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RELATIONSHIP BETWEEN BODY MASS INDEX & ANEMIA AT THE AGE OF 15-19 YEARS IN ALBANIA IN 2017

HUBUNGAN INDEKS MASSA TUBUH & ANEMIA PADA UMUR 15-19 TAHUN DI ALBANIA TAHUN 2017

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ABSTRACT

Introduction: Anemia could be a condition in which the hemoglobin concentration falls below the set limit value due to a decrease in the number and size of red blood cells. In low-income countries, the prevalence of anemia remains high and is a priority area. Risk factors for anemia among men aged 15-59 years and women aged 15-49 years in Albania, Morocco and Ukraine. Anemia in children from several countries is quite high.

Methods: The research design used is quantitative research methods with secondary data analysis approach. The secondary data is through literature review information, on the Demographic Health Survey (DHS) website for 2017 – 2018 in Albania. The data was analyzed in the age range of 15-19 years using the SPSS v25. The independent variable used in this study was age. The data analysis used the Spearman RHO.

Result: The result of the Spearman Rank statistical test showed that there is a positive relationship between BMI and anemia level. The correlation coefficient number in the results above is positive, which is 0.050, thus it can be interpreted that if the BMI is increased, the Anemia level will increase. It is known that the value of Sig (2 Tailed) is $0.026 < 0.05$ or 0.01, which means that there is a significant relationship.

Conclusion: Based on the results of the study, it was concluded that there was a relationship between BMI and anemia level based on data management from Albania. Nurses must be able to prevent, treat the anemia problems, and prevent this disease.

Keywords: Anemia; Body Mass Index; Hemoglobin

ABSTRAK

Pendahuluan: Anemia merupakan suatu kondisi dimana kadar hemoglobin berada di bawah nilai yang ditetapkan karena penurunan jumlah dan ukuran sel darah merah di negara-negara berpenghasilan rendah, prevalensi anemia tetap tinggi dan merupakan area prioritas. Faktor risiko anemia pada pria usia 15-59 tahun dan wanita usia 15-49 tahun di Albania, Maroko, dan Ukraina. Anemia pada anak dari beberapa negara cukup tinggi.

Metode: desain penelitian yang digunakan adalah metode penelitian kuantitatif dengan pendekatan analisis data sekunder. Data sekunder adalah data melalui informasi tinjauan pustaka di situs Demographic Health Survey (DHS) 2017-2018 di Albania. Analisis data menggunakan Spearman Rank.

Hasil: Hasil uji statistic Spearman Rank menunjukkan bahwa terdapat hubungan positif antara Indeks Massa Tubuh (IMT) dengan tingkat anemia. Angka koefisien korelasi pada hasil di atas adalah positif yaitu 0,050,

sehingga dapat diartikan bahwa jika Indeks Massa Tubuh (IMT) dinaikkan maka kadar Anemia akan meningkat. Diketahui nilai Sig (2 tailed) sebesar 0.026 < 0.05 atau 0.01

Kesimpulan: *Berdasarkan hasil penelitian disimpulkan bahwa terdapat hubungan positif antara IMT dengan tingkat anemia berdasarkan manajemen data dari Albania. Perawat harus mampu mencegah, mengobati, masalah anemia, dan mencegah penyakit ini.*

Kata kunci: *Anemia; Indeks Massa Tubuh; Hemoglobin*

INTRODUCTION

The prevalence of anemia varies by place of residence, urban and rural in different regions/countries. This prevalence identifies risk factors for anemia among men aged 15-59 years and women aged 15-49 years in Ethiopia (Ejigu, Wencheko, & Berhane, 2018). Whereas in India, the prevalence of anemia in children has been reported as high as 70% related to child morbidity and mortality (Yadav & Nilima, 2021).

From the prevalence that has been described, it can be concluded that the number of anemia in a child from several countries is quite high, which has been explained in previous journals because anemia is caused by iron deficiency, mental, economic, and others. Therefore, there is a need for solutions to overcome anemia in children, including: knowing the cause, applying a good diet (foods containing iron: meat, vegetables, beans), consuming vitamin C, then giving treatment to increase hemoglobin levels in children (Vart, Jaglan, & Shafique, 2015).

