



Research



The Effect of Green Extract on Hemoglobin Levels in Pregnant Women with Anemia

Suci Rahmadheny¹, Wiwit Fetrisia², Lisnira³

^{1,2} Faculty of Midwifery Universitas Prima Nusantara Bukittinggi, West Sumatera, Indonesia

³ Kumun Public Health Centre Sungai Penuh City, Jambi, Indonesia

ARTICLE INFORMATION

Received: February 03, 2023
Revised: February 23, 2023
Accepted: March 26, 2023
Available online: March 30, 2023

KEYWORDS

Mung bean extract; Fe tablets; Hb levels of pregnant women

CORRESPONDING AUTHOR

Suci Rahmadheny

E-mail: suci.rahmadheny@gmail.com

A B S T R A K

Background: 20% of maternal fatalities are a result of anemia during pregnancy. The World Health Organization (WHO) reports that the incidence of anemia during pregnancy exceeds 56 percent. Mung bean extract contains iron, which can be used as a substitute to raise blood hemoglobin levels.

Aims: The objective of this study was to determine the impact of mung bean extract on the hemoglobin levels of anemic expectant women at the Kumun Health Center in Sungai Penuh City in 2022.

Methods : This is a Quasi-Experimental study with a Two-Group Pre-Test and Post-Test Design. This study's population consisted of 58 expectant women in their third trimester and a sample of 20 individuals selected using a technique of purposive sampling.

Results: Prior to receiving mung bean extract and fe tablets, 10 individuals in the experimental group had Hb levels of 8.7 (Moderate Anemia), but after receiving the intervention, their Hb levels increased to 10.9. (Mild Anemia). In the control group, the Hb level of expectant women was 9.0 (Moderate Anemia) prior to receiving Fe tablets, but increased to 10.4 after receiving them (Mild Anemia).

Conclusion: With a P-Value of 0.000 (0.05), it was determined that mung bean extract and Fe tablets had an effect on the hemoglobin levels of expectant women with anemia at the Kumun Health Center in Sungai Penuh City in 2022. It is recommended that pregnant women pay close attention to the foods and beverages they consume on a daily basis in order to meet their requirements during pregnancy, such as consuming beverages with high iron content, such as green bean extract and Fe tablets.

INTRODUCTION

According to 2018 Riskesdas results, 48.9% of expectant women in Indonesia suffer from anemia. Up to 84.6% of anemia in expectant women occurs between the ages of 15 and 24. Low knowledge and awareness of the dangers of anemia in pregnancy, which tends to manifest in the first and third trimesters, contribute to this high number (Indonesian Health Profile, 2019). Jambi Provincial Health Office Profile Data for 2019 indicates that the percentage of service coverage for pregnant women for the first visit in the first trimester (K1) (100 percent target) and the fourth visit in the third trimester (K4) (95 percent target) have not reached the target, namely: K1 in 2014 it was 98.89% and fell to 96.95% in 2015, and K4 in 2014 it was 93.39% and fell to 91.50% in 2020. Provincial Health Directorate of Jambi, 2020.

Kumun Community Health Center, Sungai City, is replete with data on the number of pregnant women who visited in 2019, namely 156 pregnant women, and from these data there were 37 pregnant women with anemia, in 2020 the visiting data

for pregnant women was 167 pregnant women with pregnant women who anemia, namely as many as 49 people, and in 2021 the number of pregnant women visits is as many as 158 pregnant women with the number of pregnant women who are anemic, namely as many as (Puskesmas Kumun Kota Sungai Lilin, 2021).

Almatzier (2011) states that the best way to increase hemoglobin levels in the body is to increase the consumption of nutritious foods, particularly foods that are rich in iron (chicken liver, meat, fish, chicken meat, egg yolks) as well as sources of vitamins and minerals (green beans, tofu, tempeh, peanuts, red beans) (dark green vegetables and fruits). Red flesh (beef, goat, lamb), beans, green vegetables, eggs, nuts, and seafood are all sources of iron. Fresh produce, green vegetables, cauliflower, liver, kidneys, and dairy products are sources of folate. Each half-cup serving of green beans contains as much as 2.25 mg of iron. Green legumes contain 2.19 percent phytate. Phytate can inhibit iron absorption, so green legumes should be soaked prior to processing. Soaking green legumes beforehand facilitates the absorption of iron, which is required for the maturation of red blood cells (Helty, 2018).

When consumed, boiled or processed mung bean seeds have a high digestibility and low flatulence. Hemagglutinin is toxic and can aggregate red blood cells. The toxicity of hemagglutinin can be eliminated by heating at 100 °C. Phytic acid can form complexes with Fe or mineral elements, particularly Zn, Mg, and Ca, into insoluble forms that are difficult for the body to assimilate, thereby decreasing their bioavailability because they become extremely difficult to digest. The process of fermentation can increase the availability of iron to the body. This is essential for the prevention of iron nutritional anemia. Green beans also contain vitamin C, which helps the body assimilate Fe because it can convert ferric to ferrous (Astawan, 2019).

