



THE EFFECT OF ACUPRESSURE TO HEMOGLOBIN LEVELS OF THE ELDERLY

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ABSTRACT

Background: Hemoglobin is a protein in erythrocytes. Anemia in the elderly often goes unnoticed. Traditional Chinese Medicine (TCM) is also considered as one of the complementary and alternative medicine (CAM). This study aims to determine hemoglobin levels after acupressure therapy of the elderly at Panti Griya Sehat Bahagia.

Methods: The design of this study used an experimental research design in the form of two groups: pretest-posttest design. The sample in this study were all elderly in Panti Griya Sehat Bahagia. The study was conducted in September 2022 at Panti Griya Sehat Bahagia, Karanganyar Regency. The sampling technique was total sampling of 34 subjects in this research. Data collected is the primary data by recording and evaluating the results of the action in this research. Statistical test using univariate analysis and bivariate analysis by using t test.

Results: There were differences in hemoglobin levels before and after acupressure therapy in the elderly at Panti Griya Sehat Bahagia ($p < 0.001$).

Conclusion: There is an average increase in hemoglobin levels between before and after acupressure therapy in the elderly at Panti Griya Sehat Bahagia.

Keywords: *Hemoglobin Level, Acupressure, Elderly*

INTRODUCTION

Hemoglobin is a protein found in erythrocytes. Hemoglobin is naturally in red color because there is the iron in it which binds to oxygen and changes when it is deoxygenated. According to WHO, normal hemoglobin levels for adult women

are 12.0-16.0 g/dL and adult men are 13.0-17.0 g/dL ¹.

The decreased body function in the elderly, based on *Permenkes No. 25 2016*, is started from 60 years and over, because the elderly people are not able to maintain their normal functions which is indicated by physical and psychological change so that many

kinds of disease can come, one of which is anemia. It is because metabolic system in the elderly is not good². Women in their elderly are more prone to decrease in hemoglobin (Hb), then they get anemia because their organ system functions, iron intakes, and hormones begin to decline³.

Anemia in the elderly often comes unnoticed. The elderly is part of the elements of society that tend to receive less attention. Anemia in the elderly most often occurs chronically. The cause can be due to the decreased digestive function, poor nutritional intake, or other suffered diseases of the elderly. Attention to anemia in the elderly is very less than the anemia in childbearing age or adolescent. The program for giving iron tablets is also targeted to women in their childbearing age⁴.

Traditional Chinese medicine (TCM) is also considered as one of the complementary and alternative medicine (CAM), which was originally used in China, Japan, Korea, and around the world. According to WHO (2019), they included TCM to the International Classification of Diseases Revision 11⁵.

Acupressure utilizes stimulation to the patient's acupuncture points. It is usually in ears and scalp to influence the flow of the body's bioenergy known as qi. Qi flows in a meridian (channel), thus the essence of acupressure treatment is to restore the balancing of body's system (homeostasis) which is manifested by a regular and harmonious flow of qi in the meridians so that the patient becomes healthy.⁶By strengthening qi, the immune system becomes good, the causes of disease can be eliminated indirectly. Based on Chen's (2019) research in his meta-analysis research design formulates that there is an effectiveness of acupressure in improving the health to the elderly⁵.

This study aims to determine the hemoglobin levels after acupressure therapy in the elderly at Panti Griya Sehat Bahagia.

METHODS

The design of this study is a quantitative study using an experimental research design in the form of two groups: pretest-posttest. This study gave treatment to two groups. Group 1 was given acupressure therapy accompanied by measurements before and after treatment. Group 2 was given Fe tablets as a control group accompanied by measurements before and after they were given Fe tablets. The dependent variable is hemoglobin level. The independent variable was acupressure therapy.

The population in this study is the elderly in Panti Griya Sehat Bahagia.. The sampling technique was total sampling of 34 research subjects. The data was collected using an observation sheet to measure the hemoglobin levels using hemoglobin tools of Easy Touch Blood to before and after the treatment is given. This acupressure therapy is done by pressing the acupoint points at points SP6 (Sanyinjiao), SP10 (Xuehai), ST36 (Zusanli). Data collection was carried out in September 2022.

This research was conducted with univariate analysis, Shapiro-Wilk normality test, and independent t-test analysis.

