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RESEARCH **Open Access**

Premarital and Preconception Classes for Stunting Prevention at the Premarital School

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Abstract
Stunting is a growth disorder of children under five due to malnutrition, with the prevalence rate in Indonesia in 2023 reaching 21.5%. To reduce stunting rates, premarital and preconception classes are essential in providing knowledge and skills to prospective parents to prevent stunting. This study aims to develop an intervention module for premarital and preconception classes that integrates education on stunting prevention with coping skills training. The study also seeks to measure the effects of the module on participants' perceived stress, coping skills, and self-efficacy, as part of an effort to strengthen the preparedness of prospective brides in maintaining maternal and child health and preventing stunting. This study is a quasy experimental study with a one-group pretest-posttest design. The population in this study were women in the premarital and preconception period. The sampling technique used was probability sampling, a simple random sampling of 41 people—data analysis using the Wilcoxon Test. The study results showed significant differences in three variables after the premarital class intervention. The stress perception scale experienced a decrease in mean score from 20.93 to 18.83 with a difference of -2.10 (p=0.002). Self-confidence experienced an average increase from 44.76 to 48.27 with a difference of 3.51 (p=0.002). Coping strategies also increased the average score from 97.34 to 99.24, with a difference of 1.90 (p=0.023). Premarital classes are effective in reducing stress and increasing self-confidence and coping strategies. Premarital classes and preconception programs with coping skills need to be expanded to prevent stunting.

Keywords: Premarital Class, Preconception, Stunting, Coping Skill, Self-Efficacy.

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1. INTRODUCTION

Stunting is a condition of impaired growth in children under five years old caused by malnutrition or other health problems (Vaivada et al., 2020; Wijayanti, 2022). Stunting can be diagnose by the child height, in one research the number of standard deviation child's height is less than -2, which is means the child's height is much shorter than that of healthy children of the same age (Sahira & Assariah, 2023). Stunting deserves more attention because it can have an impact on children's lives until they grow up, especially the risk of physical and cognitive developmental disorders if not appropriately handled. The effect of stunting in the short term can be a decrease in learning ability due to a lack of mental development. Meanwhile, in the long term, it can reduce the quality of life of children as adults due to decreased opportunities for better education, employment opportunities, and income. In addition, there is also a risk of tending to become obese in later life, thus increasing the risk of various non-communicable diseases, such as diabetes, hypertension, cancer, and others (Nirmalasari, 2020; Rueda-Guevara et al., 2021).

According to the 2023 Indonesian Nutritional Status Survey, the national stunting rate has only slightly decreased from 21.6% in 2022 to 21.5% in 2023. The highest prevalence was recorded in Central Papua Province (39.4%), while the lowest was in Bali Province (7.2%). In Central Java Province, Brebes Regency reported the highest rate at 29.1%, with 20 regencies/cities in the province experiencing an increase in stunting prevalence. Notably, Grobogan Regency saw a sharp rise from 9.6% in 2022 to 20.2% in 2023. These figures reflect the urgent need for effective interventions, as Indonesia is targeting a stunting rate of 14% by 2024, requiring a significant reduction from the current rate in just two years (Kementerian Kesehatan Republik Indonesia, 2023)

One promising approach is early intervention through premarital and preconception education programs, which can address key risk factors before pregnancy occurs. Evidence shows that maternal health and nutritional status prior to conception significantly influence pregnancy outcomes and child growth. By improving knowledge, self-efficacy, and coping skills among prospective brides, these programs play a crucial role in preventing low birth weight and stunting—conditions often rooted in inadequate maternal preparation. Therefore, integrating stunting prevention and psychological resilience into premarital and preconception classes is a strategic step toward breaking the cycle of intergenerational malnutrition.

Stunting is one of the nutritional problems in children whose manifestations begin since the preconception period (Simanjuntak & Wahyudi, 2021). Based on Presidential regulation number 72 of 2021 concerning the Acceleration of Stunting Reduction (PPS), the implementation of the Acceleration of Stunting Reduction with target groups includes adolescents, brides-to-be; pregnant women; breastfeeding mothers, and children aged 0 (zero) - 59 (fifty-nine) months. The government conducts two holistic interventions to achieve these targets: specific and sensitive. Specific interventions are activities implemented to address the direct causes of stunting. Sensitive interventions are activities implemented to address the indirect causes of stunting (Kementerian Kesehatan Republik Indonesia, 2021). Of efforts to reduce stunting, 30 percent depend on specific interventions (and) 70 percent rely on sensitive interventions. Sensitive interventions a program outside the health sector that can accelerate nutritional improvements, especially stunting. Education using the 1000 HPK pocket book can improve knowledge and attitude scores of female brides and grooms (Simanjuntak & Wahyudi, 2021).

