

The effect of pregnant mother assistance on stunting prevention behavior

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Abstract

Stunting, a consequence of prolonged inadequate nutrition, often due to improper feeding practices, was a significant health

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issue. This study aimed to investigate the impact of maternal assistance on behaviors aimed at preventing stunting. The research employed a pre-experimental design with a one-group *pre*-test and *post*-test for 32 pregnant women attending a Samarinda health center. Data collection utilized structured questionnaires evaluating knowledge, attitudes, and actions. The result of the study revealed that most participants were aged 18-25, had a high level of education, and were housewives. A majority had an income exceeding 2,868,081 units, were primigravida, and lived in nuclear families. Notably, maternal assistance significantly improved stunting prevention behaviors, as evidenced by a *p*-value of 0.005. This study emphasizes the positive impact of providing comprehensive support, including education and counseling, to pregnant women. Such assistance could enhance knowledge, attitudes, and actions related to stunting prevention. Health professionals should prioritize this support to reduce the risk of stunting among children and promote maternal and child health.

Introduction

Stunting is a chronic malnutrition problem caused by prolonged insufficient nutritional intake, often resulting from inadequate feeding practices that do not align with nutritional needs.^{1,2} It's worth noting that stunting can manifest from fetal development and becomes evident in children around the age of two.^{3,4} Short stature in toddlers, commonly referred to as stunting, is a widespread nutritional issue affecting children worldwide.⁵ Inadequate nutrition during pregnancy and the first year of life can have lasting effects on brain development. The prenatal period is marked by rapid brain development, which continues into early childhood.⁶ Research reveals that newborns possess approximately one hundred billion brain cells, and the maturation and formation of neurological connections occur progressively from birth to early childhood. Insufficient nutrition during this critical period can lead to neurological abnormalities, developmental disorders, and impact motor, cognitive, language, socio-emotional abilities, and even result in mental retardation.⁷ Motor function decline in stunted children without congenital abnormalities is associated with the underdevelopment of the triceps surae muscle, hampering their motor abilities.⁸

In 2017, approximately 22.2% of the global toddler population, roughly 150.8 million children, experienced stunting. However, this figure represents an improvement compared to the stunting rate in 2000, which stood at 32.6%.^{8,9} Indonesia, in particular, faces a high prevalence of stunted children, with national data from Riskesdas in 2018 indicating a prevalence of 30.8%. This represents a decline from 37.2% in 2013 to 30.8% in 2018.¹⁰ While Indonesia has made progress, the prevalence remains relatively high compared to the World Health Organization's (WHO) benchmark of less than 20%, highlighting the need for continued attention.⁹ In East Borneo, the prevalence of stunting, as per data from the East Borneo Health Office in 2017, stands at 30.6% among toddlers. Although this percentage is below the national

average, it still exceeds the WHO standard of 20%, making it a significant health concern.¹¹

Assistance for pregnant women encompasses activities such as education, nutrition guidance, and health counseling designed specifically for pregnant women.¹² This support also extends to services and assistance, all aimed at preventing stunting through individual and group approaches.¹³ Assistance involves various actions, including paying attention, delivering messages, encouragement, providing advice or solutions, offering services, referring, mobilizing, and collaborating to empower pregnant women. Consequently, this research seeks to examine the impact of Pregnant mother assistance on stunting prevention behavior within a health center in Samarinda.

Previous studies offer valuable insights into the potential benefits of nutrition education and counseling for pregnant women. For instance, research in the West Gojjam Zone, Ethiopia, demonstrated that pregnant women who received nutrition education were 2.02 times more likely to improve their dietary practices compared to those who did not receive such education.¹³ Another study in Katenga-Kauda indicated that knowledge about nutrition and consumption of diverse foods increased in both study groups but was notably higher in the intervention group.¹⁴ Furthermore, a study by Yurni revealed that two weeks of balanced nutrition education in two sessions increased respondents' practice of selecting a balanced menu by 7.7 percent.¹⁵ Intensive nutritional counseling, employing leaflet media, has proven to be an effective method for enhancing pregnant mothers' knowledge.¹⁶ This research aimed to assess the influence of pregnant mother assistance on stunting prevention behavior within a health center in Samarinda. By building on previous studies and addressing the critical issue of stunting in toddlers, this research endeavors to contribute to the broader efforts aimed at improving maternal and child health outcomes.

Materials and Methods

Design

The research design employed in this study follows a pre-experimental approach, specifically utilizing a one-group pre-test and post-test design. This design entails conducting an initial assessment (pre-test) before the intervention or treatment and then a follow-up assessment (post-test) after the intervention.