RESULTS

Table 1 Characteristics of research subjects

Characteristics	Mean±SD	Min-Max
Age	62,85 ± 8,56	51 – 84
Pre-Action Hb Level	11,41 ± 1,12	9 – 13,6
Post-Action Hb Level	12,44 ± 1,04	10,5 – 14,6
Difference in Hb Levels	0,82 ± 1,92	-1,6 – 2,6

Based on table 1, it shows from 34 research subjects they had an average age of 62.85 years. The result of measurement of average hemoglobin level before the treatment was 11.82 mg/dL, while the

average hemoglobin level after the intervention was 12.56. Thus, the average difference in the increase of hemoglobin level was 0.74 mg/dL.

Table 2. Distribution of Hemoglobin Levels on Research Subjects

Hemoglobin Level	Acupressure		Fe Tablets	
	F	%	F	%
Pre				
Anemia	12	70,59	10	58,82
Normal	5	29,41	7	41,18
Post				
Anemia	2	11,76	8	47,06
Normal	15	88,24	9	52,94

Based on table 2, it shows from 34 research subjects there were 12 people (70.59%) experienced to anemia before they had a treatment in acupressure group and after treatment the hemoglobin levels of the majority of research subjects increased (normal). There were 15 people (88.24%) in acupressure group.

Table 3. Normality Test Result

Hemoglobin Level	n	Shapiro-Wilk Sign
Pre action	34	0,851
Post action	34	0,704
Pre acupressure	17	0,851
Post Akupresur	17	0,582
Pre Tablet Fe	17	0,864
Post Tablet Fe	17	0,631

According to Dahlan (2014) based on the data above, the data test used was the Shapiro-Wilk test because the number of subjects was less than 50, only 34 research subjects. Based on table 2, the result of the normality test shows that the value of Sig in hemoglobin levels before and after acupressure therapy and consumption Fe tablets were > 0.05, it means that the data in hemoglobin levels before and after treatment were normally distributed.

Because the data tested were normally distributed, the hypothesis test used was independent t-test to determine the difference in hemoglobin levels before and after acupressure therapy and Fe tablets.

Table 3 shows the results of independent t test analysis between the two groups of Acupressure and Fe tablets, there was no difference in hemoglobin levels at the beginning before the treatment was given (p = 0.0861; p> 0.05). This happened because the subjects in both groups had the same hemoglobin level when they were examined. There was a difference in hemoglobin levels after the treatment was given between the two groups of acupressure therapy and Fe tablets (p=0.0114; p<0.05). After the treatment, the average of hemoglobin level in the acupressure group was higher (Mean= 12.88; SD= 1.11) than Fe Tablet group (Mean= 12; SD= 0.78).

Table 3. The results of t test in hemoglobin levels of research subjects

Hemoglobin Level	Acupressure		Fe Tablets		P
	Mean ± SD	Min - Max	Mean ± SD	Min - Max	
Pre	11,21 ± 1,16	9 – 13,4	11,62 ± 1,07	9,9 – 13,6	0,2970
Post	12,88 ± 1,11	10,6 – 14,6	12 ± 0,78	10,5 – 13,8	0,0114
	p < 0,001		p = 0,0861		

The results of t test analysis showed that there were differences in hemoglobin level before and after acupressure therapy (p<0.001; p<0.05). After acupressure

treatment, there was an increase in hemoglobin levels of the research subjects.

DISCUSSION

Elderly is one of the risk factors of decreasing body function and immunity in

humans. Because of the higher age, so there will be an aging process that causes damage to molecular and cellular. In line with a decrease of body function and immunity in the elderly, there is also a decrease in hemoglobin level. Older people over 65 years have poor organ storage functions so that they do not support oxygen supply due to the lack of oxygen. This is known to be fatal for human organs and if the same dysfunction continues, those can lead to organ failure⁸.

Low hemoglobin levels indicate anemia for the body. To increase the function of hemoglobin, elderly with Hb deficiency can also take blood-boosting drugs or foods which are rich in iron, folate, and vitamin B12, such as meat, fish, eggs, and vegetables.⁹ Iron is a mineral needed for forming the red blood cells. Iron functions in the body's is to self-defence system. Each iron tablet contains 200 mg ferrous sulfate or 60 mg elemental iron and 0.400 folic acid¹⁰.

Although there was an increase in Hb levels in the control group after consuming Fe tablets, but there was no significant increase in hemoglobin levels in the control group after consuming Fe tablets at Panti Werdha Griya Sehat.

