

The Effectiveness of a Family-Based and Socio-Cultural Health Promotion Model on Behavioral Changes in Stunting Prevention in North Gorontalo

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Abstract. Stunting remains a major public health problem in Indonesia, particularly among children under five years old. This study aimed to evaluate the effectiveness of family-based health promotion programs in improving mothers' knowledge, attitudes, and practices toward stunting prevention in five Primary Health Centers (Puskesmas) located in North Gorontalo Regency, namely Kwandang, Molingkapoto, Anggrek, Ilangata, and Monano. This quasi-experimental study employed a pre-test and post-test design without a control group. A total of 365 respondents, who were mothers of children under five and pregnant women, were selected using inclusion and exclusion criteria. Data were collected using structured questionnaires covering three domains: knowledge, attitude, and practice, each with dichotomous responses (Yes/No). The results showed an overall improvement in the post-test compared to the pre-test in four health centers (Kwandang, Anggrek, Ilangata, and Monano), indicating enhanced maternal capacity in stunting prevention. However, in Molingkapoto, post-test scores declined compared to the pre-test, suggesting contextual challenges in health promotion delivery. In conclusion, family-based health promotion proved effective in strengthening mothers' capacity to prevent stunting, though its success varies by local context. Tailored interventions considering cultural, social, and economic factors are needed to maximize the program's impact and sustainability.

Keywords: stunting, family-based health promotion, maternal knowledge, maternal attitude, maternal practice, North Gorontalo

1 Introduction

Stunting has remained one of the most pressing global public health challenges due to its multidimensional impact on health, education, and economic development. According to the joint report by UNICEF, WHO, and the World Bank (2023), an estimated 148.1 million children under the age of five worldwide suffer from stunting. South Asia accounts for approximately 53 percent of these cases, followed by Sub-Saharan Africa with 31 percent, while the rest are spread across regions such as Southeast Asia, including Indonesia. Stunting is not merely an indicator of poor growth; it reflects chronic nutritional deficiencies and recurrent infections, which hinder optimal brain development, compromise immune function, and lower overall quality of life (Vaivada et al., 2020). Hence, reducing stunting is not only a health priority but also a developmental imperative aligned with the Sustainable Development Goals (SDGs).

Indonesia is among the five countries with the highest prevalence of stunting globally, alongside India, Nigeria, Pakistan, and the Democratic Republic of Congo. Data from the Indonesia Nutrition Status Survey (SSGI) revealed a decline in national stunting prevalence from 27.7 percent in 2019 to 21.6 percent in 2022 (Kemenkes RI, 2023). Despite this progress, the prevalence remains significantly above the national target of 14 percent by 2024, as outlined in the National Strategy for the Acceleration of Stunting Prevention (Bappenas, 2022). Moreover, geographic disparities persist; provinces in eastern Indonesia such as East Nusa Tenggara, Central Papua, and West Sulawesi continue to record prevalence rates above 30 percent (Tarigan et al., 2023). These regional

variations highlight the influence of structural, environmental, and sociocultural determinants that require localized approaches for effective stunting reduction.

In the province of Gorontalo, stunting prevalence remains considerably high, with 26.9 percent reported in 2023. Particularly concerning is the situation in North Gorontalo Regency, where prevalence rose sharply from 23.6 percent in 2022 to 30.5 percent in 2023 (Dinas Kesehatan Provinsi Gorontalo, 2023). This implies that nearly one in three children under five in this region suffers from chronic growth retardation. Furthermore, data show that 7,195 families are at risk of stunting in North Gorontalo, with 747 lacking access to proper sanitation and safe drinking water, 455 facing short birth intervals, and 241 raising more than three children. These conditions underscore that stunting is not only linked to inadequate nutrition but also intertwined with family structure, environmental sanitation, reproductive health practices, and socioeconomic vulnerability (Roka et al., 2023).

