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Provision of Media Booklets on Increase Knowledge of Junior School Children

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Abstract

The Indonesian government has implemented policies to improve the quality of human resources, namely efforts to improve community nutrition. But the implementation has not been optimal, and there are various problems with eating behavior, clean and healthy living behavior, and disease. A Quasi-experimental design with correlational design. The sampling technique was purposive, proportional, and random sampling with 100 samples. This research took time in June-July 2022. Univariate describes the characteristics of the subject. Bivariate on two variables related or correlated. Based on the Spearman correlation test, the p-value of work (0.634) with a value of (ρ) 0.048, education (0.085) with (ρ) -0.173, infrastructure (0.518) with a value of (ρ) 0.065, school support (0.127) with a value of (ρ) 0.062, parental support (0.010) with (ρ) 0.255 and peer support (0.005) with (ρ) -0.034. Predisposing factors on the variables of work and education through booklet media on knowledge of anemia prevention >0.005. Enabling factors through booklet media on knowledge of anemia prevention were not significantly related to p-value >0.005. The reinforcing factor on the variables of school support and peer support through booklet media on knowledge of anemia prevention, was not significantly related to a p-value of 0.005, but the parental support variable had a significant relationship p-value of 0.005.

Introduction

Anemia is a deficiency of red blood cells/hemoglobin (Hb) and not having enough oxygen to meet the body's physiological needs (Teshale et al., 2020). Adolescence is a period of growth, reproductive maturation, and developmental transition with increased nutritional intake, which makes adolescents more susceptible to nutritional deficiencies (Zhu et al., 2021). Anemia affects almost 25% of school-age children (5-14 years) of the world's population (Wouters et al., 2019; Yang et al., 2020). Anemia causes 600,000 child deaths in low and middle-income countries each year, with the highest proportion of deaths occurring in South Asia (Phong et al., 2019; Yang et al., 2020). WHO estimates that anemia affects 33% of women of reproductive age globally (about 613 million women between the ages of 15 and 49 years). The highest prevalence of 35% in Africa and Asia and in South Asian countries such as Indonesia 30%, Nepal 46%, and Bhutan 58% (Fentie et al., 2020). The prevalence of anemia in adolescent girls has increased from 37.1% in 2013 to 48.9% in 2018. The anemia prevalence in Central Java Province is 30.90%. The prevalence of the number of iron tablets obtained from health facilities, schools, and self-initiated was 11.20%, 84.30%, and 11.70%, while adolescents who consumed iron tablets <52 items were 97.9%, and >52 items were 2.07%.

The Government of Indonesia has implemented policies to improve the quality of human resources, namely efforts to improve community nutrition through the application of balanced nutrition in the Regulation of the Minister of Health of the Republic of Indonesia

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(Permenkes RI) Number 41 of 2014 concerning Guidelines for Balanced Nutrition (Ministry of Health, 2014). Junior high school students have not entirely received the impact of the policy because its implementation has not been optimal and there are various problems in eating behavior, clean and healthy living behavior, and diseases related to nutrition, so it is necessary to implement balanced nutrition in the form of socialization, counseling, training, counseling, nutrition practices, balanced, and nutrition education (Prime et al., 2017). There are still shortcomings in giving iron tablets to young women, namely the lack of facilities and infrastructure such as promotional media, leaflets, brochures, and iron supplementation cards.

The risk of anemia was very high among adolescent girls (10 to 14 years) (Adjusted Odds Ratio (AOR); 1.98; 95% CI; 1.03, 3.82) and living in food insecure households (AOR 1, 48; 95% CI; 1.05–2.09) (Gebreyesus et al., 2019). Family income has a significant relationship with the incidence of anemia in adolescent girls, p-value <0.001, with an OR value of 3.307, meaning that in low-income families, it is 3.3 times higher than in high-income families (Rangkuti, 2020). Adolescent girls with low knowledge are 0.784 times more likely to experience anemia than girls with good knowledge. In terms of facilities and infrastructure, it is still not optimal in giving iron tablets to young women, promotional media, leaflets, brochures, and TTD cards. There are differences in students' knowledge before and after counseling with the lecture method and booklet media. The increase in the average value of 66.41 in the pre-test to 94.10 in the post-test. Taking Fe tablets also reduces the chance of anemia by 0.680 times. Adolescent girls whose iron consumption pattern is irregular have 4,250 times the chance of experiencing anemia compared to girls whose iron consumption pattern is regular (Manik & Simamora, 2019).

