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Characteristics, body mass index (bmi), and upper arm circumference in first trimester pregnant women

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ABSTRACT

Age, education, occupation, and parity affect the nutritional status of pregnant women. Body Mass Index (BMI) and Upper Arm Circumference, these two measurements become routine services for pregnant women who have their pregnancy checked. But the number of pregnant women who are subjected to Upper Arm Circumference examinations does not reach 100%. This study aims to determine the characteristics, the proportion of BMI, and Upper Arm Circumference in pregnant women in the I trimester in the Darul Imarah Health Center Working Area, Aceh Besar Regency. This descriptive study included 142 first-trimester pregnant women recorded in the KIA room register book of the Darul Imarah Health Center, Aceh Besar Regency. The data comes from data based from January to June 2022. The results showed that the age characteristics of most respondents ranged from 20-35 years old, had secondary education, did not work, and had multigravida pregnancies. For BMI and Upper Arm Circumference results, the average body mass index and upper arm circumference size are in the normal category. It is hoped that health workers will improve health services for pregnant women about fulfilling nutrition before and during pregnancy.

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INTRODUCTION

Energy metabolism during pregnancy has increased, so the need for energy and other nutrients increases according to gestational age. Lack of energy or certain nutrients during pregnancy causes the fetus to grow imperfectly, anemia, and chronic energy deficiency (Most et al., 2019). Excess or deficiency of nutrients can affect intrauterine growth. Malnutrition in pregnant women results in anemia, increased risk of infection, low birth weight, and premature birth (Nsereko et al., 2022). A similar opinion was expressed by Islami et al., (2021) that pregnancy is at risk of being caused by anemia and chronic energy deficiency. A study conducted by Muze et al., (2020) found that one in five pregnant women who visited the ANC clinic was malnourished.

The World Health Organization (WHO) reports that the prevalence of chronic energy deficiency in pregnancy in developing countries is 15-47%. It was recorded that the highest number of cases occurred in the third trimester compared to the first and second trimesters of pregnancy.

Anemia and chronic energy deficiency account for 40% of deaths in pregnant women in developing countries. Indonesia is in fourth place with the largest prevalence of chronic energy deficiency in pregnant women, namely 35.5%. Sustainable Development Goals (SDGs) have a target for the prevalence of chronic energy deficiency in pregnant women to decrease by 5% in 2015-2030 (WHO, 2012). Data from the results of the 2018 Basic Health Research (Riskesdas) shows that the prevalence of chronic energy deficiency in Indonesia in 2018 was 17.3% (Badan Penelitian dan PengembanganKemeneterian Kesehatan RI, 2018).

Data obtained from the Aceh Nutritional Status Monitoring (PSG) in 2018 for pregnant women who are at risk of experiencing chronic energy deficiency was 8.7%. This data has increased by 0.6% from 2016. And there are 4.1% of women of childbearing age at risk of developing chronic energy deficiency. The district with the highest proportion of chronic energy deficiency is Simeulue Regency (16.5%) and the lowest is Singkil Regency (3.6%). Meanwhile, the proportion of chronic energy deficiency in Aceh Besar Regency is still relatively high at 10.4% (Dinas Kesehatan Aceh, 2017).

Based on data from PWS KIA Aceh Besar Regency in 2020 from 673 pregnant women who are chronic energy deficiency, 123 people (18%) from Darul Imarah District. The number of pregnant women who visited the Darul Imarah Health Center was 1551 and as many as 1161 people were examined by Upper Arm Circumference. For 2021 the incidence of chronic energy deficiency decreased from the previous year, where 1551 pregnant women whose chronic energy deficiency amounted to 34 people (0.6%). Pregnant women who received Upper Arm Circumference measurement services were 1107 people (71%) (Puskesmas Darul Imarah, 2021).

