, Poltekkes Kemenkes Pangkalpinang
*Email : ori.pertami@poltekkespangkalpinang.ac.id

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Abstract

The reduction in wasting prevalence in Pangkalpinang City from 5.1% in 2021 to 4.9% in 2022 was statistically insignificant, reflecting a marginal decline of only 0.2%, still near the threshold.Pangkal Balam Health Center allocated the highest budget to serve 59 undernourished children under five. This study aimed to evaluate the implementation of a nutrition education model using the "Karamunting Genzi" Parenting Monitoring Card, an educational and self-assessment tool designed to support mothers and caregivers in planning and evaluating age-appropriate feeding practices. This study uses a quasi-experimental design with a cross-sectional approach. Respondents consist of 44 mothers/caregivers of U-5 children undernourished and receiving locally based supplementary feeding (PMT). The interventions consisted of cadre training, home visits, and using the Karamunting Genzi Monitoring Card as a monitoring tool. Data was collected using structured questionnaires and analyzed using Spearman's rank tests. The intervention engaged 10 community health (Posyandu) cadres to support 44 participating mothers across five urban villages, focusing on improving feeding knowledge and practices. Post-intervention assessments showed significant improvements in maternal knowledge (mean score increased from 65.9 to 67.6) and feeding practices (94.1 to 96.2). Spearman's rank test showed a strong relationship between pre- and post-intervention knowledge scores (rs = 0.775) and parenting practices (rs = 0.766). This study recommends replicating intervention in other areas, conducting long-term behavioral monitoring, developing more interactive educational media, and integrating the tool into broader nutrition programs through collaboration with the government and relevant stakeholders to address childhood malnutrition effectively.

INTRODUCTION

Undernutrition among children under five remains a pressing global health concern, particularly during the critical period of 6 to 23 months when children transition from exclusive breastfeeding to complementary feeding. This phase, part of the first 1,000 days of life, is pivotal for optimal growth and cognitive development (Dewey, 2020). Stunting has long-term physical, metabolic, neurocognitive, hormonal, and functional consequences, including increased risk of chronic disease, impaired brain development, altered hormonal regulation, and reduced adult work capacity (Saleh et al., 2021; Soliman et al., 2021) .

In Indonesia, the prevalence of child wasting remains concerning. The Bangka Belitung Islands Province is below the cut-off point for public health problems based on nutritional prevalence, particularly stunting (>20%), but shows an insignificant decline, from 18.6 percent in 2021 to 18.5 percent in 2022.

Public health problems also persist in the Bangka Belitung Islands, based on the threshold for wasting prevalence (>5%), although this has decreased from 6.2 percent in 2021 to 5.8 percent in 2022. Pangkalpinang City has experienced a significant decline in 3.8 prevalence, from 16.7 percent in 2021 to 12.9 percent in 2022. A decline also occurred in terms of the prevalence of wasting. However, it was not significant and was at the threshold value, namely from 5.1 percent (2021) to 4.9 percent (2022) or only 0.2% (Kementerian Kesehatan, 2021, 2022). Pangkalpinang City also received funding for supplementary feeding from the local food from the Ministry of Health in 2023 in each

community health center working area. One of these working areas is the Pangkal Balam Community Health Center, which received the most significant funding, with the number of target toddlers with malnutrition being as many as 59 (Dinkes Kota Pangkalpinang, 2023). Although the government has implemented various nutrition programs, a gap exists in providing specific and measurable community nutrition education instruments to empower child feeding care (Choufani et al., 2020).

Effective complementary feeding interventions, including the introduction of diverse and nutrient-rich foods, significantly reduce stunting. This study found that low dietary diversity and infrequent complementary feeding practices increase the risk of stunting, emphasizing the importance of adequate feeding for child growth (Babys et al., 2022). These activities can motivate mothers to be responsive parents and ensure adequate feeding practices (Wardani et al., 2021). However, the success of these interventions relies heavily on caregiver knowledge and behavior. Research has emphasized the importance of tailored education using interactive media to enhance caregiver engagement and understanding (Ahmad et al., 2020).

A community-based model using the Karamunting Genzi Parenting Monitoring Card was developed to address these challenges. This tool is an educational medium and a self-assessment instrument to help mothers plan and evaluate their feeding practices. The urgency of this intervention lies in its potential to bridge the gap between policy implementation and behavior change at the household level. The present study evaluates the implementation of this model within the community setting of Pangkal Balam Health Center, where the burden of undernutrition among toddlers is among the highest in the city.

METHOD

This study employed a community-based participatory research design. This study received ethical approval from the Health Research Ethics Committee of Poltekkes Kemenkes Pangkalpinang, as stated in the Ethical Clearance No: 53/EC/KEPK-PKP/VIII/2024. The intervention was conducted over six months, from May to October 2024, in the working area of the Pangkal Balam Health Center, Pangkalpinang City, Indonesia. The target population consisted of 44 mothers of undernourished children aged 6–59 months who received locally-based supplementary feeding (PMT) from the Ministry of Health program. Respondents were selected purposively based on nutritional vulnerability and their involvement in the PMT program.

