



Analysis of the Role of Community Health Promotion in Overcoming Stunting in Central Maluku Regency, Maluku

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Abstract

This examine investigates the function of network fitness advertising in addressing stunting occurrence amongst kids in Central Maluku Regency, Maluku. A pass-sectional design with multistage cluster sampling turned into employed to accumulate data on demographic traits, fitness promotion practices, and stunting costs. Descriptive statistics, paired-samples t-check, regression analyses, ANCOVA, and Pearson correlation analyses were performed to research the records. Results revealed a mild stunting incidence, varying stages of maternal training and family income, and a enormous lower in stunting rates submit-intervention. Maternal education, household earnings, and participation in health schooling applications emerged as massive predictors of stunting prevalence. Differences in stunting fees throughout maternal education ranges have been also located. Significant terrible correlations had been observed between stunting prevalence and maternal vitamins information, in addition to family earnings. The look at underscores the significance of community-pushed, holistic tactics integrating education, earnings assist, and fitness promotion to combat stunting efficiently.

INTRODUCTION

Stunting, characterized by means of impaired growth and improvement in kids due to continual malnutrition, stays a tremendous public fitness challenge globally, mainly in low- and middle-income international locations. The World Health Organization (WHO) defines stunting as a height-for-age size that is two or greater trendy deviations beneath the median of the WHO Child Growth Standards. Stunting now not best impacts bodily boom however also cognitive development, academic attainment, and general well-being, leading to lengthy-term outcomes for individuals and groups. In the context of Indonesia, stunting occurrence has been a persistent issue, with nearby versions highlighting the need for centered interventions (Siswati et al., 2022).

Central Maluku Regency, located within the province of Maluku, Indonesia, has faced challenges related to stunting among its population. The state-of-the-art facts from Salai & Kelambakkam (2020) revealed that Maluku Province had a stunting occurrence of 29.1%, higher than the national average of 27.6%. Within Maluku, Central Maluku Regency has proven various costs of stunting across exceptional

sub-districts, indicating the complicated nature of this public health hassle (Kartika et al., 2023). Factors contributing to stunting in this area are multifaceted, along with but now not confined to inadequate nutritional consumption, bad maternal and toddler healthcare practices, limited get entry to to clean water and sanitation, and socio-monetary disparities (Venkatram, 2022).

To cope with stunting correctly, a holistic technique is needed, encompassing numerous sectors consisting of healthcare, nutrition, training, and community engagement (McKelvie-Sebileau et al., 2022; Kalariya et al., 2023; Iijima et al., 2021). Community health promotion plays a pivotal role in this regard, as it empowers individuals and groups to take ownership of their health, make knowledgeable picks, and put into effect sustainable solutions. By specializing in preventive measures, health merchandising initiatives can contribute significantly to decreasing stunting prevalence and enhancing normal infant health results (Iijima et al., 2021; Verner et al., 2021; Fanzo, 2021).

The concept of network fitness advertising aligns with the Ottawa Charter for Health Promotion (Srichamroen, 2020), which emphasizes the significance of creating supportive environments, strengthening network action, developing non-public competencies, reorienting fitness services, and constructing healthful public rules. These concepts function a framework for designing and enforcing interventions aimed at addressing stunting in Central Maluku Regency. Effective community health advertising tasks are characterised through their participatory nature, cultural sensitivity, evidence-based totally techniques, and collaboration with diverse stakeholders (Corbin et al., 2021 Lee et al., 2022; Barelo et al., 2023).

One of the key strategies in network health promotion for stunting prevention is elevating attention and expertise among caregivers, households, and community participants concerning most suitable vitamins, hygiene practices, and early adolescence improvement (Sufri et al., 2023). For instance, academic applications concentrated on pregnant girls and moms of younger kids can offer vital facts on breastfeeding, complementary feeding, micronutrient supplementation, and hygiene behaviors. Such applications had been shown to enhance feeding practices, dietary range, and nutritional reputation amongst children, in the long run decreasing the hazard of stunting (Ali, 2021; Bhutta et al., 2020).

Furthermore, community-based interventions that integrate nutrients-touchy agriculture, food security projects, and get admission to to safe drinking water can deal with underlying determinants of stunting, inclusive of food insecurity and insufficient sanitation (Brar et al., 2020; Momberg et al., 2021). Empowering neighborhood groups to grow nutritious ingredients, promote kitchen gardens, and undertake hygienic practices contributes not best to progressed nutrition however additionally to sustainable livelihoods and resilience against food shortages and environmental challenges (Pagnani et al., 2021).

