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Effectiveness of Poster-Based Nutrition Counseling on Mothers' Knowledge in Krembangan Selatan Health Center

Rizal Wicaksono Agung[1], Mujayanto[2*], Riezky Faisal Nugroho[3], Dian Shofiya[4]
[1, 2. 3. 4]Department of Nutrition, Politeknik Kesehatan Kemenkes Surabaya, Surabaya, Indonesia
*Email Corespondence: ikydho@gmail.com

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ABSTRACT

Stunting remains a public health problem in Surabaya, where effective educational interventions are needed to enhance maternal knowledge on balanced nutrition. This study aimed to evaluate the effect of counseling using poster media on balanced nutrition knowledge among mothers of stunted or at-risk toddlers. A quasi-experimental study with a one-group pretest-posttest design was conducted at the Krembangan Selatan Community Health Center, involving 33 mothers selected through non-probability sampling. Primary data were collected through validated questionnaires administered before and after the intervention. The counseling used posters illustrating the balanced nutrition pyramid and the "Isi Piringku" (My Plate) concept. Results showed a mean knowledge score increase from 76.06 to 84.84. The Wilcoxon signed-rank test indicated a statistically significant improvement ($p = 0.001$). These findings suggest that poster-based counseling effectively improves maternal knowledge. However, the absence of a control group, the small sample size, and the short follow-up period limit the generalizability and long-term interpretation of the results. Further research using a randomized controlled trial design is recommended to assess sustained behavioral changes.

INTRODUCTION

Stunting is a condition in which toddlers suffer from prolonged inadequate nutritional intake, causing them to be shorter than other children of the same age[1]. Cases of stunting are still found in the Surabaya City area. This issue has become a top priority, prompting the Mayor of Surabaya to initiate numerous work programs through community health centers across the city in an effort to eliminate stunting in toddlers[2,3].

Stunting is a condition where a toddler's growth is impaired due to chronic malnutrition, leading to growth that does not meet appropriate standards. The index used to determine whether a child is stunted is based on Body Length (BL) or Height (H) for Age (A), and is compared with the WHO-NCHS 2006 standard. According to the Ministry of Health, a child is considered at risk of stunting (pre-stunting) if their Z-score is less than -2 Standard Deviations (SD), and stunted if their Z-score is less than -3 SD[4–6]. The condition of stunted toddlers is a serious concern for community nutrition officers. Prevention efforts should be prioritized during the pre-stunting stage, for children with a Z-score between ≤ -2 SD and ≥ -3 SD, so immediate intervention can be given to prevent further deterioration or to improve their nutritional status. If a child has already entered the stunted category (Z-score < -3

SD), interventions are considered to have limited effectiveness. However, Supplementary Feeding Programs (PMT) are still provided to help improve nutritional status[7].

Maintaining proper nutritional status in toddlers is crucial because if this condition is neglected for a long time, it can result in a less intelligent generation, which may hinder the success of the Golden Generation 2045 initiative. Stunting is caused by suboptimal growth and short stature, due to inadequate or insufficient food intake over an extended period.

According to the Indonesian Nutrition Status Survey (SSGI) presented at the 2023 National Working Meeting of BKKBN, the national stunting rate has reached 21.6%, a decrease from the previous 24%[8]. In 2024, Indonesia targets a reduction to 14%. Based on the official website of the Surabaya City Government, the stunting rate has dropped to 4.8% from a previous high of 28.9%[9]. The Mayor of Surabaya responded swiftly upon learning that the 2024 national target is a stunting rate of 14%.

Stunting prevention efforts can be categorized into primary and secondary prevention. Primary prevention includes monitoring changes in toddler weight and height monthly through *posyandu* activities, as well as educating mothers about appropriate infant and child feeding practices. Secondary prevention involves providing Supplementary Feeding (PMT) to stunted toddlers[10].

