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## PRE-CONCEPTION HEALTH AND NUTRITION PRACTICE IS ASSOCIATED WITH ANEMIA AMONG PRE-MARITAL WOMAN IN SLEMAN, INDONESIA

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### ABSTRACT

The nutritional status of pre-marital women is critical for fetal programming. The aim of this study is to assess the association between pre-conception health and nutrition knowledge, attitude and practice (KAP) with anemia status among pre-marital woman (PMW). The cross-sectional survey was undertaken in two Puskesmas in Sleman District from April-October 2021 and involved 111 PMW aged 19-59 years old who selected by quota sampling. The mid-upper-arm-circumference measurement, the 24-h food recall interview, artery blood sample collection, and validated KAP questionnaire interview were conducted during data collection. The association between KAP and anemia was analysis by chi-square test. The study found that 21.6%, 14.4%, and 49.1% of them were chronic energy-deficiency, anemia, and lack of minimum-dietary diversity. The proportion of PMW who had a good knowledge, attitude, and practice was 70.5%, 67.8%, 64.3%, respectively. The practices of pre-conception health and nutrition care is associated with anemia (p-value<0.005) but not for knowledge and attitude. Strategy to reduce anemia in this population should combine KAP improvement with focus on increasing enabling factor to perform good pre-conception and nutrition care practice.

*Keywords: practices, conception, pre-marital, knowledge, women, Indonesia.*

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### INTRODUCTION

Anemia is a significant health concern, particularly among women of reproductive age, and understanding its contributing factors is crucial for effective prevention and intervention strategies (Dean, Lassi, Imam, & Bhutta, 2014). Exploring the association between knowledge, attitude, and practice of nutrition with anemia

status among pre-marital women is essential for several reasons. Investigating nutritional knowledge can help identify gaps that may lead to inadequate dietary choices and subsequent anemia. By assessing attitudes towards nutrition care, we can uncover perceptions that may influence dietary practices. Positive attitudes towards proper nutrition can result in better dietary choices and lower anemia risk. Dietary practices are directly linked to anemia, and investigating this association among pre-marital women can shed light on specific behaviors that need intervention. This stage is critical for women's health as it sets the foundation for their future well-being and that of their children. Therefore, this study aims to examine the association between pre-conception health and nutrition knowledge, attitude and practice and the prevalence of anemia among pre-marital women in Sleman, Indonesia.

## METHODS

The study was part of previous study entitled the development of innovative posyandu pre-conception care in Sleman (Matsna, Kandarina, & Padmawati, 2021). The cross-sectional survey was undertaken in two Puskesmas in Sleman Districts from April-October 2021 and involved 111 pre-marital women aged 19-59 years old who selected by quota sampling. Three enumerators were trained to collect several data. The mid-upper-arm-circumference (MUAC) measurement was used to determine the chronic energy deficiency status, the 24-h food recall interview was conducted to derive minimum dietary diversity score for woman (MDD-W), artery blood sample collection was performed by Puskesmas Laboratory staff to analysed the haemoglobin through haematology analyzer, and validated knowledge, attitude, and practice (KAP) questionnaire were utilized to measure the pre-conception health and nutrition KAP among respondents. The KAP questionnaire had 35 variables consisting of 15 knowledge, 10 attitude, and 10 practice questions. The reliability test of KAP questionnaire showed 0.7 Cronbach alpha score. The cut-off category between poor and adequate knowledge, attitude, and practice was determined by the median score of questionnaire. The statistical analysis were done by SPSS Version 25. The association between KAP and anemia status was analysed by *chi-square* test. This study was approved by Medical and Health Research Ethic Committee, FK KMK UGM, number KE/FK/0813/EC/2021.

## RESULTS AND DISCUSSION

The study found that 49.1%, 21.6%, 14.4%, and of 111 pre-marital women who participated were lack of minimum dietary diversity (<5 types of food-groups consumed/day), chronic energy-deficiency, and anemia, respectively. The prevalence of Anemia in this study was similar with the data was shown in Indonesia Basic Health Survey in 2018 about 15% among women aged 15-34 years old (MOH RI, 2018).