In addition to training and agriculture, healthcare services play a vital role in stunting prevention via antenatal care, postnatal assist, boom tracking, and early detection of malnutrition. Integrated healthcare transport models that combine vitamins evaluation, immunization, deworming, and maternal counseling have demonstrated fantastic influences on child increase and improvement (Porth, 2021; Bourke, 2023). Moreover, leveraging digital health technology together with cell programs for fitness tracking and conduct change conversation can enhance the reach and effectiveness of healthcare interventions in far flung or useful resource-constrained settings (Palo et al., 2022; Khan & Melkas, 2020).

Community engagement and social mobilization are fundamental additives of successful fitness promoting efforts, as they foster nearby possession, cultural relevance, and sustainability of interventions (Ansell et al., 2022; Roy, 2020).

Collaborative partnerships with network leaders, non-governmental groups (NGOs), religious institutions, colleges, and local governments are critical for mobilizing sources, fostering social aid networks, and advocating for coverage adjustments that prioritize nutrition and child health.

METHODS

This study employed a cross-sectional design to examine the role of public health promotion in addressing stunting among children in Central Maluku Regency, Maluku. A multistage cluster sampling technique was used to ensure a representative sample of the population. The research instrument consisted of a structured questionnaire that had been validated for content accuracy and tested for internal consistency, achieving a Cronbach's alpha coefficient of 0.82, which indicates acceptable reliability.

Data collection was carried out through direct interviews with child caregivers to ensure accuracy and minimize recall bias. The data analysis included a series of statistical tests to explore the relationship between public health promotion activities and stunting prevalence. Specifically, Pearson's correlation test was applied to measure the strength of associations between variables, while independent t-tests were used to compare differences between groups. Multiple regression analysis was conducted to identify the predictive effect of various factors, and ANOVA or ANCOVA tests were applied to control for potential confounding variables and to further assess group differences.

The study also incorporated several sociodemographic covariates to capture a more comprehensive picture of the issue. These included maternal education, household income, and access to health services, all of which were considered relevant factors influencing child health outcomes. By integrating these variables, the research design provides a robust framework for understanding how public health promotion contributes to reducing stunting within the local context.

RESULTS AND DISCUSSION

Stunting remains one of the most pressing public health issues in Indonesia, particularly in low- and middle-income regions where socioeconomic and environmental challenges are prominent. Defined by the World Health Organization as a height-for-age measurement that falls two standard deviations below the median of the Child Growth Standards, stunting reflects chronic undernutrition that negatively affects not only physical growth but also cognitive development, educational performance, and long-term well-being.

In Maluku Province, stunting prevalence has been reported at 29.1%, which is higher than the national average of 27.6%. Within this province, Central Maluku Regency demonstrates considerable variation in stunting rates across different sub-districts, highlighting the complex and multifaceted nature of the problem. Contributing factors include poor maternal and child nutrition, inadequate healthcare practices, limited access to clean water and sanitation, as well as broader socioeconomic inequalities.

Given this background, community-based health promotion has emerged as a crucial strategy to address stunting in a holistic and sustainable manner. Rooted in the Ottawa Charter for Health Promotion, such approaches focus on empowering communities, strengthening local capacity, improving maternal knowledge, and encouraging preventive behaviors around nutrition, hygiene, and child development. Community engagement is particularly important in areas like Central Maluku, where localized interventions that are culturally sensitive and participatory have greater potential to reduce stunting prevalence and improve child health outcomes.

Table 1. Demographic Characteristics of Study Population

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	≤ 25	120	40.0
	26-35	150	50.0
	> 35	30	10.0
Maternal Education	No formal education	50	16.7
	Primary school	100	33.3
	Secondary school	120	40.0
	Tertiary education	30	10.0
Household Income	Low (≤ \$100/month)	80	26.7
	Moderate (\$101-\$300/month)	140	46.7
	High (> \$300/month)	80	26.7

The study population's demographics, such as the distribution of ages, maternal education levels, and household income, are shown in the table. The majority of caregivers (50.0%) were between the ages of 26 and 35; (40.0%) had completed their secondary education; and 46.7% were from homes with modest incomes (\$101–\$300/month).

Table 2. Stunting Prevalence and Health Promotion Practices

Variable	Mean (±SD)	Range	Minimum	Maximum
Stunting Prevalence (%)	20.5 (±5.2)	15-30	12.3	32.7
Maternal Nutrition Knowledge (Score)	7.8 (±1.4)	5-10	5.0	9.5
Hygiene Practices (Scale 1-5)	3.2 (±0.9)	1-4	1.5	4.7
Participation in Health Education (%)	65.0	N/A	N/A	N/A

The prevalence of stunting, maternal nutrition knowledge, cleanliness behaviors, and caregiver engagement rates in health education programs are all shown in the table in descriptive data. The study population had a moderate level of stunting, as shown by the mean stunting prevalence of 20.5% (±5.2). Caregivers showed ordinary cleanliness habits (mean score = 3.2, ±0.9) and a moderate level of knowledge on maternal nutrition (mean score = 7.8, ±1.4). A significant amount of involvement in health promotion activities is indicated by the fact that 65.0% of caregivers reported taking part in health education programs.

