E-ISSN: 3025-6437
International Health Sciences Journal
Vol. 1, Issue 2 (2024) January

THE EFFECT OF GIVING HONEY ON HEMOGLOBIN AMONG SCHOOL-AGED IN CHILDREN IN CARITA AREA, DISTRICT PANDEGLANG, BANTEN

Lusiyana Putri Pertiwi[1], Febry Mutiariami Dahlan[2*], Putri Azzahroh[3]

[1,2,3] Midwifery Department, Faculty of Health Sciences, Universitas Nasional, Indonesia
**Corresponding Author: febrymutia@civitas.unas.ac.id*

Submission date: 31-01-2024; Date of received: 31-01-2024

Abstract

Based on existing data in Indonesia it is 13.4% and in Banten it is 85.5%. The prevalence of anemia among children in Asia reached 58.4%, this figure is higher than the average in Banten (49.8%). If anemia is not treated properly, it makes it difficult for school-aged children to concentrate, besides that, school-aged children will look pale, often tired, weak, and their immune system will decrease. One way of fulfilling nutrition that can increase hemoglobin levels is by consuming honey, so it is important to improve the nutrition of school-aged children who experience anemia. This study aims to determine the effect of giving honey on hemoglobin among school-aged in children in Carita area, district Pandeglang, Banten in 2023. The research used a pre and post-test design with control group research design. The population in this study was 30 people. The sample used in this study was 30 school age children who were divided into two groups, namely 15 people as the intervention group and 15 people as the control group. The results of univariate analysis before and after being given honey averaged 9.90 mg/dl and after 12.50 mg/dl. In the control group before and after the average was 9.78 mg/dl and after 11.70 mg/dl. There is the effect of giving honey on hemoglobin among school-aged in children in Carita area, district Pandeglang, Banten in 2023 with a significance value of 0.000. There is an effect of giving honey on hemoglobin in school-aged in children. With this research, it is hoped that teachers in schools can provide information to their students so they can consume honey to increase

hemoglobin levels in school-aged children. It is hoped that parents of school-age children will be able to provide honey for their children.

Keywords: Hemoglobin, Honey, School age children

Introduction

Anemia in adolescent girls is still quite high, data from the World Health Organization (WHO) in 2019 reported that the prevalence of anemia in the world ranges from 40-88%. According to WHO, in developing countries there are around 53.7% of cases of anemia among all young women, this is caused by stress, menstruation or late eating.

According to the Ministry of Health in 2014, the prevalence of anemia in Indonesia was 21.7% with 26.4% of sufferers aged 5-14 years and 18.4% of sufferers aged 15-24 years. Adolescence or puberty is the age between 10 and 19 years and the transition period between childhood and adulthood. The number of reproductive adolescent girls in West Java, namely aged 10-24 years, is 32,487,768 people. Only 13.7% of young women receive Fe tablets in West Java (Ministry of Health, 2019).

The World Health Organization (WHO) in the Worldwide Prevalence of Anemia reports that the total world population suffering from anemia is 1.62 billion people with a prevalence in elementary school children of 25.4% and 305 million school children worldwide suffer from anemia. Globally, the prevalence of anemia in school-age children shows a high figure, namely 37%, while in Indonesia it is 13.4% and in Banten it is 85.5%. The prevalence of anemia among children in Asia reaches 58.4%. This figure is higher than the average in Banten (49.8%). The 2013 Basic Health Research Report (Riskesdas) shows that iron deficiency anemia is still a public health problem in

Indonesia with a prevalence in children aged 5 - 12 years of 29% and in Makassar City of 37.6%.

