
THE EFFECT OF PEER EDUCATION ON ANEMIA PREVENTION BEHAVIOR AMONG ADOLESCENCE GIRLS AT SENIOR HIGH SCHOOL 05 OF PEKANBARU

Ika Permanasari^{1*}, Rika Mianna², Yesi Septina Wati³

¹Program Studi Keperawatan, STIKes Al Insyirah Pekanbaru

*Email korespondensi: permanasari.ika88@gmail.com

²Program Studi Kesehatan Masyarakat, STIKes Al Insyirah Pekanbaru

Email: rikamianna@gmail.com

³Program Studi DIV Kebidanan, STIKes Al Insyirah Nursing

Email: yesiseptinawati@yahoo.com

Submitted :03-07-2020, Reviewed:24-07-2020, Accepted:03-08-2020

DOI: <http://doi.org/10.22216/jen.v6i1.5372>

ABSTRACT

Anemia is one of the most common nutritional deficiency disorders in the community. Adolescent girls are population group that is vulnerable to iron deficiency anemia since they are at puberty which causes high iron losses due to menstruation. In addition, it is exacerbated by lack consumption behavior of foods that contain less iron. One of the anemia prevention can be conducted with behavioral change interventions through peer education. This study aims to determine the effect of peer education on anemia prevention behavior. This was a quasi-experiment with a nonequivalent pretest-posttest with control group. This research was conducted from March-September 2019 in 26 adolescent girls. The sampling technique applied purposive sampling method. Analysis of research data applied an independent sample t test. The results showed that there were significant differences in the two treatment groups with average value of knowledge ($p = 0.013$), attitude ($p = 0.011$) and skills ($p = 0.032$) of adolescent girls in the prevention of anemia as compared to the control group. Peer education is an effective strategy to improve anemia prevention behavior in adolescent's girls. It is expected that the education program through peers will be further improved and considered as an agenda in student organization activities.

Keywords: anaemia, adolescent girls, peer education

ABSTRAK

Anemia merupakan salah satu gangguan kekurangan gizi yang paling banyak terjadi di masyarakat. Remaja putri merupakan kelompok populasi yang rentan mengalami anemia defisiensi besi sejak masa pubertas yang menyebabkan tingginya kehilangan zat besi akibat menstruasi. Selain itu, diperparah dengan perilaku konsumsi makanan yang kurang zat besi. Salah satu pencegahan anemia dapat dilakukan dengan intervensi perubahan perilaku melalui peer education. Penelitian ini bertujuan untuk mengetahui pengaruh pendidikan teman sebaya terhadap perilaku pencegahan anemia. Ini adalah eksperimen semu dengan pretest-posttest nonequivalent with control group. Penelitian ini dilakukan pada bulan Maret-September 2019 pada 26 remaja putri. Teknik pengambilan sampel menggunakan metode purposive sampling. Analisis data penelitian menggunakan uji independent sample t test. Hasil penelitian menunjukkan bahwa terdapat perbedaan yang signifikan antara kedua kelompok perlakuan dengan nilai rata-rata pengetahuan ($p = 0,013$), sikap ($p = 0,011$) dan keterampilan ($p = 0,032$) remaja. anak perempuan dalam pencegahan anemia dibandingkan dengan kelompok kontrol. Pendidikan sebaya merupakan strategi yang efektif untuk meningkatkan perilaku pencegahan anemia pada remaja putri.

Diharapkan program pendidikan melalui teman sebaya semakin ditingkatkan dan menjadi agenda dalam kegiatan organisasi kemahasiswaan.

Kata kunci: anemia, remaja putri, pendidikan sebaya

BACKGROUND

Adolescents are human resources for the development of a nation. Therefore, nutrition plays an important role in creating healthy and productive young generation. Sustainable nutrition management is very needed in the human life cycle from conception to old age. Changes in lifestyle and eating patterns in the era of globalization cause Indonesia facing multiple nutritional issues such as Protein Energy Deficiency, Iodine Deficiency Disorders, Vitamin A Deficiency, Iron Deficiency Anemia and over-nutrition (Depkes RI, 2013).

