



The Effect Of Health Education On Knowledge And Attitudes About Anemia In Adolescent

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ABSTRACT

Anemia is a disease where hemoglobin levels in red blood cells are lower than normal due to a lack of important food elements. The prevalence of adolescent anemia in Bengkulu increased by 9.3% from 2013 – 2018. The aim of the research was to determine the effect of health education on the knowledge and attitudes of adolescent girls about anemia in SMP N Bengkulu City.

This quantitative research uses the Quasi Experimental Pretest-Posttest method with a control group. The total sample was 52 young women, each group had a sample of 26 young women. Analysis of knowledge data used the Wilcoxon Signed Rank Test and Mann Whitney Test, for attitudes used Paired Samples T Test and Independent Samples T Test.

Statistical test results of the mean knowledge of the crossword game group (92.42), monopoly game group (80.69) mean difference (11.73), statistical test results of the mean attitude of the crossword game group (56.08), monopoly game group (50.58), the mean difference (5.5), this shows that the increase in the knowledge & attitude scores of the intervention group was higher than the control group.

Keywords: Health Education, Knowledge, Attitudes





1. Introduction

Adolescents are individuals who are between the ages of 10 and 19, a crucial period in which many physical and mental changes occur. Changes, both physical and psychological, are often influenced by nutritional problems that can cause various health problems, one of which is anemia (1). One of the biggest health problems among adolescents, especially adolescent girls, is anemia. This can occur due to an unhealthy diet and lack of physical activity (2). According to the *World Health Organization* (WHO) in 2021, in 2019 the prevalence of anemia in WUS (15-49 years) in the world was around 29.9%, and the prevalence of anemia in non-pregnant women aged 15-49 years was 29.6%. In the Indonesian Health Profile (2022), the anemia rate in the 15-24 year age group in Indonesia reaches 84.6%, with the prevalence of TTD (blood supplement tablets) in adolescent girls expected to reach 50.0% in 2022 (3).

Adolescent girls are prone to iron deficiency anemia because they go through the menstrual phase every month and need a much larger amount of iron to replace the amount lost during menstruation. Lack of knowledge also contributes to the risk of anemia (4). Anemia in adolescence increases the risk of iron deficiency during pregnancy, as iron requirements increase significantly during pregnancy (5). Keltul education is a process of perubahan perilaku hidulp selhat which is based on self-awareness both in the individual, group or community in the community and improving health (6).

From Riskesdas data (2018), the prevalence of anemia among adolescents in Bengkulu increased by 9.3% from 2013-2018. The prevalence of anemia in adolescents aged 15 to 24 years is 32%, which means that it is estimated that 3 to 4 adolescents suffer from anemia. The prevalence of anemia is higher in women (27.2%) than in men (20.3%). Adolescent girls are one of the most vulnerable groups, with 3 to 4 out of 10 adolescents suffering from anemia (7). Profile of the Bengkulu City Health Office, Report on Children's Health Activities in Junior High School/MTs/SLB Level in 2022 states that the number of health centers in Bengkulu City is 20 health centers. The work areas of the health center such as the drop, fish market, and lemongrass fields are at risk of anemia. After it was known from the data of the Bengkulu City Health Office that the risk of anemia in adolescent girls in the health center area decreased by 5 people, the fish market health center by 5 people, and the padang serai health center by 37 people. Therefore, the researcher raised the topic of the Influence of Health Education on the Knowledge and Attitudes of Adolescent Girls Regarding Anemia at SMP N Bengkulu City. For the intervention group, the location of SMP N 19 is the only junior high school in the Padang Serai area with the highest risk of anemia in the city of Bengkulu and there has been no research using the Crossword Puzzle Game as a medium to increase the knowledge and attitudes of adolescents in the junior high school regarding Anemia and for the comparison group it was taken at SMP N 09 school in Bengkulu City because the location of SMP N





09 is in the fish market area with the number of risk of anemia in adolescents the 2nd most after the Padang Serai area. From several studies, the causes and factors of anemia were obtained, research by Lasmawanti (2024) found that much of the knowledge of adolescents at Budi Agung Medan High School for the level of knowledge about anemia is still poor, this bad attitude is found in 35 respondents (52.2%), a fairly good diet of 50.7% (34 respondents) and for those who are deprived as much as 52.2% (35 respondents). This study can be concluded that factors related to anemia in Budi Agung High School Adolescents that attitude, diet, knowledge and menstruation are related to the incidence of anemia (8).