Sample

The study employed consecutive sampling, selecting pregnant women in their first to third trimesters who met the criteria for normal pregnancies and completed all questionnaire items related to stunting prevention at both pre-test and post-test stages. A total of 32 participants comprised the study's sample size.

Regarding the intervention procedure, pregnant women received assistance through direct education using visual aids such as flip sheets and informative leaflets during their visits to health-care facilities. This educational and counseling approach aimed at stunting prevention involved two-way communication, fostering an interactive dialogue to enhance knowledge. This process served as the initial step in facilitating behavioral change towards stunting prevention.

Instruments

The study utilized a questionnaire to assess the attitude and behaviour of pregnant women. In order to analyze the data descrip-

tively, we established a measurement scale using attitude and behavioural instruments.

Attitudes

Participants responded to statements related to stunting during pregnancy, with 20 items in the questionnaire. Half of these items (1, 5, 6, 7, 10, 11, 12, 17, and 18) were framed positively (+), while the remaining half (2, 3, 4, 8, 9, 13, 14, 15, 16, 19, and 20) were framed negatively (-). We employed a Likert-Scale rubric to assign scores, where for negative statements: Extremely Agree (EA) was scored as 0, Agree (A) as 1, Doubt (D) as 2, less agree (LA) as 3, and extremely disagree (EDis) as 4. Conversely, for positive statements, the scoring was the opposite: Extremely Agree (EA) was scored as 4, Agree (A) as 3, Doubt (D) as 2, Less agree (LA) as 1, and extremely disagree (EDis) as 0. All individual scores were then summed, and the total scores were classified as 'good' (>65) or 'poor' (<65).

Behavior

Behavior refers to actions taken by pregnant women both during and after childbirth related to stunting prevention. It was indicated by various factors such as pregnancy examination visits, balanced nutritional consumption, iron tablet intake, early breastfeeding initiation, and exclusive breastfeeding. Each participant's behavior was rated on a scale of 0 to 5 based on a combination of these five indicators. 'Good' behavior was defined as scoring 2 or higher, representing adherence to at least four of these indicators, while 'poor' behavior was assigned to those scoring 1, indicating adherence to fewer than four indicators.

Analysis

The paired t test was used to analyze the data. The level of significance used in this test is a p-value of 0.05 at 95% confidence. The variables measured are the knowledge, attitudes, and actions of pregnant women in preventing stunting. The measuring tool used is a questionnaire. Measuring behavioral changes (knowledge, attitudes, and actions) in efforts to prevent stunting with questionnaires measurement results using ratio data. All questions have valid status because the value of r-count (Corrected Item-Total Correlation) is greater than table >0,468.

Ethical clearance

Ethical test at the Poltekkes Kaltim ethics committee with number LB.02.01/7/2068/2021. After obtaining prospective research respondents, the researcher first explained research information and ethics in research to the subject regarding the benefits and objectives of the research, time, and research procedures. The researcher also explained to the subjects who were willing to be respondents to sign the consent form; if they did not sign, they would not be used as research respondents. Researchers also explained that the subject has the right to withdraw as a research subject and not be given any sanctions or treatment.

Results

Frequency distribution of demography characteristics of all variables.

Table 1 provides a comprehensive overview of the demographic characteristics of the pregnant women participating in this study. It reveals that a substantial proportion of the participants fell within the 18–25 age bracket, with 14 individuals (43.7%) belonging to

this age group. Moreover, a notable percentage, consisting of 14 participants (43.8%), possessed a higher level of education, while a majority of 18 individuals (56.3%) identified as housewives. The economic profile of the participants was also noteworthy, with a significant 25 families (78.1%) reporting an income exceeding 2,868,081 rupiahs. Additionally, 15 respondents (46.9%) were experiencing their first pregnancy (primigravida), and the family structure of 17 families (53.1%) adhered to a nuclear family arrangement. These demographic insights provide a valuable context for understanding the characteristics of the study's participants and their potential influence on stunting prevention behaviors.

Table 2 provides a clear picture of the changes observed in pregnant women's knowledge, attitudes, and actions before and after receiving assistance. Prior to assistance, the mean knowledge score was 9.59 ± 4.89 , which increased significantly to 12.8 ± 2.88 after assistance. Similarly, the mean attitude score also showed a noteworthy improvement, rising from 7.91 ± 2.84 before assistance to 10 ± 0.00 after assistance. In terms of actions related to stunting prevention, the mean score before assistance was 7.84 ± 2.61 , and it slightly increased to 8.19 ± 2.38 after receiving assistance. To assess the impact of pregnant mother assistance on stunting prevention behavior, the paired t-test was employed with a significance level of 5% (0.05). The results revealed that for knowledge ($p=0.00$) and attitude ($p=0.00$), there was a highly significant effect of pregnant mother assistance. Moreover, for stunting prevention actions, the p-value was 0.014, indicating a statistically significant influence of the assistance on these behaviors. This suggests that the provided assistance had a positive and statistically significant impact on enhancing knowledge, attitudes, and actions related to stunting prevention among pregnant women.