The consequences of stunting are profound and long-lasting. Beyond impaired physical growth, stunted children exhibit delayed cognitive development, reduced school performance, and a higher susceptibility to infectious diseases. Vilcins and Irdawati (2021) highlighted that stunting contributes to persistent intellectual, motor, and emotional impairments. In adulthood, these individuals face an increased risk of non-communicable diseases such as diabetes, hypertension, and cardiovascular illnesses. Economically, childhood stunting is linked to a reduction in future earnings by up to 20 percent, while on a national scale it can decrease a country's GDP by 2–3 percent (Geopani et al., 2024). Therefore, preventing stunting is essential not only for improving child survival but also for strengthening the nation's human capital and economic productivity.

The Indonesian government has implemented several national programs such as the National Movement for the Acceleration of Stunting Prevention, the 1,000 First Days of Life Program, and the Healthy Indonesia Program with Family Approach (Kemenkes RI, 2022). While these programs have contributed to improvements, studies reveal that interventions often remain top-down, uni-directional, and insufficiently tailored to local sociocultural realities (Ramadhan et al., 2025). Preliminary studies in North Gorontalo indicate that nutrition education and counseling are still dominated by lecture-style approaches, with limited engagement of families and minimal consideration of cultural practices. Yet, family is the primary decision-making unit regarding child feeding, caregiving, and health-seeking behaviors. Without active family participation and alignment with cultural norms, such interventions are unlikely to achieve sustainable behavior change (Yunita & Hidayat, 2020).

Cultural values and traditions, if well-integrated, hold strong potential to support behavior modification in stunting prevention. For instance, local customs, food practices, and community leadership structures can act as enablers of change when embedded in health promotion strategies. Wilianarti et al. (2021) emphasized that family-based health promotion models, enriched with sociocultural understanding, yield significant results in improving maternal and child nutrition practices. Similarly, Nugraha et al. (2024) demonstrated that culturally-sensitive interventions are more acceptable to communities and therefore more effective in driving behavioral change. These findings suggest that a culturally contextualized and family-based approach could serve as a pivotal strategy for reducing stunting prevalence in North Gorontalo.

Against this background, the present study aims to examine the effectiveness of a family-based and socio-cultural health promotion model in changing stunting prevention behaviors among families in North Gorontalo. By evaluating the impact of the model through field trials, this research seeks to generate evidence for a more participatory, context-sensitive, and sustainable approach to health promotion. Ultimately, the findings are expected to contribute both theoretically and practically to strengthening stunting prevention strategies in high-prevalence regions of Indonesia.

2 Methods

This study employed a quasi-experimental design with a one-group pretest–posttest approach to evaluate the effectiveness of a family-based and socio-cultural health promotion model in changing family behavior toward stunting prevention. The study was conducted in North Gorontalo Regency, Gorontalo Province, Indonesia, which reported a stunting prevalence of 30.5 percent in 2023, a rate higher than the national average. The study population consisted of all families with children under

five years of age residing in the catchment areas of five primary health centers (Puskesmas), namely Kwandang, Molingkapoto, Anggrek, Ilangata, and Monano. Samples were selected using purposive sampling based on specific criteria. The respondents were biological mothers of children under five years old, permanently residing in North Gorontalo Regency, and willing to participate by signing an informed consent form. Mothers who had children with chronic medical conditions affecting growth other than stunting, or those who could not be reached or failed to complete the entire research process, were excluded. The total sample consisted of 365 mothers of under-five children, distributed as follows: 80 respondents from Kwandang, 80 from Molingkapoto, 75 from Anggrek, 80 from Ilangata, and 50 from Monano.