Bahagia Karanganyar ($p = 0.0861$; $p > 0.05$). This is due to the possibility that the elderly's body lacks the ability of absorb iron, drinks tea or coffee after eating, or there are some elderly people who forget to consume Fe tablets.

This is in line with previous research by Listiana (2016) which states that drinking tea should be one hour before or after eating because tea can inhibit the iron absorption process by 64%. This may happen because tea contains tannins where tannins bind minerals. In the other hand coffee can inhibit the process of iron absorption by 39%. Research conducted by Endrikinikapoulos et al (2020) states that with the increasing age, people are often difficult to meet the daily iron needs because the function of the digestive organs begins to decrease, so that the level

of iron in the body begins to decrease. Serum iron will also decrease.

At present, Western medicine in increasing Hemoglobin level is blood transfusion, EPO, and iron, which have a good therapeutic effect on various degrees of anemia and are fast working. However, Western medicine mostly acts on a single hematopoiesis link, and the long-term benefits in patients cannot be observed. There are also several problems, such as high costs, blood transfusion infections, risk of thrombus, gastrointestinal reactions, tumor cell resistance, disease progression, and even death. Consumption of iron supplements is usually given for the people who suffer from anemia iron deficiency. However, hemochromatosis or injury may occur due to indiscriminate use of oral iron, and poor treatment adherence rates in patients, even the side effects of high gastrointestinal frequency. Apart from western medicine, blood deficiency syndrome can be treated with traditional Chinese medicine.

This study showed that after the acupuncture therapy there was an increase in hemoglobin levels in the elderly at the Panti Wredha Griya Sehat Bahagia Karanganyar ($p < 0.001$; $p < 0.05$). The theoretical foundation of blood deficiency with Traditional Chinese Medicine (Acupressure and herbal medicine) explained the relationship between Qi and blood and the relationship between Zangfu and blood formation, TCM treatment supports Qi and increases blood cells, thus it can treat blood deficiency syndrome for a long time. Other studies have also reported the therapeutic effect and safety profile of TCM treatment. It was in line with the research of Dang et al. (2019) reported that there is significant increase in hemoglobin level which was found after TCM treatment compared to the control group (MD = 4.57, 95% CI [1.38, 7.76], $P = 0.005$; I₂ = 97%). Good results were also found for the overall therapeutic effect (RR=1.31, 95% CI [1.18, 1.46], $P < 0.001$; I₂=51%)¹⁴.

Early treatment in TCM can regulate the balance of Yin and Yang, increase efficiency and reduce toxicity. According to TCM theory, spleen deficiency is an important triggering factor in myelodysplastic syndrome of deficient blood hemoglobin levels, and the approach is called "tonifying the spleen". Spleen is responsible for maintaining the normal distribution of iron to the body. The implementation of this function depends on the transport of splenic Qi. Therefore, deficiency of spleen Qi and reduced spleen function will lead to impaired iron distribution¹⁶.

One of the therapeutic methods that can be used is acupressure is a traditional Chinese medicine technique¹⁷. Acupressure to certain points on the body is a non-pharmacological intervention which is very efficient and relatively safe because it does not involve invasive actions or injure the skin. Acupressure is an alternative treatment without drug dependence and side effects. Acupressure can be done with the help of another person or done independently. Assistance for elderly families is expected to be able to perform acupressure independently¹⁸.

This is in line with the statement of the Sasang Constitution of Korean traditional medicine for the medical study program. They suggest the special treatment of blood deficiency with traditional medicine consisting of acupuncture, acupressure and herbal medicine. These are an effective and safe treatment¹⁹.

CONCLUSIONS

The results of hemoglobin levels measurement before and after acupressure therapy showed that the majority of research subjects increased significantly in their hemoglobin levels compared to the Fe tablet group. This shows that there are differences in hemoglobin levels before and after acupressure therapy in the elderly at Panti Griya Sehat Bahagia ($p < 0.001$). The average hemoglobin level before

acupressure therapy was 11.21 g/dL, then it increased to 12.88 g/dL after acupressure therapy.

This research can be used as a reference or literature review of health sciences in the treatment of pain. Health service agencies can cooperate with acupressure therapists in preventive and curative services, especially to the prevention of anemia. People can be motivated to do acupressure independently or with the help of others for the elderly on a regular basis, because acupressure is very effective and does not cause side effects.

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