In the pre-marital period, efforts to provide knowledge and education are part of a sensitive intervention through increasing knowledge so that it can give knowledge about stunting prevention information. In addition, at the pre-nuptial and pre-conception stages, it is also essential to provide coping skills and management skills to provide skills at the pre-nuptial and pre-conception ages the ability to take action and take a favorable attitude to prevent stunting. Coping efforts made during the pre-marital and preconception stages that

affect the outcome of pregnancy and birth are better, by minimizing or preventing the adverse effects of emotional, behavioral, cognitive, and physiological responses to the causes of stunting. Coping ability functions to select and apply appropriate efforts to overcome various adverse conditions to take positive and beneficial actions, including in preparing pre-marital and pre-pregnancy mothers. The coping response is related to more favorable indicators for psychological well-being. Coping through positive appraisal with efforts to create positive meaning focused on personal development is associated with better outcomes for mother and baby, fewer depressive symptoms, and lower pregnancy problems (Bright et al., 2019; Shamsaei et al., 2019). This study aims to analyze the preparedness (Perceived Stress Scale, Self-efficacy, and coping skills) of women during the period of pre-marital for preventing and managing stunting. This effort is implemented through the development of an intervention module for premarital and preconception classes, which integrates stunting prevention education with coping skills training, aiming to strengthen the preparedness of prospective brides in maintaining maternal and child health. This research also emphasizes the development of coping skills as a strategic component in the prevention and management of stunting. The proposed model for premarital classes, which incorporates coping skills training, is designed to be integrated into midwifery services to enhance risk detection and improve stunting prevention management (Rahayu et al., 2017; Wingo et al., 2017).

The urgency of this research is underscored by the persistently high rate of stunting among toddlers in Indonesia, which remains at 21.5% as of 2023, far from the national target of 14% by 2024 (Kementerian Kesehatan Republik Indonesia, 2023). As a sensitive intervention, this initiative is expected to contribute significantly to national stunting reduction efforts—given that 70% of stunting prevention depends on sensitive interventions, including those that address psychosocial and behavioral factors. Therefore, this research offers a promising alternative approach to support Indonesia's stunting reduction agenda.

2. RESEARCH METHOD

This study is quasy experimental research using a one-group pretest-posttest design approach. The population in this study consists of women aged 16 -20 years in the pre-marital and preconception periods at premarital school SAMAWA, Tegal, Center of Java. The study employed a probability sampling technique using a simple random sampling method, with a total of 41 participants. A priori power analysis determined that this sample size was sufficient to achieve adequate statistical power at an alpha level of 0.05. However, while the sample size meets the minimum requirements for detecting statistical significance, its generalizability to a broader population may be limited. The primary instrument of this study is a screening questionnaire for stunting risk during the pre-marital and preconception periods. This questionnaire was developed based on a literature review by identifying signs observed in women, including nutritional status, dietary patterns, medical history, disease history, knowledge, attitudes, and practices related to stunting prevention during these periods. The instrument underwent construct validity testing, as well as validity and reliability tests, to measure the accuracy of the stunting risk detection tool. The validity and reliability of this instrument were measured using the SPSS application with the product moment formula, with the result that the calculated r was greater than the table r, which means that the instrument is valid. In this research, the reliability of the instrument was measured using the Cronbach Alpha formula, where the result was calculated $r > 0.06$, which means that the instrument in this study is suitable for use. Additionally, This study developed an intervention module for pre-marital and preconception classes with a focus on equipping participants with coping skills aimed at preventing stunting in future offspring. The interventions provided to the respondents were structured, evidence-based, and tailored to address the key risk factors of stunting from a

psychosocial and nutritional perspective. The intervention module consisted of the following component: Nutritional education, reproductive health awareness, coping skill training, health behavior motivation, and parenting and child development. Intervention was held for four times for each week and each session about 2 hours.

Each session of the intervention module was designed to be interactive and engaging, supported by multimedia materials, printed booklets, and guided follow-up discussions to reinforce comprehension. By integrating both biological and psychosocial components, the module aimed to holistically prepare individuals for healthy parenthood and help break the cycle of stunting.

To assess the effectiveness of the developed module, which was implemented through premarital and preconception classes, data were collected before and after the intervention. The Wilcoxon signed-rank test was used to analyze changes in participants' perceived stress, coping skills, and self-efficacy, providing a quantitative evaluation of the module's impact.

This study has also received ethical approval from the Ethics Committee of the Health Polytechnic of the Ministry of Health Semarang, with ethical approval number No. 0855/EA/KEPK/2024.

