THE RELATIONSHIP BETWEEN AGE, EDUCATION, AND KNOWLEDGE LEVEL ON THE NUTRITIONAL STATUS OF PREGNANT WOMEN AT THE JOHAN PAHLAWAN PUSKESMAS WEST ACEH REGENCY

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Abstract

Background: *According to the World Health Organization (WHO), chronic energy deficit is associated with 40% of maternal mortality in underdeveloped nations. An assessment of pregnant women's nutritional health may be done through several methods, including the Upper Arm Circumference (UAC) test. If the UAC measurement comes out less than 23.5 cm, it indicates that pregnant women's nutritional status is inadequate. Pregnant women's nutritional health might be positively or negatively impacted by their mothers' knowledge of meal selection. Babies born to mothers who do not get enough nourishment may be born with a host of issues.* ***Objective:*** *to learn how the nutritional status of pregnant women at the Johan Pahlawan Puskesmas is affected by factors including age, education, and knowledge level.* ***Methods:*** *This type of research is an analytic survey with a cross-sectional approach. Data collection techniques are quantitative research. This research was conducted on 48 samples and was carried out from June 26 to July 4, 2024, on pregnant women at the Johan Pahlawan Puskesmas. The measuring instruments used were questionnaires and UAC test. The data analysis method used Spearman's rank correlation coefficient for the statistical test.* ***Research Results:*** *there is a relationship between age, education, and knowledge level to the nutritional status of pregnant women at Puskesmas Johan Pahlawan with a P-value age 0.014 < α (0.05), education with P-value 0.047 < α (0,05), knowledge with P-value 0.003 < α (0.05), respectively.* ***Conclusion:*** *there is a relationship between knowledge, age, education, and nutritional status in pregnant women in the work area of the Johan Pahlawan Puskesmas, West Aceh.* ***Suggestion:*** *It is expected that health services will provide health promotion activities for pregnant women in the work area of the Puskesmas and need to monitor the nutritional status of pregnant women every month, and it is necessary to identify other variables related to the nutritional status of pregnant women.*

Keywords: *Education, Knowledge, Nutritional Status, Age*

INTRODUCTION

n 2023, the World Health Organization (WHO) reported that women who were undernourished throughout their pregnancies were more likely to have children with low birth weights and other complications. It was also found in 2022 that chronic energy shortage was associated with 40% of maternal fatalities in underdeveloped nations (WHO, 2023).

It is essential to pay particular attention to pregnant women. Pregnant women who have malnutrition, such as chronic energy shortages, are more likely to experience morbidity. Hence, it is crucial to prevent this condition (Novianti, 2023).

More than half of pregnant women had very low energy intake (<70% of the recommended energy intake), and about half of pregnant women also had low protein intake (<80% of the recommended intake). Integrated Antenatal Care is another approach to enhancing pregnant women's health and nutritional condition (Kemenkes RI, 2022). Chronic Energy Deficiency (CED) affected 16.9% of pregnant women, while anemia affected 27.7%, according to the 2023 Indonesian Health Survey. Pregnant women have additional health risks, including those associated with STDs like

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HIV/AIDS, tuberculosis, and hepatitis B, as well as non-communicable disease risk factors, including high blood pressure, diabetes mellitus, and others (Ministry of Health, 2023). Pregnant women and other women of childbearing age (WUS) are susceptible to chronic energy deficiency (CED), a common issue with their nutritional condition. If a person's UAC is below the normal range, it is considered that they may be suffering from Chronic Energy Deficiency (CED). The mother's nutritional state can influence the unborn child's growth before and throughout pregnancy. The fetus relies heavily on the mother to breathe, develop, and be healthy. Misaligned dietary intake during pregnancy might negatively impact the health of the mother and her unborn child (Situmorang & Barus, 2023). The Anthropometric Indicator of Upper Arm Circumference (UAC) is one of the metrics used to assess the nutritional health of pregnant women. Pregnant women are considered to be malnourished if their Upper Arm Circumference (UAC) is less than or equal to 23.5 cm, which puts them at risk of having lack nutritional status (Kemenkes RI, 2022)

Chronic energy shortage can occur in pregnant women if they do not receive adequate nutrients (Bumil KEK). Persistent Energy Shortages Women at Risk of Severe Eczema During Pregnancy are individuals expecting a child who has an abnormally small upper arm circumference (UAC). The degree of education of moms is a factor in their nutritional health since a greater level of education is associated with a better understanding of any given topic. According to the preliminary statistics, most moms in the puskesmas employment area have completed secondary school. Furthermore, many individuals still do not understand the dietary requirements of pregnant women. Because homemakers and market vendors make up the majority of pregnant women's workforce, they often neglect or are unsure of how to meet the demands of a balanced diet. Another thing that affects nutritional status is the low socioeconomic conditions of a household (Morsy & Alhady, 2014). Despite that, Researchers at the Johan Pahlawan Puskesmas in West Aceh Regency are interested in learning more about the nutritional status of pregnant women in connection to their age, education level, and the aforementioned fertility phenomena.