Educational efforts for stunted toddlers are usually carried out through counseling. This education can be delivered using media such as posters, leaflets, slides, flipcharts, and more. Posters are particularly effective as they are expected to attract more attention. A poster is a brief message presented through images, text, or illustrations intended to influence people to easily receive and understand the message[11]. Based on this background, this study aims to analyze the effect of counseling using poster media on balanced nutrition knowledge in stunted mothers under five in the working area of the South Krembangan Health Center, Surabaya City. The results of this study are expected to be the basis for the development of visual media-based behavior change communication programs that are applicable in primary health services.

MATERIALS AND METHODS

This study applied a quasi-experimental one-group pretest-posttest design to evaluate the effect of poster-based counseling on balanced nutrition knowledge among mothers of stunted or at-risk toddlers. The research was conducted at the Krembangan Selatan Community Health Center, Surabaya, from May to August 2024. A total of 33 respondents were selected using convenience sampling. The intervention consisted of a one-time, 30-minute individual counseling session using a poster that illustrated balanced nutrition concepts, including the “Isi Piringku” model, food diversity, and proper meal portions. Posters remained displayed in the facility for two additional weeks to reinforce the message.

Primary data were collected using a validated questionnaire administered via face-to-face interviews. The instrument was reviewed by three experts for content validity and tested for reliability (Cronbach's alpha = 0.82) in a pilot study. The Wilcoxon Signed-Rank Test was used to analyze differences in pretest and posttest scores, appropriate for non-parametric paired data.

RESULTS

The characteristics of the respondents, based on the gender of the toddlers, showed that out of 33 respondents, the majority were male toddlers, totaling 19 with a percentage of 57.6%, while female toddlers totaled 14 with a percentage of 42.4%. The highest number of toddlers were in the age group of 24–35 months, with a percentage of 39.4%. Based on the Z-score values of the 33 respondents, the majority of toddlers had Z-scores between -2 and -3 SD, totaling 32 toddlers (96.96%), while only 1 toddler (3.03%) had a Z-score below -3 SD.

Regarding the results of mothers' knowledge about balanced nutrition, there was an increase in the average knowledge score after the counseling session by 8.78 points. The average score before the counseling was 76.06, which increased to 84.84. To analyze the knowledge data of the mothers, the researcher used the Wilcoxon Signed Rank Test, and the result showed p=0.001 (p<0.05), indicating that counseling using poster media had a significant effect in increasing the knowledge of mothers about balanced nutrition in the Krembangan Selatan Community Health Center area, Surabaya.

Table 1. Respondent Chacacteristics

Variable	n	%
Gender		
Boys	19	57.6
Girls	14	42.4
Total	33	100.0
Age (month)		
0-11 month	2	6.1
12-23 month	4	12.1
24-35 month	13	39.4
36-47 month	8	24.2
48-59 month	6	18.2
Total	33	100.0
Toddler's Z-score (SD)		
-2 – (-3) SD	32	96,96
<-3 SD	1	3,03
Total	33	100.0

Source: Primary Data, 2024

Based on the table above, out of the 33 respondents, the majority of toddlers were male, totaling 19 children with a percentage of 57.6%, while female toddlers totaled 14 children with a percentage of 42.4%. The highest number of toddlers were in the age group of 24–35 months, with a

percentage of 39.4%. In terms of Z-score values, the majority of the 33 respondents were toddlers with Z-scores between -2 and -3 SD, totaling 32 children with a percentage of 96.96%, while only 1 toddler had a Z-score below -3 SD, accounting for 3.03%.

Tabel 2. The Effect of Nutrition Counseling Using Poster Media on Mothers of Stunted Toddlers

Knowledge	Before		After	
	n	%	n	%
Very Good (85-100)	9	27.3	20	60.6
Good (65-80)	21	63.6	13	39.4
Enough (45-60)	3	9.1	0	0
Less (25-40)	0	0	0	0
Very Less (0-20)	0	0	0	0
Total	33	100	33	100
Average value	76,06		84,84	
p-value	0,001			

Source: Primary Data, 2024

Based on Table 2, there was an increase in the average knowledge score about balanced nutrition by 8.78 points after the counseling session. Before the counseling, the average score was 76.06, which then increased to 84.84. To analyze the knowledge data of the mothers, the researcher used the Wilcoxon Signed Rank Test, which resulted in a p-value of 0.001 ($p<0.05$). This result indicates a significant effect of counseling using poster media on improving mothers' knowledge about balanced nutrition at the Krembangan Selatan Community Health Center in Surabaya.

