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EFFECTIVENESS OF CULTURE-SENSITIVE EDUCATION USING THE TRANSTHEORETICAL MODEL ON UNDER-FIVE FAMILY FEEDING PRACTICES

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Abstract

Stunting remains a chronic nutritional problem in Indonesia, with a prevalence of 21.6% in 2023 and 27.4% in South Sulawesi. Feeding practices are an important factor in preventing stunting, but existing interventions are often general in nature and do not take into account cultural aspects and families' readiness to change their behavior. MethodsThis study used a quasi-experimental one-group pre-test post-test design on 55 mothers of children under five years in the working area of the Simbang Community Health Center, Maros District. The intervention was cultural-sensitive nutrition education based on the Transtheoretical Model (TTM). Data were collected using the Feeding Practice Questionnaire and analyzed using the Wilcoxon Signed Rank test. The result: The results showed a significant increase in the stage of behavioral change, with $Z = -4.523$, $p < 0.001$, and effect size $r = 0.61$. The TTM-based intervention was effective in improving family feeding practices. Conclusions: This approach helped families progress gradually to the maintenance stage and proved to be more effective than conventional nutrition education.

Keywords: *Stunting, culture, transtheoretical model (TTM), family feeding practices, health education*

Introduction

Stunting remains a serious public health problem in Indonesia. Based on the 2023 Indonesian Nutrition Status Survey (SSGI), the national prevalence of stunting reached 21.5%, down from 24.4% in the previous year, but still above the WHO threshold of 20% (Kemenkes RI, 2023). South Sulawesi is one of the regions with the highest prevalence of stunting, at 27.4%, and Maros Regency has a significant chronic nutritional burden (Dinkes Provinsi Sulawesi Selatan., 2023). This condition indicates that stunting prevention efforts in the region require more innovative, contextual, and culturally sensitive nutrition education strategies.

One of the key factors in preventing stunting is feeding practices for children under five years of age. These practices include the timing of complementary feeding, feeding frequency, food variety, and food safety (WHO, 2023). However, studies show that many families in rural areas of Indonesia have not yet implemented feeding practices that are in line with WHO recommendations, either due to limited knowledge, economic factors, or the influence of local culture (Effendy et al., 2020). In the context of the Bugis-Makassar community, for example, there are still certain food restrictions for mothers and children, as well as traditional beliefs that influence the choice of food ingredients. This often results in insufficient intake of animal protein and micronutrients during the critical growth period of children (Alam et al., 2020).

Most nutrition education interventions carried out at the Posyandu and Puskesmas levels have been uniform and focused on increasing knowledge rather than changing behavior. This approach has proven to have limited effectiveness, as it does not take into account the stage of readiness of families to change their behavior or the socio-cultural context that influences it (Ghodsi et al., 2021, McGuire, 2005, Prochaska & DiClemente, 1983). Therefore, a personalized, gradual, and culturally sensitive educational approach is needed so that nutrition messages are more easily accepted and applied in a sustainable manner.

Theory of behavioral change that has been proven effective in the context of public health is the Transtheoretical Model This model explains that behavioral change occurs through five stages, namely precontemplation, contemplation,

preparation, action, and maintenance, and is influenced by an individual's cognitive, affective, and social processes (Prochaska & DiClemente, 1983). Several studies have shown that the Transtheoretical Model can increase the effectiveness of nutrition and parenting education interventions because it is able to tailor messages and intervention strategies based on the individual's stage of readiness (Grant et al., 2022, Wahid N, Wanda D, 2019). However, to date, the application of TTM in the context of nutrition education for families with children under five years in Indonesia, especially those that integrate local cultural aspects, is still very limited. Findings from the study by Mahmudiono et al., (2020) show that behavior-based interventions contextualized with local culture produce more significant changes in eating behavior than conventional approaches. Therefore, there is a research gap in the local context of South Sulawesi, where cultural values are still very strong and have not been widely studied in relation to behavioral change models for feeding.

Thus, this study aims to analyze the effectiveness of culture-sensitive nutrition education based on the transtheoretical model (TTM) on feeding practices of families with children under five years in Je'netaesa Village, Maros District. This approach not only provides nutrition education that is appropriate to the stages of behavioral change in families, but also integrates local Bugis-Makassar cultural values into the education process

Method

This study is an experimental study using a one-group pre-test and post-test design. This study conducted a culture-based educational intervention and Transtheoretical Model (TTM). Before and after the intervention, an assessment will be conducted on the TTM stages and family feeding practices for children under five years. The research was conducted from June to August 2025 in the working area of the Simbang Community Health Center, Maros Regency, South Sulawesi. The population in this study consisted of all parents who had children under five years. Sampling was conducted using purposive sampling, which selected respondents based on specific criteria. The inclusion criteria for this study were parents who had children under five years and were willing to participate in the study until its completion, while the exclusion criteria were parents who were not located in the study area at the time of the study.