3. RESULTS AND DISCUSSION

Table 1. Characteristic of Respondents

Variable	n	%	Mean±SD	Min-Max
Age				
16 years	10	24.4	19.41±3.06	16-26
>16 years	31	75.6		
Weight				
<50 kg	22	53.7	49.46±6.60	40-70
≥50 kg	19	46.3		
Height				
<150 cm	5	12.2	156.51±6.83	142-170
≥150 cm	36	87.8		
Mid-upper arm circumference (MUAC)				
<23,5 cm	22	53.7	22.99±1.41	20-25
≥23,5 cm	19	46.3		

Table 1 presents that the characteristics of respondents in this study vary in terms of age, weight, height, and upper arm circumference. The age variable averages 19.41 years, with a minimum age of 16 years and a maximum of 26 years. In the age criteria, most respondents are under 20 years old, which means they are classified as at risk. Pregnancy that may occur at this age can increase the incidence of anemia, small for gestational age, preterm birth and maternal and infant mortality (Masturoh et al., 2022). Therefore, delaying the first pregnancy at this age is very important (Lassi et al., 2020). The weight variable averages 49.46 kg with a minimum weight of 40 kg and a maximum of 70 kg. The average height variable is 156.51 cm with a minimum height of 142 cm and a maximum of 170 cm. Maternal height ≤150 cm has a risk of 3.4 times giving birth to stunted children. In this study, most respondents' height was >150 cm (Rosyida et al., 2022). While the Mid-upper arm circumference (MUAC) tvariable has an average of 22.99 cm with a minimum MUAC of 20 cm and a maximum of 25 cm. The majority of respondents had MUAC <23.5; this indicates that respondents have a risk of stunting their children. Pregnant women with SEZ (Chronic Energy Deficiency) characterized by MUAC < 23.5 cm have a 4.85 times greater chance of having stunted children compared to mothers who are not SEZ (Nisak & Nadhiroh, 2024). Prospective brides who experience SEZ are advised to postpone pregnancy to improve their nutritional status first, so as not to become pregnant women with SEZ who are at risk of giving birth to babies with low birth weight (LBW) and

stunting. If pregnancy does occur, it is necessary to intervene in the form of supplementary feeding and education to prevent the risks that may arise (Amalia et al., 2023).

Table 2. Wilcoxon Test Results

Variable		**Mean±SD**	***p-value***
Perceived Stress Scale	Pretest	20.93±5.53	0.002*
	Posttest	18.83±4.60	
	⊿ Mean	-2.10±5.04	
Self-efficacy	Pretest	44.76±6.31	0.002*
	Posttest	48.27±6.23	
	⊿ Mean	3.51±6.92	
Copping skill	Pretest	97.34±7,86	0.023*
	Posttest	99.24±14.70	
	⊿ Mean	1.90±14.52	

The results table 2 of the Wilcoxon test showed a significant difference between pre- and post-intervention scores across all measured variables. There was a significant reduction in perceived stress (p = 0.002), an increase in self-efficacy (p = 0.002), and an improvement in coping skills (p = 0.023). These findings indicate that the intervention module had a positive impact on participants' psychological readiness for healthy parenthood.

However, it is important to note that these results may have been influenced by individual characteristics such as age, weight, height, and mid-upper arm circumference (MUAC/LILA), which were not controlled for in this study. Differences in nutritional status, physical health, or age-related psychological development may affect how individuals respond to stress and benefit from coping skill training. Therefore, while the module shows promising effectiveness, the absence of control for these variables represents a limitation that should be addressed in future research. Conducting multivariate analyses or controlled trials would help clarify whether the observed effects are solely due to the intervention or partly influenced by underlying participant characteristics.

The Wilcoxon test results showed a p-value = 0.023 (<0.05) on the copping strategy variable before and after the premarital class intervention. This indicates that there is a significant difference in the average copping strategy before (97.34) and after (99.24), with a difference of 1.90 and a standard deviation of 14.52. In addition, the significant increase in the use of effective coping strategies also indicates that the intervention provided equipped individuals with the necessary skills to better deal with stressful situations. Coping skill training during provided duirng classes aimed to build psychological resilience by teaching stress management, emotional regulation, and problem-solving skills. The training utilized cognitive-behavioral techniques and mindfulness practices to help participants handle stressors that could impact maternal and child health. While stress during pregnancy can affect maternal and fetal health and potentially increase the risk of complications. By equipping expectant mothers with effective coping strategies, the intervention helps reduce stress's negative impact, thereby supporting maternal and fetal well-being. In addition, coping skills can minimize or prevent the negative effects of emotional, behavioral, cognitive, and physiological responses to stress. Research shows that effective coping strategies can reduce perceived stress and improve pregnancy outcomes, which in turn contribute to long-term child health, including preventing stunting. In addition, interventions designed to improve mental health and resilience in working pregnant women have shown effectiveness in preventing mental health problems and improving resilience, which may have positive impacts on pregnancy outcomes and long-term child health (Crombag et al., 2025).