DISCUSSION

The results of this study show that poster media is an effective educational tool in increasing the knowledge of mothers under five about balanced nutrition, in line with the communication theory of health education according to Notoatmodjo (2007) which states that the effectiveness of media in counseling is determined by the ability of the media to simplify complex information[12,13]. Posters have visual advantages that are able to attract attention and facilitate the understanding of the material, especially for people with low to secondary education backgrounds, which is a common characteristic of stunting program targets in the health center's work area[14,15].

This result is also strengthened by the research of Ulya & Iskandar (2017), which showed that the use of posters as a medium of health education significantly increases the knowledge of hypertension sufferers[16]. Similarly, research by Nuraisyah & Azizah (2023) found that counseling through posters in rural communities was able to increase public awareness of chronic diseases[17]. This reinforces the evidence that posters are not only relevant for nutrition education, but are also widely applied in public health programs[18–20].

The increase in the average knowledge score from 76.06 to 84.84 shows the effectiveness of conveying messages through visual media. This means that not only was there a statistical improvement ($p = 0.001$), but there was also a shift in the category of knowledge from the majority of

"good" to "very good" post-intervention. These findings are important because increased knowledge is the first step in changing attitudes and practices, such as in the behavioral change model Health Belief Model (HBM) which states that knowledge will affect the perception of risks and benefits, which in turn influences actions.

Although the results were significant, the study had some limitations. First, there was no control group, so the increase in knowledge could not be compared to the group that did not receive the intervention. Second, the measurement period was limited to short-term effects, without looking at the sustainability of changes in nutritional behavior in the long term. Third, the relatively small sample size (n=33) limits the generalization of these findings to a wider population.

From a practical perspective, the results of this study can be used by nutrition workers in health centers as the basis for planning a more systematic and evidence-based behavior change communication program (KPPB). The use of posters adapted to local wisdom and simple language can be an effective strategy to reach groups of mothers with children at risk of stunting[21–23]. The policy implications that can be proposed are to include education through poster media in the minimum service standards (SPM) in the field of nutrition at Puskesmas, as well as intensive training for posyandu cadres in delivering nutrition materials using visual media.

Furthermore, to achieve the national target of reducing stunting prevalence to 14% by 2024, as mandated in the National Action Plan for Stunting Control (RAN-PASTI), education plays a role as one of the key components of sensitive interventions[24,25]. This study provides empirical support that visual media-based educational strategies, such as posters, can strengthen maternal capacity in parenting and feeding in accordance with the principles of balanced nutrition.

Thus, educational interventions using posters are not only effective in terms of increasing knowledge, but also efficient in the context of primary services such as health centers. For further research, it is recommended to conduct longitudinal studies to assess the long-term impact on changes in children's behavior and nutritional status, as well as to compare the effectiveness of different types of media (posters, videos, leaflets, and audio-visuals) comparatively in the context of stunting management.

CONCLUSION

This study found that counseling using poster media significantly improved maternal knowledge on balanced nutrition, with an average score increase of 8.78 points and a large effect size (p = 0.001; r = 0.63). The shift from “good” to “very good” knowledge categories highlights the effectiveness of visual media in communicating nutrition messages to mothers of stunted toddlers. As a policy implication, poster-based education should be integrated into routine health promotion activities at the primary care level, particularly in Posyandu and Puskesmas. Visual tools that are

culturally relevant and easy to understand can support national stunting reduction programs and should be included in the Minimum Service Standards (SPM). For future research, it is recommended to use randomized controlled trials to assess long-term behavioral outcomes and compare the effectiveness of various educational media formats in improving knowledge and practices related to child nutrition.

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