LITERATURE REVIEW

Definition of Nutritional Status

A person's nutritional status may be described as an indicator of their nutritional state or a reflection of their current level of balance (Supariasa et al., 2020). The body's condition as a result of nutrient absorption and use is known as nutritional status. A pregnant woman's nutritional status is a physiological state that develops due to her intake, metabolism, and use of macro and micronutrients (Paramita, 2019). Pregnant women's nutritional status is the degree to which their bodies can get and use the nutrients essential to their lives and the proper functioning of their organs. One way to assess a pregnant woman's nutritional condition is to measure her UAC, or upper arm circumference. The UAC measurement highly indicates the mother's actual body mass index (BMI), with a strong correlation between the two. Specifically, a higher BMI is associated with a greater willingness during pregnancy (Paramita, 2019).

Assessment of the nutritional status of pregnant women

There are two direct and indirect methods for determining a person's nutritional status. A nutritional status assessment aims to identify populations or individuals at risk of under - or overnutrition by analyzing data gathered using various approaches (Supariasa et al., 2020).

The relationship between age, knowledge, and education level on nutritional status

The research results showed that the P-value was $0.014 < \alpha$ (0.05), so there was a significant negative correlation between age and the nutritional status of pregnant women in the Johan Pahlawan Puskesmas, West Aceh Regency. The age of pregnant women ranges from 21-35 years, 79.2% of which makes the risk of malnutrition in pregnant women lower because this age is the most productive or best age for mothers to conceive.

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The research results showed that the P-value was $0.034 < \alpha$ (0.05); consequently, pregnant women in the Johan Pahlawan Puskesmas area in West Aceh Regency had a favorable association between education and nutritional status. A whopping 47.9% of pregnant women have only completed high school. Pregnant women at the Johan Pahlawan Puskesmas have a secondary education level, which helps them understand what they need to eat throughout their pregnancy. The existence of good education minimizes the occurrence of malnutrition in pregnant women due to a lack of understanding of meeting nutritional needs.

Upper Arm Circumference

Chronic Energy Deficiency (CED) can be detected early in populations at risk by measuring practices in pregnant women and women of childbearing age (WUS). Protein and energy deficits that persist over an extended period of time are symptoms of chronic energy shortages. Short-term changes in nutritional status cannot be monitored by routine testing. The measurement of UAC is so simple that it can be performed by anyone, even those without special training (Supariasa et al., 2020). The classification of CED Risk based on UAC can be shown in Table 1.

Table 1 Classification of CED Risk Based on UAC

UAC Threshold Value (cm)	Severity
< 23,5	At risk
≥ 23,5	Not at risk

METHODS

This study employs quantitative research methods in gathering, processing, analyzing, and presenting data. Within the vicinity of the Johan Pahlawan Puskesmas in West Aceh Regency, 48 pregnant women made up the total sample for this study. This study used a cross-sectional design. The features of each research variable are described in this study using univariate analysis. Then, we used bivariate analysis to find out how pregnant women in the Puskesmas Johan Pahlawan Puskesmas in West Aceh Regency correlated with one another regarding their nutritional status with age, education, and degree of knowledge. Data analysis used SPSS version 22. The statistical test method used Spearman's rank correlation coefficient for the statistical test with a confidence level of 95% (α=0.05).

RESULTS AND DISCUSSION

Result

The study results are presented as univariate and bivariate test results. The univariate test results, which display data on the frequency distribution of age, education, level of knowledge, and nutritional status of pregnant women in the Johan Pahlawan Aceh Barat Puskesmas working area, are presented in Table 2. Then, the results of the bivariate test, which look at the relationship between the three variables of age, education, and level of knowledge and nutritional status, are presented in Table 3.

Table 2. Age, education, knowledge level frequency distribution of pregnant women at Johan Pahlawan Puskesmas (n=48).

