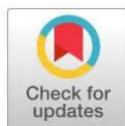


Preventing Stunting from the Source: A Study of Premarital Couples on Participation in Preconception Care



Nuriana Kartika Sari¹, Atik Ismiyati², Munica Rita Hernayanti³, Sumarah⁴, Indraswari Siscadarsih⁵

¹Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia
kartikasarinuriana@gmail.com

²Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia
atikismiyatinadine@gmail.com

³Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia
municaadriana@gmail.com

⁴Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia
sumarahakbid@gmail.com

⁵Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia
indraswari46@gmail.com

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ABSTRACT

Indonesia ranks among the highest globally for childhood stunting, largely due to chronic nutritional deficiencies beginning during the first 8000 days of life—starting even before conception. Poor health and nutritional status among women of reproductive age prior to marriage significantly increase the risk of adverse pregnancy outcomes and childhood stunting. This study aimed to identify the determinants of premarital couples' participation in preconception care as a strategy to reduce stunting. This cross-sectional analytical study involved 61 premarital couples recruited through total sampling at the Office of Religious Affairs (KUA) in Kapanewon Sewon, Bantul Regency, Yogyakarta, Indonesia. Inclusion criteria included couples aged 20–35 years who met the study requirements. Data were analyzed using univariate, bivariate (Chi-square), and multivariate logistic regression tests. Knowledge ($p = 0.001$), attitude ($p = 0.007$), and social support ($p = 0.015$) were significantly associated with participation in preconception care. Multivariate analysis showed that couples with good knowledge were 4.3 times more likely ($AOR = 4.30$; 95% CI: 1.65–11.22) to participate in preconception care. Improved knowledge, positive attitudes, and strong social support significantly increase premarital couples' participation in preconception care. Strengthening early health promotion and community-based interventions is essential to optimize reproductive health preparation and prevent stunting from its earliest source.

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Corresponding Author:

Nuriana Kartika Sari

Department of Midwifery, Poltekkes Kemenkes Yogyakarta

Tata Bumi Street, No.3, Gamping, Sleman, Daerah Istimewa Yogyakarta. Telp (0274) 617601

Email: kartikasarinuriana@gmail.com

INTRODUCTION

Indonesia ranks fourth in stunting in the world and second in Southeast Asia based on stunting among children under five. The results of the integration of SSGBI show that the prevalence of stunting in Indonesia is 27.7%. Based on these results, more efforts are still

needed from various ministries and institutions, through specific nutrition interventions and sensitive nutrition interventions, so that the target of reducing stunting by 3.0 percent a year or to 14 percent by 2024 can be achieved.(1) Based on the health profile of the Special Region of Yogyakarta (DIY), stunting was 16.4% in 2022.(2) The prevalence of stunting in Bantul Regency was 6.42% in 2022.(3) Stunting is one of the most serious threats to the long-term quality of human resources as it affects brain development, learning capacity, economic competitiveness, and increases the risk of non-communicable diseases in adulthood. Children who experience stunting are more likely to have cognitive limitations, low productivity, and a diminished quality of life, ultimately perpetuating the cycle of intergenerational poverty (4).

Stunting prevention efforts are significant because they will determine the quality of the next generation of human resources. One cause of stunting is chronic nutritional deficiencies experienced during the first 8,000 days of life, namely before pregnancy. Women of childbearing age who have poor health status before marriage will experience complications during pregnancy, which can affect the growth and development of the fetus in the womb, increasing the risk of giving birth to low birth weight and affecting the risk of stunting.(5) Healthy preconception women will grow and develop into healthy prospective mothers and give birth to healthy babies.(6) Interventions in this stunting prevention effort need to be carried out early, starting from the initial planning of marriage through the assistance of premarital couple. Assistance to premarital couple needs to be done because the risk of stunting already exists before pregnancy.(7) Health screening, promotion and education activities in China are also conducted in premarital to improve their knowledge and attitude.(8) Research conducted by Williamson (2018) also stated relevant results women who received premarital education tended to have better relationship conditions with their partners, health, and psychological.(9)