Misrawati (2019) conducted research on the effect of mung bean extract and Fe tablets on increasing Hb levels in pregnant women with anemia. The Wilcoxon test and the Mann Whitney test revealed the effect of mung bean extract and Fe tablets on increasing Hb levels in pregnant women with anemia.

On the basis of a preliminary survey conducted at the KIA polyclinic at the Kumun Health Center on November 22, 2021, ten pregnant women determined that three pregnant women had moderate anemia, two pregnant women had mild anemia, and five pregnant women had severe anemia. The expectant woman then stated that she was unaware of the foods that could increase Hb levels in pregnant women. In 2022, researchers at the Kumun Health Center in Sungai Penuh City are interested in studying the effect of administering mung bean extract on the hemoglobin levels of expectant women with anemia.

METHOD

This study employs a quasi-experimental design with a pre- and post-test, two-group structure, as described below (Riwiddiko, 2013). This investigation was conducted in the working area of the Kumun Health Center in Sungai Penuh City from July to August 2022. The population of this study consisted of pregnant women who visited the Kumun Health Center, a total of 58 pregnant women, and a sample of 10 individuals from each category was selected using the technique of purposive sampling.

RESULT DAN DISCUSSION

Table 1: The Experimental Group's Pregnant Women's Average Hemoglobin Before and After Taking Green Bean Extract and Fe Pills.

| Hemoglobin levels | Average \pm SD (gr/dl) | Min | Max |
|-------------------------|--------------------------|------|------|
| Hemoglobin level before | 8.79 \pm 0.91 | 7.8 | 10.6 |
| Hemoglobin levels after | 10.91 \pm 0.19 | 10.5 | 11.0 |

According to the results of the study, the average hemoglobin level before administration of mung bean extract and Fe tablets was 8.79 g/dL and after administration, it was 10.91 g/dL. Before mung bean extract and Fe tablets, the minimum average

was 7.8 gr/dL and the maximum average was 10.6 gr/dL, whereas the minimum average after mung bean extract and Fe tablets was 10.5 gr/dL and the maximum average after mung bean extract and Fe tablets was 11.0 gr/dL.

Table 2: The control group's pregnant women's average hemoglobin before and after taking Fe pills.

| Hemoglobin levels | Average \pm SD (gr/dl) | Min | Max |
|---------------------------------------|--------------------------|-----|------|
| Hemoglobin levels before intervention | 9.03 \pm 0.81 | 8.0 | 10.8 |
| Hemoglobin levels after intervention | 10.42 \pm 0.46 | 9.9 | 11.0 |

According to the findings of the study, the average hemoglobin level was 9.03 g/dL prior to administration of mung bean extract and Fe tablets, and 10.42 g/dL after administration. The minimum average before mung bean extract and Fe tablets was 8.0 gr/dL, while the maximum average before mung bean extract and Fe tablets was 10.8 gr/dL. After mung bean extract and Fe tablets, the minimum average was 9.9 gr/dL and the maximum average was 11.0 gr/dL.

Data Normality Test

Shapiro Wilk was used to compute the data normality test for the experimental and control groups in this study because the sample size was less than 50. If the significance value (P value) was greater than 0.05, the data was deemed normally distributed. The results of the normality test can be seen in the table below.

| Hemoglobin levels | P-value | Conclusion |
|---|---------|---------------------|
| Before giving green bean extract and Fe tablets | 0.213 | normal distribution |
| After giving of green bean extract and Fe tablets | 0.278 | normal distribution |
| Before giving of Fe tablets | 0.202 | normal distribution |
| After giving of Fe tablets | 0.118 | normal distribution |

On the basis of the Shapiro Wilk data normality test, it was determined that all variables in the control and experimental groups had significances greater than (0.05), so it was concluded that the data were normally distributed.

Green Bean Extract and Pregnant Anemic Women's Hemoglobin Levels

| Hemoglobin levels | Average \pm SD (gr/dl) | p-value |
|---|--------------------------|---------|
| giving of green bean extract and Fe tablets | 10.91 \pm 0.19 | 0.004 |
| giving of Fe tablets | 10.42 \pm 0.46 | |

After mung bean extract and Fe tablets, 10 respondents each, the study results were revealed. The independent sample t test showed a P value of 0.004 ($P < \alpha$), so H_a was accepted and H_0 was rejected with an average difference (Mean Difference) of 0.5 (10.91 – 10.42). Thus, pregnant women with anemia in the working area of the Kumun Health Center, Sungai Penuh City in 2022 can benefit from consuming green bean extract and Fe tablets.

CONCLUSION

In 2022, expectant women with anemia in the working area of the Kumun Health Center in Sungai Penuh City will benefit more from consuming mung bean extract and Fe tablets than from taking Fe tablets by themselves.