Data collection included pre- and post-intervention surveys using structured questionnaires to assess maternal knowledge and child feeding practices. Data were collected with assistance from 10 trained posyandu cadres who facilitated education sessions and home visits using the Karamunting Genzi card as the core intervention tool. The tool allowed mothers to self-assess and track feeding practices according to recommended dietary guidelines.

Data were analyzed using descriptive statistics to measure mean scores and percentage changes. Spearman's rank correlation coefficient was used to examine the relationship between pre- and post-intervention knowledge and practices. The correlation test was conducted at a significance level of $p < 0.01$. Statistical analysis was performed using SPSS version 25. This methodological approach was chosen to assess both the educational tool's effectiveness and the respondents' behavioral changes.

RESULTS AND DISCUSSION

Results

This study involved 10 Posyandu cadres who accompanied respondents using the Karamunting Genzi monitoring card.

Table 1. Characteristics of Respondents

Characteristics	n	%
Sex U-5 Children		
Male	24	54,5
Female	20	45,5
Age		
6 – 9 months	1	2,3
9 – 12 months	3	6,8
12 – 24 months	12	27,3
24 – 59 months	28	63,6
Father's Occupation		
Government employee	4	9,1
Private or Self-Employed Worker	7	15,9
Agricultural & Manual Labor Sector	33	75,0
Father's Education		
Elementary school	14	31,8
Junior high school	8	18,2
Senior high school	17	38,6
College/University	5	11,4
Mother's Occupation		
Housewife	41	93,2
Others	3	6,8
Mother's Education		
Elementary school	8	18,2

Junior high school	13	29,5
Senior high school	18	40,9
College/University	5	11,4

Source: Primary research data 2024

Table 1 shows that the target gender is almost balanced, although males are more numerous at 54.5 percent, and the largest age category is in the 24-59 month range at 63.6 percent. The characteristics of fathers' occupations and the highest education levels are labourers/fishermen (75.0%) and high school graduates (38.6%), respectively. Meanwhile, respondents most common occupations and education levels are housewives (93.2%) and high school graduates (40.9%).

Before the study, the average knowledge score of respondents regarding complementary feeding was 65.9. After assistance using the Karamunting Genzi monitoring card, the average knowledge score increased to 67.6. The observed feeding practices covered 10 key items, including breastfeeding (for children aged 6–24 months), provision of staple foods, animal- and plant-based protein sources, vegetables and fruits, meal frequency and portion size, as well as handwashing practices using soap. Initial assessments on the first day showed that the average practice score was 94.1. By the end of the eight-day mentoring period, the average score had increased to 96.2, indicating an improvement in maternal feeding behavior (Table 2).

Table 2. Improvement in Respondents' Knowledge and Complementary Feeding Practice Score

Variables	$\bar{x} \pm SD$	Min - Maks
Knowledge		
Before	65.9 ± 12,6	20 – 87
After	67.6 ± 11,3	40 – 87
Practice		
Before	94.1 ± 10,6	56 – 100
After	96.2 ± 7,6	67 – 100

Source: Primary research data 2024

The respondents' knowledge level in the less category regarding complementary feeding before the intervention with the Karamunting Genzi monitoring card was 59.1 percent. However, after the intervention, this category decreased to 56.8 percent. The good category's knowledge level increased to 42.2 percent from 40.9 percent. Respondents' practices regarding complementary feeding were categorized as less accurate before assistance with the Karamunting Genzi monitoring card, which was 22.7 percent. However, after assistance, this decreased to 20.5 percent. Respondents practices in the appropriate category also increased to 79.5 percent, up from 77.3 percent (Figure

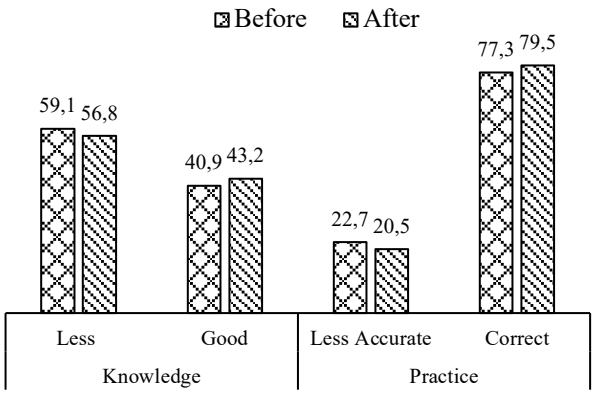

Figure 1. Improvement in Respondents' Knowledge and Complementary Feeding Practices

Statistical analysis of the knowledge variable yielded a Spearman correlation coefficient (rs) of 0.775, indicating a strong positive association between pre- and post-intervention knowledge levels. This result suggests that respondents with higher baseline knowledge tended to retain or further enhance their knowledge following the Karamunting Genzi intervention. The corresponding p-value (< 0.000) confirms that this association is statistically significant at the 1% significance level (Table 3).