Albania is a country located in southern Europe, Albania was used as a research site because this country has a large population of people with anemia (Talukder et al., 2022). Some findings stated that the occurrence anemia in individuals who were over-nourished and undernourished were associated with significance. Individuals with overweight were experience less anemia than individuals with normal weight. This classification of weight was based on body mass index (BMI) (Thamban et al., 2018; Zheng et al., 2020). Therefore, we investigated the relationship between body mass index and anemia at the age of 15 – 19 years by measuring hemoglobin and levels of anemia.

RESEARCH METHOD

The research design used is quantitative research methods with secondary data analysis approach. Quantitative research according to Sugiyono (2017:7) is a research method based on the philosophy of positivism, as a scientific method because it has fulfilled scientific principles in a concrete or empirical, objective, measurable, rational, and systematic manner. Secondary data

where the acquisition is through literature review information, on the Demographic Health Survey (DHS) website for 2017 – 2018 in Albania. This method is used because it is efficient and the sample is representative so that the results of the study can be generalized.

The data access process from DHS is also quite easy for researchers and everything is free. So this research is an independent and dependent study with a cross sectional study approach. Although the data is available, the raw data has not been processed, so here we will process the data in such a way that it becomes information that can finally be used to answer research objectives.

Based on the data we have, It can be concluded that there are 2 variables, namely the dependent and independent variables. The dependent variable or also called the output variable, criteria, or consequential. Where according to Sugiyono (2016:39), this dependent variable is the result or influence caused by the independent variable. This dependent variable cannot change unless something else happens or affects it. And what can affect the dependent variable is the independent variable.

The non-parametric statistical test conducted by this study uses bivariate analysis which considers the properties of two variables in relation to each other so that conclusions can be drawn from this analysis (Hardani & Fardani, 2020). The most common statistical tool for two groups of variables uses the Spearman Rank Test, used if you want to know the suitability between 2 (two) subjects where the data scale is ordinal according to this study the variables are ordinal. The decision rule in this study is if the probability (Sig) Spearman Rank >0.05 then null hypothesis is accepted and < 0.05 then hipotesis alternatif is accepted the final number is seen how significant the relationship is (Artaya, 2019).

The design of this research was exploratory using a descriptive survey format approach because the population was large. The relationship survey between body mass index & anemia at the age of 15-19 years in Albania in 2017 uses health survey data with a choice of African countries in Albania, Morocco, and Ukraine. Albania, Morocco,

and Ukraine were meant to be the population for this research, but- the data obtained on the DHS website in Ukraine cannot produce results. There are variable names that we need, but they are empty when opened. So hopefully in the future, when the data is available, we will update the research with the appropriate variables.

The data obtained from Morocco is a comparison of previous data, between data BMI among people in Albania and Morocco. The population obtained is 15,000 to more respondents with probability sampling. This sampling uses a cluster random sampling method or based on area. This is because it has to take a population sample that is distributed over a wide geographic area. The exclusion criteria consisted of Age 15-19 thin according to BMI (≥25.0), result of measure - hemoglobin, level of anemia, BMI standard deviation.

Data analysis in the form of univariate and bivariate analysis. The data will be presented in tabular form, then statistical analysis of normality will be carried out to determine the data that has been collected is normally distributed or taken from a normal population using the Kolmogorov-Smirnov method and the Spearman Rank test.

RESULT

Table 1 Sample characteristic in Albania 2017-2018

Characteristic	Women	Men	Total
Who are overweight or obese according to BMI (>=25.0) Age 15 – 19 Albania 2017 - 2018	13.9 %	17.8 %	31.7 %
Number	10.338	5.827	**16.165**

Based on Table 1, it can be seen that male and female subjects aged 15-19 in Albania were 16,165 with the number of overweight or obese according to BMI (>=25.0) Age 15-19 Albania 2017 – 2018 (31.7%).

Based on Table 2, it can be seen that there are no recorded data on male subjects and 15-19 women aged 15-19 in Morocco in 2003-2004 as a comparison of previous data, between data BMI among people in Albania and Morocco as many as 15,818 with the number of overweight or obese according to BMI (>=25.0) Age 15-19 Morocco

2003 - 2004 (36.6%). Further data from Ukraine is not recorded on the website.

Table 2 Sample Morocco 2003-2004

Characteristic	Women	Men	Total
Who are overweight or obese according to BMI (>=25.0) Age 15 – 19 Morocco 2003 - 2004	10.9%	-	36.6%
Number	3.168	-	**15.818**

Table 3 Normality test results of data of Albania 2017-2018

a. Test distribution is Normal.

b. Calculated from data.