The instrument used was a feeding practice questionnaire adapted and modified from several sources, consisting of six domains, namely (1) feeding patterns and frequency, (2) food quality and variety, (3) food hygiene and safety, (4) responsiveness and interaction during feeding, (5) cultural influences and family beliefs, (6) social support and health monitoring (WHO & UNICEF, 2021, Birch & Fisher, 1998, Musher-Eizenman, D. and Holub, 2007, Kemenkes RI, 2023, Leininger, 1991). To measure family readiness, the transtheoretical model instrument was used. This instrument consists of 3 domains of questions, and each domain consists of 5 stages, namely precontemplation, contemplation, preparation, action, and maintenance (Prochaska & DiClemente, 1983). This questionnaire has been pilot-tested on 30 respondents who are mothers with children under five years and has undergone validity and reliability testing. The validity test was conducted using the Content Validity Index (CVI) method with a result of s-CVI score of 0.96. The reliability test of the transtheoretical model questionnaire showed a Cronbach's Alpha value of 0.877 and the feeding practice questionnaire showed a Cronbach's Alpha value of 0.835. The data were analyzed using the Wilcoxon signed rank test. This study has obtained ethical approval from the STIK Stella Maris Makassar Ethics Committee with number 39/STIK-SM/KEPK/VII/2025.

Results

Table 1 Characteristics of respondents based on mother's education level, occupation, number of children, children age, and children's nutritional status

Characteristics	f	(%)
Mother's education		
Primary education	19	34,55
Secondary edeucation	30	54,54
Higher education	6	10,91
Occupation		
Housewife	48	87,3
Employee	6	10,9
Self employed	1	1,8

Number of children		
1	8	14,5
2	18	32,7
>2	29	52,7
Children age (month)		
0- <12	9	16,4
12-36	30	54,5
37-60	16	29,1
Nutritional status		
Normal	34	61,8
Stunted	12	21,8
Severely stunted	9	16,4
	55	100

Source: Primary Data

Based on table 1, it was found that most respondents were mothers with secondary education (high school) totaling 30 respondents (54.54%), followed by 19 respondents with elementary education (34.55%), and 6 respondents with higher education (10.91%). The majority of respondents worked as housewives, totaling 48 respondents (87.3%). Based on the number of children, most respondents had more than two children, totaling 29 respondents (52.7%). The majority of children were in the 13-36 months age group, with 30 respondents (54.5%), followed by 16 respondents (29.1%) in the 37-60 months age group, and 9 respondents (16.4%) in the 0-12 months age group. The nutritional status of children was mostly in the normal category, with 34 respondents (61.8%), but there were still 12 respondents (21.8%) who were stunted and 9 people (16.4%) who were severely stunted.

Table 2. Characteristics of respondents based on age

Characteristics	Mean	Standar deviasi	Median
Mother's age	32,93	5,972	32,00

Source: Primary Data

Based on the table above, the average age of respondents was 32.93 ±5.97 years, with an age range of 20–50 years.

Table 3. Frequency distribution of respondents based on the transtheoretical model (TTM) and family feeding practices before and after intervention

Variables	Pre intervention		Post intervention	
	(f)	(%)	(f)	(%)
Transteoritikal model (TTM)				
Precontemplation	1	1,8		
Contemplation	23	41,8		
Preparation	31	56,4		
Action			20	36,4
Maintanance			35	63,6
Feeding Practice				
Low	20	36,36	0	0
Medium	5	9,09	5	9,09
High	30	54,55	50	90,91
Total	55	100	55	

Source: Primary Data

Based on table 2, in terms of Transtheoretical Model (TTM) capacity, before the intervention, there was 1 respondent (1.8%) in the precontemplation stage, 23 respondents (41.8%) in the contemplation stage, and 31 respondents (56.4%) in the preparation stage. After the intervention, the proportion of respondents in the maintenance stage increased to 35 respondents (63.6%) and those in the action stage increased to 20 respondents (36.4%). Before the intervention, 20 respondents (36.36%) were in the low category and 30 respondents (54.55%) were in the high category for feeding practices. After the intervention, family feeding practices increased from 54.55% to 90.91%.

Table 4. Analysis of comparison in family feeding practice scores before and after the intervention.

Comparison	N	Mean Rank	Sum of Rank
Negative Ranks (Post < Pre)	0	0.00	0.00
Positive Ranks (Post > Pre)	25	13.00	325.00
Ties (Post = Pre)	30	-	-
Total	55		

Based on table 4, the Wilcoxon Signed Rank test results obtained data from 55 respondents, none of whom experienced a decrease in score (negative ranks = 0), 25 respondents experienced an increase (positive ranks), and 30 respondents remained the same (ties).