Assessment of nutritional status begins before the gestation period. In the study, conducted on 991 pregnant women in Northern Eutophia, one-third of the sample was malnourished before pregnancy. This problem is caused by the level of education, socioeconomic status, and wrong eating practices (Misgina et al., 2021). A similar thing was revealed by Bari et al., (2020) illiterate and low-income mothers have the potential to experience malnutrition. Malnutrition experienced by mothers also has an impact on the nutritional status of children and the failure of exclusive breastfeeding. The results of the study by Kumera et al., (2018) also revealed that many women who live in rural areas experience malnutrition, have low educational status, high birth rates, and have parasitic infections in the intestines.

The prevalence of malnutrition in pregnant women is due to the lack of diversity of processed foods, family size, family economy, household food security, and birth distance (Tsegaye et al., 2020). Fulfillment of nutrient intake during pregnancy is carried out with the correct diet. However, only 19.9% of pregnant women have an appropriate diet. Incorrect eating regulation practices are caused by a lack of knowledge and a culture of abstinence (Demilew et al., 2020). The culture of abstinence from eating in pregnant women is still a big problem in rural areas. Half of the pregnant women reported abstinence from food. Foods avoided include meat, salt, eggs, milk, and oil. The main reason put forward is the fear of having a large baby which can cause difficulties in the labor process (Amare et al., 2022).

The assessment of nutritional status is obtained from the results of anthropometric measurements, namely the Body Mass Index BMI) and Upper Arm Circumference. These two measurements become routine services for pregnant women who have their pregnancies checked. Upper Arm Circumference measurements cannot be used to monitor changes in nutritional status in the short term. Upper Arm Circumference measurements are used because their measurements are very easy and can be done by anyone. The Upper Arm Circumference standard used in Indonesia as stated on the Upper Arm Circumference ribbon is that if Upper Arm Circumference < 23.5 cm means a mother with poor nutritional status, while Upper Arm Circumference >23.5 cm is a mother who has good and bad nutritional status due to obesity (Kementerian Kesehatan RI, 2020). Cohort studies prove that nutritional status assessment in pregnant women is better using Upper Arm

Circumference measurements compared to BMI. Upper Arm Circumference measurements can be used up to the III trimester (Chhillar et al., 2021).

Research conducted by Fakier et al, there is a relationship between BMI and Upper Arm Circumference. Linear regression analysis showed that on average for every 1 cm of Upper Arm Circumference, the BMI increased by 1.27 kg/m2 units. With a p-value of <0.0001, it shows very strong statistical significance (Fakier et al., 2017). The mother's BMI before pregnancy affects the anthropometric results of the baby at birth. Among them are birth weight, BMI, and waist circumference of the child (Cox et al., 2020).

Nutrition services for pregnant women are one of the integrated programs in antenatal services. The management of chronic energy deficiency in pregnant women begins during adolescence and before pregnancy. Efforts made to improve nutrition in pregnant women whose chronic energy deficiency begin with the calculation of needs, and dietary administration (including the composition of nutrients, the form of food, and the frequency of administration in a day) (Kementerian Kesehatan RI, 2020).

RESEARCH METHOD

This study is a descriptive survey study by describing the characteristics of respondents and the average body mass index and upper arm circumference in pregnant women in the work area of the Darul Imarah Health Center. The data collection technique uses secondary data from the register book of the Child Maternal Health (KIA) room of the Darul Imarah Health Center, from January to June 2022. The population in this study was first-trimester pregnant women who visited the Darul Imarah Health Center, Aceh Besar Regency, and were recorded in the register book. Sampling used the technique of total population with a total sample of 142 people. Filling in research data directly on research instruments in the form of chek-lists. The collected data is then processed with descriptive statistics and presented in the form of a frequency distribution table.