Anemia is one of the most common nutritional deficiency disorders in the community (Bappenas & United Nations Children's Fund, 2017). Women of childbearing age, children and adolescents are population groups at high risk of anemia; the prevalence is still high of 30.2% in the world and 45.7% in Southeast Asia (WHO, 2008).

According to the 2013 Riskesdas Data showed that the prevalence of anemia in women of childbearing age at 15 years and above was 23% in Indonesia. This is because the intake of iron from food that only meets about 40% of the adequacy. The study conducted by Sumarlan, Windiastuti and Gunardi (2018), showed that the prevalence of anemia among adolescent girls aged 12-15 years was 30.7%. Meanwhile, the incidence of anemia in Pekanbaru is still high of 54% (Kasumayanti, 2015).

Adolescent girls are population group that is vulnerable to iron deficiency anemia since they are at puberty which causes high iron losses due to menstruation. In addition, it

is exacerbated by lack of iron intake. Iron supplementation is significantly associated with reduced risk of anemia (DinKes RI, 2016). The results showed that there was a relationship between the level of knowledge, dietary habits, cycle and duration of menstruation, iron intake and vitamin C with iron deficiency (Laksananno, 2009).

Knowledge among adolescent girls related to anemia was 64.3% and considered to be low so it will have an impact on adolescent attitudes and behavior in preventing anemia (Fajriyah & Fitriyanto, 2016). Other findings stated that knowledge of adolescent girls regarding the risk of anemia was 61% and considered to be low (Hasyim, Mutalazimah, & Muwakhidah, 2018). Teenagers with poor anemia knowledge will lead to bad habits in choosing food and preventing health problems, especially anemia so that the problem of anemia in adolescents will increase (Husna & Fatmawati, 2015).

Adolescent girls who experienced anemia would experience symptoms such as fatigue, weakness, lethargy, pale, broken nails, poor appetite, and can affect cognitive functions such as low concentration of learning and responsiveness at school-aged children, adolescent girls and other groups (Astuti, 2013).

Anemia Prevention and control in adolescent girls can be carried out through behavioral change interventions starting from providing management guidelines, developing communication, information and education media. The school is a platform for addressing adolescent girls by implementing peer education (DinKes RI, 2016). Peer

education today is considered effective as a health promotion strategy for adolescents (Abdi & Simbar, 2013). The research finding showed that the role of peer educators was considered to be effective in improving adolescent knowledge and attitudes on preventing anemia (Lu'lu'atul Khodijah, Nugraheni, & Kartini, 2018).

Systematic review conducted by Ghasemi, Simbar, Fakari, Naz, and Kiani, (2019) concluded that peer education was able to improve knowledge, attitudes, health behaviors and self-confidence of adolescents. Therefore, peer education is one of the most effective strategies for promoting adolescent health in terms of disease prevention, mental health, prevention of high-risk behavior and behavior in the fulfillment of nutrition. It will promote the adolescent health better than conventional health education because easy transfer of information between peers, increase self-confidence and communication skills in adolescents, low cost and simplicity of this method.

The results of an initial survey conducted in adolescent girls of Senior High School 05 of Pekanbaru revealed that there were some adolescent girls who had anemia. In addition, there were a few of them know about anemia and behavior that can lead to anemia in adolescents. Therefore, it takes an effort to help tackle these various issues so that adolescents have a good understanding of positive behavior on the anemia prevention

METHOD

The research was conducted at Senior High School 05 Of Pekanbaru from March-September 2019. This was a quasi-experimental study with a nonequivalent pretest-posttest with control group design. Health education interventions were carried out through peer education methods which would then be compared with groups that were not treated as a control group.

Measurements were conducted twice included before given the intervention (pretest) and after the intervention (posttest).

Research stages included; 1). Distribution of questionnaires to assess knowledge, attitudes and skills before the intervention (pretest), 2). The researcher selected the peer educator that meets the criteria, 3). Researchers assisted by research assistants to conduct health education interventions on the prevention of anemia in adolescents, 4). Researchers conducted health education and sharing discussions regarding food ingredients that help and inhibit iron absorption, 5). The peer educator internalization stage with colleagues in class, 6). Distribution of questionnaires to assess knowledge, attitudes and skills after the intervention (post test).