The research instrument was a structured questionnaire covering three domains: knowledge, attitudes, and practices related to stunting prevention. Each item provided two possible responses, “Yes” or “No,” with “Yes” scored as 1 and “No” scored as 0. The total scores were calculated for each respondent during the pretest and posttest phases to determine behavioral changes following the intervention. The intervention was implemented through a family-based and socio-cultural health promotion model designed with a participatory educational approach, integrating local cultural values, and involving community health cadres and local leaders. The intervention materials included exclusive breastfeeding, age-appropriate complementary feeding, balanced nutrition, utilization of local food sources, environmental sanitation, and infectious disease prevention. The intervention consisted of eight weekly sessions lasting 60–90 minutes each, conducted at community health posts (Posyandu) within the service areas of the five Puskesmas, facilitated by trained health workers in collaboration with local cadres. Data analysis was conducted in two stages. Descriptive analysis was used to present frequency distributions and percentages of responses for knowledge, attitudes, and practices. Inferential analysis was carried out using the McNemar test to assess significant differences between pretest and posttest results within the same group. Fisher’s Exact test was used as an alternative if small cell counts were found. All tests were performed with a significance level of 0.05.

3 Results And Discussion

3.1 Results of Pre-test and Post-test at PKM Kwandang

To assess the effectiveness of the family- and socio-cultural-based health promotion model, measurements were conducted through pre-test and post-test involving 80 respondents within the working area of PKM Kwandang. The measurement used a questionnaire consisting of 13 items related to family knowledge, attitudes, and practices in stunting prevention.

Table 1. Descriptive Statistics of Pre-test and Post-test Results at PKM Kwandang

Statistic	Pre-test	Post-test
Number of Respondents	80	80
Minimum Score	0	1
Maximum Score	13	13
Mean	8,31	8,66
Median	9	9
Standard Deviation	3,58	3,47

Source: Processed Research Data (2025)

Based on Table 1, there was an increase in the mean score from 8.31 at the pre-test to 8.66 at the post-test. Although this increase was relatively small (a difference of 0.35 points), it indicates a positive impact of the family- and socio-cultural-based health promotion intervention. The higher average score demonstrates that respondents’ understanding of the concept of stunting, its causes, and prevention methods improved after receiving education. The median remained at 9 in both the pre-test and post-test, suggesting that most respondents consistently maintained a fairly good level of understanding and practice even before the intervention. However, the post-test results show that

the number of respondents with low scores decreased, while those with scores closer to the maximum increased.

The minimum score also improved, from 0 in the pre-test to 1 in the post-test. This means that prior to the intervention, there were respondents who did not understand stunting prevention at all, but after receiving the education, none of the respondents scored 0. This finding indicates that health promotion successfully provided all respondents with a basic understanding. Meanwhile, the maximum score remained at 13 both before and after the intervention. This shows that there were groups of respondents who already had very good knowledge and practices regarding stunting prevention, and the education further reinforced their existing knowledge. In terms of standard deviation, there was a decrease from 3.58 in the pre-test to 3.47 in the post-test. This reduction indicates that respondents' answers in the post-test were more homogeneous compared to the pre-test. In other words, the education helped align the perceptions and understanding of the respondents, thereby reducing variation among them.

These results demonstrate that the family- and socio-cultural-based health promotion model was able to enhance both the consistency and the average level of respondents' understanding in preventing stunting. Although the improvement in the mean score was not statistically significant, the intervention was effective in reducing the number of respondents with very low scores, narrowing the gap among respondents, and strengthening the collective awareness within families to actively participate in stunting prevention.

3.2 Results of Pre-test and Post-test at PKM Molingkapoto

The implementation of the community service program (PKM) in the working area of PKM Molingkapoto aimed to improve family knowledge, attitudes, and behaviors in stunting prevention efforts. Before the intervention, respondents were given a pre-test to determine their baseline knowledge, attitudes, and behaviors related to stunting. After the intervention, which consisted of health education and hands-on practice, the respondents were administered a post-test to evaluate the changes that occurred. The total number of respondents in this activity was 80 people, most of whom were housewives and pregnant women with varied educational and socio-economic backgrounds. The questionnaire consisted of 13 questions with answers categorized as Yes or No.