Changes in individual or community health are influenced by the theory of Lawrence W. Green. It suggests that human behavior is affected by behavioral and non-behavioral causes. The causes of behavior are formed from predisposing factors such as knowledge, education, and parental occupation. Enabling factors such as facilities and infrastructure as well as health services. Reinforcing factors such as parental support, school support, and peer support. The prevalence of giving iron tablets to adolescent girls in Surakarta City increased from 37.9% to 49.5% in 2018. Health services for school-age children through cross-sectoral activities related to School's Health Clinic (SHC) include the provision of iron tablets for young women by health workers/SHC teachers/school health cadres in 2019 by 90.6%, decreased in 2018 which was 95.9%. The above phenomenon is the basis of the interest of researchers to conduct research following the theory put forward by Lawrence Green which says that individual or community health is influenced by two main factors, namely behavioral causes and factors outside behavior. Therefore, researchers are interested in examining the influence of predisposing, enabling, and reinforcing factors through the provision of booklet educational media on knowledge of anemia prevention in SMP Negeri Surakarta City.

Method

The research design uses quasi-experimental design research, this study examines the effect of two independent variables on the dependent variable by design. Namely, one group pre-test post test, and correlational (correlational research). It aims to determine whether there is an association between two or more variables and how far the correlation exists between the variables studied. The sampling technique was determined by purposive, proportional, and random sampling. The sample inclusion criteria were subjects who were registered as active in class VIII of SMP Negeri 20, SMP Negeri 21, SMP Negeri 14, and SMP Negeri 26 Surakarta, subjects living with their parents, willing to give informed consent, able to communicate well, and cooperative. The sample exclusion criteria were subjects who were not present in health education and did not participate in all series of research activities. The instrument used in this study was a questionnaire sheet using booklet media. In this study, there were validity tests conducted, namely validity and reliability tests, to determine the feasibility of questionnaires and booklets for learning. The booklet in this study contains material on anemia prevention and

control strategies. It is supported by attractive designs such as animated images so that they can play a role in attracting the attention of readers and the words used are straightforward. Univariate to describe the characteristics of the subject. Bivariate analysis was carried out on two related or correlated variables. If the data is normally distributed, it is tested using Pearson correlation. When it is not, then, by Spearman. All analyzes used SPSS 25.0 (IBM Corporation, New York). This research has been accepted by the Health Research Ethics Committee of Semarang State University in 2022 under the number 229/KEPPK/EC/2022.

Result and Discussion

The city of Surakarta consists of 5 sub-districts and has 17 Community Health Centers (CHC), including CHC Pucangsawit and Purwodiningratan. Of the two CHCs, some have a junior high school. This study examines four junior high schools from two CHCs. Namely SMP Negeri 20 Surakarta, SMP Negeri 21 Surakarta, SMP Negeri 14 Surakarta, and SMP Negeri 26 Surakarta. Based on the results of a survey from the Surakarta City Health Office. The results of the study used a univariate test to determine the frequency distribution of each variable studied, and a bivariate to determine the relationship between variables.

Table 1. Characteristics of Respondents

Variables	n	Frequency	%	mean	median	Std. Deviation
Work						
1. Businessman	100	62	62	1.38	1	0.488
2. Public/Private Servants		38	38			
Education						
1. Low (Not school-middle school)	100	42	42	1.58	2	0.496
2. High (high school-university)		58	58			
Infrastructure Support						
1. Less Support	100	44	44	1.56	2	0.499
2. Support		56	56			
School Support						
1. Less Support	100	41	41	1.59	2	0.494
2. Support		59	59			
Parental Support						
1. Less Support	100	42	42	1.52	2	0.502
2. Support		58	58			
Peer Support						
1. Less Support	100	48	48	1.52	2	0.502
2. Support		52	52			
Media Booklet						
1. Bad	100	45	45	1.55	2	0.500
2. Well		55	55			
Knowledge						
1. No changes	100	41	41	1.59	2	0.494
2. There are changes		59	59			

Source = Primary Data, 2022

Data from each variable is displayed in tabular form according to its type, including work, education, infrastructure, school support, parental support, peer support, and booklets. Univariant analysis on the majority of respondents' parents have entrepreneurial jobs such as farmers/fishermen/laborers (62%) and have a high level of education with high school and college graduates (58%). The infrastructure support variable is in good condition (56%), and 44% is in poor condition. School support responded well in learning at school (59%), supported by a positive response from parents (58%), and assisted by positive peer support (52%), presented in table 1.