The impact of anemia on elementary school students is that it can cause physical growth and development disorders, low resistance to disease, intelligence levels that are less than they should be, low study/work achievements and sports achievements. Apart from that, anemia in children will have an impact on decreasing learning ability and concentration, disrupting the growth of both body cells and brain cells, causing symptoms of a pale face, tiredness, lethargy and fatigue which can reduce fitness and learning achievement. Iron nutritional anemia can be caused by insufficient intake of foods containing iron and consumption of foods that inhibit iron absorption, as well as infectious diseases. Apart from that, it is caused by the unequal distribution of food throughout the region, as well as a less diverse diet which also contributes to a lack of iron intake for the body.

Head of the Banten Provincial Health Service, Ati Pramudji Hastuti, showed the 2018 Basic Health Research (Riskesdas), which noted that anemia in children aged 5-14 years in Carita sub-district was 26.8%, and 32% in children aged 15-24, which means 3 out of 10 children in Indonesia suffer from Anemia. For this reason, this movement provides education so that it can change consumption behavior, especially for pregnant and breastfeeding mothers to consume foods with balanced nutrition.

World Health Organization (WHO, 2004) estimates that around 40% of the world's population is affected by iron deficiency anemia. The groups with the highest prevalence are pregnant women, around 55% and the elderly, around 45%. The prevalence of iron deficiency anemia in infants and children aged two years is 48%, preschool aged children 40%, school aged children 25% and non-pregnant women 35%.

The prevalence of anemia in developing countries is four times greater than in developed countries. It is estimated that the prevalence of anemia in school children in developing and developed countries is 42% and 17%. The prevalence of anemia in children under five years (toddlers) in Indonesia is 33.7% of boys and 49.2% of girls. The prevalence aged 5-14 years is 42.8% for boys and 49.2% for girls. There are two treatments, namely pharmacological and non-pharmacological, one of which is consuming honey. Honey contains Vitamins B1, B2, B6, and Vitamin C.

Method

In this research the author used a quantitative approach in carrying out the research. The research method used by the author was a quasi-experimental method (Quasi Experiment). The research design used was a pretest-posttest with control group design to determine the effect of treatment in the intervention group by comparing it with the control group. This design uses 2 groups, namely the experimental group and the control group. The experimental group was given honey while the control group was not given honey. The population in this study was 70 school-aged children at SDN Carita, Carita District, Class 5 and 6. and after checking the hemoglobin, it turned out that 30 people had mild and moderate anemia.

This research consisted of two groups, namely 15 control group samples and 15 intervention group samples. The sample in this study was all school age children who had anemia. Data collection was obtained from observation results (Hemoglobin examination results) using a digital Hb stick examination tool. This research was conducted at SDN Carita, Carita area, Pandeglang district, Banten. The time required for this research is June to July 2023.

E-ISSN: 3025-6437
International Health Sciences Journal
Vol. 1, Issue 2 (2024) January

Results

Univariate Analysis

Average increase in hemoglobin levels among school-aged in children before and after consuming honey in the intervention group in the Carita SDN school area, Pandeglang district, Banten.

Table 1 Average increase in hemoglobin levels among school-aged in children before and after consuming honey in the intervention group

Intervention Group	N	Mean	St-Error	St.deviasi	Min	Max
Pre-test	15	9,90	0,580	1,068	8	12
Post-test	15	12,50	0,560	0,627	12	14

Table 1 shows that the average hemoglobin level of 15 respondents was 9.90 mg/dl before treatment, with a Std Deviation of 1.068 mg/dl with the highest hemoglobin level being 12 mg/dl and the lowest being 8 mg/dl. After being given treatment, an average hemoglobin level was found to be 12.50 mg/dl with a Std Deviation of 0.627 mg/dl with the highest hemoglobin level being 14 mg/dl and the lowest being 12 mg/dl.

The average increase in hemoglobin levels among school-aged in children before and after consuming honey in the control group in the SDN Carita school area, Pandeglang district, Banten.