Table 2. Descriptive Statistics of Pre-test and Post-test Results at PKM Molingkapoto

Statistic	Pre-test	Post-test
Number of Respondents	80	80
Minimum Score	1	3
Maximum Score	13	11
Mean	8,35	7,00
Median	9	6
Standard Deviation	3,25	3,13

Source: Processed Research Data (2025)

The pre-test and post-test results at PKM Molingkapoto provide an overview of the changes in family knowledge, attitudes, and behaviors regarding stunting prevention after the health education intervention. As shown in Table 2, the number of respondents involved in this study was 80. During the pre-test, respondents' correct responses (Yes) ranged from a minimum score of 1 to a maximum of 13, with a mean of 8.35 and a median of 9. The standard deviation of 3.25 indicates relatively high variability among respondents, in which most mothers already possessed basic knowledge of stunting prevention, but there were still groups with very low levels of understanding. In contrast, the post-test results showed that respondents' correct answers ranged from a minimum score of 3 to a maximum of 11, with a mean of 7.00 and a median of 6. The standard deviation of 3.13 indicates that the variability among respondents remained relatively consistent with the pre-test results. However, unlike PKM Kwandang, the post-test results in Molingkapoto revealed a decrease in the average score compared to the pre-test. This suggests that the health education program conducted

at PKM Molingkapoto did not fully produce the expected positive impact on improving families' understanding and practices in stunting prevention.

The decline in the mean score from 8.35 in the pre-test to 7.00 in the post-test may be influenced by several factors. First, respondents may have been less attentive during the sessions, or the timing of the intervention may not have matched participants' conditions, thus limiting comprehension. Second, there is a possibility of response bias in filling out the post-test questionnaire, for example due to fatigue or the tendency to provide quick answers without carefully considering the questions. Third, differences in educational background, socio-economic status, and prior experiences with health services such as posyandu likely contributed to the varying levels of acceptance of the new information provided. Looking at the median score, the post-test result of 6 indicates that half of the respondents scored below 6 and the other half above 6. This confirms that most respondents did not show consistent improvement after the intervention. Compared to the pre-test median of 9, there was a downward shift in score distribution. Nonetheless, the presence of respondents with a maximum score of 11 in the post-test shows that a small group of participants were able to understand the educational material well. The results from PKM Molingkapoto demonstrate that the success of such interventions is highly influenced by the effectiveness of delivery methods, respondents' readiness to receive information, and external factors such as family and community support. This highlights the importance of applying more participatory educational approaches in the future, taking into account individual characteristics and families' socio-economic conditions, to ensure that the impact of the intervention can be optimized.

3.3 Results of Pre-test and Post-test at PKM Anggrek

This section presents the research findings on the effectiveness of the family- and socio-cultural-based health promotion model implemented at PKM Anggrek. The analysis was carried out using pre-test and post-test instruments to evaluate changes in family knowledge, attitudes, and behaviors in stunting prevention. A total of 75 respondents, consisting of pregnant women and mothers with toddlers, participated in this study. These findings provide an overview of the extent to which the health promotion intervention was able to improve family understanding and practices in the context of stunting prevention in the working area of PKM Anggrek.

Table 3. Pre-test and Post Test Results of PKM Anggrek

Statistic	Pre-test	Post-test
Number of Respondents	75	75
Minimum Score	1	1
Maximum Score	13	13
Mean	7,03	7,89
Median	6	9
Standard Deviation	3,22	3,11

Source: Processed Research Data (2025)

The results show an increase in family knowledge, attitudes, and behaviors after the health promotion intervention. At the pre-test stage, the mean score was 7.03, reflecting a moderate level of understanding and practice. After the intervention, the mean score rose to 7.89, indicating a significant improvement in the reception of educational materials and the adoption of stunting prevention practices. The median also increased from 6 to 9, meaning that half of the respondents achieved at least a score of 9 after the intervention. This indicates that the intervention not only improved the average score but also shifted the overall distribution of scores upward.