The premarital care program in Indonesia is a program issued by the government under the National Population and Family Planning Agency (BKKBN), launched at the end of 2021. The premarital couples mentoring program is motivated to support accelerating stunting reduction in Indonesia. This program monitors and assists premarital couples to ensure they are ready to marry and become pregnant, and as a prerequisite for premarital couple to register their marriage.(10) Preliminary studies conducted by researchers found that the program has been running in the Special Region of Yogyakarta (DIY), but not all premarital couples have participated in this program. Based on the problem, researchers are interested in researching the participation of premarital couples in preconception care. This study took place in Bantul Regency because the coverage of premarital couples on preconception care was only 60% and was still lagging behind several other districts in the DIY region. Various factors influence this low participation rate, including a lack of knowledge about the importance of premarital checkups, limited access to reproductive health services, social stigma surrounding premarital health checkups, and suboptimal coordination between the health sector and civil registration authorities. According to Widayani's (2021) research, women of childbearing age still have relatively poor knowledge and attitudes regarding preconception care.(11)

In fact, scientific evidence shows that preconception interventions are highly effective in improving pregnancy outcomes and reducing stunting risk. A global study by Barker et al. (2018) found that nutritional and educational interventions initiated during the preconception phase significantly improve maternal nutritional status and reduce the incidence of low birth weight. Premarital education programs have improved knowledge, attitudes, and behaviors about healthy pregnancy planning.(12)

Thus, increasing participation in preconception care services among premarital couples is crucial. This study was conducted in Bantul Regency to explore the factors influencing participation levels, thereby providing an evidence-based foundation for

developing more effective intervention strategies supporting the national stunting reduction agenda.

METHOD

This type of research is an observational study with a cross-sectional research design. This research was conducted at KUA Kapanewon Sewon, Bantul, Yogyakarta, from January to June 2025. Respondents were recruited by registering premarital couples who were willing to participate at the KUA and met the inclusion and exclusion criteria. The inclusion criteria used in this study were premarital couples aged 20-35 years, residing in regencies/municipalities in Bantul, who were willing to become research respondents. The exclusion criteria used in this study were premarital couples in treatment in hospitals or other health services at the time of the survey, premarital couples who were undergoing treatment or suffering from diseases that required regular consumption of drugs, and premarital couples who were not in place when the study took place. This study used a structured questionnaire as its instrument. This study collected primary data in the form of questionnaires and secondary data in the form of premarital couples' data available at the Office of Religious Affairs (KUA) in Kapanewon Sewon, Bantul Regency, Yogyakarta Special Region, Indonesia. This location was selected due to its relatively low coverage of premarital couples participating in the national preconception care program. The sampling technique in this study used consecutive sampling with total of 61 participants. The independent variables included age, education, and occupation (measured via self-reported demographics), knowledge and attitudes toward preconception care (assessed using a structured questionnaire), timing of marriage (proximal vs. long-term), and social support (measured via perception-based Likert scale questions). The dependent variable is the participation of premarital couples in preconception care, defined as the engagement of premarital couples in screening, counseling, or health education activities as part of the national preconception care program. The questionnaire was tested for validity and reliability at the Sewon I Public Health Center, Bantul, Yogyakarta before use. Twenty people were used for the validity and reliability tests. The validity test of the questionnaire used Pearson correlation formula, while the reliability test used the Cronbach's alpha correlation formula. From 25 knowledge and 20 attitude questionnaire items tested, 14 knowledge items and 10 attitude items were deemed valid ($r > 0.42$) and reliable, with an alpha of 0.78. Participants completed the questionnaire onsite at the KUA after providing informed consent. Data collection was supervised by trained enumerators to ensure comprehension and consistency in responses. Confidentiality and anonymity of participants were maintained throughout the process. This study employed Stata software for univariate analysis in the form of proportions, bivariate analysis in the form of chi-square, and multivariate analysis in the form of logistic regression, with a 95% confidence level and a significance level of $p < 0.05$. Ethical clearance for this study was obtained from the Poltekkes Kemenkes Yogyakarta Ethics Committee (No. DP.04.03/e-KEPK.1/031/2025).

RESULTS

Research on preventing stunting from the source: a study of premarital couples on participation in preconception care has been carried out with the following results.

Univariate analysis

A univariate analysis was conducted to determine the characteristics of the research data. This analysis will be presented as a frequency distribution table (percentages).

