



Correlation between Premarital Nutritional Status and Pregnancy Planning for Prospective Brides

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ABSTRACT

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The premarital period is closely related to the preconception period because after marriage, women will undergo fertilization activities. Entering the preconception period means preparing to become a mother. Pregnancy planning is important to motivate behavior change before and during pregnancy. According to WHO, 4 out of 10 pregnant women did not plan their pregnancies, leading to delayed interventions. The 2019 Indonesian Ministry of Health survey reported a Maternal Mortality Rate (MMR) of 305 per 100.0000 live births and anemia prevalence of 48.9% among pregnant women. These issues highlight the need for prospective brides to plan pregnancies before marriage. However, awareness of preconception care remains low, with most care starting only before delivery. This study aimed to determine the relationship between premarital nutritional status and pregnancy planning. A quantitative cross-sectional study was conducted among 150 brides visiting health centers in the Kendal district, using accidental sampling. Data were analyzed with the Chi-Square test. Results showed a significant relationship between hemoglobin levels and pregnancy planning ($p = 0.005$), but no relationship between Body Mass Index (BMI) and Mid Upper Arm Circumference (MUAC) with pregnancy planning. The study concludes that improving education on preconception nutritional status for brides-to-be is essential to enhance pregnancy readiness and outcomes.

INTRODUCTION

The Maternal Mortality Rate (MMR) is currently an indicator of welfare in a country. MMR is a description of the level of community welfare and an illustration of the quality of existing health services.⁽¹⁾ The MMR in Indonesia remains high, with 305 maternal deaths per 100.000 live births reported in 2019.⁽²⁾ The leading causes of maternal mortality include bleeding, hypertension during pregnancy, and infection.⁽³⁾ Iron deficiency is prevalent among pregnant women, particularly teenagers, and protein inadequacy is also a concern. To address these issues, early intervention is crucial, beginning during adolescence to detect reproductive health irregularities⁽⁴⁾. The preconception period, spanning three months to one year before pregnancy, plays a vital role in ensuring the health of both mother and baby⁽⁵⁾. Adequate nutrition during this time is essential to prevent prematurity, low birth weight, and stunting. Preconceptional care aims to identify and modify health risks for a healthy pregnancy outcome. Planned pregnancies have a positive impact on outcomes, but many pregnancies





are unplanned, leading to delayed interventions ⁽²⁾. Awareness of preconception care remains low, and there is a need to promote early preparation for pregnancy, as good nutrition during this period benefits both men and women, contributing to healthy reproductive processes and better fetal development ^(3,4). In Adina Y Lang's research in Australia in the journal *Women and Birth* in 2021, it was stated that 74% of women planned a pregnancy, and the rest had not planned a pregnancy. ⁽⁵⁾ Women who had planned their pregnancy reported one or more lifestyle changes in preparation for pregnancy. ⁽⁶⁾ Meanwhile, according to July, only 35.4% of women had planned a pregnancy, while 64.6% of women had not planned a pregnancy. ⁽⁷⁾ Previous studies have mostly targeted married women of childbearing age, but this study focuses more on women who have registered to get married. The aim is to see whether they already have plans related to pregnancy, taking into account their current nutritional status.

METHOD

The research design used was quantitative research with a cross-sectional approach on prospective brides who visited the Health Center in Kendal Regency. The sample was taken using quota sampling of 150 respondents with the following inclusion criteria: couples who were newly married for the first time and had never been pregnant. The exclusion criteria were pregnant women with unwanted pregnancies. Data were collected through structured interviews on sociodemographic data and pregnancy planning. Data related to nutritional status was obtained by taking data from medical records, including weight, height, Body Mass Index (BMI), Mid-Upper Arm Circumference (MUAC), and hemoglobin (Hb) levels. HB, Mid-Upper Arm Circumference (MUAC), height, and weight checks were carried out by midwives at the health center when the prospective brides underwent premarital health checks. The pregnancy planning questionnaire used the LMUP Questionnaire. This questionnaire has not been tested for local validity, which is a limitation of this study. The LMUP has been formally and informally validated in various countries as a research tool. Recent consensus recommends the LMUP as an outcome measure for preconception care in the United States. ⁽⁸⁾ Ethical review was carried out at the ethics commission of the faculty of public health, Diponegoro University with number 449/EA/KEPK-FKM/2023. Data analysis used Chi Square test.

RESULT AND DISCUSSION

This study was conducted on 150 prospective brides and grooms who were going to undergo a medical examination and had already registered at the KUA. Table 1 shows the characteristics of respondents based on age, education, and occupation. The majority of respondents were within the healthy reproductive age range (20-35 years) at 84%, most had a secondary education at 54.7%, and most were workers at 84%.

Table 1.
 Frequency distribution of respondent characteristics

No	Characteristics	n	f (%)
1	Age of Respondents		
	a. Healthy Reproduction	126	84
	b. Unhealthy Reproduction	24	16
2	Education		
	a. Elementary school	40	26,7
	b. Secondary school	82	54,7
	c. High School	28	18,4
3	Work		
	a. Work	126	84
	b. Doesn't work	24	16



The results of the study in Table 1 show that the majority of respondents are within the healthy reproductive age range. This healthy reproductive age is the ideal age for planning a pregnancy. The majority of respondents have a secondary education level. The higher the level of education, the more likely they are to be actively involved in reproductive decision-making and have a planned pregnancy.^(9,10) The majority of respondents are employed. Several studies indicated that employment provides better access to health services, which contributes to more careful and timely pregnancy planning.⁽¹¹⁾

Table 2.
Frequency distribution of respondents based on nutritional status

No	Nutritional status	n	f (%)
1	BMI		
	Normal	69	46
	Abnormal	81	54
2	MUAC		
	CED	40	26,7
	Not CED	110	73,3
3	Hemoglobin Level		
	Anemia	76	50,7
	Not anemic	74	49,3