The relatively stable standard deviation (from 3.22 to 3.11) suggests that although variations among respondents remained, their responses became slightly more homogeneous after the intervention. However, the fact that the minimum score remained at 1 shows that there were still respondents who did not understand or practice stunting prevention, even after the program. This may be influenced by external factors such as educational background, socio-economic conditions, or cultural barriers. These findings confirm that the family- and socio-cultural-based health

promotion model is effective in enhancing awareness and improving prevention practices. Nonetheless, the presence of respondents with very low scores highlights the need for follow-up interventions that are more personalized, such as door-to-door visits by posyandu cadres or the involvement of community leaders to deliver health messages in a culturally resonant way. Thus, the findings at PKM Anggrek provide preliminary evidence that health promotion programs can improve not only knowledge but also family behaviors, although some groups still require more intensive support.

3.4 Results of Pre-test and Post-test at PKM Ilangata

Data collection at PKM Ilangata involved 80 respondents consisting of mothers with toddlers and pregnant women. The aim was to assess the effectiveness of family- and socio-cultural-based health promotion in improving knowledge, attitudes, and behaviors toward stunting prevention. The instrument used was a 13-item questionnaire covering these three dimensions. Data were collected during the pre-test and post-test phases to evaluate changes after the intervention.

Table 4. Descriptive Statistics of Pre-test and Post-test Results at PKM Ilangata

Statistic	Pre-test	Post-test
Number of Respondents	80	80
Minimum Score	3	1
Maximum Score	11	13
Mean	7,28	7,91
Median	6	8
Standard Deviation	2,87	3,42

Source: Processed Research Data (2025)

The pre-test results showed a mean score of 7.28, indicating that respondents' understanding and preventive behaviors were at a moderate level. The median score of 6 reflected that half of the respondents scored 6 or higher, though some still demonstrated very low comprehension, as indicated by the minimum score of 3. Following the intervention, the mean score increased to 7.91. Although the improvement was not as substantial as in other PKMs, it nevertheless reflected a shift toward better understanding and practice. The median increased from 6 to 8, suggesting that responses became more concentrated in the medium-to-high category.

The total number of "Yes" answers also rose from 582 to 633, showing an increase of 51 points in knowledge and preventive practices at the family level. The maximum score reached 13 in the post-test, demonstrating that some respondents answered all items correctly, fully absorbing the health promotion content. However, the minimum score decreased to 1, indicating that some respondents showed little to no improvement. The increase in standard deviation from 2.87 to 3.42 suggests widening variation, with differences between highly responsive and less responsive participants. These findings suggest that the intervention at PKM Ilangata was moderately effective in raising awareness and improving some practices, but the high variability highlights the need for more targeted approaches, such as home visits or intensive mentoring by posyandu cadres, particularly for respondents with persistently low understanding.

3.5 Results of Pre-test and Post-test at PKM Monano

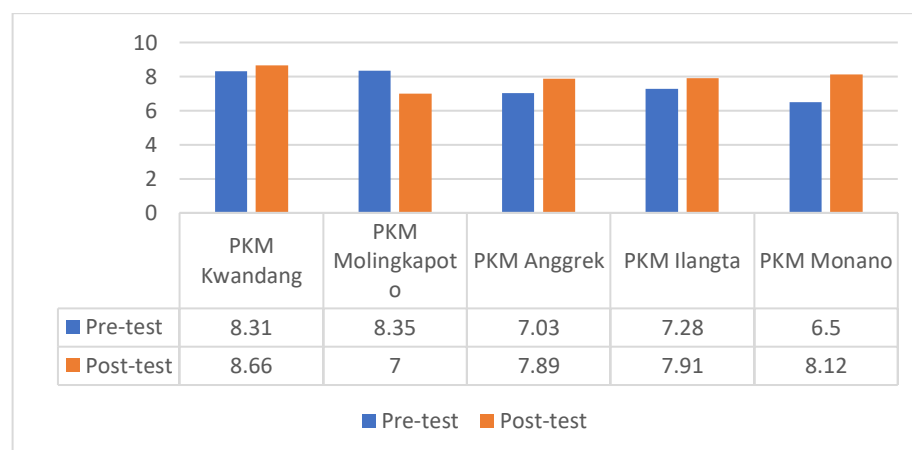
The family-based health promotion activity at PKM Monano involved 50 respondents. Data collected consisted of pre-test and post-test responses to questionnaires on family knowledge, attitudes, and behaviors toward stunting prevention. The analysis compared the number of "Yes" answers, reflecting positive knowledge, attitudes, and behaviors.