Table 1. Distribution of Premarital Couples' Characteristics

Variable	n	%
Age		
20-24	15	24,59
25-29	36	59,02
30-35	10	16,39
Education		
Low	2	3,28
Medium	28	49,90
High	31	50,82
Occupation		
Employed	58	95,08
Not Employed	3	4,92
Knowledge		
Good	17	27,87
Medium	34	55,74
Less	10	16,39
Attitude		
Positive	28	45,90
Negative	33	54,10
Marriage Time		
≥ 3 months	27	55,74
< 3 months	34	44,26
Social Support		
Supportive	32	52,46
Not Supportive	19	47,54

Notes:

n: number

% : percentage

The results of Table 1 show that most premarital couples are between 25 and 29 years old and, on average, work. The distance between marriage registration and marriage date in this study averaged less than three months. The average premarital couple had a positive attitude and received social support related to participation in preconception care.

Bivariate analysis

To determine the relationship between the independent and dependent variables, bivariate analysis was conducted using the chi-square statistical test with a 5% significance level or a 95% confidence interval.

Table 2. Association analysis of factors in premarital couples' participation in preconception care

Variable	Following preconception care		Not Participating in Preconception Care		OR	p	95%CI
	n	%	N	%			
Age							
20-24	9	35	6	17	1		
25-29	12	46	24	69	0,33	0,083	0,09-1,15
30-35	5	19	5	5	0,67	0,622	0,13-3,34
Education							
Low	0	0	2	6	1		
Medium	11	42	17	49	0,69	0,483	1,24-1,94
High	15	58	16	46	1		
Occupation							
Employed	25	96	33	94	1,51	0,74	0,12-17,66
Not Working	1	4	2	6	1		
Knowledge							
Good	14	54	3	9	8,55	0,003*	2,04-35,80
Medium	12	46	22	63	1		
Less	0	0	10	29	1		

Variable	Following preconception care		Not Participating in Preconception Care		OR	p	95%CI
	n	%	N	%			
Attitude							
Positive	17	65	11	31	4,12	0,010*	1,40-12,11
Negative	9	35	24	69	1		
Marriage Time							
≥ 3 months	12	46	15	43	1,14	0,79	0,41-3,17
< 3 months	14	54	20	57	1		
Social Support							
Supportive	19	73	13	37	4,59	0,007*	1,52-13,86
Not supportive	7	27	22	63	1		

Description:

n: number

p: p-value with probability value p<0.05

OR: Odds Ratio

Based on Table 2, the premarital couples with good knowledge have an 8.55 times greater increase in the participation of preconception care than the premarital couple whose knowledge is moderate or less. Premarital couples who had a positive attitude towards preconception care were 4.12 times more likely to increase preconception care participation than premarital couples who had a negative attitude. Premarital couples who received good social support were 4.59 times more likely to increase preconception care participation than premarital couples who did not receive social support.

Multivariate analysis

Multivariable analysis was conducted to determine the proper relationship between the independent and dependent variables.

Table 3. Relationship between Knowledge, Attitude, and Social Support on the Participation of Premarital Couples in Preconception Care

Variable	Model 1	Model 2	Model 3	Model 4
	OR 95% CI	OR 95% CI	OR 95% CI	OR 95% CI
Knowledge				
Good	8,85** (1,98-39,52)	8,039** (1,84-35,10)	7,92** (1,70-36,98)	
Medium	1	1	1	
Less	1	1	1	
Attitude				
Positive	3,52 (0,96-12,82)		4,85* (1,15-20,35)	5,11* (1,52-17,15)
Negative	1		1	1
Social support				
Supportive		3,14 (0,86-11,49)	4,48* (1,04-19,30)	5,65** (1,65-19,27)
Not supportive	1	1	1	1
N	61	61	61	61
Pseudo R ²	0,206	0,196	0,270	0,189
AIC	62,13	62,86	59,63	73,47

*p<0.05, **p<0.01, ***p<0.001

Based on the multivariable analysis above, the third model was selected to explain the relationship between knowledge, attitude, and social support with the participation of premarital couples in preconception care. The third model was chosen because it has the smallest AIC (Akaike's Information Criterion) value.(13)

DISCUSSION

This study shows that knowledge, attitude, and social support are the most critical factors influencing the participation of premarital couples in preconception care. Couples with good knowledge, positive attitudes, and strong social support from family, healthcare providers, and community leaders tend to participate more fully in preconception care.