Variable	Frequency	Percentage
Age		
• Not at risk ((21-35 years)	38	79,2
• Risk (< 20 and year > 35 years)	10	20,8
Total	**48**	**100**

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Education level		
• Bachelor degree	8	16,7
• Senior high school	21	43,8
• Junior-senior high school	19	39,6
Total	**48**	**100**
Knowledge level		
• Good	17	35,4
• Sufficient	10	20,8
• Insuficient	21	43.8
Total	**48**	**100**
Nutritional Status		
• No CED	22	45,8
• CED	26	54,2
Total	**48**	**100**

Source: Primer Data (Edited 2024)

Based on Table 2 above, it is known that the majority of pregnant women who are not at risk (21-35 years old) are 38 people (79.2%), pregnant women who are at risk (< 20 years old and > 35 years old) are 10 people (20.8%). Then, most of the pregnant women's education level is senior high school, as many as 21 people (43.8%), and the minority of mothers have a bachelor's education, as many as eight people (16.7%) for the knowledge level. Table 2 shows that 43.8% of pregnant women have insufficient knowledge, whereas 20.8% have sufficient knowledge. At the same time, those who had good knowledge were 17 people (35.4%). Then, the nutritional status showed that 26 pregnant women (54.2%) still fall into the CED group for nutritional status, whereas 22 pregnant women (45.8%) fall into the No CED category.

Table 3. The Relationship between age, education, and knowledge level on nutritional status of pregnant women at the Johan Pahlawan Puskesmas (n= 48)

Category			UAC
Spearman's rho	Age	Correlation Coefficient	-.352
		Sig. (2-tailed)	.014
		N	48
	Education level	Correlation Coefficient	+.288
		Sig. (2-tailed)	.047
		N	48
	Knowledge level	Correlation Coefficient	+.417
		Sig. (2-tailed)	.003
		N	48

Source: Primer Data (Edited 2024)

Table 3 shows a negative link between age and nutritional status among pregnant women in the Johan Pahlawan Puskesmas, West Aceh Regency, with a P-value of $0.014 < \alpha$ (0.05). Then, the relationship between education and nutritional status was obtained with a P-value of $0.047 < \alpha$ (0.05), indicating a significant positive correlation between education and the nutritional status of pregnant women in the Johan Pahlawan Puskemas area. In the knowledge level parameter, a significant positive correlation was obtained with the nutritional status of pregnant women with a P-value of $0.003 < \alpha$ (0.05).

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Discussion

Relationship of Age to Nutritional Status of Pregnant Women

The study results showed that a P-value of 0.014 <α (0.05) was obtained so that there was a significant relationship with a negative correlation between age and nutritional status of pregnant women in the Johan Pahlawan Puskesmas work area, West Aceh Regency. The age of pregnant women ranged from 21 to 35 years, as much as 79.2% (Table 2), with this age making the risk of malnutrition in pregnant women lower because that age is the most productive or best age for mothers to conceive. However, there are still 20,8% pregnant women aged under 20 and over 35.

Diana & Ginting (2023) state that a healthy and safe reproductive age is 20-35 years. Pregnancy under 20 years is biologically not optimal, emotions tend to be unstable, and mentality is not mature, so it is easy to experience shocks, which results in a lack of attention to meeting nutritional needs during pregnancy. Meanwhile, mothers who are pregnant under the age of 20 have a greater risk of problems during pregnancy because the body or organs of a teenager still need growth and development. Pregnant women under 20 years of age are at risk of complications such as anemia, premature birth, or low birth weight. Meanwhile, pregnant women over 35 years of age require more nutritional intake because organ function is getting weaker, and there is a risk of metabolic disorders in pregnant women (Situmorang & Barus (2023).

It is also reinforced by the results of Barir's research (2020), showing that age <20 or >35 years has an effect on the incidence of KEK (Chronic Energy Deficiency) compared to mothers aged 20-35 years and is statistically significant. Mothers aged <20 years and >35 years tend to experience nutritional problems. Mothers aged <20 years in the physiological process of the body require sufficient intake for the body's metabolic needs, which are more significant for growth compared to mothers aged 20-35 years so that if pregnancy occurs, there will be competition in fulfilling nutritional needs between the mother and baby.

Relationship of Education to Nutritional Status in Pregnant Women

The study results showed a P-value of 0.047 <α (0.05) was obtained, so there was a significant positive correlation between education and the nutritional status of pregnant women in the Johan Pahlawan Puskesmas work area, West Aceh Regency. Most pregnant women's education was in high school, at 47.9% (Table 2), while only 16.7% of pregnant women were bachelor's graduates. It shows that pregnant women's education level in the Johan Pahlawan Puskesmas work area is secondary education so that pregnant women understand their nutritional needs better.