Tabel 5. Descriptive Statistics of Pre-test and Post-test Result PKM Monano

Statistic	Pre-test	Post-test
Number of Respondents	50	50
Minimum Score	3	0
Maximum Score	11	13
Mean	6,50	8,12
Median	6	9
Standard Deviation	2,62	3,68

Source: Processed Research Data (2025)

The pre-test results showed a mean score of 6.50, with a median of 6, indicating that most respondents had a moderate level of knowledge and preventive behavior. The minimum score of 3 suggested that some respondents had very limited understanding, while the maximum score of 11 indicated that a few already demonstrated fairly good knowledge and behavior. After receiving health education, the post-test results showed a significant improvement. The mean score increased to 8.12, and the median rose from 6 to 9, showing a clear upward shift in the distribution of responses. The total number of “Yes” responses increased from 325 to 406, or an additional 81 positive answers, confirming the effectiveness of the intervention in enhancing knowledge, attitudes, and behaviors. The maximum score reached 13 in the post-test, indicating that some respondents were able to answer all questions correctly after the intervention. However, the minimum score decreased to 0, reflecting that at least one respondent failed to show any improvement. This finding is consistent with the rise in standard deviation from 2.62 to 3.68, suggesting greater variation among respondents. Overall, the results at PKM Monano show that the intervention was effective in improving family knowledge and behaviors in stunting prevention. Nevertheless, the widening variation underscores the need for more tailored strategies, such as intensive guidance or personalized approaches for groups that lag behind in knowledge and practice.

**Fig 1.** Comparative Graph of Pre-test and Post-test Results.

3.6 Comparison of Pre-test and Post-test Results Across All PKMs

The graph above illustrates a comparison of pre-test and post-test results across five PKM locations (Kwandang, Molingkapoto, Anggrek, Ilangata, and Monano). Overall, most PKMs demonstrated an improvement in family knowledge and practices regarding stunting prevention following the family- and socio-cultural-based health education intervention. At PKM Kwandang, the mean score increased from 8.31 in the pre-test to 8.66 in the post-test. This improvement indicates that the educational intervention was relatively effective in strengthening mothers' knowledge and behaviors related to stunting prevention. Conversely, PKM Molingkapoto showed a different pattern, where

the mean score decreased from 8.35 (pre-test) to 7.00 (post-test). This decline may have been influenced by several factors, such as the varied levels of respondents' understanding, socio-cultural conditions that affected the consistency of responses, or limited acceptance of the educational methods applied. This finding underscores the need for an evaluation of the educational approach in that particular area. Meanwhile, PKM Anggrek recorded an increase in the mean score from 7.03 (pre-test) to 7.89 (post-test). Although the improvement was not large, it still reflects a positive effect of the intervention. Similarly, PKM Ilangata showed an increase from 7.28 to 7.91, demonstrating that the program successfully raised mothers' awareness of the importance of nutrition, immunization, and family health practices in preventing stunting. The most significant improvement was observed at PKM Monano, where the mean score rose from 6.50 (pre-test) to 8.12 (post-test). This notable increase illustrates that family-based education and the socio-cultural approach were highly accepted by the local community, leading to direct changes in attitudes and behaviors.