The knowledge factor is one of the factors that premarital couples do not follow preconception care. In this study, premarital couples who followed preconception care were more likely to have good knowledge. This is under Ayele (2021) in Ethiopia, who also revealed that good knowledge about preconception care showed a significant relationship to participation in preconception care.(14) Similar research in Ethiopia by Fekene (2020) found that good knowledge about preconception care positively correlates with implementing preconception care.(15) In line with Notoatmodjo's (2016) theory, the level of education is very influential on changes in attitudes, motivation, and healthy living behaviour in individuals.(16)

Many factors contribute to premarital couples' lack of knowledge about the importance of preconception care, including lack of information, lack of literacy, and lack of access to information. According to Kurniawati (2023), many women still lack knowledge about preconception care because not all have access to information.(17)

Attitude is also one of the factors for premarital couples to follow preconception care. In this study, the positive attitude of premarital couples was more likely to follow preconception care. This is also in line with the results of research in Malawi, Africa, perceptions and attitudes about the importance of preconception care affect the coverage of preconception care.(18)(16) In Japan, Shibata (2023) suggested that women who have never given birth mostly have negative attitudes about preconception care, so they do not follow preconception care.(20)

Acting, especially in terms of preconception screening, is influenced by the motivation of premarital couples to conduct preconception screening. This motivation can encourage a person, group, or community to work together to achieve specific goals under the expectations of individuals, groups, and society.(21) Someone lacks the desire or motivation to carry out positive activities due to a lack of knowledge or information.(22)

In this study, premarital couples who received more support followed preconception care than those who did not receive support. In addition to family support, external parties such as village officials, community leaders, and the necessary media are involved. According to research by Aprilianti (2015), the role of a headman in the community is essential in organizing the community in their area to participate in a program because village officials, such as the headman, can foster trust in the community.(23) This is under the statement Susanto (2017) that an integrated health information system can make it easier for the public to get information related to health services, make it easier for related agencies to get data about health services, facilitate the active role of the community in participating in the health sector and become a control over existing health services.(24)

The preconception care program in Indonesia, especially in DIY, has existed and is already running, but not all premarital couples get this program before marriage. Following a complete preconception care is intended to provide knowledge and readiness for pregnancy for premarital couples. The experience of patients who do not get a complete health check can affect the quality of a health service. Several things influence the quality of primary health care, include comprehensive, fair, safe, effective, efficient, and integrated.(25) In Indonesia, particularly in the Special Region of Yogyakarta (DIY), equitable access to health information services is still limited, health workers and community leaders are not fully engaged, and cultural perceptions do not prioritize premarital health. Additionally, the local context differs from the global context due to low health literacy among

the population, limited internet access in rural areas, and uneven implementation of mandatory preconception policies for couples planning to marry.

The study findings suggest that interventions involving strengthened health education and social support could increase preconception service coverage. These findings are relevant to healthcare workers, community leaders, and policymakers when designing strategies to promote and prevent pregnancy complications and their impact on stunting, which aligns with Sustainable Development Goals (SDGs) 3 on maternal and child health.(26)

The results of this study indicate the need to strengthen national policies requiring preconception care as part of marriage administration. The government could integrate this service into the Integrated Health Information System and empower local leaders, such as village heads, to become agents of change. Additionally, expanding Indonesia's National Health Insurance (BPJS Kesehatan) coverage to include preconception care services would increase access and participation among premarital couples.

CONCLUSION

This study concludes that knowledge level, attitude, and social support are significant factors in increasing the participation of premarital couples in preconception care in Bantul Regency, DIY. However, knowledge is the most influential factor in participation, with an odds ratio OR 7.92 (p<0.01). Therefore, national policies must be strengthened to integrate the obligation to participate in preconception care into the marriage registration process. Empowering community leaders and families as educational agents is essential to increasing preconception care coverage. Additionally, an integrated health information system involving village and community health center components can facilitate the dissemination of information and access to preconception care. Policies requiring preconception screening for premarital couples can increase awareness of and readiness for healthy pregnancies. Further research with a broader scope using both quantitative and qualitative approaches is needed to explore other factors.

AUTHOR CREDIT STATEMENT

The first author is responsible for the idea, design, and writing. The second author was involved in methodology, analysis, and manuscript editing. The third to fifth author handles project administration, data validation, supervision.

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DECLARATION OF COMPETING INTEREST

There is no conflict of interest.

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