Similarly, the Spearman correlation coefficient (rs) for feeding practices was 0.766, also indicating a strong positive association between practices before and after the intervention. Respondents who exhibited better initial feeding practices were more likely to sustain or improve those practices after utilizing the Karamunting Genzi monitoring card. The statistical significance of this relationship ($p < 0.000$) further supports the robustness of the findings at the 1% level of significance (Table 3).

Table 3. Correlation Analysis Between Knowledge and Practice Before and After the Karamunting Genzi Intervention

Variabel	Spearman's rs	ρ-value
Knowledge	0.775	0.000
Practice	0.766	0.000

Source: Primary research data 2024

Discussion

Feeding practices for children aged 6–59 months are crucial, as breast milk alone is no longer sufficient to mete their increasing nutritional needs. Children

require energy-dense and nutrient-rich foods during this period to support optimal growth and development (Capra et al., 2024). This study evaluated the effectiveness of the Karamunting Genzi parenting monitoring card in improving maternal knowledge and feeding practices, measured through pre- and post-intervention assessments.

Effectiveness of the Karamunting Genzi Card

User-friendly and straightforward educational media, such as monitoring cards, can significantly enhance caregivers' knowledge and feeding practices. Visual and interactive aids such as monitoring cards positively impact mothers' understanding of food diversity and appropriate feeding frequency(Ikhsyania et al., 2025). Furthermore, visual aids can improve complementary feeding practices by increasing mothers' knowledge (Mousavi Ezmareh et al., 2024).

In this community-based intervention, the use of the Karamunting Genzi card significantly improved maternal behavior. Before the intervention, most respondents exhibited limited understanding of portion sizes, food groups, and meal frequency. After implementing the monitoring card, post-test results indicated a notable improvement in maternal understanding, particularly regarding the importance of food diversity and fulfillment of macronutrient and micronutrient needs for children aged 6–59 months.

Improvement in Knowledge and Practice

The intervention using the monitoring card effectively enhanced maternal knowledge and feeding practices, corroborating previous studies (Ahmad et al., 2019). Maternal knowledge of appropriate feeding practices directly influences their behavior in providing adequate and diverse nutrition. Before the intervention, respondents often lacked awareness of the necessary nutritional proportions and the importance of iron, protein, and healthy fats. Post-intervention assessments showed improvements in these areas, as evidenced by the correlation results: knowledge (rs = 0.775) and practice (rs = 0.766).

These findings align with the study (Y. B. Prasetyo et al., 2023; Tahreem et al., 2024), which indicated that improvements in maternal nutrition knowledge through educational media were associated with better feeding practices and improved child nutrition status. A better understanding of child feeding is expected to result in more appropriate practices, reducing undernutrition risks among children.

Program Limitations

While the intervention produced positive outcomes, several limitations should be noted. Behavioral changes in infant and child feeding practices often require extended observation, as knowledge acquisition does not always translate into immediate behavioral change (Birungi et al., 2022). Additionally, this program was implemented within a limited geographic area and involved a small sample size, which may affect the generalizability of the results. Future research and community-based programs involving a larger population and broader geographic coverage are necessary to validate the effectiveness of similar interventions.

Implications for Nutrition Programs and Policy

The findings of this intervention carry important implications for child nutrition improvement programs, particularly in areas with high malnutrition rates. Simple yet effective educational media, such as the Karamunting Genzi monitoring card, can be integrated into broader nutrition interventions. Local governments and health centers should consider incorporating such tools into maternal education programs, especially in regions with prevalent stunting and wasting issues (A. Prasetyo et al., 2023). Overall, empowering mothers with better knowledge and feeding practices through visual educational media can serve as an initial step toward improving feeding behaviors and ultimately reducing malnutrition in children aged 6–59 months.

CONCLUSION

Using the Karamunting Genzi parenting monitoring card effectively improves maternal knowledge and feeding practices for infants and young children. The average knowledge score increased from 65.9 to 67.6, while the average feeding practice score rose from 94.1 to 96.2. A strong and statistically significant positive correlation was found between pre- and post-intervention knowledge (rs = 0.775) and feeding practices (rs = 0.766). These findings indicate that educational interventions utilizing simple visual media can enhance caregivers' understanding and behavior in meeting the nutritional needs of children aged 6–59 months. The results also highlight the potential of the Karamunting Genzi card as a practical tool for community-based nutrition education.

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