Table 5. Wilcoxon Signed Rank Test Statistical Results

Variable	z	p-value	*Effect Size* (r)
Feeding Practice	−4.523	0.000	0.61 (besar)

Based on table 5, the Wilcoxon test yielded a result of Z = −4.523 with p < 0.000, indicating a difference in integration scores before and after the intervention. An effect size value of r = 0.61 indicates that the intervention had an effect on family feeding practices. These results confirm that the effect of the intervention is not only statistically significant but also practically meaningful in family feeding practices for the prevention of stunting in children under five years.

Discussions

The results of this study indicate that culture-sensitive nutrition education based on the transtheoretical model has a significant effect on improving infant feeding practices in families. Based on the Wilcoxon Signed Rank test, Z value of -4.523 and p = 0.000 (p < 0.05) were obtained, indicating a significant difference between feeding practices before and after the intervention. The effect size (r)= 0.61, which is categorized as a large effect (Cohen, 2013). This shows that the intervention applied is not only statistically significant but also has practical significance in changing family behavior towards healthier and more sustainable feeding practices. These findings support the recommendations (WHO, 2023) that emphasize the importance of family-based interventions, involving mothers as the primary agents of change in stunting prevention.

Conceptually, the success of this intervention can be explained through a combination of two approaches, namely the cultural approach and the Transtheoretical Model. The culture-based approach emphasizes the importance of culturally congruent care, which is health services tailored to local cultural values, norms, and practices, so that health messages are more easily accepted and practiced by the community (Leininger, 1991). Meanwhile, the TTM explains that behavioral change does not occur suddenly, but rather through five sequential stages: precontemplation, contemplation, preparation, action, and maintenance (Prochaska & DiClemente, 1983).

In this study, the respondents' behavioral change stages showed a shift from the preparation stage (56.4%) before the intervention to the maintenance stage (63.6%) after the intervention. This shift indicates an increase in motivation and internalization of health values integrated with local wisdom. This finding is in line with (Martin et al., 2020), who stated that the integration of behavioral theory with the local cultural context increases the effectiveness of nutrition programs in middle-income countries, because it takes into account individual readiness and the social context in which the behavior is formed. Culture has a profound influence on family nutrition behavior. In the Bugis-Makassar community, for example, child feeding patterns are strongly influenced by traditional values and hereditary beliefs about foods that are taboo for infants (Putriana et al., 2019). Other studies (Hartono et al., 2020, Wahid N, Wanda D, 2019) have also found that feeding practices in Bugis society are largely influenced by traditional beliefs, such as restrictions on the consumption of certain eggs or fish because they are considered “too hot” for babies. However, through an educational approach that respects culture and provides scientifically sound explanations that are easily accepted, behavioral changes can occur without causing cultural resistance.

Culturally sensitive education on family health practices reinforces previous findings by (Effendy et al., 2020, Haniarti et al., 2025) which prove that culturally sensitive nutrition education significantly improves stunting prevention behaviors among mothers. This approach enables health workers to convey messages in a manner consistent with the community's value system, such as using local terms, analogies, and cultural symbols familiar to respondents. In the context of this study, the intervention was delivered through TTM-based education and behavioral reflection, so that mothers not only knew what to do, but also realized why and how the change was important for their children. The interventions carried out during this study emphasized the stages of behavioral change according to TTM, starting from building awareness in

the precontemplation stage, increasing motivation and confidence in the contemplation stage, to strengthening commitment and consistency of behavior in the maintenance stage. The participatory, culture-based, and repetitive education process has been proven to increase the sustainability of healthy behaviors within families. This is consistent with research Martin et al., (2020) showing that integrating behavioral theory into nutrition education programs can increase compliance and reinforce behavioral change at the family level, especially in communities with strong socio-cultural backgrounds.

Analysis of respondent characteristics shows that the majority of mothers have a secondary education (54.5%) and are housewives (87.3%). This condition provides a great opportunity for family-based interventions because mothers have more time and control over their children's eating patterns. Mothers' education and employment status are important determinants of children's nutritional behavior. Mothers with higher education tend to have better knowledge about nutritional needs and complementary feeding practices (BKKBN, 2022). However, this study shows that even though most mothers have a secondary education, appropriate and culturally-based approaches can significantly improve their behavior. This is also supported by UNICEF (2021) and Mediani et al. (2022), who report that improvements in nutritional practices in developing countries are not only determined by formal education levels but also by relevant, contextual, and participatory educational interventions. Thus, TTM-based interventions can be an effective strategy to bridge the health literacy gap and encourage behavioral change in groups with lower secondary education.

Conclusion

This study concludes that culture-sensitive nutrition education based on the Transtheoretical Model (TTM) is effective in improving feeding practices among families with children under five years. This approach successfully integrates local cultural values with stages of behavioral change so that nutrition messages are more easily accepted and applied by families. The implications for the nursing and health fields are the need to implement culturally sensitive health promotion interventions based on behavioral theory, so that health workers can become effective facilitators of behavioral change in the prevention of stunting and improvement of family health.

Conflicting Interest

All authors declare no conflict of interest.

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