From this background, the high rate of anemia among adolescent girls, therefore the formulation of this research problem is whether there is an influence of Health Education on the knowledge and attitudes of adolescent girls regarding anemia in SMP N Bengkulu City. Objectives of this study are known to have the influence of health education on the knowledge and attitudes of adolescent girls regarding anemia in SMP N Bengkulu City; the average knowledge and attitude about anemia before and after intervention in the crossword media group and the monopoly game media group in adolescent girls at Bengkulu City State Junior High School; It is known that there is a difference in health education on knowledge and attitudes about anemia in the crossword puzzle media group and monopoly game media before and after being given an intervention on adolescent girls at SMP Negeri Bengkulu City. Rahayu's study shows that there is a relationship between the level of knowledge and the number of cases of anemia in adolescent girls. Adolescent girls who know about anemia tend to consume enough food to meet their nutritional needs so that they do not get anemia(9). Based on research by Fadhillah (2022), health education activities using various media such as print media, whiteboards, electronic media, and game media have succeeded in increasing adolescent girls' knowledge about anemia and the importance of its prevention (10).

The method of play is one of the effective educational approaches. Crossword puzzle is a simple game where the player has to fill in the blank boxes of the available questions there is a connection between the use of crossword puzzles and the student's knowledge. There was a significant difference between the knowledge levels of young women before and after getting the game with the crossword media. From crossword puzzle games teenagers can increase their curiosity, intelligence, teamwork, speed of thinking, and knowledge (11). Another study conducted by Purba (2023) Providing education with crossword puzzle game media showed that there was an influence on the level of knowledge and attitudes of adolescent girls about anemia at SMK Karsa Mulya Palangkaraya ($p < 0.05$) (12).

2. Research Method

a. Type and Design of Research





This is a quantitative study of the quality of the study of the two *group* (group play) *pretest-posttest design with control of the group*. The population in this population is a relmaja pultri student at SMP N 19 and SMP N 09 Belngkullul. The population of the 8th grade pultri relmaja at SMP N 19 Belngkullul Belrjulmlah 137 students and the 8th grade pultri relmaja at SMP N 09 Belngkullul Belrjulmlah 47 students. The minimum sample size for this group is 26 people, each group is 26 people and 26 people in the control group are 26 people in the control group. The total sample size was 52 people. The sampling process in this study was applied by using proportional *stratified stratified*. This training is carried out by applying to the elite athletes who are eligible for the elite qualification with No.KEIPK BKL/323/05/2024.

b. Data Collection technique

The data collected in this study consisted of primary and secondary data. Primary data were obtained by distributing questionnaires directly to the mothers who were part of the study sample, while secondary data were obtained from the Bengkulu Provincial Health Office, the Bengkulu City Health Office, and community health centers (Puskesmas).

c. Validity and reliability Test

- Validity tetsting was conducted using Pearson Product Moment on 15 question items, with the results of all item being valid ($r_{\text{count}} > r_{\text{table}} 0,361$).
- Reliability test using Cronbach's Alpha $> 0,60$, indicating a reliable instrument.

d. Data Analysis Technique

Data was analyzed using:

- Univariate analysis : to describe the frequency distribution of maternal Knowledge and Spousal Support about Exclusive Breastfeeding.
- Bivariate analysis : using the Chi-Square test with a significance level of $\alpha = 0,05$ to determine the relationship between the two variables.

3. Results And Discussions

a. Result

Table 1
Average Knowledge and Attitudes Before and After Being Given Health Education Through Crossword and Monopoly Puzzle Games

Variable	Media Crossword Puzzle Games				Monopoly Game Media			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Knowledge								
<i>Pre-Test</i>	56,5	12,087	20	67	56,81	13,951	27	87
<i>Post-Test</i>	92,42	4,632	80	100	80,69	11,334	53	100
Attitude								





<i>Pre-Test</i>	39,19	5,55	30	49	37,54	4,329	30	49
<i>Post-Test</i>	56,08	2,038	52	60	50,58	6,476	27	59

From the table above, it can be seen the results of the average performance and *prel-post* and *post-telst* attitudes in the media group of cross-tele-telki and the media group of monopoly playing, with the use of *ulji Wilcoxon*, *Signeld*, *Rank telst* & *ulji Paireld Samplel T Telst*. Telrcan be dispersed by the people of each group of cells and cells are protected by intelligence.

Table 2

Differences in health education on knowledge and attitudes about anemia

Variable	Mean		Selisih	<i>P-value</i>
	<i>Pre - Te st</i>	<i>Post- Te st</i>		
Knowledge				
Media Crossword Puzzle Games	56,5	92,42	35,92	0,000 ^a
Monopoly Game Media	56,81	80,69	23,88	0,000 ^a
Attitude				
Media Crossword Puzzle Games	39,19	56,08	16,89	0,000 ^b
Monopoly Game Media	37,54	50,58	13,04	0,000 ^b

^a*Wilcoxon Signed Rank Test*

^b*Paired Sample T Test*

Based on the table above, it is known that there are differences in health education regarding knowledge and attitudes about anemia before and after the intervention. There is a significant difference in the variables of knowledge and attitude from pre-test to post-test, meaning that there is an increase in knowledge and attitude after being given an intervention.

