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The Relationship BetweenAnemia Status to Physical Fitness of Adolescent Girls at the Adolescent Posyandu of Sanur Tourism Village ID 3711

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ABSTRACT

Background: Physical activity is closely related to physical fitness in adolescents. One of the factors that affect physical fitness in adolescent girls is health status, such as anemia. The purpose of this study was to determine the relationship of anemia status to the physical fitness of adolescent girls at the Sanur Tourism Village Youth Posyandu. **Methods:** This type of research is observational with cross-sectional research design. The sample used was 32 adolescent girls with accidental sample technique. The sample size was 32 adolescent girls from four adolescent posyandu in Sanur Village. Hemoglobin level data were taken using the POCT method and physical fitness data were taken using the 20-meter bleep test. The data was processed by analyzing using the spearman test p <0.005. **Result:** The results showed that the percentage of anemia status in adolescent girls was 62.5% and all 100% of adolescent girls had sufficient physical fitness. **Discussion:** There is a relationship between anemia status and physical fitness in adolescent girls in adolescent posyandu in Sanur Tourism Village.

Keywords : anemia; physical fitness; adolescent girls

Introduction

The transition period from child to adult is called adolescence. An adolescent girl is not far from exhausting physical activity, both indoors and outdoors. Physical activity is related to the physical fitness of an adolescent girl, because physical activity is an important aspect in supporting physical fitness. According to Riskesdas in 2018 shows data that as many as 33.5% of adolescents aged over 10 years have less physical activity, which causes low physical fitness in adolescents.

Wiarto (2013) argues that physical fitness is a situation of the body's ability and ability to adapt (adjustment) to physical exemption without causing excessive fatigue. Physical fitness is the physical ability that gives a good influence on a teenager to carry out daily activities without causing significant fatigue and still have reserves to enjoy other times optimally (PutriMarsanda and Alexander Kurniawan, 2023).

Based on previous research conducted by AnggaHardiansyah et al in 2022, it shows that the physical fitness category of MAN 2 Semarang City students is 50.6% in the poor category with a sample of 87 students. The lack of physical fitness of adolescent girls is caused by various factors, such as age, gender, genetics, physical activity, nutritional status, health status and history and lifestyle (WindaMaulida et al, 2022).

One of the health statuses that affect physical fitness is anemia. Anemia occurs because the hemoglobin level in the body is less than 12 g/dL. The formation of hemoglobin in the blood is not optimal due to iron deficiency. According to WHO data in 2021, anemia in productive women aged 15-49 years was 29.9%. Riskesdas 2018 data shows that the prevalence of adolescent anemia is 32%, which means that 3-4 out of 10 adolescents in Indonesia are anemic. According to research by Sriningrat et al in 2019, the prevalence of anemia in Denpasar City was 45.9%. The causes of anemia other than lack of iron intake are folic acid, vitamin B12 and vitamin A deficiency, acute or chronic inflammation, parasitic infections, and disturbances in the production of red blood cells (DwiYanti W.P et al, 2021).

One of the villages in Denpasar City which is famous for its many tourist attractions is Sanur Village. Sanur Village has many tourist attractions such as Sanur Beach which is spread out, besides that, the development of the first health special economic zone in Indonesia was also launched. In January 2023, a special adolescent posyandu was opened as a basic health approach to adolescents. Based on the vision of the Denpasar Health Polytechnic Kemenkes Denpasar Applied Bachelor Department, which is to produce cultured graduates, superior in the field of nutrition and tourism dietetics in 2030, in realizing this vision, the mission is to carry out community service based on research results and carry out the tri darma of higher education based on local wisdom oriented towards nutrition and tourism dietetics.

The author is interested in conducting research on Posyandu adolescents and raises the issue of the relationship between anemia status and physical fitness of adolescent girls in the Sanur Tourism Village youth posyandu. The purpose of this study was to determine the relationship of anemia status to the physical fitness of adolescent girls in the adolescent posyandu of Sanur Tourism Village.

Method

This study used observational research with a cross-sectional approach. This research began in December 2023 to April 2024. The research site was located in four posyandu spread in Sanur Village, namely BanjarDanginpeken, BanjarTanjung youth

posyandu, BanjarTewel youth posyandu, and BanjarPuseh youth posyandu, SanurKauh Village, South Denpasar. This study involved 32 adolescent girls with accidental sampling technique, adolescent girls who actively come to the posyandu are aged 13-19 years and are not menstruating. Data collection of hemoglobin levels with the POCT method and physical fitness data with the 20-meter bleep test. Data were analyzed to determine the relationship between anemia status and physical fitness of adolescent girls with the spearman test.

Result

1. Characteristics of the Research Sample

Table 1. Distribution of adolescent girls based on characteristics

Karakteristik	Amount	
	n	%
Age (year)		
13-15	4	12,5
16-18	16	50,0
19	12	37,5
Education		
Junior high school	6	18,7
Senior high school	14	43,8
College	12	37,5
Exercise Habits		
Jogging	12	37,5
Gym	4	12,5
Others	7	21,8
No exercise	9	28,2
Exercise Frequency		
No exercise	9	28,2
1 time/week	5	15,6
2 times/week	10	31,2
3 times/week	4	12,5
7 times/week	4	12,5
Total	32	100,0

Table 1 shows that half (50.0%) of adolescent girls are aged 16-18 years, with the most education taken is high school (43.8%). The most frequent exercise habit was jogging (37.5%) with the most frequency of 2 times/week (31.2%).

2. Anemia Status

Table 2. Distribution of Adolescent Girls Based on Anemia Status

Anemia Status	Amount	
	n	%
Anemia	20	62,5
Not anemia	12	37,5
Total	32	100,0

Table 2 shows that most of the adolescent girls (62.5%) have anemia status and the rest of the adolescent girls (37.5%) have non-anemia status.