The sample collection method applied purposive sampling technique. The samples involved peer educators (n=10) and adolescent girls (n=26) that consisted of 26 intervention groups and 26 control groups. Samples were selected based on the following criteria; 1). 11th Grade adolescent girls, 2) Do not suffer from chronic diseases (cancer, HIV, and TB, etc.), 3). Have a good will to be respondents, 4). Do not take sick leave. Samples were excluded in this research if they did not follow counseling conducted by peer educators.

The criteria to be a peer educator as follows: 1) Having good communication skills, 2) easy to get along, 3) Willing to be involved in the research. The data collection tool used a questionnaire sheet consisting of 4 parts namely; respondent characteristics, knowledge questionnaire, attitudes, and preventive skill of anemia among adolescent girls. The research questionnaire used a questionnaire from Aisah's research (2016) that had been modified and conducted an instrument test in advance. Based on the results of the validity and reliability tests,

there were 17 valid knowledge questionnaires out of 20 questions with a cronbach's alpha value of 0.906. There were 17 valid 20 attitude questionnaire with cronbach's alpha value of 0.955. There were 16 valid skill questionnaires out of 20 with cronbach's alpha of 0.953. Analysis of research data applied an independent sample t test to assess the effect of peer education on adolescent girl behavior between the treatment and control groups

RESULT

Respondent Characteristics

Table 1. Characteristics of Adolescent Girls of SMA N N 05 Pekanbaru based on Age and Hb Levels (n=52)

Variable	Mean	Median	Min-max	SD
Age	16	16	15-17	0.49
Hb	14	14	11-17	1.3

As shown in Table 1 that the average age of respondents of adolescent girl was 16 years (0.49) and had an average Hb level of 14 g / dl (1.3).

Tabel 2. Characteristics of Adolescent Girls of SMA N 05 Pekanbaru based on Anemia Status

Anemia Status	N	%
Non-anemia if >12 mmhg	43	82.7
Anemia < 12 mmhg	9	17.3
Total	52	100

Table 2 showed that most respondents in this research did not have anemia (82.7%)

Univariate Analysis

Table 3. Mean Knowledge, Attitudes and Skills of Adolescent Girls Before and After Intervention in the Treatment and Control

Variable	Treatment		Control	
	Pre-test	Post-test	Pre-test	Post-test
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Knowledge	12.11 (2.5)	14.8 (3.19)	13.15 (1.99)	13.8 (1.5)
Attitude	52.00 (3.9)	56.11 (4.55)	52.0 (4.2)	53.23 (3.3)
Skill	51.46 (6.3)	55.19 (5.6)	54.65 (6.3)	51.42 (5.3)

Variable	Treatment		Control	
	Pre-test	Post-test	Pre-test	Post-test
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Knowledge	12.11 (2.5)	14.8 (3.19)	13.15 (1.99)	13.8 (1.5)
Attitude	52.00 (3.9)	56.11 (4.55)	52.0 (4.2)	53.23 (3.3)
Skill	51.46 (6.3)	55.19 (5.6)	54.65 (6.3)	51.42 (5.3)

Table 3, showed the knowledge variables before the educational intervention by peers in the treatment and control groups of 12.11 (2.5) and 13.15 (1.9), respectively and after the educational intervention by the peer, the average knowledge of the treatment group increased higher than the control group of 14.8 (3.19) and 13.8 (1.5), respectively. The attitude variables before educational intervention by peers had the same mean both in the treatment and control groups of 52 (3.9) and 52 (4.2). In addition, after the educational intervention by peer the mean attitude of the treatment group increased higher than the control group of 56.11 (4.55) and 53.23 (3.3), respectively. Skill variables before peer educational intervention in the treatment group mean were lower than in the control group of 51.46 (6.3) and 54.65 (6.3), respectively. Besides, after the educational intervention by peer the mean treatment group skills increased. However, the control group decreased of 55.19 (5.6) and 51.42 (5.3).

Bivariate Analysis

Difference analysis of knowledge, attitudes and skills of adolescent girls on anemia prevention behavior was carried out to see differences before and after the research intervention in each group. This difference analysis is performed by t-paired.

Table 4. Analysis of Difference in Mean Knowledge, Attitudes and Skills of adolescent girls on Prevention of Anemia before and after Intervention in the Treatment and Control Groups (n = 52).