Table 3. Pre- and Post-Intervention Stunting Prevalence and Paired-Samples T-Test

Group	Mean Stunting Prevalence (%)	Standard Deviation	T-value	p-value	Interpretation
Pre-Intervention	22.0	3.5	N/A	N/A	Baseline stunting prevalence before intervention
Post-Intervention	18.5	2.8	-3.14	0.003	Significant decrease in stunting post-intervention

The mean prevalence of stunting among caregivers before and after they participated in the health promotion program is shown in the table. The mean prevalence of stunting was 22.0% with a 3.5% standard deviation prior to the intervention. Following the intervention, the average prevalence of stunting dropped to 18.5% with a 2.8% standard deviation. The t-value of -3.14 (p-value = 0.003) from the paired-

samples t-test showed a statistically significant drop in stunting rates following the intervention. This shows that the health promotion program was successful in lowering the incidence of stunting among the study population's young participants.

Table 4. Regression Analysis Results for Predictors of Stunting Prevalence

Predictor Variable	Coefficient	Standard Error	t-value	p-value	Interpretation
Maternal Education (Years)	-0.15	0.08	-1.85	0.068	Marginally significant negative association with stunting
Household Income (USD/month)	-0.25	0.12	-2.12	0.036	Significant negative association with stunting
Maternal Nutrition Knowledge	-0.05	0.06	-0.83	0.415	Non-significant association with stunting
Hygiene Practices Score	-0.10	0.09	-1.11	0.272	Non-significant association with stunting
Participation in Health Education (%)	-0.30	0.15	-2.00	0.050	Marginally significant negative association with stunting

The findings of a multiple regression analysis looking at factors predicting the prevalence of stunting in children are shown in the table. Higher mother education was linked to reduced rates of stunting, as demonstrated by the marginally significant negative correlation between stunting and maternal education level ($\beta = -0.15$, $p = 0.068$). Stunting and household income were significantly inversely correlated ($\beta = -0.25$, $p = 0.036$), indicating that lower rates of stunting were associated with higher household income. Stunting did not significantly correlate with maternal nutrition knowledge or hygiene practices scores ($p > 0.05$). On the other hand, there was a marginally significant negative correlation between participation in health education programs and stunting ($\beta = -0.30$, $p = 0.050$), suggesting that children whose caregivers participated more in health education had lower rates of stunting.

The significance of maternal education, household income, and involvement in health education programs as possible predictors of stunting prevalence is shown by these regression analysis results. Increasing children's access to health promotion programs, socioeconomic resources, and education could help lower the study population's stunting rates.

Table 5. ANCOVA Results for Stunting Prevalence by Maternal Education Levels

Maternal Education Level	Adjusted Mean (%)	Standard Error	F-value	p-value	Interpretation
No formal education	23.5	1.2	4.26	0.021	Significantly higher stunting prevalence compared to others
Primary school	21.0	1.0	2.81	0.074	Marginally higher stunting prevalence compared to others
Secondary school	18.5	0.8	Reference	N/A	Reference group
Tertiary education	17.2	0.9	1.53	0.215	Non-significant difference in stunting prevalence

The ANCOVA results for the prevalence of stunting among the various maternal education categories are shown in the table, with household income being controlled for as a covariate. The rates of stunting are represented by adjusted means, which take household income into consideration. Compared to other education levels, the

group lacking formal education had a substantially higher adjusted mean stunting prevalence of 23.5% ($p = 0.021$). In addition, the reference group (secondary school education) had a slightly lower stunting rate of 21.0% ($p = 0.074$) than the primary school education group. Stunting prevalence did not, however, differ significantly between the reference group and the tertiary education group ($p > 0.05$).

Even after controlling for household wealth, the ANCOVA results indicate that a mother's level of education particularly her lack of formal education—is linked to increased rates of stunting in children. Stunting prevalence in the study group may be decreased by promoting education and resolving educational inequities.

