

# Relationship Between Material Characteristics, Adequacy Intake of Iron, Folic Acid and Vitamin C with Anemia Status in Women of Reliable Age (WUS)

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## ABSTRACT

Women of childbearing age as prospective mothers are a vulnerable group whose health status must be considered, especially their nutritional status. The quality of the next generation will be determined by the condition of the mother since before pregnancy and during pregnancy. Preconception health is very important, including nutritional status, especially in an effort to prepare for pregnancy because it will be closely related to pregnancy outcomes. The goal of this study was to see how preconception nutrition counseling affected protein intake, calcium, iron, folic acid, and nutritional status in women of childbearing age (WUS) in Sikapak Barat village. The study was carried out in the village of West Attitude. Data will be collected from July to August 2021. This study has a quasi-experimental design with a single group pre and post test. The participants in this study were all women of reproductive age in the hamlet of West Attitude who were married in the preconception period, and the sample size was 30 persons who satisfied the inclusion criteria. Statistical analyses revealed that the counseling had a significant effect on boosting knowledge ( $p = 0.000$ ), attitudes ( $p = 0.001$ ), protein consumption ( $p = 0.000$ ), and iron intake ( $p = 0.000$ ), but no influence on calcium intake, folic acid, or nutritional status following counseling.

**Keywords:** *Counseling, Preconceptional Nutrition, Protein Intake, Calcium, Iron, Folic Acid, Nutritional Status*

## 1. INTRODUCTION

Women of childbearing age as prospective mothers are a vulnerable group whose health status must be considered, especially their nutritional status. The quality of a future generation is determined by the condition of the mother since before pregnancy and during pregnancy. Preconception health is very important to consider including nutritional status, especially in an effort to prepare for pregnancy because it will be closely related to pregnancy outcomes.[1][2][3]

Preconception women are assumed to be adult women or women of childbearing age who are ready to become mothers and whose nutritional needs are different from those of childhood, adolescence, or old age at the time of conception.[4][5]

Preconception nutritional status will affect the condition of pregnancy and the welfare of the baby which will be better if the prevention is done before pregnancy. Women aged 20-35 are the most appropriate age in preventing nutritional problems, especially chronic energy deficiency.[6][7][8]

Nutritional behavior is a very important factor. Someone who behaves healthy if the food consumed provides balanced nutrition. The more variety of food ingredients consumed, the greater the nutritional intake. Awareness to consume healthy food that until now has not been owned by women of childbearing age.[9][10]

The increasing prevalence of SEZ in WUS indicates a problem. Therefore, it is necessary to handle one of them by providing counseling. Counseling is one of the efforts to increase the

knowledge and ability of individuals or families about nutrition.[11][12]

With the provision of counseling is expected to increase nutritional intake in women of childbearing age. Nutritional intakes that affect preconception are carbohydrates, fats, proteins, folic acid, vitamins A, E, and B12, minerals, zinc, iron, calcium and omega 3.[13]

**2. METHODS**

The study was carried out in the community of West Attitude. This study will take performed between July and August of 2021. This study has a quasi-experimental design with a one-group pre-and post-test.[14] All women of reproductive age who were married in the preconception period in the village of West Attitude, a total of 528 persons, were included in this research. The sample is part of the population. Purposive sampling was used to collect data. After that, the sample is determined by screening it against the inclusion and exclusion criteria. The sample studied amounted to 30 people. The analysis used is univariate and bivariate analysis. The statistical test used was T-dependent, but if the data were not normally distributed, the Wilcoxon test was used.