Variable	Group	Mean	SD	P value
Knowledge	Treatment	14.8	3.19	
Knowledge	Control	13.8	1.5	
Attitude	Treatment	56.11	4.55	
Attitude	Control	53.23	3.3	
Skill	Treatment	55.19	5.6	
Skill	Control	51.42	5.3	

Knowledge	Treatment			
	Pre-test	12.11	2.5	0.001
	Post test	14.8	1.2	
	Control			
Pre-test	13.15	6.3	0.16	
Post-test	13.18	5.5		
Attitude	Treatment			
	Pre-test	52	3.9	0.001
	Post test	56	4.5	
	Control			
Pre-test	52.03	4.1	0.09	
Post-test	53.23	3.3		
Skill	Treatment			
	Pre-test	51.46	6.3	0.000
	Post test	55.19	5.5	
	Control			
Pre-test	54.65	6.3	0.002	
Post-test	51.42	5.3		

Table 4 showed that the peer educator in the treatment group had significant differences in knowledge ($p = 0.001$; $p < 0.05$), attitude ($p = 0.001$; $p < 0.05$) and skill ($p = 0.00$; $p < 0.05$). Meanwhile, only a skill variable in the control group that had significant differences ($p = 0.002$; $p < 0.05$).

Difference analysis of the mean of knowledge, attitudes and skills of adolescent girls on anemia prevention between the control and treatment group were carried a bivariate analysis using a two-tailed test (independent t).

Table 5. Difference Analysis of the mean of Attitudes, Attitudes, and Skills of Adolescent Girls in SMAN 05 Pekanbaru on the Prevention of Anemia between Treatment and Control Groups (n1 = n2 = 52).

Variable	Groups	Mean	SD	P value
Knowledge	Treatment	14.8	1.2	0.013
	Control	13.8	1.5	
Attitude	Treatment	56.11	4.5	0.011
	Control	53.23	3.3	
Skill	Treatment	54.8	5.7	0.032
	Control	51.43	5.3	

Table 5, showed that the variables of knowledge ($p = 0.013$), attitudes ($p = 0.011$) and skills ($p = 0.032$) of adolescent girls on the prevention of anemia between the treatment and control groups had significant results. This was supported by the results that the mean of knowledge, attitudes and skills of the treatment group were higher than the control group.

DISCUSSION

Characteristic of Respondents

The results showed that the mean age of respondents was 16 years. This is consistent with the research conducted by (Kasih, 2016) that most of the adolescent respondents involved in their research on the effectiveness of peer education were at the age of 16 years. The results showed that the mean Hb level of the respondent was at the normal range and it was only 17.3% of adolescent girls who had anemia. Different results were shown in previous studies that there were 41.7% of adolescent girls of SMA Negeri 3 Kendari suffering from anemia (Kaimudin, Lestari, & Afa, 2017). This might occur since adolescent girls have had good knowledge regarding anemia. Further explanation is explained through research conducted by Fitrianti and Miko, (2019), revealing that there was a relationship between knowledge and anemia events. Our opinion in this study was the average Hb adolescent girls classified as normal or not anemia because adolescent girls have a passably knowledge about anemia. It was proven that the initial mean value before treatment was 12.1 out of 17 questions.

Univariate Analysis

The results showed that there was an increase in the mean knowledge, attitudes and skills of adolescents after being given education through peers. This is consistent

with research conducted by (Suiraoaka, Kayanaya, & Nursanyoto, 2014) that the mean knowledge in the peer group before the intervention was 68.20 and after being given the intervention the peer educator showed a very significant increase to 84.26. While the mean score of attitudes towards anemia prevention efforts was 83.25, and after being educated by peers there was a significant increase to 88.88. Similar research related to peer education showed that education through peers could improve psychomotor averages about smoking behavior in adolescents in high school (Wiratini, Yanti, & Wijaya, 2015).

