Correlation between Knowledge, Attitudes, Nutritional Status and Eating Frequency with Anemia in Young Girls at STIKes Bhakti Pertiwi Indonesia

Rosmiati[1], Al-Bahra[2]
Public Health Study Program STIKes Bhakti Pertiwi Indonesia, Jakarta-Indonesia[1]
Information Technology Education Study Program- Raharja University, Tangerang–Indonesia[2]
e-mail: rosmiatiedi@gmail.com[1], albahra@raharja.info[2]

Abstract

The purpose of this study was to examine the relationship between knowledge, attitudes, nutritional status and eating frequency with anemia in young women at the Bhakti Pertiwi Indonesia STIKes. This research is an analytic survey type with a cross sectional design. The population in this study were all female students of STIKes Bhakti Pertiwi Indonesia, totaling 414 people. Samples were taken as many as 126 respondents, sampling technique with Proportional Random Sampling. Data collection was carried out with primary data using a questionnaire. Data analysis with univariate, bivariate, multivariate. The results of the study showed that 38.9% of respondents experienced anemia. The results of univariate analysis obtained high knowledge (81.0%), positive attitude (50.8%), normal nutritional status (BMI 18.5 - <25.0) of 81.7% and frequency of eating 3 times/day (55.6%). The results of the bivariate analysis showed that there were four related variables, namely knowledge (p=0.016; OR=3.333), attitude (p=0.049; OR=2.220), nutritional status (p=0.031; OR=3.022), eating frequency (p=0.000; OR=35,282). The results of multivariate analysis showed that factors related to anemia in female adolescents were eating frequency (p=0.000; OR=38.479) while knowledge was the confounding variable. The dominant factor associated with anemia in female adolescents is eating frequency. Eating frequency is a variable associated with anemia in female adolescents. It is suggested to Midwifery student Salsabila Serang to increase the frequency of regular meals 3 times/day with a balanced nutrition menu that is high in iron (Fe).

Keywords: Eating Frequency, Knowledge, Attitude, Nutritional Status, Anemia

Introduction

Anemia is a nutritional problem with a high prevalence in the world. Anemia due to iron deficiency is the most common nutritional disorder in the world and is an epidemic public health problem. This problem mainly affects women of reproductive age and children in tropical and subtropical regions. Anemia due to iron deficiency affects more than 2 billion people in the world. In developing countries, there are 370 million women who suffer from anemia due to iron deficiency.

The prevalence of nutritional anemia in the world on average for the general population is 40%, the prevalence in

developing countries tends to be three to four times higher than in developed countries. Based on actual survey data globally and the United Nations in 2006, it is known that the prevalence of anemia in non-pregnant women globally is 30.2%.

A survey in the United States stated that 30-40% of women and children of childbearing age had iron deficiency anemia. In India, it shows that out of 113 million young women in India, it is estimated that the prevalence of anemia in young women is 56 percent. According to WHO, around 25-40% of young women in Southeast Asia suffer from mild to severe anemia.

Iron deficiency anemia can be influenced by several factors, namely the lack of consumption of animal food sources as a source of easily absorbed iron (heme iron), while non-heme iron is a high source of iron but is difficult to absorb, so it requires large portions. large enough to meet the needs of iron in a day. It can also be caused by a lack of nutrients that play a role in iron absorption such as protein and vitamin C. Consumption of foods high in fiber, tannins and phytates can inhibit iron absorption.

The impact of anemia on adolescents, among other things, can reduce the body's resistance so that it is susceptible to disease, reduce adolescent activity related to physical work ability and learning achievement and reduce adolescent fitness, thereby inhibiting sports achievement and productivity. In addition, anemia that occurs in young women is a risk for impaired physical and mental functioning, and can increase the risk of disorders during pregnancy.

Previous research in Selected Schools of India showed the prevalence of anemia in young girls was 80%. 48.75% mild anemia, 42.5% moderate anemia and 8.75% severe anemia. Another study in India that supports this research with a relatively high prevalence of anemia is the Premalatha study which showed that the prevalence of anemia was found to be 78.75%.

Based on a preliminary study conducted on September 17 2021 of 10 students from STIKes Bhakti Pertiwi Indonesia, a hemoglobin (Hb) examination was carried out and found that 6 people (60%) suffered from anemia with hb levels < 12 gr/dl, poor nutritional status (BMI < 18.5) by 40%). Then conducted interviews using a questionnaire to students who suffer from anemia caused by several factors, namely low knowledge (60%), negative attitude (70%), low parental education (< high school), parental income < UMK of 40%, eating frequency is not regularly (< 3 times/day).