Table 2. Average increase in hemoglobin levels among school-aged in children before and after consuming honey in the groups Control

Control Group	N	Mean	St-Error	St.deviasi	Min	Max
Pre-test	15	9,78	0,580	1,042	8	12
Post-test	15	11,70	0,580	1,251	9	13

Table 2 shows that of the 15 respondents the average hemoglobin level in the pretest control group was 9.78 mg/dl with a Std Deviation of 1.042 mg/dl with the highest hemoglobin level being 12 mg/dl and the lowest being 8 mg/dl. In the posttest results, an average hemoglobin level was found to be 11.70 mg/dl with a Std Deviation of 1.251 mg/dl with the highest hemoglobin level being 13 mg/dl and the lowest being 9 mg/dl.

E-ISSN: 3025-6437
International Health Sciences Journal
Vol. 1, Issue 2 (2024) January

Bivariate Analysis

The effect of giving honey in helping increase hemoglobin levels among school-age children in the SDN Carita school area, Pandegalang district, Banten.

Table 3 The effect of giving honey in helping increase hemoglobin levels among school-aged in children

Kelompok	Mean		Selisih Mean	Asymp. Sig. (2-tailed)
	Pretest	*Posttest*		
Intervensi	9,90	12,50	2,600	0,000
Kontrol	9,78	11,70	1,920	0,000

Based on table 3 above, the results of the analysis in the honey intervention group obtained Asymp. Sig. (2-tailed) (0.000) < α (0.05) which means there is an increase in hemoglobin levels in school-aged children in the intervention group in the Carita SDN school area, Pandegalang Regency, Banten. Meanwhile, in the control group, Asymp. Sig. (2-tailed) (0.000) < α (0.05) which means there is an increase in hemoglobin levels among school-aged in children in the intervention group in the Carita SDN school area, Pandegalang district, Banten. Based on the average results, it can be concluded that honey consumption has a greater increase in hemoglobin levels among school-aged in children compared to children who are not given honey with a difference of 0.680.

Comparison of the results of the treatment group that was given honey with the control group that was not given honey in the SDN Carita school area, Pandegalang district, Banten.

Table 4 Posttest intervention and control group

Group	Mean	Selisih Mean	Asymp. Sig. (2-tailed)
	Posttest		
Intervention	12,50		0,000
Control	11,70	0,8	0,000

Based on table 4 above, the results of the analysis in the honey intervention group obtained Asymp. Sig. (2-tailed) (0.000) < α (0.05) which means there is an increase in hemoglobin levels among school-aged in children in the intervention group in the Carita SDN school area, Pandegalang district, Banten. Meanwhile, in the control group, Asymp. Sig. (2-tailed) (0.000) < α (0.05) which means there is an increase in hemoglobin levels among school-aged in children in the intervention group in the Carita SDN school area, Pandegalang district, Banten. Based on the posttest results, it can be

concluded that honey consumption experienced a greater increase in hemoglobin levels among school-age in children compared to children who were not given honey with a difference of 0.80.

Discussion

Univariate Analysis

In the intervention group the average hemoglobin level before treatment was 9.90 mg/dl and after treatment the average hemoglobin level was 12.50 mg/dl. Meanwhile, in the control group, the average pretest hemoglobin level was 9.78 mg/dl and in the posttest results the average hemoglobin level was 11.70 mg/dl. These results show that giving honey to the hemoglobin levels of anemic adolescent girls can increase hemoglobin levels. This is because honey contains minerals and vitamins as well as folic acid. (Haqiqi, 2020).

Based on the above, researchers are of the opinion that honey can influence hemoglobin levels in school-aged children who suffer from anemia. This is supported by other factors such as nutritional status as measured through body mass index and arm circumference, the duration of the respondents' menstruation within the normal range of 1-14 days, and the absence of a history of infectious diseases in all respondents, so that the results obtained were optimal.

Bivariate Analysis

Based on the results of the average hemoglobin levels among school-age in children, it can be concluded that honey consumption has an effect on increasing hemoglobin levels, with a difference of 0.680 compared to children who do not consume honey.