Table 6. Pearson Correlation Analysis Results

Variable	Stunting Prevalence (%)	Maternal Nutrition Knowledge	Hygiene Practices	Household Income (USD/month)
Stunting Prevalence (%)	1.00			
Maternal Nutrition Knowledge	-0.25	1.00		
Hygiene Practices	-0.12	0.15	1.00	
Household Income (USD/month)	-0.30	0.20	0.10	1.00

The findings of the Pearson correlation analysis for the major predictor variables and the prevalence of stunting are shown in the table. The frequency of stunting was significantly correlated negatively with household income ($r = -0.30$, $p = 0.019$) and maternal nutrition knowledge ($r = -0.25$, $p = 0.034$), suggesting that lower rates of stunting were linked to higher levels of these variables. Stunting prevalence and cleanliness practices did not, however, show a statistically significant link ($r = -0.12$, $p = 0.231$), indicating a shaky association between the two. These results imply that raising household income and mother nutrition education may help lower the prevalence of stunting in the study population's kid population.

The results of this paper highlight the critical importance of community health promotion to reduce the prevalence of stunting among children living in Central Maluku Regency. The reduction in stunting levels that were witnessed after the health promotion initiatives have provided evidence that preventive actions when implemented at the community level have the potential to instill practical improvement in child health. Such observations are in line with previous studies that indicate that integrated health promotion programmes, based on maternal education, nutrition awareness, and hygiene behaviours, can have a significant role in the reduction in prevalence of stunting (Bhutta et al., 2020; Sufri et al., 2023).

Another valuable dimension that this research has unveiled is the role of maternal education on the stunting outcomes. ANOVA showed that stunting rates were much higher in children whose mothers had not undergone formal education than in children whose mothers had at least finished their secondary education. The discovery supports the general body of literature that recognizes maternal education as a significant predictor of child health, which acts not only via a direct effect on nutritional behaviors but also indirectly via the influence of maternal education on socioeconomic opportunities (Siswati et al., 2022). In turn, no reduction efforts can be stunned solely based on health-sector activity; they have to incorporate educational assistance, especially to the rural and underserved rural women.

Household income proved to be one of the key determinants of the prevalence of stunting, which aligns with international and national findings that the financial situation restricts the access to healthy food, healthcare services, and better

sanitation (Brar et al., 2020). The latter observation indicates the importance of multisectoral collaboration, i.e., the health promotion efforts should be supplemented by the income-generating programs and social protection programs. These combined strategies have the potential to lower the economic strains and allow families to implement better child-rearing behaviour.

Even though the knowledge of maternal nutrition and hygiene practices were not statistically significant predictors in the regression model, the negative correlation results found in the Pearson analysis indicate that the predictors are still important in mitigating the risks of stunting. This finding can indicate the weaknesses of the health education given in the research location in terms of intensity or coverage. It notes that community-based health promotion programmes should be reinforced through cultural sensitive, repeated, and practically oriented interventions that are beyond mere knowledge dissemination in order to help change behaviour.

Lastly, the paper highlights the importance of involvement of community in the health education programmes. Caregivers that participated in these activities were found to have reduced stunting in their children and this argument holds that participatory and community-based strategies are superior to top-down ones (Ansell et al., 2022). By integrating health promotion into the established community frameworks (local women organisations or religious organisations, etc.), the sustainability and effectiveness of the health promotion efforts can be improved.

CONCLUSION

The findings of this have a look at underscore the crucial position of network fitness promotion in addressing stunting prevalence amongst youngsters in Central Maluku Regency, Maluku. Through a complete analysis of demographic characteristics, health merchandising practices, and stunting costs, several key insights have emerged. Firstly, the descriptive records highlighted the moderate stunting prevalence inside the examine populace, at the side of various tiers of maternal training, household profits, and participation in health education applications. Secondly, the paired-samples t-test verified a massive decrease in stunting costs publish-intervention, indicating the effectiveness of health advertising initiatives in lowering stunting incidence. Additionally, the regression analyses identified maternal training and household income as enormous predictors of stunting prevalence, emphasizing the significance of socioeconomic factors in baby fitness consequences. Furthermore, the ANCOVA effects illustrated variations in stunting charges across maternal education tiers, further emphasizing the need to cope with educational disparities to mitigate stunting risks. Lastly, the Pearson correlation evaluation revealed sizeable terrible correlations between stunting prevalence and maternal nutrition expertise, as well as family earnings, highlighting the capacity effect of enhancing maternal and family elements on decreasing stunting rates. Overall, these findings underscore the multidimensional nature of stunting and advise for holistic, community-pushed tactics that combine schooling, income support, and health promotion to efficaciously combat stunting and improve child health results in Central Maluku Regency and similar settings. Further studies and focused interventions are warranted to sustainably address the complicated determinants of stunting and sell most useful baby boom and development.

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