The purpose of this research was to study and explain the relationship between knowledge, attitudes, nutritional status and eating frequency with the incidence of anemia in young women at STIKes Bhakti Pertiwi Indonesia.

Method

The type of research used is Analytical Survey, which is a survey or research that tries to explore how and why health phenomena occur. Approach. used is a cross-sectional design, namely research to study the dynamics of the correlation between risk factors and effects, by way of approach, observation, and data collection all at once (point time approach).

The population in this study were all female students of STIKes Bhakti Pertiwi Indonesia, totaling 414 respondents. The sampling technique in this study used Proportional Random Sampling. The sample size was determined based on the 95% confidence level and 90% power of the test. The sampling formula for

different proportions in this study uses the sample size formula

The minimum number of samples required from the calculation of the formula above is 115 respondents, plus 10% of the drop out rate of 11 people so that the total sample is 126 respondents. Proportion sampling technique. Data collection techniques in this study used primary data. The data collection tool (research instrument) used was a questionnaire which was distributed directly to female students of STIKes Bhakti Pertiwi Indonesia Level I, II and III. Before the questionnaires were distributed, prior to being investigated, a validity test was carried out first.

Result and Discussion

Univariate analysis

Dependent Variable (Anemia in Young Women)

Table 1. Distribution of Respondents According to the Incidence of Anemia in young women at STIKes Bhakti Pertiwi Indonesia

Anemia in young women	Amount	Percentage (%)
Anemia	49	38,9
Not Anemia	77	61,1
Total	126	100

The distribution of respondents according to anemia in young women showed that respondents who were not anemic were 22% higher than those who were anemic. Of the 49 respondents who had anemia, 39 (79.6%) had mild anemia and 10 (20.4%) had moderate anemia.

Independent Variable

The independent variables in this study consisted of knowledge which was grouped into low knowledge if the respondent's correct answer score was <75 and high if the respondent's correct

answer score was ≥ 75, negative attitude < Median 60 and positive ≥ Median 60, BMI abnormal nutritional status < 18.5 - > 25.0 and normal nutritional status BMI 18.5-25.0, frequency of eating < 3 x/day and ≥ 3 x/day.

Knowledge

Table 2 Distribution of Respondents according to Knowledge at STIKes Bhakti Pertiwi Indonesia

Knowledge	Amount	Percentage (%)
Low, <75	24	19,0
Height ≥ 75	102	81,0
Total	126	100

The distribution of respondents according to knowledge of young women showed that respondents with high knowledge (≥ 75) were 62% higher than respondents with low knowledge (<75).

The results of this study are in line with research conducted by Laksmita in 2018, which stated that there was a significant relationship between young women's knowledge about anemia and the incidence of anemia. Adequate nutritional knowledge will influence the consumption behavior of these teenagers, where choosing the right food can prevent them from anemia.

The results of this study are also in line with research which shows that there is no significant relationship between adolescent knowledge and the incidence of anemia (Sirait, 2019). The absence of a relationship between knowledge and the incidence of anemia can be caused by adolescent behavior that is not in line with their knowledge. Having good knowledge does not guarantee that teenagers will apply it in their food choices, because they are influenced by friends or the environment who are used to snacking carelessly.

These results differ from research by Pantaleon (2019) which says that there is no relationship between knowledge and the nutritional status of young women at

SMAN II Kupang City. There is no relationship between knowledge and nutritional status because knowledge is an indirect factor different from infectious diseases and food intake.

Attitude

Table 3 Distribution of Respondents by Attitude at STIKes Bhakti Pertiwi Indonesia

Attitude	Amount	Percentage (%)
Negative (< Median 60)	62	49,2
Positive (Median 60)	64	50,8
Total	126	100

The distribution of respondents according to the attitudes of young women shows that respondents who have a positive attitude are almost the same as respondents who have a negative attitude.

This is in line with previous studies that found that 19 adolescent girls (24.1%) who were anemic had a positive attitude towards anemia. Meanwhile, as many as 32 teenage girls (46.4%) who have anemia status.