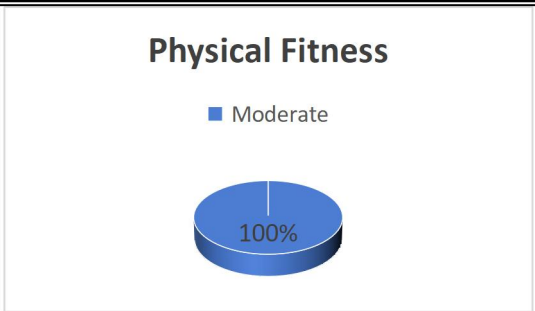
3. Distribution of Anemia Status

Table 3. Distribution of Adolescent Girls Based on Anemia Specifications

Status anemia	Amount	
	n	%
Moderate anemia	13	40,7
Mild anemia	7	21,8
Not anemic	12	37,5
Total	32	100,0

Table 3 shows that most adolescent girls (40.7%) have moderate anemia status, some (37.5%) have no anemia status and the rest (21.8%) have mild anemia status.

4. Physical fitness



Picture 1. Distribution of adolescent girls based on physical fitness

Picture 1 shows that all adolescent girls (100%) have physical fitness in the moderate category.

5. Relationship between Anemia Status and Physical Fitness

Table 5. Distribution of Adolescent Girls Based on Anemia Status with Physical Fitness

Anemia Status	Physical Fitness				*p-value**
	Enough		Total		
	f	%	f	%	
Not Anemic	12	37,500	12	37,500	0,000
Mild Anemia	7	21,875	7	21,875	
Moderate Anemia	13	40,625	13	40,625	
Amount	32	100	32	100	

Table 4 shows 32 adolescent girls, with 20 adolescent girls who have anemia having moderate physical fitness, while 13 adolescent girls who do not have anemia have moderate physical fitness. The results of statistical analysis with the spearman test, showed that there was a relationship between anemia status and physical fitness of adolescent girls at the Sanur Tourism Village posyandu (p-value 0.000).

Discussion

More than 62.5% of adolescent girls were anemic, classified into 40.7% moderately anemic girls and 21.8% mildly anemic girls, while the other 37.5% were not anemic. Compared to the 2018 Riskesdas data, the prevalence of anemia in Indonesia was 32% and in Denpasar City the prevalence of anemia in adolescents was 45.9%. The results of this study are greater than the results of the 2018 Riskesdas data and prevalence data in Denpasar City. The high anemia experienced by adolescent girls is due to less diverse food intake, not many adolescent girls take blood supplement tablets, and have a less regular eating pattern, such as eating 1-2 times a day.

There are impacts caused by anemia experienced in adolescent girls, such as reducing immunity, disrupting learning concentration, disrupting fitness and productivity. When adolescent girls grow up and experience anemia, it can lead to an increase in premature births and low birth weight babies, and increase deaths during childbirth.

One of the consequences of anemia that occurs in adolescent girls is decreased physical fitness. Based on the research data, all adolescent girls (100%) have sufficient physical fitness. Based on the facts in the field during observation, many young women were less enthusiastic in undergoing physical fitness tests, felt tired quickly, many teenagers were still strong enough to run but because their friends stopped, the teenagers followed their friends to stop too. The results of this study are in line with research conducted by Laurensia Mei V.H et al. in 2021 on Santriwati at PondokPesantren Kota Semarang, showing that all santriwati (100%) have very poor body fitness. This is due to the physical activity of most subjects in the low and medium categories. Compared to the research data, there is an increase in physical fitness in adolescent girls with physical activities such as jogging which is done 2 times / week. Based on the theory of Budiwanto S, physical activity is related to body fitness where there are physiological changes between changes in the respiratory system along with an increase in neuromuscular, cardiorespiratory changes due to the heart working more efficiently so that it can circulate more blood and muscle strengthening so that it changes the skeletal muscle system, as well as changes in the digestive system.

Most adolescent girls (62.5%) who are anemic have adequate physical fitness, while some other adolescent girls (37.5%) who are not

anemic have adequate physical fitness as well. This is related to the statistical analysis test using the spearman test, which shows that there is a relationship between anemia status and physical fitness in adolescent girls at the Sanur Tourism Village youth posyandu. These results are in line with research conducted by NurYuslaili et al., in 2020 on adolescents at the Maitreyawira Buddhist Training Center, showing that there is a significant relationship between Hb levels and physical fitness with a p-value of 0.014 ($p<0.05$). A decrease in fitness level can occur in anemia sufferers with decreased hemoglobin levels and the consequence is a decrease in oxygen transport capacity in the blood (NurYuslaili et al., 2020). The lower the hemoglobin level in the body, the lower the oxygen transport in the blood (SitoAyuet.al., 2020). Hemoglobin levels that meet the body's metabolic needs, supply high oxygen demand for circulation throughout the body, enable appropriate physical activity, and support a person's physical fitness. The oxygen delivery system required by the body to produce energy through mitochondrial metabolic activity is strongly related to VO2max values. Hemoglobin carries oxygen taken up by the lungs and releases it into active tissues.

Conclusion

Based on the research that has been done, it is concluded that there is a significant relationship between anemia status and physical fitness in adolescent girls at the Sanur Tourism Village youth posyandu with a p-value <0.005.

Based on these results, it is recommended to all young women to be consistent in exercising and undergo daily activities with enthusiasm so as to improve physical fitness even better.

Conflict Of Interest

The authors declare that they have no conflicts of interest.

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