ANNOUNCEMENT

We would like to acknowledge the Kumun Sungai Penuh Health Center and the Sungai Penuh City Health Office for facilitating the provision of data on anemia cases among pregnant women. We would also like to appreciate LPPM Prima Nusantara Bukittinggi for providing technical support for this study.

REFERENCE

- [1] Akbar, (2015). *Aneka Tanaman Apotek Hidup di Sekitar Kita*. Jakarta : One Book.
- [2] Alimul, Hidayat A.A. (2008). *Metode Penelitian Kebidanan dan Teknik Analisa Data*. Jakarta: Salemba Medika.
- [3] Almatsier S, Soetardjo S, Soekatri M. (2011). *Gizi seimbang dalam 24. Daur kehidupan*. Jakarta : Gramedia Pustaka Utama;
- [4] Astawan M. (2009) *Sehat dengan Hidangan Kacang Dan Biji-Bijian*. Depok, Penebar Swadaya.
- [5] Astawan M (2019). *Sehat dengan Hidangan Kacang dan Biji-Bijian*. Jakarta : Penebar Swadaya
- [6] Cahyati, D. P. & dkk. (2020). *Peningkatan Kadar Hemoglobin dengan Pemberian Kukis Pelangi Ikan Gaguk*. Journal of Chemical Information and Modeling, 11(2), 1–25.
- [7] Departemen Gizi dan Kesehatan Masyarakat Universitas Indonesia. (2016). *Gizi dan Kesehatan Masyarakat*. Jakarta: Rajawali Pers.
- [8] Faridah, U., & Indraswari, V. (2017). *Pemberian Kaang Hijau sebagai Upaya Peningkatan Kadar Hemoglobin Pada Remaja Putri*. Orecol Proceeding, February, 215–222.
- [9] Helitty, (2018). *Pengaruh Jus Kacang Hijau Terhadap Kadar Hemoglobin dan Jumlah Sel Darah dalam Konteks Asuhan Keperawatan Pasien Kanker dengan Kemoterapi di RSUP Fatmawati Jakarta*. Tesis. Jakarta : UI
- [10] Kementerian Kesehatan RI, (2018). Pusat Data dan Informasi (Infodatin). <http://www.depkes.go.id/resources/download/pusdatin/infodatin/infodatin-ibu.pdf>
- [11] Kristiyanasari, (2010). *Gizi Ibu Hamil*. Yogyakarta : Nuha Medika.
- [12] Manuaba, I. (2010). *Ilmu Kebidanan, Penyakit Kandungan dan KB Untuk Pendidikan Bidan*. Jakarta: EGC
- [13] Misrawati, (2019). *Pengaruh Sari Kacang Ijo Dan Tablet Fe Terhadap Peningkatan Kadar Hb Ibu Hamil dengan Anemia*. Jurnal Ilmiah Kesehatan Sandi Husada. <https://akper-sandikarsa.e-journal.id/JIKSH>
- [14] Notoatmodjo, S. (2010). *Promosi Kesehatan Teori Dan Aplikasi*. Jakarta: Rineka Cipta
- [15] Notoatmodjo, S. (2012). *Metode Penelitian Kesehatan*. Jakarta : Rineka Cipta.
- [16] Nurjanah, A. (2017). *Pengaruh Pemberian Sari Kacang Hijau Terhadap Kadar Hemoglobin pada Remaja Putri Anemia*. In *Skripsi* (Vol. 4, pp. 9–15).
- [17] Pakar Gizi Indonesia. (2017). *Ilmu Gizi Teori dan Aplikasi*. Jakarta : EGC
- [18] Prawirohardjo, S. (2010). *Ilmu Kebidanan*. Jakarta :Yayasan Bina Pustaka.
- [19] Purwono, R. (2012). *Kacang Hijau*. Jakarta: Penebar Swadaya
- [20] Rizki, M. R., & Nawangwulan, S. (2018). *Kerangka Konsep, Hipotesis dan Variabel Penelitian*. In *Metodologi Penelitian Kesehatan* (pp. 45–94). Sidoarjo: Indomedia Pustaka.
- [21] Sugiyono, (2009), *Metode Penelitian Kuantitatif, Kualitatif dan R&D*, Bandung : Alfabeta.
- [22] Sulistyoningsih, H, (2011). *Gizi untuk Kesehatan Ibu dan Anak*. Yogyakarta: Graha Ilmu.
- [23] Varney H, Kriebs JM, Gegor LC. (2007). *Buku Ajar Asuhan Kebidanan*. 4 Vol.1. Jakarta: EGC.
- [24] Wiknjosastro, (2005). *Status Gizi Pada Ibu Hamil Kesehatan*. Graja Grafindo Persada : Jakarta.
- [25] Yuni Kusmiati, (2015) *Perawatan Ibu Hamil*. Pitra Maya. Yogyakarta.