Young women have a ten times greater risk of suffering from anemia when compared to young men, because young women experience menstruation every month, and the habit of limiting food consumption (Warlenda, 2019)

This is related to poor eating habits, low understanding and knowledge of nutrition in adolescents and environmental influences such as the adoption of irregular diets and preferences for instant food and junk food. The problem of anemia in adolescents will have negative impacts such as decreased concentration in learning, decreased physical fitness and the high risk of giving birth to LBW babies (Adriani & Wirjatmadi, 2016)

The Relationship between Attitude and Anemia in Young Women at the Bhakti Pertiwi Indonesia STIKes

The previous table has seen that respondents who have a negative attitude (<Median 60) have a proportion of 48.4% experiencing anemia, while respondents who have a positive attitude (Median 60 have a proportion of 29.7% experiencing anemia.

The results of the Chi-Square (Continuity Correction) statistical test obtained p value = 0.049, it can be concluded that there is a significant difference in the proportion of anemia in young women between respondents who have a negative attitude and respondents who have a positive attitude so that there is a relationship between attitudes and anemia in young women at STIKes Bhakti Pertiwi Indonesia in 2015.

The results of the analysis also obtained OR = 2.220 (95% CI = 1.068-4.616), meaning that respondents who have a negative attitude have the potential to experience anemia 2.2 times compared to respondents who have a positive attitude.

The Relationship between Nutritional Status and Anemia in Young Girls at STIKes Bhakti Pertiwi Indonesia

The previous table can be seen that respondents who have abnormal nutritional status (BMI <18.5 - 25.0) have a proportion of 60.9% experiencing anemia, while respondents who have normal nutritional status (BMI 18.5 - <25, 0) has a proportion of 34.0%.

The results of the Chi-Square (Continuity Correction) statistical test obtained p value = 0.031, it can be concluded that there is a significant difference in the proportion of anemia in young women between respondents who have abnormal nutritional status and

respondents who have normal nutritional status so that there is a relationship between nutritional status nutrition with anemia in young women at STIKes Bhakti Pertiwi Indonesia 2015.

The results of the analysis also obtained OR = 3.022 (95% CI = 1.191-7.670), meaning that respondents who have abnormal nutritional status have the potential to experience anemia 3 times compared to respondents who have normal nutritional status.

The results of this study are in line with Nuraeni's research in 2019, which stated that there was a significant relationship between nutritional status and the incidence of anemia in young women. Adolescent girls are one of the groups at risk for anemia, because they experience menstruation every month, and are experiencing physical and mental changes so they are very vulnerable to experiencing nutritional problems.

The nutritional status of young women is often influenced by eating behavior and body image (Widianti, 2012). In general, young women want to get an ideal body shape, resulting in food restrictions and unhealthy food choices. The results showed that most of the adolescents had good nutritional status (66%), but many of the respondents in this study had anemia (58%).

The results of this study are in line with research conducted by Adiyani, in 2017 which stated that there was no significant relationship between nutritional status and the incidence of anemia in young women at SMA PGRI 4 Banjarmasin. The absence of a relationship between nutritional status and the incidence of anemia in female adolescents can be caused by the selection of types and frequency of meals for adolescents who do not meet their nutritional needs, so they continue to experience anemia problems. Normal nutritional status can be obtained because

their consumption of macronutrients (energy and protein) is balanced, while not supported by the consumption of micronutrients (iron) which play a role in the formation of hemoglobin.

Deficiency of Hb levels in the body, caused by the intake of iron through daily food is not sufficient for physiological needs or iron loss occurs due to an infectious disease. This can result in a decrease in thinking ability and changes in behavior (Adriani, 2016).

The Relationship between Eating Frequency and Anemia in Young Girls at STIKes Bhakti Pertiwi Indonesia

Based on the previous table it can be seen that respondents who ate <3x/day had a proportion of 76.8% experiencing anemia, while respondents who ate frequency 3x/day had a proportion of 8.6% experiencing anemia.

The results of the Chi-Square (Continuity Correction) statistical test obtained p = 0.000, so it can be concluded that there is a significant difference in the proportion of anemia in young women between respondents who eat <3 times per day and respondents who eat <3 times per day so that there is a relationship between eating frequency and anemia in young women at the 2015 Bhakti Pertiwi Indonesia STIKes.

The results of the analysis also obtained OR = 35.282 (95% CI = 12.450 - 99.989), meaning that respondents who ate <3 times/day had the potential to experience anemia 35.2 times compared to respondents who ate <3x/day.

The most common symptoms of anemia are fatigue, weakness, lethargy, dizziness, pale face and eyelids and dizzy eyes. The effects of anemia include fatigue, increased susceptibility to infection because the immune system and the body's immune function decrease so

that it is more susceptible to poisoning and (Kusmiran, 2016).