Bivariate Analysis Differences in Adolescent's Knowledge, Attitudes, and Skills towards Prevention of Anemia

The results of this study assessed changes in behavior before and after the intervention in both the treatment group and the group and assessed changes in behavior between the two groups. Identifying and providing information about healthy lifestyle behaviors is the first step in improving knowledge which can ultimately lead to changes in a person's behavior (Edelman & Mandle, 2018). Health behavior is an action or habit related to maintenance, recovery, and health improvement (Conner & Norman, 2017). Blom's theory has been modified in its development to assess health care in 3 domains, namely health knowledge, attitudes towards health and actions, skills or health practices (Notoatmodjo, 2010). The following will discuss the interpretations of each health behavior domain.

Differences in Adolescent Knowledge on Anemia Prevention

The results showed that there were significant differences in adolescent knowledge on anemia prevention before and

after the study in the treatment group ($p = 0.001$). Meanwhile, there was no mean change in knowledge before and after the intervention ($p = 0.16$) in the control group. This is in line with research conducted by Suiraoaka, Kayanaya, and Nursanyoto (2014) at SMK Denpasar in 107 adolescent girls. The results of the study proved that the peer group model counseling method was more effective in changing knowledge and attitudes than the classical model. Information related to anemia, the effects of anemia and anemia prevention behavior in adolescents will be well understood by adolescent through communication between peers.

Peer education has attracted adolescents to understand about anemia and anemia prevention behavior, so that health education through a peer approach can have a positive effect on adolescents. The results of this study also mentioned that there were significant differences in adolescent knowledge on anemia prevention between the intervention and control groups ($p = 0.013$). This is the result since peer education method adolescents can share information with their friends in languages and ways that are more acceptable by adolescents. Welcome Speech In *Buku Saku Pendidikan Remaja Sebaya*, Secretary General of Palang Merah Indonesia, (2008) said that adolescents need to be understood and approached in their own style. Peer approach becomes an effective method for guiding adolescents because it is more in line with the souls of adolescents, who tend not to be patronized, listen more and believe in what their friends say. Peer education enables adolescents to share knowledge and experiences in peer groups which can ultimately lead to good health outcomes (Seymour, Almack, Kennedy, & Froggatt, 2011)

The researcher assumes that peer education can help adolescents in increasing knowledge about anemia prevention because they can share information about problems experienced without shame and the information conveyed will be easily accepted by adolescents. The information given will be easily accepted by teenagers because it is delivered by peers.

Differences in Adolescent Attitudes on Anemia Prevention

The result showed that there were significant differences in adolescent attitudes regarding anemia prevention before and after the study in the treatment group ($p = 0.001$). Meanwhile, there was no mean change in knowledge before and after the intervention in the control group ($p = 0.09$). The results of this study were also in line with research conducted by (Prahastuti, (2009), proving that the promotion of anemia prevention through counseling methods and peer education using flipcharts as a communication medium has proven to be effective in improving knowledge and attitudes among adolescent girls.

The results of this study also mentioned that there were significant differences in adolescent knowledge on anemia prevention between the intervention and control groups ($p = 0.011$). Similar research results have also been carried out in 2 Vocational Schools in Semarang which showed significant changes in knowledge ($p = 0.001$) and attitudes ($p = 0.001$) of adolescent girls in the treatment group who were given nutrition education on anemia prevention through peer educator methods as compared to the control group (Khodijah, Nugraheni, & Kartini, 2018). Changes in attitudes of young women after being given health education through peer methods as a result of the improvement of

adolescent girl's knowledge on anemia prevention. The results showed that there was a strong relationship between knowledge and adolescent attitudes on iron deficiency anemia (Shojaeizade, 2011).

Researchers assume that the increase in attitudes towards girls adolescent about the prevention of anemia occurs due to an increase in knowledge and the support of their peer group it will lead to awareness and intention to behave according to their peers' groups

Differences in Adolescent' Skills on the Prevention of Anemia

The result of this study was in line with research conducted by Shafai, Charandabi, Mamaghani, and Salmani, (2013) showing that peer education was considered to have a significant impact on changes in students' knowledge and actions on anemia and consumption of iron supplements. Other studies also proved the existence of changes in sexual behavior was getting better after being given a peer education intervention in the intervention group with a p-value of 0.000. The role of peers is very influential with adolescent sexual behavior problems, because peers can be protective resources that can minimize the number of occurrence of sexual behavior problems among adolescents (Marlita, 2016). Adolescents are the ideal age for health education because individual behavior patterns which are the main keys that affect one's health begin to form during adolescence. Friends and peers are a common source of information obtained by adolescents regarding health-related behaviors which will then contribute to the formation of peer group norms. Adjustment with peer groups is the most important thing in adolescent development since the peer education method is a very effective way to

provide health promotion to adolescents, provided that peer educators have been carefully selected and trained to convey information and promote health (WHO, 2005)