Table 1. Characteristic of respondents (n:111)

Characteristics	Value
<b>Age</b> , mean (min-max)	24.5 (20-29)
<b>Last Education</b> , n (%)	
Graduated from junior high school or equal	6 (5.4)
Graduated from senior high school or equal	55 (49.5)
Graduated from university or equal	50 (45.1)
<b>Nutritional Status</b> , n (%)	
Chronic Energy Deficiency (MUAC < 23.5cm)	24 (21.6)
Normal (MUAC ≥ 23.5cm)	86 (77.4)
<b>Hemoglobin gr/dL</b> , mean (SD)	12.8 (1.1)
<b>Anemia Status</b> , n (%)	
Anemia (<12 gr/dL)	16 (14.4)
Tidak Anemia (≥12 gr/dL)	95 (85.6)
<b>Minimum dietary diversity</b> , n (%)	
More diverse (≥5 food groups)	56 (50.9)
Less diverse (<5 food groups)	54 (49.1)
<b>Pre-Conception Health and Nutrition Care</b>	
Knowledge score, median (min-max)	11 (7-14)
Attitude score, median (min-max)	7 (3-10)
Practice score, median (min-max)	9 (6-10)

The proportion of respondent who had a good knowledge, attitude, and practice about 69.7%, 66.9%, 64.3%, respectively. The practices of pre-conception health and nutrition care is significantly associated with anemia (p-value<0.005) but not for knowledge and attitude. Respondent who have better pra-conception and nutrition care practice was less likely to have anemia. The composite pre-conception health and nutrition care practice questionnaire measure the dietary practice (ie consumption of fruit and vegie in last week, food preferences), health seeking behaviour (ie pre-marital care service utilization), hygiene and health sanitation practice, and healthy life style (ie physical activity, adequate sleep duration). These composite variables were the determinant factor of anemia among women reproductive age as reported in systematic review in 2021 (Owais, Merritt, Lee, & Bhutta, 2021).

Meanwhile, the knowledge and attitude of respondent were not associated with anemia. This study showed to us that adequate knowledge and attitude could not guarantee have a better practice in pre-conception and nutrition care practice. There are some factors influence the behaviour and practice among women reproductive age such as lack of self-efficacy, nutrition and health care access, food access and availability, etc. Self-efficacy in this context referred to the level of a person's confidence in his or her ability to successfully perform a behavior as described in

health belief model. <sup>4</sup> Poor self-efficacy was positively associated with the poor dietary practice (Diddana, 2019)

Table 2. The association between pre-conception health and nutrition knowledge, attitude and practice and the prevalence of anemia among pre-marital women (n:109)

KAP Variable	n (%)	Anemia, (n=16) %	Normal, (n=93) %	p-value
<b>Knowledge</b>				
Poor	33 (30.3)	31.2	30.1	0.927
Adequate	76 (69.7)	68.8	69.9	
<b>Attitude</b>				
Poor	36 (33.1)	31.3	33.3	0.870
Adequate	73 (66.9)	68.7	66.7	
<b>Practice</b>				
Poor	39 (35.8)	56.3	32.3	0.054*
Adequate	70 (64.2)	43.8	67.7	

Based on this study findings, further study is needed to develop strategy which focus on increasing enabling factors to perform good pre-conception and nutrition care practice among women reproductive age or pre-marital woman.

## CONCLUSION

The practices related to pre-conception and nutrition care is associated with anemia status among pre-marital woman. Strategy to reduce anemia in this population should combine KAP improvement with focus on increasing facilitating factor such as self-efficacy, nutrition and health care access, food access and availability to perform good pre-conception and nutrition care practice.

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## DECLARATION OF CONFLICT OF INTERESTS

All authors have no conflict of interests

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