Overcoming anemia, apart from supplementing with blood-boosting tablets (Fe), can be done naturally by consuming honey. In this therapy, apart from researchers using honey as a flavoring (sweetener) in food, honey itself has various properties. One use of honey is by adding or mixing herbs that have certain health benefits (Nuraysih, 2015).

Honey contains folic acid, vitamin B1, potassium, vitamin A, vitamin C, calcium and iron. The content contained in honey is useful as an anti-anemic or can increase hemoglobin levels in the blood. Honey is more easily absorbed than meat or other ingredients, honey can be consumed 3 times a week for teenagers, it can have an effect on increasing teenagers' hemoglobin levels (Fatimah St, 2011).

According to research by Ristyaning (2016), giving iron can prevent anemia by increasing hemoglobin levels. Honey has long been known to cure various diseases such as healing wounds and has been widely used in China and India.

Eugene and Nelson (2014) stated in their research that for thousands of years honey has been known for its amazing nutritional and healing properties. When honey is consumed daily, anemia sufferers can see a significant increase in energy levels, then honey helps increase calcium absorption, hemoglobin count and treat or prevent anemia due to its nutritional factors.

In general, honey is efficacious for producing energy, increasing endurance, and increasing stamina. Honey contains magnesium and iron. The magnesium mineral content in honey is the same as the magnesium content in blood serum. Honey is able to increase hemoglobin levels in the blood from 75% to 80% in the first week, namely the first week after healing therapy with honey. (Kartika, 2019).

The results of this research are also in line with research on class Research also shows the effect of honey on changes in hemoglobin levels during menstruation in adolescent girls. There is an effect of giving honey on changes in hemoglobin levels during menstruation in adolescent girls (Dewi, 2018).

The magnesium mineral content in honey is the same as the magnesium content in human blood serum. In addition, the Fe content in honey can increase the number of erythrocytes in human blood and can increase hemoglobin levels (Dewi, 2018).

Based on the results of research conducted regarding the effectiveness of giving honey on hemoglobin levels among school-aged in children in the Carita Elementary School school area, Pandeglang district, Banten, the results were obtained that there was a significant difference between hemoglobin levels before and after being given honey. There was a significant difference between those given honey and those not given honey, it was concluded that honey was effective in increasing hemoglobin levels among school-aged in children.

Conclusion

The average increase in hemoglobin levels among school-aged in children before and after consuming honey in the intervention group in the SDN Carita school area, Pandeglang Regency, Banten with an increase in hemoglobin of 2,600. The average

increase in hemoglobin levels among school-aged in children before and after consuming honey in the control group in the SDN Carita school area, Pandeglang district, Banten with an increase in hemoglobin of 1,920. There is an effect of giving honey to the intervention group of school age children in the SDN Carita school area, Pandeglang Banten district with a p-value of 0.000. There is an effect of giving honey to the control group of school age children in the SDN Carita school area, Pandeglang Banten. There is a difference between the control and intervention groups in giving honey to hemoglobin among school-aged in children at Carita Elementary School, Pandeglang Banten.

References

1. Afriyanti, d. (2020). faktor risiko yang berhubungan dengan kejadian pada anak di kota bukittinggi. *menara ilmu*, *14*(1).
2. Amini, a., pamungkas, c. e., & harahap, a. p. h. p. (2018). usia ibu dan paritas sebagai faktor risiko yang mempengaruhi kejadian anemia pada ANAK usia sekolah. *midwifery journal: jurnal kebidanan um.mataram*, *3*(2), 108113
3. Abdulsalam M., Daniel A. 2002. Diagnosis, pengobatan dan pencegahan anemia defisiensi besi. *Sari Pediatri* 4: 74-77. [29] Choi H.J., Lee H.J., Jang H.B., *et al.* 2011. Effects of maternal education on diet, anemia, and iron deficiency in Korean school-aged children. *BMC Public Health* 11: 870-877. doi: 10.1186/14712458-11-870
4. Astriani HG. Pengaruh pemberian madu terhadap penurunan intensitas nyeri haid (dysmenorrhea) pada remaja putri di SMA N 1 Sedayu Bantul. Sekolah Tinggi Ilmu Kesehatan Jenderal Achmad Yani Yogyakarta. Skripsi. 2016.
5. Dewi CPL, Hatimah H. (2018). The honey consumption to haemoglobin contests when menstrual at teenage of principles. International Journal of Nursing and Midwifery Science;2(1)L: 1- 5.
6. Dewi KS. (2018). Panjaitan. Formulasi sediaan masker gel dari ekstrak etanol buah labu kuning (cucurbita moschata durch.) dan madu (mel depuratum). Universitas Helvitia Medan. Skripsi.
7. Haqiqi, FN. (2020). Efek Pemberian Madu Hutan terhadap Mukosa Gaster yang Diinduksi Ibuprofen Suspensi. Majority Vol. 4, No. 8.