Table 3

The influence of health education on adolescent's knowledge and attitudes about anemia

Kelompok	Mean		Selisih
	<i>Pre - Te st</i>	<i>Post- Te st</i>	
Knowledge			
Media Crossword Puzzle Games	56,5	92,42	35,92
Monopoly Game Media	56,81	80,69	23,88
Attitude			





Media Crossword Puzzle Games	39,19	56,08	16,89
Monopoly Game Media	37,54	50,58	13,04

^{a1}*Wilcoxon Signed Rank Test*^{b1}*Mann Whitnay*^{a2}*Paired Sample T Test*^{b2}*Independent Samples T-Test*

The results of the knowledge and attitude data test using the Mann Whitney test and the Independent Samples T-Test test obtained a p value = 0.000 < from 0.05, then Ho was rejected using a 95% confidence level, which means that there is an influence of health education using crossword puzzle game media and monopoly game media on the knowledge and attitudes of adolescent girls regarding anemia at Bengkulu City State Junior High School. Based on the difference from pre-test to post-test, the most significant value was the variable of knowledge and intervention attitudes using crossword puzzle game media, meaning that crossword puzzle game media was more influential than monopoly game media.

b. Discussion

The knowledge and attitudes of young women have been shown to increase after being given health education through crossword and monopoly games. This is in line with the results of research conducted by Safitri (2022) which showed that the increase in knowledge about anemia deficiency of substances using crossword and monopoly games has increased intelligence (13). The results of this study are also in line with Angelliquele's research (2023) that the TTS game model and effective lectures can increase the knowledge of MTs Manba'ull Hulda students regarding the appearance of reproduction in young people. (14). Based on Fadilah's research (2022), the lesson using the Monopoly model makes students easier to understand the material being taught. So if students are easier to understand the material that has been delivered, students will be smarter and more intelligent because they can relate the learning material to their daily lives (15).

A significant difference in mean rank was obtained, this indicates that the increase in respondents' attitude scores in the crossword puzzle media group was higher than in the monopoly game media group. The results of Diniyati's (2019) study stated that there was a significant difference in knowledge before and after being educated with crossword puzzle media on anemia deficiency of iron substances (16). This is in line with Aprillya's (2023) research on the Inclusion of Animated Videos with Crossword Puzzles on Knowledge and Attitudes of Healthy Snack Consumption in Students of SDN 148 Grelsik, with the results showing a difference in average attitudes before and after intelligence.





The results of the study showed that the average increase in the knowledge and attitude scores of respondents in the group with the crossword game media was higher than in the monopoly game media group. This is in line with the research of Yaulmil Chariril Mulzakir (2018) who stated that the crossword game media with the NHT model has effectiveness on students' knowledge, attitudes, and actions. So it can be concluded that the Crossword game media with the NHT model has effectiveness on students' knowledge, attitudes, and actions before and after the implementation. One of the factors that influences a person's knowledge and attitudes is media (17). Meanwhile, research from Zullfelri (2022) found that cross-platform video games had a significant impact on increasing students' knowledge of overweight and obesity. This indicates that the use of cross-platform video games is effective in increasing students' understanding of overweight and obesity issues (18).

This is also in line with Aribowo's research (2014) which states that by using crossword puzzles, students will be more enthusiastic about learning and increase their vocabulary. This is because the game of crossword puzzles can make students interested and enjoy learning without having to face boring situations (19). This crossword puzzle can be completed by teachers at school and can be used by all groups, both beginners, middle school or advanced students, besides that, there are also materials that can be chosen according to the learning objectives. Learning becomes a fun and interesting activity, so it is hoped that students' learning outcomes will improve (20).

4. Conclusion And Suggestion

a. Conclusion

Based on the results of the influence of health education on anemia on female students at SMP N 19 Kota Bengkulu, various conclusions can be drawn: The average knowledge and attitudes of female students who have experienced anemia and those who have been given health education through crossword puzzle games and monopoly games have increased; there is a difference between those who have been given health education through crossword puzzle games on the knowledge and attitudes of female students who have experienced anemia compared to health education through monopoly games; Health education using crossword puzzle games has more influence than monopoly games on the knowledge and attitudes of young women and girls in SMP N Kota Bengkulu.

b. Suggestion

Crossword puzzle games about anemia can be used as various educational or learning methods in providing health education and can be used by the Student Health Unit to improve the knowledge and attitudes of young people to prevent anemia from an early age; for Poltelkkels Kelmelnkels Bengkulu, it is hoped that this research can





be used as a reference for students as various learning methods in improving the knowledge and attitudes of young people in providing Health Education in courses, community empowerment and others; For further research, the results of this research can be used as a source of literature in developing further research and can subsequently develop research variables in addition to the existing variables; for respondents, it is hoped that they will further increase their awareness of each other's health, one way of which is by implementing what they have obtained when they become respondents.

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