3.7 Discussion

The research findings reveal variations in changes in family knowledge, attitudes, and behaviors regarding stunting prevention after the implementation of family- and socio-cultural-based health promotion interventions across five community health centers (PKMs) in North Gorontalo Regency. In general, four PKMs—Kwandang, Anggrek, Ilangata, and Monano—showed an increase in the mean score of “Yes” responses in the post-test compared to the pre-test. This indicates an improvement in understanding as well as more positive behaviors related to stunting prevention practices. This finding is in line with health promotion theory, which states that education based on family and social environments can influence changes in community health behaviors [1]. The achievement is also consistent with the study of Wilianarti [2], which confirmed that family- and community-based interventions are effective in strengthening family capacity to prevent stunting in coastal areas. However, different results were found at PKM Molingkapoto, where the post-test mean score decreased compared to the pre-test. This phenomenon suggests the presence of contextual factors that need to be considered, such as the alignment of materials with local norms and culture, delivery methods that were less interactive, or limited respondent comprehension due to educational and cognitive constraints. This is supported by Harahap et al. [3], who emphasized that social and cultural values play a crucial role in determining the success of stunting interventions. If interventions fail to integrate local cultural aspects, health messages tend to be less accepted by the community.

Beyond cultural factors, the effectiveness of interventions is also heavily influenced by the quality of material delivery. The use of audiovisual media is more effective than printed media in improving health knowledge and attitudes. Thus, the decline in results at Molingkapoto may be related to a delivery method that was less engaging or overly theoretical [3]. On the other hand, the significant improvement observed in PKM Monano suggests that the intervention was well received and could serve as a pilot model to be adapted in other PKMs with local adjustments. Meanwhile, PKM Anggrek and Ilangata showed moderate increases, indicating the need for follow-up interventions with strengthened materials, repeated educational sessions, and family mentoring to ensure deeper behavioral change [4, 5].

The findings also demonstrate that health behavior changes do not occur uniformly across regions. This can be explained by diffusion of innovation theory, which posits that the adoption of new behaviors is influenced by social readiness, environmental support, and individual factors. Respondents with high pre-test scores may have experienced a ceiling effect, thus showing limited improvement, while those with low scores may require more intensive guidance to achieve significant change [6]. Additionally, environmental support factors, the presence of active posyandu, and consistent health cadres delivering education play an important role in sustaining behavioral change [7]. Therefore, the success of family-based health promotion interventions depends not only on the educational content but also on the strengthening of local health systems, social support, and the adaptation of local cultural values.

In conclusion, although this study confirms the effectiveness of interventions in most PKMs, some limitations must be acknowledged. The absence of a pure control group makes it difficult to ensure that the observed changes were entirely due to the intervention. Furthermore, the use of a

binary “Yes/No” questionnaire may not fully capture the variations in the intensity of respondents’ behaviors. Social desirability bias may also have occurred, with respondents providing favorable answers in line with researchers’ expectations. Nevertheless, the findings still provide important evidence that family- and socio-cultural-based health promotion holds strong potential as an effective stunting prevention strategy. However, the interventions must be culturally adapted to local contexts [8]. Future studies with a quasi-experimental design involving control groups and long-term monitoring are strongly suggested to evaluate the sustainability of behavioral change in stunting prevention efforts in North Gorontalo Regency.

4 Conclusion

The findings of this study demonstrate that family-based health promotion programs implemented in five community health centers (PKMs) had a positive impact on improving mothers’ knowledge, attitudes, and behaviors in stunting prevention, although the magnitude of improvement varied across locations. Overall, four PKMs—Kwandang, Anggrek, Ilangata, and Monano—showed higher post-test mean scores compared to the pre-test, indicating improvements in maternal understanding of balanced nutrition practices, exclusive breastfeeding, immunization, and utilization of health services. In contrast, at PKM Molingkapoto, the post-test mean score decreased compared to the pre-test, suggesting the need for in-depth evaluation regarding delivery methods, socio-cultural context, and community engagement in health promotion interventions in that area. This study confirms that family-based health promotion interventions are an effective strategy to strengthen maternal capacity in stunting prevention efforts. However, their effectiveness is strongly influenced by local factors such as culture, family support, socio-economic conditions, and the involvement of health workers. Therefore, health promotion materials and methods must be adapted to the characteristics of each community to ensure more equitable and sustainable outcomes.

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