Good education minimizes the occurrence of malnutrition in pregnant women due to a lack of understanding of meeting nutritional needs. The level of education obtained by someone from school can affect a person's knowledge; the higher a person's education, the higher their understanding of health, especially in efforts to prevent malnutrition in pregnant women during their pregnancy. A person's higher education makes them understand more about how to get information or education about nutrition in pregnant women. The low education of pregnant women can be one of the causes of nutritional anemia, which is caused by ignorance about nutrition and ignorance of how to find nutrition information. Educated pregnant women will be more competent in managing their diet for the needs of a pregnant woman (Diana & Ginting, 2023).

Based on the results of research conducted by Diana and Ginting (2023), it was revealed that there is a relationship between education factors and the nutritional status of pregnant women. Education can affect knowledge, and the higher a person's education, the better they are at maintaining health, especially in efforts to prevent malnutrition in pregnant women during their pregnancy.

Researchers also assume that maternal education has a significant influence on the nutritional status of pregnant women. Pregnant women with higher education have easier communication skills and understand more quickly what they need. Mothers with a higher education tend to find out or read, either from books or other things. Higher education can make it easier for pregnant women to understand and find information about what nutrition should be met when pregnant. Pregnant women who have low education or no school tend to follow what their parents usually do from generation to

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generation or see other people do, even though what is done is not suitable for the nutrition of pregnant women.

Relationship between Level of Knowledge About Nutrition and Nutritional Status of Pregnant Women

The study results showed that a P-value of 0.003 <α (0.05) was obtained, so there was a significant relationship with a positive correlation between the level of knowledge about nutrition and the nutritional status of pregnant women. Most pregnant women's knowledge was insuficient category, as much as 43.8% in the Johan Pahlawan Puskesmas work area, West Aceh Regency. Only 35.4% had good knowledge about nutritional status (Table 2).

Knowledge of pregnant women's nutrition is an essential factor influencing eating behavior during pregnancy. The study results show that not all pregnant women have an adequate understanding of nutritious food. Many mothers have low levels of knowledge due to a lack of access to information, lack of formal education, or lack of education from health workers. Individual knowledge greatly influences their daily healthy behavior. The knowledge of pregnant women also influences their behavior in maintaining pregnancy (Silaban & Hastuty, 2021).

The knowledge possessed by a mother will affect a person's behavior. If the mother has good knowledge, she is likely to provide sufficient nutritional intake for herself and her fetus; conversely, if the mother has insufficient knowledge, the nutritional intake needs for herself and her fetus will likely not be met optimally (Prautami, 2020).

Nutritional status is a measure of success in fulfilling nutrition for pregnant women. Nutrition for pregnant women is a nutrient that is needed in large quantities to fulfill their nutrition and the development of the fetus they are carrying. The growth and development of the fetus come from the mother, so the mother's nutritional status must be good so that there are no complications for the child she is carrying. The nutritional status of pregnant women can be measured, one of which is by measuring the Upper Arm Circumference (UAC). Poor nutritional status has a risk of complications during pregnancy, such as anemia or Low Birth Weight (LBW). On the other hand, excessive nutritional status (overweight/obese) is also a concern because it can increase the risk of gestational diabetes and hypertension (Simanjuntak et al., 2022).

On the other hand, nutritional needs during pregnancy will increase by 15% compared to the needs of normal women. Food consumed by pregnant women will be used for fetal growth by 40% and the remaining 60% for maternal growth. Increased energy and nutrient needs occur as gestational age increases. During pregnancy, additional energy of 80,000 calories (cal) or 285-300 cal/day is required (Apriliani et al., 2019).

The results of research conducted by Sagitarini et al. (2021) also show that there is a significant relationship between knowledge about nutrition and the nutritional status of pregnant women. Similar research was also conducted by Harahap et al. (2022), which revealed that there is a relationship between knowledge and the nutritional status of pregnant women.

Researchers assume that knowledge is essential for pregnant women. With good understanding, a mother will have a positive attitude and apply positive things in her life. Good knowledge will improve behavior or attitudes in maintaining her pregnancy, one of which is the nutritional needs of pregnant women. Pregnant women who know the importance of their nutrients try to meet their dietary needs to avoid pregnant women who experience KEK.

CLOSING

Conclusion

Among the pregnant women surveyed at the Johan Pahlawan Puskesmas, West Aceh Regency, the majority of pregnant women were aged 21-35 years, as many as 28 people (79.2%), with the majority of education graduates being high school, as many as 21 people (43.8%), and a lack of knowledge, as many as 21 people (43.8%). Then, the nutritional status of pregnant women was predominantly in the less category, with as many as 26 people (54.2%). Then, the nutritional status

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of pregnant women in the area was shown to be significantly influenced by gender, education level, and age (P-values 0.014 <α 0.05, 0.047 <α 0.05, and 0.003 <α 0.05, respectively).

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