When viewed in the context of respondent characteristics, these outcomes become particularly meaningful. The majority of participants were over 16 years old, an age at which individuals may possess better cognitive and emotional maturity, allowing them to more effectively absorb and apply coping strategies. Furthermore, a substantial number of respondents had a LILA (upper arm circumference) measurement of less than 23.5 cm, indicating chronic energy deficiency (CED/SEZ). This condition not only reflects poor nutritional status but may also correlate with higher baseline stress levels and reduced resilience.

The improvement in perceived stress, self-efficacy, and coping skills among participants with SEZ risk suggests that psychosocial interventions—even among nutritionally vulnerable individuals—can still yield beneficial outcomes. However, because factors such as age and nutritional status were not controlled for in the analysis, it is possible that these characteristics influenced the magnitude of the intervention's effect. Future research should consider controlling or stratifying for these variables to better isolate the impact of the intervention and to explore whether such modules are equally effective across different subgroups.

Furthermore, based on the results of the difference analysis, there were significant changes in the three variables measured: the stress perception scale, the brief self-confidence instrument, and the coping strategy instrument, all of which had a p-value <0.05. These results indicate that the interventions, such as premarital and preconception classes plus coping skills, successfully reduced stress perception, increased self-efficacy, and developed more effective coping strategies in respondents. Previous research has suggested that participating in premarital antenatal education reduces the risk of breastfeeding discontinuation in the first month after delivery and can increase maternal confidence and self-efficacy in breastfeeding (Ciochoń et al., 2022). Maternal education is said to be a predictor and modifiable in growth promotion and has an impact on reducing the incidence of stunting (Fitriyani et al., 2024; Krebs et al., 2022).

The results of this study are relevant in the context of stunting prevention, where the ability to manage stress, strong self-esteem and effective coping strategies play an essential role in ensuring that mothers-to-be and their families can maintain good health during the premarital and preconception periods (Rueda-Guevara et al., 2021). Thus, successful interventions that improve these three aspects could significantly reduce stunting rates in Indonesia, as expected in the government's target to reduce stunting prevalence to 14% by 2024. These findings support the importance of developing a comprehensive, psychological skills-based stunting prevention program as part of a sensitive intervention effort to achieve Indonesia's stunting reduction target (Almaini et al., 2022; Harwati et al., 2023; Kerangan et al., 2023).

Pre-marital and pre-conception education that includes training in coping strategies can have a long-term impact on maternal and child health. Furthermore, Efforts to increase knowledge can be made by providing education or nutritional counseling to encourage someone to change their attitudes and behavior. Education that premarital classes can do could be effectively improve knowledge, attitudes, and skills related to prevention or management of stunting in the next year life of pre-marital women (Huriah et al., 2022; Lestari, Shaluhiyah & Adi, 2023). Thus, as a model to prevent stunting. Research suggests that prenatal education designed to improve the knowledge and skills of expectant parents can help them manage stress effectively during pregnancy, labor, and the postpartum period. For example, one study found that individualized education reduced prenatal anxiety in older multiparous mothers. In addition, psychosocial interventions have been shown to be effective in improving parental well-being and parenting quality, which in turn can transform stress into constructive challenges and improve the body's homeostatic response to change. Thus, comprehensive educational programs can help expectant parents better manage stress, achieve beneficial

eustress, and enhance satisfaction and well-being during pregnancy, labor, and the postpartum period (Shen et al., 2022).

This education helps expectant mothers prepare themselves physically and builds the mental resilience needed to face challenges during pregnancy and after childbirth. Therefore, integrating programs that focus on these psychological aspects is becoming increasingly important in the government's efforts to reduce stunting and improve overall public health (Vaivada et al., 2020). The pre-marital classes are one of the National Strategy for Accelerating Stunting Reduction as referred to in paragraph which are aims to: reduce the prevalence of Stunting; improve the quality of preparation for family life; ensure fulfillment of nutritional intake; improve parenting patterns; improve access and quality of health services; and improve access to drinking water and sanitation (Presiden Republik Indonesia, 2021).

4. CONCLUSION

This research focuses on enhancing science and technology products by developing a stunting risk detection and management system targeted at the pre-marriage and preconception stages. The findings of this study highlight that a stunting risk detection and management system at the pre-marriage and preconception stages enhanced with coping skills training is effective in preparing prospective brides for pregnancy. The program successfully reduces stress, boosts self-confidence, and strengthens coping mechanisms, which are key factors in preventing stunting from an early stage.

To maximize its impact, strong intersectoral collaboration is essential, and the government must prioritize wider access to pre-marital and preconception programs, especially in areas with high stunting prevalence. Future research should focus on assessing the long-term effects and effectiveness of each intervention component to provide robust evidence for scaling and informing sustainable policy development.

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