From the SPSS output display in Table 3 it appears that the number of observations from Albania in 2018 – 2019 for anemia level's samples amounted to 2,675, Result of measurement – Hemoglobin 2,737, and Body mass Index 2,729. This test showed that the three data was not normally distributed (significancy value = 0,00 < 0,05). The normality of the distribution of all numerical research variables was tested by the Kolmogorov-Smirnov test because the sample was more than 50.

The output of the correlation calculation above the Relationship between BMI and Anemia Level variables obtained a correlation coefficient of 0.05. This is means that the correlation level where the relationship is quite related. The sign (*) means that the correlation is significant and the direction of the type of relationship between variables is unidirectional because the correlation coefficient number in the results above is positive, which is 0.050, thus it can be interpreted that if the BMI is increased, the Anemia level will increase. It is known that the value of Sig (2 Tailed) is 0.026 < 0.05 or 0.01, which means that there is a significant relationship.

The relationship between Result of measurement variables – hemoglobin with Anemia

level and BMI shows that the correlation coefficient data results are -0.05 and -0.014, meaning that the relationship level can be said to be very weak and the type of relationship is negative so that the result of measurement – hemoglobin is increased, the Anemia level and BMI decrease. It is known that the significance value (2 tailed) is 0.833 and 0.460 is greater than 0.05 or 0.01, so the relationship between these variables cannot be said to be significant.

Table 4 Spearman-Rank test results of data of Albania 2017-2018

Correlations

			Result of measurement - hemoglobin	Anemia level	Body Mass Index
Spearman's rho	Result of measurement - hemoglobin	Correlation Coefficient	1.000	-.005	-.014
		Sig. (2-tailed)	.	.833	.460
		N	2737	1950	2729
	Anemia level	Correlation Coefficient	-.005	1.000	.050*
		Sig. (2-tailed)	.833		.026
		N	1950	1958	1944
	Body Mass Index	Correlation Coefficient	-.014	.050*	1.000
		Sig. (2-tailed)	.460	.026	.
		N	2729	1944	2729

*. Correlation is significant at the 0.05 level (2-tailed).

The data that we have collected after processing cannot appear because it was empty during the research period on the DHS website. Country data that we did not find in Ukraine and Morocco.

DISCUSSION

Based on the results of the study showed that men have BMI values above normal and many women have BMI values below normal to normal. This is because normal hemoglobin levels are generally different in men and women. For men, anemia is defined as a hemoglobin level of less than 13.5 grams/100ml and in women a hemoglobin level of less than 12.0 grams/100ml (Proverawati, 2011). In addition, the causes of anemia in women include menstruation every month, irregular eating habits, infectious diseases and parasitic infections.

The results of our research show that there is a relationship between body mass index (BMI) and anemia, this is in accordance with research conducted by Ashis et al. (2022) who found an association between BMI and anemia in women aged 15-49 in Albania.There are two categories of body mass index (BMI), normal (estimate = 0.891) and overweight (estimate = 0.832), which have a positive effect on the hemoglobin status of the respondents, which means that the hemoglobin level was significantly (p < 0.001) higher among normal and non-responders and overweight than respondents who weighed less.

The incidence of anemia is also influenced by the nutritional content of food. So, nutrition is

very important for teenagers because with the activities of teenagers who are very dense, it will make the eating patterns of teenagers change. This can lead to an unbalanced diet. Imbalance of nutritional intake in adolescents can also be a cause of anemia, for example by doing a diet program in limiting eating that is not in accordance with nutritional needs.

In the data that has been shown that the low relationship between Result of measurement variables – hemoglobin with BMI and Anemia Levels is due to negative results shows that the correlation coefficient data results are -0.05 and -0.014 and the value Sig. (2 tailed) is 0,833 and 0,460 is significantly greater than the normal value. However, in the literature it is contrary to our research where this variable is very related or related.

Nutritional status has a positive correlation with hemoglobin levels, meaning that the worse the nutritional status of a person, the lower the hemoglobin level (Thompson, 2010). The results of research conducted by Briawan and Hardiansyah (2010) concluded that normal nutritional status and was more of a protective factor for anemia. Determination of anemia can also be done by measuring the hematocrit which on average is equivalent to three times the hemoglobin level.

CONCLUSION

Based on the results of the study, it was concluded that there was a relationship between body mass index and anemia level and there was no relationship between the result of measurement – hemoglobin with anemia level and BMI based on data management from Albania. We hope to be able to do further research by collecting data that has been developed.

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