Conclusion

After the analysis was carried out by removing one by one the variables with a p value > 0.05, one variable was obtained with a p value < 0.05, namely eating frequency. Then the variables with P > 0.05 were excluded so that the final multivariate modeling was obtained. The results of the multivariate analysis showed that the variable associated with anemia in young women at STIKes Bhakti Pertiwi Indonesia was eating frequency, while the knowledge variable was a confounding variable. The OR of eating frequency was 38.479, meaning that girls who ate <3 times/day had a 38.4 times chance of becoming anemic compared to girls who ate <3 times/day. Based on the final results of multivariate analysis, it was found that the most dominant factor related to anemia in female adolescents was eating frequency with OR=38.479.

Bibliography

1. Adiyani, K., Heriyani, F., Rosida, L. 2017. Hubungan Status Gizi dengan Kejadian Anemia Pada Remaja Putri di SMA PGRI 4 Banjarmasin.
2. Adriani, M., Wirjatmadi, B., 2016. Pengantar Gizi Masyarakat. Kencana Prenada Media Grup. Jakarta
3. Amrin. 2014. *Hubungan Kebiasaan Sarapan Dan Konsumsi Suplemen dengan Status Hemoglobin Pada Remaja Putri Di SMAN 10 Makassar*. Program Studi Ilmu Gizi Fakultas Kesehatan Kota Makassar Universitas Hasanuddin.
4. BKKBN. 2013. *Ayo menjadi remaja berkarakter : religius, sehat, cerdas, produktif*. Available from : www.bkkbn.go.id/.../Seri%20Pendidi kan%20Kependuduk Diakses tanggal 18 Oktober 2015.
5. Departemen Gizi dan Kesehatan Masyarakat. 2009. *Gizi dan Kesehatan Masyarakat*. Fakultas Kesehatan masyarakat Universitas Indonesia. Edisi Revisi, Jakarta : Raja Grafindo Persada.
6. Depkes, RI. 1994. *Pedoman Umum Gizi Seimbang*. Bandung.
7. Farida, I. 2007. *Determinan Kejadian Anemia pada Remaja Putri di Kecamatan Gebog Kabupaten Kudus*. Tesis. Magister Gizi Masyarakat, Universitas Diponegoro, Semarang.
8. Fikawati, Syafiq, Nurjuaida. 2011. *Pengaruh suplementasi zat besi satu dan dua kali per minggu terhadap kadar hemoglobin pada siswi yang menderita anemia*. Lintas Departemen Kesehatan Reproduksi Fakultas Kesehatan Kesehatan Masyarakat UI, Dinas Kesehatan Kota Tangerang. Vol.24 No.4.
9. Gunatmaningsih, D. 2007. *Faktor-Faktor Yang Berhubungan Dengan Kejadian Anemia Pada Remaja Putri Di SMA Negeri 1 Kecamatan Jatibarang Kabupaten Brebes Tahun 2007*. Skripsi. Fakultas Ilmu Keolahragaan, Jurusan Ilmu Kesehatan Masyarakat. Available from : http://lib.unnes.ac.id/1102/1/2676.pdf Diakses tanggal 18 Oktober 2015.
10. Handayani, N. 2010. *Faktor-faktor yang berhubungan dengan Kejadian Anemia pada remaja putri di SMAN 1 Kijang Kecamatan Bintan Timur, Kabupaten Bintan*. FKM UI, Depok.
11. Hastono, PS. 2007. *Analisis Data Kesehatan*. Fakultas Kesehatan Masyarakat, Program S2 Kesehatan Reproduksi, Universitas Respati Indonesia, Jakarta.
12. Husnah, N. 2014. Hubungan Makanan Sumber Heme Dan Non Heme Terhadap Kadar Hb Remaja

Putri Sma 10 Makassar Tahun 2014. Prodi Ilmu Gizi Fakultas Kesehatan Masyarakat Universitas Hasanuddin. Available from : http://repository.unhas.ac.id/bitstream/handle/123456789/10595/NURHIDAYAH%20HUSNAH%20K21110251.pdf?sequence=1 Diakses tanggal 18 Agustus 2015.

13. Imran. 2014. *Pengetahuan dan Sikap tentang Anemia Dengan Status Hemoglobin Remaja Putri Di SMA Negeri 10 Makassar*. Bagian Ilmu Gizi Fakultas Kesehatan Masyarakat Universitas Hasanuddin. Available from : http://repository.unhas.ac.id/bitstream/handle/123456789/10585/NURSYAHIDAH%20IMRAN%20K21110307.pdf?sequence=1 Diakses tanggal 18 Oktober 2015.