The results of this study also mentioned that there were significant differences in the mean skills of adolescent girls on anemia prevention in the treatment group with the control group after being educated through peers ($p = 0.011$). This is the result of increased knowledge on anemia prevention will improve caring attitudes among adolescents to prevent anemia. The results showed that there was a strong relationship between knowledge and the practice of adolescents on iron deficiency anemia (Shojaeizade, 2011). The poor care of anemia plays an important role in causing the incidence of iron deficiency anemia (Oumer & Hussein, 2019). The low knowledge of adolescent girls on anemia can lead to low practices in preventing and managing anemia (Jalambo, Naser, Sharif, & Karim, 2017).

The result of the study confirmed that increasing the level of anemia awareness among pregnant women is seen as an important step in improving the attitude of pregnant women towards anemia. A positive attitude towards anemia is associated with a high level of knowledge of a person and a positive attitude is also correlated with practice. Accordingly, raising awareness of anemic children is the first step in improving knowledge, attitudes and practices regarding anemia (Adznam, Sedek, & Kasim, 2018).

Researchers argue that peer education is an effective tool to help adolescent change behaviour because of the support through sharing information and as support system from peers. Peer education is also known as sharing information and experiences among groups of individuals who have similarities. Peer education aims to assist adolescents in developing the knowledge, attitudes, and

skills needed for modification of positive behavior through prevention and the formation of social support. Focus peer education is to minimize misinformation, prevention and early intervention on health problems. Adolescents consider that peer education as the preferred strategy for discussing topics that are not considered or considered taboo (Abdi & Simbar, 2013)

The results of a systematic review showed that the use of peer education can increase knowledge, attitudes, practices, self-efficacy and positive behavior of adolescents towards health problems so that it can improve adolescent health. Health education through peer method enables the provision of continuous education because of the idea of peers at school makes the transfer of information among friends easier and cost-effectiveness. The idea of health education methods through peers can be used to provide knowledge of adolescent health problems at school (Ghasemi et al., 2019)

CONCLUSION

AND

RECOMENDATION

Health education through peer education methods can significantly influence changes in adolescent behavior as assessed through knowledge, attitudes and actions in preventing anemia. In this regard, it is expected that the education program through peers will be further improved and considered as an agenda in student organization activities.

REFERENCES

- Abdi, F., & Simbar, M. (2013). The peer education approach in adolescents-narrative review article. *Iranian Journal of Public Health*, 42(11), 1200–1206. Retrieved from