**3. RESULTS**

**3.1 The effect of counseling on preconceptional nutrition against knowledge**

**Table 1.** Knowledge analysis before and after intervention

Measure Time	Average	Standard Deviation	P Value
Before Intervention	6,40	1,923	0,000
After Intervention	9,10	1,125	
Knowledge Improvement		27	

**3.2 The effect of counseling on preconceptional nutrition against attitude**

**Table 2.** Analysis of attitudes before and after intervention

Measurement Time	Average	Standard Deviation	p value
Before Intervention	30,43	3,181	0,001
After Intervention	33,73	3,028	
Attitude Improvement		3,3	

**3.3 The effect of counseling on preconceptional nutrition against protein**

**Table 3.** Protein analysis before and after intervention

Measurement Time	Average	Standard Deviation	p value
Before Intervention	60,23	5,844	0,000
After Intervention	66,31	8,306	
Increased Protein Intake		6,08	

**3.4 The effect of counseling on preconceptional nutrition against calcium**

**Table 4.** Calcium analysis before and after intervention

Measurement Time	Average	Standard Deviation	p value
Before Intervention	251,48	80,11	0,548
After Intervention	244,05	68,74	
Increased Calcium Intake		7,43	

**3.5 The effect of counseling on preconceptional nutrition against iron**

**Table 5.** Analysis of iron before and after intervention

Measurement Time	Average	Standard Deviation	p value
Before Intervention	10,273	1,849	0,000
After Intervention	12,227	2,353	
Increased Iron Intake		2,05	

**3.6 The effect of counseling on preconceptional nutrition against folic acid**

**Table 6.** Analysis of folic acid before and after intervention

Measurement Time	Average	Standard Deviation
Before Intervention	174,96	31,71
After Intervention	183,98	32,93
Increased Folic Acid Intake		9,02

**3.7 The effect of counseling on preconceptional nutrition against nutritional status**

**Table 7.** Analysis of nutritional status before and after intervention

Measurement Time	Average	Standard Deviation	p value
Before Intervention	24,91	6,054	0,135
After Intervention	25,04	5,824	
Increased BMI	0,13		

**4. DISCUSSION**

**4.1 The Effect of Nutrition Counseling on Knowledge**

Knowledge is one of the three components that influence human behavior. Because the process is founded on awareness and a good mindset, the habit will be sustained. However, if the conduct is not founded on knowledge and awareness, it will not continue long.[15]

The findings of the data analysis reveal that the average knowledge of the sample has increased both before and after counseling.  $P = 0.000$  ( $0.05$ ) was also obtained as a significant score, indicating that counseling had an effect on enhancing the sample's knowledge.

After the intervention, there occurs a shift in knowledge. This is in accordance with a study done in Semarang by Tiara et al (2014), in which mothers of stunted children aged 1-2 years were provided nutritional counseling, and there was a substantial difference in knowledge before and after counseling. A similar study was also conducted by Khodijah (2015) regarding counseling about sexually transmitted infections can increase the knowledge of female sex workers.

**4.2 The Effect of Nutrition Counseling on Attitude**

Attitude according to Notoatmodjo (2003) is a response reaction someone who is still closed to a stimulus or object. Based on the findings of a study conducted on WUS with statistical test results of  $p = 0.001$  ( $p < 0.05$ ), this shows that counseling has an impact on attitude change. This investigation Margareta and Lilatul's study supports this (2015), which shows that the influence of counseling on growth and feeding toddlers on mother's attitude ( $p = 0.014$ ).

Counseling improves attitudes because counselors and clients think to solve problems together. It contains Cognitive and affective elements that cause changes in attitudes in oneself someone.[7][8]

**4.3 The Effect of Nutrition Counseling on Protein Intake**

Protein deficiency, one of which can cause KEK. KEK can have a negative impact on the mother and fetus. Pregnancy malnutrition can impair fetal growth and result in miscarriage, abortion, stillbirth, neonatal mortality, congenital abnormalities, infant anemia, intrapartum hypoxia (death within the womb), and low birth weight (LBW). Effect Short-term KEK include anemia, organ development is not optimal and less physical growth, resulting in less a person's productivity. So it is necessary to prevent SEZ incident.[16]

The results obtained  $p = 0.000$  which indicates there is an effect of counseling on preconceptional nutrition on protein intake. This matter in accordance with the conclusion of statistical tests with the conditions  $p < 0.05$  then  $H_0$  is rejected. This research is in line with Anny's research in 2012 which mentioned that there was an increase in protein intake after being given health education about preconception nutrition that is  $p = 0.000$ .