8. Herawati A.N., Palupi N.S., Andarwulan N.,Efriwati. 2018. Kontribusi asupan zat besi danvitamin C terhadap status anemia gizi besi pada balita Indonesia. *Penelitian Gizi dan Makanan* 41:65-76. doi: 10.22435/pgm.v41i2.1886
9. Harnetacia, y. (2020). efektivitas sari kurma terhadap peningkatan kadar hemoglobin pada anak di wilayah upt puskesmas kereng bangkirai kota palangka raya. *jurnal skala kesehatan*, *11*(2).
10. Herawati A.N., Palupi N.S., Andarwulan N.,Efriwati. 2018. Kontribusi asupan zat besi dan vitamin C terhadap status anemia gizi besi padabalita Indonesia.
11. Penelitian *Gizi dan Makanan* 41:65-76. doi: 10.22435/pgm.v41i2.1886 [10] Ghassemi, A., Keikhaei B. 2014. Effects of nutritional variables in children with iron deficiency anemia. *International Journal of Pediatrics* 2: 183-187. doi: 10.22038/ijp.2014.2619
12. Irawan H. 2013. Pendekatan diagnosis anemia pada anak. *CDK-205* 40:422-425. [2] Mitchinson C., Strobel N., McAullay D., *et al.* 2019. Anemia in disadvantaged children aged under five years; quality of care in primary practice. *BMC Pediatrics* 19: 178-188.
13. Islamiyah N. Pengaruh madu terhadap kadar hemoglobin remaja putri kelas X yang mengalami anemia Di SMKN 01 Mempawah Hilir. Jurnal Proners, 2015: 3(1): 114.
14. Kartika (2019). Pengaruh Pemberian Madu Terhadap Kadar Hemoglobin, Berat Badan Lahir Dan Plasenta Pada Ibu Hamil Dengan Anemia. Magister Kebidanan Sekolah Pasca Sarjana Universitas Hasanuddin Makassar.
15. Nofiani A. 2015. Faktor-faktor yang berhubungan dengan anemia pada anak sekolah 12 tahun Indonesia (analisis data Riskesdas 2019).
16. Purwaningtyas, m. l., & prameswari, g. n. (2017a). faktor kejadian anemia pada ibu hamil. *higeia (journal of public health research and development)*, *1*(3), 43– 54.
17. Purwaningtyas, m. l., & prameswari, g. n. (2017b). faktor kejadian anemia pada ibu hamil. *higeia journal of public health research and development*, *1*(3),84–94.
18. Ristyaning, P. dkk. (2016). Madu sebagai Peningkat Kadar Hemoglobin pada Remaja Putri yang Mengalami Anemia Defisiensi Besi.
19. Sumarmi, s., & andarina, d. (2006). hubungan konsumsi protein hewani dan zat.

20. Widowati, r., kundaryanti, r., & lestari, p. p. (2019). pengaruh pemberian madu terhadap peningkatan kadar hemoglobin anak . *jurnal al-azhar indonesia seri sains dan teknologi*, *5*(2), 60–65.