Table 2 Characteristics of Adolescent Knowledge of Surakarta State Junior High School

Variables	n	mean	Std. Deviation	Difference	95% CI	p-value
Knowledge before being given a media booklet	100	64.75	12.047	25,600	22.754-28.446	0.000
Knowledge after being given a media booklet	100	90.35	6,600			

Paired T-Test, the difference between before and after, CI = Confidence Interval
Source = Primary Data, 2022

Table 2 uses paired t-test with the average result of knowledge before being given the implementation of booklet media being 64.75 and the average knowledge after being given the implementation of booklet media being 90.35. The p-value was 0.000 (p <0.05) with a difference of 25.600 (95% CI 17. 22.754-28.446). Because the p-value and CI did not exceed zero, there was a statistically significant difference before and after implementation. Based on the normality test of the data with the Kolmogorov-Smirnov test, the data is not normally distributed, then continued with the Spearman correlation test to determine the relationship between each variable. Statistically, there is a positive relationship between parental support and the correlation value (ρ) = 0.255 (p-value 0.010). It means that the more parental support, the more knowledge and media booklets increase with the correlation value (ρ) = 0.258 (p-value 0.010) with the strength of the relationship included in the category of moderate relationship (0.26-0.50). The parental support variable can explain the knowledge variance of 6.5%, and 93.5% is explained by other variables not examined.

Table 3 Spearman Correlation

Variable	p-value	rho(ρ)	Coefficient of Determination
Work	0.634	0.048	0.002
Education	0.085	-0.173	0.030
Infrastructure	0.518	0.065	0.004
School Support	0.540	0.062	0.004
Parental Support	0.010	0.255	0.065
Peer Support	0.739	-0.034	0.001
Booklet	0.010	0.258	0.067

Source = Primary Data, 2022

Anemia is a nutritional problem that most often occurs in developed and developing countries, as well as in people with low and high socioeconomic status. This problem is caused by insufficient intake of Fe, menu patterns, and the amount of Fe released during menstruation. Anemia is a condition where Hb levels are lower than 12 g/dl. Clinical manifestations of iron deficiency are anemia, decreased immunity, and low workability, causing symptoms of lethargy, weakness, fatigue, and neglect. Changes in health personally and the community is influenced by Lawrence W. Green's theory. So the behavior is formed from predisposing such as knowledge, education, and parental work. Enabling such as facilities, infrastructure, and medical services. Reinforcing such as parental support, school support, and peer support.

Based on the Spearman correlation test, the p-value of work was (0.634), and education was (0.085). It means no significant relationship between predisposing factors through the provision of educational booklet media on knowledge. Statistically, work has a positive relationship with a value of (ρ) = 0.048 which means that the strength of the relationship is included in the category of weak (>0.00-0.25). Education has a negative relationship with (ρ) = -0.173 meaning the strength of the relationship is weak (>0.00-0.25) (Table 3). It may be due to low-income levels, environmental conditions, and lack of interest in continuing education. But education is important for families in raising children and regulating diet. Education is an important asset that supports the family's economy and is very helpful for housewives to prepare family meals, educate and care for their children (Basith et al., 2017, Razmerita et al.,

2016; Havakhor et al., 2018).

These results are in line with the research performed, showing no relationship between the father and mother's occupation with the practice of consuming blood-added tablets for adolescent girls (p-value 1000). A study by Agustina et al. (2021), showed no relationship between maternal education and the prevalence of anemia (p-value 0.37). Other by Jeihooni et al. (2021), showed that there was no relationship between work and anemia in adolescent girls (p-value 0.212). However, in contrast, the research conducted showed a significant relationship between education and eating behavior in preventing anemia (p=0.026). Mulianingsih et al. (2021), showed a significant relationship p-value 0.000 between upper-level maternal education and the incidence of mild anemia in adolescents. Based on the theory, highly educated parents will pay more attention to their children's diet because they know the nutritional intake needed by their children. Predisposing factors cannot be separated from enabling and reinforcing ones. The better the enabling and reinforcing factors will affect the predisposing ones. Carried out the study in India to explore the effect of education on the knowledge, attitude, and practice of pregnant women showed that 93% of the educated women were in favor of including iron-rich foods in their diet as compared to 67% in the group with no education (p< 0.001) (Abdel et al., 2018; Chan et al., 2020).