14. Jaganath, KD. 2014. Prevalence and Sociodemographic Factors Related to Anemia among Adolescent Girls in a Rural Area of Aurangabad District, Maharashtra. International Journal of Scientifi c Study | November 2014 | Vol 2 | Issue 8. Available from : http://www.ijss-sn.com/uploads/2/0/1/5/20153321/ijss_nov_oa05.pdf Diakses tanggal 23 Oktober 2015.

15. Kusmiran, E. (2016). Kesehatan reproduksi remaja dan wanita. Salemba Medka.

16. Laksmita, S., Yenie, H. 2018. Hubungan Pengetahuan Remaja Putri Tentang Anemia dengan Kejadian Anemia di Kabupaten Tanggamus. Journal Keperawatan Vol. XIV, No. 1, April 2018

17. Leenstra, T. 2004. Prevalence and severity of anemia and iron deficiency: cross-sectional studies in adolescent schoolgirls in western Kenya. *European Journal of Clinical Nutrition* (2004) 58, 681–691. doi:10.1038/sj.ejcn.1601865.

Available from : http://www.nature.com/ejcn/journal/v58/n4/full/1601865a.html Diakses tanggal 23 Oktober 2015.

18. Nuraeni, R., Sari, P., Martini, N., Astuti, S., Rahmiati, L. 2019. Peningkatan Kadar Hemoglobin Melalui Pemeriksaan dan Pemberian Tablet Fe Terhadap Remaja Yang Mengalami Anemia Melalui Gerakan Jumat Pintar. Journal Pengabdian Kepada Masyarakat (Indonesian Journal of Community Engagement) Vol. 5, No. 2, Agustus 2019

19. Pantaleon, M. G. (2019). Hubungan Pengetahuan Gizi dan Kebiasaan Makan dengan Status Gizi Remaja Putri di SMA Negeri II Kota Kupang. CHMK Health Journal, 3(September), 69–76.

20. Pattnaik, S. 2013. Prevalence of Anemia among adolescent girls in a rural area of Odisha and its epidemiological correlates. Indian Journal Of Maternal And Child Health, 2012.

21. Premalatha *et all*. 2012. *Prevalence of Anemia and its Associated Factors among Adolescent School Girls in Chennai, Tamil Nadu, INDIA*. Available from : http://www.omicsonline.org/prevalence-of-anemia-and-its-associated-factors-among-adolescent%20school-girls-in-chennai-tamil-nadu-india-2161-1165.1000118.pdf Diakses tanggal 22 Oktober 2015.

22. Proverawati, A dan Misaroh, S. 2009. *Menarche Menstruasi Pertama Penuh Makna*. yogyakarta: Nuha medika.

23. Rochmah, S. 2013. *Faktor-faktor yang mempengaruhi pada status anemia remaja putri di SMAN 13 Kota Tangerang Provinsi Banten Tahun 2013*. Skripsi. Sarjana Kesehatan Masyarakat. Program Sarjana Kesehatan Masyarakat,

Peminatan Kebidanan Komunitas, Universitas Indonesia, Depok.

24. Riskesdas, 2013. *Riset Kesehatan Dasar*. Badan Penelitian Dan Pengembangan Kesehatan Kementerian Kesehatan RI Tahun 2013. Available from : http://www.depkes.go.id/resources/download/general/Hasil%20Riskesdas%202013.pdf Diakses tanggal 18 Oktober 2015.

25. Sirait, A. W. 2019. Hubungan Pengetahuan, Sikap dan Tindakan Anemia dengan Kejadian Anemia pada Remaja Putri Kelas VIII di SMP Negeri 3 Lubuk Pakam. Journal. Politeknik Kesehatan Medan Jurusan Gizi

26. Warlenda, S. V.,Widodo, M. D., Candra, L., Rialita, F. Determinan Kejadian Anemia Pada Remaja Putri di SMA Negeri 1 Reteh Kecamatan Reteh Kabupaten Indragiri Hilir Tahun 2019. Journal Photon Vol. 9 No. 2. Juni 2019. Program Studi Kesehatan Masyarakat, STIKES Hang Tuah, Pekanbaru

27. Widianti, N., Candra, A. 2012. Hubungan Antara Body Image dan Perilaku Makan Dengan Status Gizi Remaja Putri di SMA Theresiana Semarang. Journal of Nutrition College Vol. 1 No. 1 Tahun 2012. Program Studi Ilmu Gizi Fakultas Kedokteran Universitas Diponegoro