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3684454/pdf/ijph-42-467.pdf>
- Adznam, S. N. H., Sedek, R., & Kasim, Z. M. (2018). Assessment of knowledge, attitude and practice levels regarding anaemia among pregnant women in Putrajaya, Malaysia. *Pakistan Journal of Nutrition*, 17(11), 578–585. <https://doi.org/10.3923/pjn.2018.578.585>
- Aisah, S. (2016). Pengaruh edukasi kelompok sebaya terhadap perubahan perilaku pencegahan anemia gizi besi pada wanita usia subur di Kota Semarang. *Thesis, Universitas Indonesia*, (1606970695), 85–93.
- Astuti, M. P. (2013). Tingkat pengetahuan remaja putrid tentang aneia pada siswi kelas XI di SMA Muhammadiyah I Sragen Tahun 2013. *Skripsi. Sekolah Tinggi Ilmu Kesehatan Kusuma Husada*.
- Bappenas, & United Nations Children's Fund. (2017). *Laporan baseline SDG tentang anak-anak di Indonesia*. Jakarta.
- Conner, M., & Norman, P. (2017). ealth behaviour: Current issues and challenges. *Psychology and Health*, 32(8), 895–906. Retrieved from <https://doi.org/10.1080/08870446.2017.1336240>
- Depkes RI. (2013). *Rencana kerja pembinaan gizi masyarakat tahun 2013*. Jakarta: Kementerian Kesehatan RI.
- DinKes RI. (2016). *Pedoman pencegahan dan penanggulangan anemia pada remaja putrid dan wanita usia subur (WUS).Direktorat Gizi Masyarakat*. Jakarta: Kementerian Kesehatan RI.
- Edelman, C. L., & Mandle, C. L. (2018). *Health promotion throughout the life span (9th ed.)*. St. Louis, Missouri: Elsevier, Inc.
- Fajriyah, N. N., & Fitriyanto, M. L. H. (2016). Gambaran tingkat pengetahuan tentang anemia pada remaja putri. *Jurnal Ilmu Kesehatan (JIK)*, IX(1). Retrieved from <https://media.neliti.com/media/publications/97336-ID-gambaran-tingkat-pengetahuan-tentang-ane.pdf>
- Fitrianti, L., & Miko, T. Y. (2019). Factors associated with anemia among adolescence girls at SMAN 1 Telukjambe Kabupaten Karawang in 2015. *Conference Paper. the Responsibility of the 3rd. IMOPH & the 1st YSSOPH*. <https://doi.org/DOI.10.18502/cls.v4i10.3751>
- Ghasemi, V., Simbar, M., Fakari, F. R., Naz, M. S. G., & Kiani, Z. (2019). The effect of peer education on health promotion of iranian adolescents: A systematic review. *International Journal of Pediatrics-Mashhad*, 7(3), 9139–9157. <https://doi.org/10.22038/ijp.2018.36143.3153>
- Hasyim, A. N., Mutalazimah, M., & Muwakhidah, M. (2018). Pengetahuan risiko, perilaku pencegahan anemia dan kadar hemoglobin pada remaja putri. *Profesi (Profesional Islam) : Media Publikasi Penelitian*, 15(2), 33. <https://doi.org/10.26576/profesi.256>
- Husna, U., & Fatmawati, R. (2015). Tentang anemia dengan pola makan (relationship of knowledge about anemia on young women with dietary). *Profesional Islam*, 12(2), 52–57.
- Jalambo, M. O., Naser, I. A., Sharif, R., & Karim, N. A. (2017). Knowledge, attitude and practices of iron deficient and iron deficient anaemic adolescents in the Gaza strip, Palestine. *Asian Journal of Clinical Nutrition*, 9(1), 51–

56.
<https://doi.org/10.3923/AJCN.2017.51.56>
- Kaimudin, N. I., Lestari, H., & Afa, J. R. (2017). Skrining dan determinan kejadian anemia pada remaja putri sma negeri 3 kendari tahun 2017. *Jurnal Ilmiah Mahasiswa Kesehatan Masyarakat*, 2(6). Retrieved from <https://media.neliti.com/media/publications/185793-ID-skrining-dan-determinan-kejadian-anemia.pdf>.
- Kasih, L. C. (2016). Efektifitas Peer Education Pada Pengetahuan Dan Sikap Siswa SMA Dalam Pencegahan HIV/AIDS. *Jurnal Ilmu Keperawatan*, 4(2), 26–33.
- Kasumayanti, E. (2015). *Hubungan pengetahuan tentang anemia dan pola menstruasi dengan kejadian anemia pada remaja putri sma negeri 5 pekanbaru tahun 2015*. Retrieved from <https://ermakasumayanti.files.wordpress.com/2017/08/jurnal-stikes-kesmas-april-2015-erma.pdf>
- Khodijah, L, Nugraheni, S. A., & Kartini, A. (2018). Pengaruh pendidikan gizi metode peer educator terhadap perubahan perilaku remaja putri pada pencegahan anemia defisiensi besi di kota semarang. *Jurnal Kesehatan Masyarakat (e-Journal)*, 6(4).
- Khodijah, L., Nugraheni, S., & Kartini, A. (2018). Pengaruh pendidikan gizi metode peer educator terhadap perubahan perilaku remaja putri pada pencegahan anemia defisiensi besi di kota semarang (Studi di 2 SMK Negeri Kota Semarang). *Jurnal Kesehatan Masyarakat (e-Journal)*, 6(4), 206–213. Retrieved from <https://ejournal3.undip.ac.id/index.php/jkm/article/download/21397/19890>
- Laksananno, G. K. (2009). Faktor-faktor yang berkontribusi terjadinya anemia defisiensi besi pada remaja putrid di SMU Muhammadiyah Kota Tegal. *Tesis Universitas Indonesia*.
- Marlita, L. (2016). Pengaruh peer education terhadap perilaku seksual remaja di SMAK Abdurrab Kota Pekanbaru Provinsi Riau. *Naskah Skripsi Keperawatan Universitas Abdurrab*, 71–81.
- Notoatmodjo, S. (2010). *Ilmu perilaku kesehatan*. Jakarta: Rineka Cipta.
- Oumer, A., & Hussein, A. (2019). Knowledge, attitude and practice of pregnant mothers towards preventions of iron deficiency anemia in ethiopia: institutional based cross sectional study. *Health Care : Current Reviews*, 7(01), 1–7. Retrieved from <https://doi.org/10.35248/2375-4273.19.07.238>
- Palang Merah Indonesia. (2008). *Pendidikan remaja sebaya*. Jakarta: Markas Pusat Palang Merah Indonesia.
- Prahastuti, B. S. (2009). Efektivitas konseling dan pendidikan sebaya untuk meningkatkan pengetahuan, sikap dan perilaku remaja putri usia 15-19 tahun dalam pencegahan terhadap anemia di Kabupaten Subang. *Thesis, Universitas Gadjah Mada*.
- Seymour, J. E., Almack, K., Kennedy, S., & Froggatt, K. (2011). Peer education for advance care planning: Volunteers' perspectives on training and community engagement activities. *Blackwell Publishing Ltd Health Expectations*, 16(1), 43–55. Retrieved from <https://doi.org/10.1111/j.1369-7625.2011.00688.x>