Discussion

Stunting prevention behavior prior to and following pregnancy assistance

The result showed that knowledge, attitudes, and actions of pregnant women have shown significant improvement both before and after receiving assistance. In summary, pregnant mother knowledge, attitudes, and actions regarding stunting prevention have significantly enhanced. These findings align with research conducted in Pulang Pisau District, which indicates that pocket-book treatment is notably effective in improving pregnant women's attitudes towards preventing stunting.¹⁷ Similarly, the results of this study are consistent with the research conducted by Wisma *et al.*, which demonstrates a significant difference ($p < 0.001$) in healthy food consumption practices among pregnant women who received nutrition education in the intervention group compared to the control group.¹⁸

The mentoring intervention provided to pregnant women in this study successfully increased their average knowledge, indicating a solid knowledge base. The enhancement in pregnant women's knowledge can be attributed to the educational and counseling assistance they received regarding stunting prevention. This two-way communication activity serves as the initial step in the process of behavior change for prevention.¹⁹ Counseling plays a pivotal role in establishing productive cooperation and communication between counselors, creating a comfortable atmosphere. Moreover, counseling and education aimed at stunting prevention in mothers correlate with reduced stunting prevalence and improved feeding practices during early childhood, as demonstrated in the research by Mistry *et al.* Counselors have the ability to gauge the extent of the counselee's knowledge and build upon it. The repetition of information during counseling sessions also contributes to the enhancement of knowledge.²⁰

Table 1. The frequency distribution of respondent characteristics.

Characteristics of respondents	Frequency	Percentage
Age		
< 18 Years	1	3.1
18-25 Years	14	43.7
26-30 Years	6	18.8
>30 Years	11	34.4
Education		
Primary Education	5	15.6
Secondary Education	13	40.6
Higher Education	14	43.8
Occupation		
Housewife	18	56.3
Self-employed	3	9.4
Private Employee	10	31.3
Government Employees	1	3
Income		
< IDR 2.868.081	7	21.9
> IDR 2.868.081	25	78.1
Number of Children		
Primigravida	15	46.9
Secondary gravida	5	15.6
Multi gravida	12	37.5
Family Structure		
Nuclear Family	17	53.1
Extended Family	15	46.9

The findings of Waswa’s research in 2015 further substantiate the effectiveness of nutrition education in improving knowledge and practices related to complementary feeding, with significantly higher average nutritional knowledge observed in the intervention group.²¹ In summary, the results of this study underscore the effectiveness of assisting pregnant women in enhancing their knowledge, attitudes, and actions concerning stunting prevention during pregnancy. Pregnant mother assistance has positively influenced the attitudes of pregnant women toward stunting prevention, as reflected in the increased average value. This highlights the capacity of Pregnant mother assistance to instigate favorable changes in mothers’ attitudes and behaviors regarding stunting prevention. Muluye’s research also supports this notion, demonstrating that nutrition education leads to improved practices and knowledge related to appropriate complementary foods.²² It is crucial to acknowledge that stunting is the result of multifaceted factors and not solely attributable to malnutrition experienced by pregnant women and children under the age of five. To effectively reduce the prevalence of stunting, interventions must focus on the first 1,000 days of life.

Changes in stunting prevention behavior before and after mentoring

Based on the statistical test results presented in Table 2, it is evident that pregnant mother assistance has a significant impact on stunting prevention behavior. This signifies that pregnant mother assistance plays a crucial role in influencing stunting prevention behavior. According to the study’s findings, after pregnant women received assistance, their average knowledge, attitudes, and practices related to stunting prevention significantly improved.

These results are consistent with research conducted in the West Gojjam Zone, Ethiopia, which found that pregnant women who received nutrition education were 2.02 times more likely to enhance their dietary practices compared to those who did not receive such education. Counseling based on the health belief model and the theory of planned behavior emerges as an effective approach to increasing the proportion of pregnant women who adopt appropriate dietary habits.²³ Likewise, the outcomes of this study align with the findings from Katenga-Kauda, where nutrition knowledge and diverse food consumption behaviors improved in both study groups but showed greater improvement in the intervention group. Enhanced nutritional knowledge has a notable impact on improving nutritional perceptions and behaviors.¹⁴

Stunting prevention primarily focuses on improving nutrition during the first thousand days of life, spanning from pregnancy until the child reaches two years of age. This approach can contribute to the optimal growth and development of millions of children, with far-reaching economic benefits in the long term.²⁴ Nutrition during the first 1000 days is recognized as pivotal, with significant implications for both maternal and offspring health. Inadequate or inappropriate nutrition during this period elevates the risk of premature birth and low birth weight.²⁵