This study also shows that most of them have normal BMI and Mid-Upper Arm Circumference (MUAC), but the majority suffer from anemia, as shown in Table 2. Adolescents play an important role in human resource development. As future agents of development, adolescents must be prepared to become high-quality human resources. Adolescents are also future spouses who will build families and become parents, so they must be thoroughly prepared both physically and psychologically, especially adolescent girls.⁽¹²⁾ Women who already have the intention/plan of pregnancy will improve their lifestyle, both nutritional patterns and activity patterns⁽¹⁰⁾. Adequate nutrition during preconception is a determinant of the quality of a baby being born.⁽¹³⁻¹⁵⁾ Nutritional status and nutritional intake in pregnant women greatly affect fetal growth. Good nutritional status in pregnant women can prevent prematurity, LBW, and stunting⁽¹⁶⁾. Hemoglobin levels play an important role for the bride and groom during her pregnancy later. the condition of the mother who has anemia can cause 2 things, both directly in the short and long term. Short-term anemia can cause fetal defects, low birth weight, and asphyxia. Whereas in the long term, it can cause stunting⁽¹⁾.

Table 3.
Frequency distribution of respondents based on pregnancy planning

No	Pregnancy Planning	n	f (%)
1	Bad Pregnancy Planning	136	90.6
2	Good Pregnancy Planning	14	9.4

Table 3 shows that the majority of respondents had inadequate pregnancy planning. The premarital period is an important phase in preparing young women physically and psychologically as future parents, so that they are able to produce a high-quality next generation.⁽¹⁷⁾ Pre-marital preparation involves women optimizing their health to prepare for and plan their pregnancies in order to improve maternal and child health. This period is an ideal time to integrate lifestyle interventions, including nutrition, early on.⁽¹⁸⁾ Planning and intention to get pregnant are important to motivate women to make behavior changes both before pregnancy and during pregnancy⁽¹⁹⁾ There are relationship between planned pregnancies and pregnancy outcomes, eg. prematurity, and low birth weight^(4,10).





Table 4.
Relationship between bride's age, education, work, BMI, MUAC and hemoglobin levels with pregnancy planning

Characteristic	Pregnancy Planning				Total		<i>p value</i>
	Bad		Good		n	%	
	n	%	n	%			
Age							
Unhealthy Reproduction	23	63,8	13	36,2	36	100	0.300
Healthy Reproduction	113	99.1	1	0.9	114	100	
Total	136		14		150		
Education							
Elementary school	34	85	6	15	40	100	0.119
Secondary school	78	95,1	4	4,9	82	100	
High School	24	85.7	4	14,3	28	100	
Total	136		14		150	100	
Work							
Work	109	90.8	11	0.8	120	100	1,000
Doesn't work	27	90	3	10	30	100	
Total	156		14		150	100	
BMI							
Abnormal	44	88	6	12	50	100	0.427
Normal	92	92	8	8	100	100	
Total	136		14			100	
Mid Upper Arm Circumferences (MUAC)							
CED	36	90	4	10	40	100	0.866
Not CED	100	90.9	10	8.1	110	100	
Total	136		14		150	100	
Hemoglobin Levels							
Anemia	74	97.3	2	2,7	76	100	0.005
Not Anemia	62	83.8	12	16.2	74	100	
Total	136		14		150	100	

Table 4 shows various factors related to pregnancy planning were examined. Pregnancy is the process by which sperm and ovum (male and female gametes) join to form a single cell called a zygote. This zygote cell will carry out cell division many times to become a developing fetus ^(1,20). Preparation for pregnancy is a very important factor ⁽²¹⁾. Preparation for pregnancy is carried out to ensure that the prospective parents are in the best condition⁽²²⁾. The analysis revealed that age, education, and occupation of respondents did not show a significant relationship with pregnancy planning. Age is closely related to psychological readiness for pregnancy and pregnancy planning. Education plays a role in pregnancy planning. People with higher education are more likely to plan their pregnancies than those with lower education. A study in Brazil found that college graduates planned their pregnancies at a much higher rate than those who did not attend college.⁽¹¹⁾ In this study, many respondents had not planned their pregnancies well; most of them wanted to have children immediately without considering their nutritional status. Several studies have mentioned that proper pregnancy preparation will have positive results for the fetus and the psychology of the pregnant woman. Good nutrition will have a positive impact on the fetus, for example, preventing fetal abnormalities and avoiding asphyxia in newborns⁽²³⁾. Similar research also states that women's behavior during preconception will affect



pregnancy outcomes. Whereas for other variables, namely BMI and MUAC, although statistically they are not related, there is a tendency for these variables if they are categorized as good, they tend to make good pregnancy planning. The chance of getting pregnant will be higher if the mother's weight is ideal. Pregnant women must have a healthy body mass index (BMI), not too low or too high.⁽²⁴⁾ Low or high BMI makes it difficult for some women to get pregnant. Physical condition for those who want to have a family is highly recommended to maintain health, physical health, and spiritual health. Physical health includes health in the sense that the person does not have any disease (especially infectious diseases) and is free from hereditary diseases. In addition, expectant mothers are not anemic, not CED, and have normal BMI⁽²⁵⁾.

CONCLUSION

There is no relationship between characteristics and pregnancy planning and there is no relationship between BMI, MUAC, and pregnancy planning. There is a relationship between hemoglobin levels and pregnancy planning. Anemia screening needs to be carried out before the bride and groom register at the sub-district office or the Religious Affairs Office. More intensive assistance needs to be provided to prospective brides and grooms at risk in preparation for conception.

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