SHC is responsible for providing health education to students. Health education to monitor the incidence of anemia in school students is not specifically about anemia through the role of SHC. Students' health education must also be improved. Students' ability to play an active role in providing medical services. Efforts to develop students' abilities to play an active role through UKS activities are to train health workers in schools, commonly known as Little Doctors. Based on the Spearman correlation analysis of facilities and infrastructure, the p-value was 0.518, meaning no significant relationship between the enabling factors through the provision of booklet educational media on knowledge of anemia prevention. Statistically, infrastructure has a positive relationship with a value (ρ) = 0.065, which means that the strength of the relationship is included in the category of weak (>0.00-0.25) (Table 3).

These results are in line with the research conducted. There are still a few who fall into the category of available facilities and infrastructure supporting the implementation of the SHC program. An analysis in Mexico also shows that family structure and access to medical services significantly correlated with school performance. Participation in the labor market is highly associated with a low possibility of going to school on time. This intuitive result is consistent with the reality of Mexican socioeconomics. Many students have to work to make a living for their families, causing late to school, and finally dropping out (Mosiño et al., 2020). This study shows no relationship between Enabling factors through the provision of educational media booklets on knowledge. It is probably due to the lack of infrastructure in schools, so respondents do not really know how to use infrastructure to increase the knowledge about anemia prevention in adolescents. Statistically, the strength of the relationship was 0.065 in the category of very weak (>0.00-0.25).

The booklet is a mediator variable between enabling factors and knowledge. Enabling factors cannot be separated from predisposing and reinforcing ones. If you have good predisposing and reinforcing ones, you will have good enabling factors that will affect the booklet media. Peers are a group of people of the same age and maturity. At this point, teens think that friends can share the same problems and provide emotional relief to see the world from the same perspective, thus interacting with peers outside the home. I spend a lot of time. Friends are not only a positive influence but can also put a lot of pressure on young women to comply with environmental standards. To prevent young women from being accepted, ostracized, ridiculed, or discussed by their peers, young women need to adapt to environmental standards that are consistent with their peers.

Based on Table 3. The results of the Spearman correlation between school support have a p-value of 0.127, meaning no significant relationship. But parental and peer support have a significant relationship with a p-value of 0.005. Statistically, school support has a

positive relationship with the value (ρ) = 0.062, meaning that the strength of the relationship is included in the category of weak (>0.00-0.25), and peer support has a negative relationship with (ρ) =-0.034 which means the strength of the relationship is included in the category of weak (> 0.00-0.25). However, the parental support variable has a positive relationship with the correlation value (ρ) = 0.255 (p-value 0.010), which means that the more parents support, the more knowledge will increase. The strength of the relationship is included in the category of moderate relationship (0.26-0.50). Young women get information about how to take iron tablets and get iron tablets distributed by schools and parents who do not allow respondents not to take iron tablets. It shows that the importance of information and support from schools, teachers, and, parents to consume Fe tablets. These results are in line with the research conducted and obtained a p-value of 0.000 which means that there is a relationship between school support and consumption of Fe tablets in adolescent girls.

Research shows several factors relating family support, teacher support, and health workers with the level of compliance of adolescent girls in consuming Fe tablets (p-value 0.000). Research shows that there is a relationship between peers and TTD consumption (p-value 0.019). The results of the frequency distribution of school support for adolescent girls in class XI at SMA N 6 Bengkulu City were 36 people (47.4%) stated that they were less supportive and as many as 40 people (52%) supported with a p-value of 0.000). Research Lee et al., (2019), reveals the importance of teachers and mothers as sources of information, and the role of diet and culture of purchased snacks, which occur with school attendance. Family support is one of the most influential factors in the compliance of adolescent girls to consume blood-added tablet. Good parental knowledge about nutrition and its consequences will encourage young women to take it. Apart from parents, other support from the community, religious leaders, and peers. Research (Mohamed et al., 2018), shows that iron deficiency anemia is associated with a poor diet. Such as low consumption of iron-rich foods or foods that increase iron absorption (e.g. foods rich in vitamin C) and high consumption of foods that inhibit iron absorption (such as tea and whole bread). Therefore, low parental education, rural location, and female students with intestinal-parasitic infections have been identified as predictors of iron deficiency anemia.

Conclusion

The predisposing factors on the variables of work and education through booklet media on knowledge of anemia prevention and the variables of work and education on knowledge of anemia prevention were not significantly related to p-value >0.005. Enabling factors through booklet media on anemia prevention knowledge and enabling factors on knowledge of anemia prevention were not significantly related with p-value >0.005. The reinforcing factor, on the variables of school support and peer support through booklet media on knowledge of anemia prevention and the variables of school support and peer support on knowledge of anemia prevention was not significantly related to p-value > 0.005. But the parental support variable had a significant relationship p -value <0.005.

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