Conversely, pregnant women who experience excessive weight gain during pregnancy are at risk of giving birth to larger babies. The First 1000 Days of Life Program highlights that changes in risk factors for obesity during pregnancy correlate with shifts in maternal behavior towards healthier food consumption.²⁶ Consequently, nutrition education aimed at fostering long-term healthy eating habits represents a strategic intervention. The assistance provided to pregnant women in this study demonstrates a substantial impact on behavior change regarding stunting prevention, moving in a positive direction. This is also corroborated by research in Bangladesh, revealing that counseling mothers using the Essential Health Care (EHC) framework can enhance knowledge and dietary practices related to child feeding, effectively reducing the prevalence of stunting.^{27,28}

The study’s outcomes also align with Monitz *et al.*’s, indicating that pregnant women who received preventive health promotion text messages displayed increased belief and expected behaviors. This suggests that text messages can effectively promote health during pregnancy.²⁹ A mother’s knowledge profoundly influences her decision-making and behavior. Mothers equipped with comprehensive knowledge about preventing stunting are more likely to implement effective prevention practices. This concept is further supported by the results of research by Yurni and Sinaga, demonstrating that a two-week balanced nutrition education program with two meetings led to a 7.7 percent increase in respondents’ practice of selecting a balanced menu.¹⁵

Intensive nutrition counseling, utilizing leaflet media, emerges as an effective alternative for enhancing the knowledge of pregnant women.¹⁶ Moreover, the observed behavioral changes in the subjects of this study can be attributed to an increase in knowledge regarding stunting. These findings collectively contribute to the growing body of evidence highlighting the positive impact of educating and counseling pregnant women during pregnancy on improving their knowledge, attitudes, and practices related to stunting prevention.³⁰ This intervention can be efficiently administered through healthcare workers who possess a high potential to enhance maternal and child health, particularly in hard-to-reach rural areas.^{30,31} These studies underscore the scientific evidence that nutrition and reproductive health education during pregnancy enhance Pregnant mother knowledge, attitudes, and practices, thereby contributing to improved maternal and infant health and reduced childhood stunting.¹⁸ Mother’s level of nutritional knowledge significantly influences her nutritional status, as sound knowledge is closely linked to the selection of a balanced menu.³²

Knowledge is a pivotal factor predisposing individuals to adopt positive behaviors. By increasing knowledge, people’s behavior can be positively influenced to prevent stunting at an early age. While stunting may have genetic factors, it can also result from poor sanitation and inadequate nutritional intake during pregnancy. Genetics or heredity accounts for 26% of the risk factors.³³ The tendency to attribute a child’s short stature to genetics can sometimes lead to inaction, when in fact, the condition may be

Table 2. The effect of pregnant mother assistance on stunting prevention behavior.

Behavioral Domain	Mean ± SD		p
	Pre	Post	
Knowledge	9.59 ± 4.89	12.8±2.88	0.00*
Attitude	7.91 ± 2.84	10±0.00	0.00*
Action	7.84±2.61	8.19±2.38	0.014*

*p<0.05.

stunting, which necessitates intensive medical intervention. Early prevention of stunting, even during pregnancy, can be achieved by meeting nutritional needs from pregnancy until the child reaches two years old (the first 1000 days of life) while monitoring their growth. The maternal nutritional status during pregnancy directly affects the growth and development of the fetus, with food utilization, absorption, and utilization impacting the outcome.^{34,35} Maternal nutrition is a critical factor during pregnancy, with healthy pregnant women who do not experience nutritional disorders before or during pregnancy giving birth to larger and healthier babies compared to those with nutritional disorders. Chronic undernutrition contributes to the birth of stunted children.³⁶ Researcher asserts that providing assistance to pregnant women can indeed lead to changes in mothers' behaviors regarding stunting prevention from pregnancy onwards. Specific nutrition interventions, such as micronutrient supplementation and additional food for pregnant women, alongside counseling and education on regular pregnancy checks and the consumption of healthy and nutritious foods, represent effective strategies in this regard.

Conclusions

In summary, this study underscores the significant impact of mentoring on pregnant women's knowledge, attitudes, and actions in preventing stunting. It aligns with existing evidence highlighting the vital role of education, counseling, and support in promoting positive maternal behaviors related to stunting prevention, starting during pregnancy. In essence, this research illuminates a path toward healthier futures for both mothers and their children. Recognizing the pivotal role of mentorship and targeted interventions, we can pave the way for improved maternal and infant health, reduced childhood stunting, and ultimately contribute to the overarching goal of fostering healthier communities and societies.

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