**4.4 The Effect of Nutrition Counseling on Calcium Intake**

Calcium in the body, mostly found in tissues hard like bones, teeth and the rest are scattered in other body parts. Calcium is also associated with reproductive health, especially pre-eclampsia/eclampsia, low birth weight, and premature birth. Calcium also increases the body's pH, which is beneficial for sperm and the eggs have been fertilized.[4]

The results obtained  $p = 0.548$  which indicates there is no the effect of counseling on preconceptional nutrition on calcium intake. This is in accordance with the conclusion of statistical tests with the conditions that  $p > 0.05$  then  $H_0$  is accepted. Physical and psychological variables are internal elements that impact eating habit. Cultural, economic, social conventions, knowledge, and media are all external variables that influence eating habit.[5][6]

**4.5 The Effect of Nutrition Counseling on Iron Intake**

Iron is an essential microelement for the body. This substance needed in hemopoiesis (blood formation), i.e. in the synthesis of hemoglobin (Hb).[11] Iron deficiency in mothers-to-be can cause anemia by showing symptoms of fatigue, difficulty concentrating and easy infection. Fe is very important for expectant mothers to facilitate ovulation and reduce the risk

of pregnant women experiencing iron nutritional anemia endanger the mother and the womb.[14]

The results of the study obtained  $p = 0.000$  which indicates there is the effect of counseling on preconceptional nutrition on iron intake. This is in accordance with the conclusion of statistical tests with the conditions that  $p < 0.05$  then  $H_0$  is rejected. This research is supported by research by Astuti and Wijayanti in 2014 entitled "The Effect of Nutrition Counseling and Tablet Administration" Iron on the Increase in HB Levels in Second Trimester Pregnant Women". From twice the intervention has seen an increase in HB levels that is  $> 0.5$  g%. The increase in hemoglobin levels may be influenced by dietary intake nutrition, especially iron intake, age and parity.

#### **4.6 Effect of Nutrition Counseling on Folic Acid Intake**

Folic acid deficiency mainly causes DNA metabolism. As a result, the shape of the cell nucleus changes, especially in cells that divide rapidly, such as red blood cells, white blood cells, and stomach and intestinal epithelial cells, as well as vaginal and cervix epithelial cells. Folate deficiency inhibits growth, causes anemia and other blood disorders.[9][10]

The results obtained  $p = 0.124$  which indicates there is no the effect of counseling on preconceptional nutrition on acid intake folate. This is in accordance with the conclusion of the statistical test with conditions  $p > 0.05$  then  $H_0$  is accepted.

To overcome this problem, awareness of the sample is needed themselves to change perceptions and behaviors regarding nutrition, and It also takes the role of the closest person to the sample to provide motivation so that it can increase the intake of folic acid.

#### **4.7 Effect of Nutrition Counseling on Nutritional Status**

The child's weight and height reflect nutritional status, which is a measure of success in providing adequate nutrition for youngsters. Nutritional status is often described as the state of health that results from a balance between nutritional needs and consumption. Status research nutrition is a measurement based on anthropometric data.[18]

The results obtained  $p = 0.135$  which indicates there is no the effect of nutritional counseling on nutritional status based on BMI. This matter in accordance with the conclusion of statistical tests with the conditions  $p < 0.05$  then  $H_0$  is accepted. This is confirmed by research Zakaria

(2012) on the effect of nutritional counseling on weight changes body which shows that body weight after nutrition counseling is not showed a significant change, namely  $p = 0.583$ .

### **5. CONCLUSIONS**

The findings of this study show that there is an effect of WUS knowledge before and after counseling on preconception nutrition with a  $p$  value of 0.000, an influence of WUS attitude before and after counseling on preconception nutrition with a  $p$  value of 0.001, and an effect of WUS protein intake before and after counseling on preconception nutrition with a  $p$  value of 0.001.

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