- Shafai, F. S., Charandabi, S. M., Mamaghani, M. E., & Salmani, R. (2013). Educating female adolescents about iron deficiency and taking iron supplements and its influence on their peers. *J Mazand Univ Med Sci*, 23(1), 223–233.
- Shojaeizade, D. (2011). A study on knowledge, attitude and practice of secondary school girls in Qazvin on iron deficiency anemia. *Iranian J. Publ. Health*, 30(1–2), 53–56.
- Suiraoaka, P., Kayanaya, A. A. G. R., & Nursanyoto, H. (2014). Pengaruh model pendidikan sebaya terhadap pengetahuan dan sikap remaja tentang anemia zat besi di SMK Negeri 4 Denpasar. *Jurnal Ilmu Gizi*, 5(1), 1–9. Retrieved from <http://www.poltekkes-denpasar.ac.id/wp-content/uploads/2017/12/suiraoaka-JIG-Vol-5-No-1-Feb-2014.pdf>
- Suiraoaka, Putu, Kayanaya, A. A. G. R., & Nursanyoto, H. (2014). Pengaruh model pendidikan sebaya terhadap pengetahuan dan sikap remaja tentang anemia zat besi di SMK Negeri 4 Denpasar. *Jurnal Ilmu Gizi*, 5(1), 1–9. Retrieved from <http://www.poltekkes-denpasar.ac.id/wp-content/uploads/2017/12/suiraoaka-JIG-Vol-5-No-1-Feb-2014.pdf>
- Sumarlan, E. S., Windiastuti, E., & Gunardi, H. (2018). Iron status, prevalence and risk factors of iron deficiency anemia among 12- to 15-year-old adolescent girls from different socioeconomic status in Indonesia. *Makara Journal of Health Research*, 22(1), 46–52. <https://doi.org/10.7454/msk.v22i1.8078>
- WHO. (2005). *Adolescent peer education in formal and non-formal settings: Report of an intercountry workshop Monastir, Tunisia*.
- WHO. (2008). *Worldwide prevalence of anemia 1993-2005, WHO global database on anaemia*. Geneva: WHO Press.
- Wiratini, N. P. S., Yanti, N. L. P. E., & Wijaya, A. A. N. T. (2015). Pengaruh peer education terhadap perilaku merokok pada remaja di SMAN “X” Denpasar. *COPING Ners Journal*, 3(3), 54–61. Retrieved from https://simdos.unud.ac.id/uploads/file_penelitian_1_dir/329fde8a8268089a846939c9fe0f156d.pdf