RESULTS AND DISCUSSIONS

Karakteristik responden yang berkunjung ke Puskesmas Darul Imarah pada penelitian ini di tinjau berdasarkan umur, tingkat pendidikan, pekerjaan dan paritas. Karakteristik responden dijelaskan pada tabel berikut:

Table 1. Frequency Distribution Characteristics of respondents

No	Variable	f	%
1	Age		
	- <20 Years	2	1.4
	- 20 – 35 Years Old	120	84.5
	- >35 Years	20	14.1
2	Education level		
	- Basic education	10	7
	- Middle Education	87	61.3
	- Higher education	45	31.7
3	Work		
	- Not Working	96	67.6
	- Work	46	32.4
4	Parity		
	- Primigravida	44	31
	- Multigravida	90	63.4
	- Grandemultigravida	8	5.6

Based on age Characteristics, most pregnant women who were sampled in the study aged 20–35 years were 84.5%. For characteristics based on education showed the majority of respondents were educated secondary by 61.3%. The majority of respondents were out of work (67.6%). As for parity, the majority of pregnancies are multigravida (63.4%).

Table 2. Average Value of Body Mass Index (BMI) and Upper Arm Circumference of Pregnant Women in the First Trimester.

Variabel	Minimum	Maximum	Mean	SD
BMI	16.7	29.3	21.14	3.192
Upper Arm Circumference	21.5	35.0	24.83	2.063

The Based on table 2, it can be seen that the average body mass index in pregnant women in the I trimester is 21.14. This BMI value indicates the average nutritional status of pregnant women in the normal category. There were 44 respondents with fewer BMI scores and 16 people with more BMI scores. And of the 142 pregnant women in the I trimester, the average upper arm circumference is 24.83 cm. Indicated nutritional status based on the size of Upper Arm Circumference in the normal category. The results of the descriptive analysis also showed 18 pregnant women with less BMI and Upper Arm Circumference in the chronic energy deficiency category. And there are 8 pregnant women with normal BMI while the Upper Arm Circumference size is in the chronic energy deficiency category.

This study shows the nutritional status of first trimester pregnant women in the Darul imarah Health Center area in the normal nutrition category. However, there are still 18 pregnant women with malnourished status. Normal nutritional status indicates a good level of well-being in pregnant women. The achievement of normal nutritional status is strongly influenced by the characteristics of respondents. Where the average age of respondents in this study in healthy reproductive age was 20-35 years (84.5%). Readiness to conceive in women aged 20-35 years will be different from the age of fewer than 20 years. Pregnant women who are ready for their pregnancy will pay more attention to their needs both before and during pregnancy. Pregnancy at the age of the mother is young or too old resulting in poor fetal quality and can be detrimental to the mother's health.

The level of education also affects the nutritional status of the mother. In this study, most of the respondents were educated secondary. It means having completed a high school education. Individuals with a high school education level will be easy in accepting and absorbing health information. Information about pregnancy can be obtained by mothers through various media, including television, radio, newspapers, magazines, and social media. Although the public can access information from various media, health workers are a direct source of information that can be found. Information about pregnancy received directly from health workers, especially midwives, has more value with a clear level of communication.

Nutritional status in pregnant women is also influenced by the economic status of the family. Wives who have income can help improve the welfare of the family. A sufficient family economy, affects the purchasing power of foodstuffs, the selection of variety, and the quality of foodstuffs. Another characteristic of respondents that can affect nutritional status during pregnancy is parity. Frequent and repeated pregnancies and childbirth at close range can cause more and more energy loss. A lot of energy needs, are sometimes not followed by the fulfillment of sufficient nutrition. So that fat reserves will be used for fox metabolism. In this study, there were 8 mothers with grandemultipara pregnancies. Pregnancy more than 4 times will pose various risks to both the mother and the fetus conceived.example:

CONCLUSION

First-trimester pregnant women in the Darul Imarah Health Center area in this study had the most age characteristics ranging from healthy reproductive age (20-25 years), secondary education, and non-work and multigravida pregnancy. The results also showed the average body mass index and the size of the upper arm circumference in the normal category. The results of this study are expected to be a guide for health workers to improve health services for pregnant women about fulfilling nutrition before and during pregnancy. For future researchers, the results of this study can serve as initial data for further research on nutritional status in first-trimester pregnant women. Researchers can analyze the relationship between respondents' characteristics and BMI and upper arm circumference.

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