The Effect of the Tolo Bean on Pregnancy Anaemia in Tulang Bawang Barat

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From the data in 2018, the number of pregnant women ranging in age from 15-24yearswith anaemia was 84.6%, from 25-34 year was 33%, from 35-44 was 33.6%, and from 45-54 years was 24% (Litbangkes, 2018). Pregnant women who were found to be anaemic were as much as 37.1% in 2013, and by 2018 this had increased to 48.9%. There were 149 maternal deaths in a thousand in Lampung and 9 cases of thematernal mortality rate came from the TulangBawang Barat district.Four instances of pregnancy-related acute kidney injury (AKI)was due to bleeding, where anaemia was the cause.There is a need for an intervention to find the root cause of anaemia in pregnant women as this condition is significant as it is important the next generation of pregnant women be able to birth their babies in good health.Anaemia in pregnant women in the province of Lampung is as high as 69.7%. The cause of maternal death in Lampung Province in 2018 was 46 cases due to haemorrhaging, 35 cases fromhypertension, 7 cases due to infection, 10 cases caused by animpaired circulatory system, 3 cases of metabolic disorders and 48 cases due to various other conditions (Dinkes, 2017). For the case of maternal mortality there are 149 in a thousand in Lampung and 9 cases of maternal deathsare from the district of TulangBawang Barat.The data in 2013 shows that there were 4 cases of maternal mortality from 4952 live births, in 2014 there were 5 cases of maternal mortality in 4,966 births. In 2015 it was reported that there were 9 cases of maternal deaths from 4968 live births (the cause of death of the mother in the 9 cases were: three from bleeding, two from eclampsia, one from infection, and another three caused by other factors. The distribution report on the maternal deaths states that one mother was from PuskesmasPanaragan Jaya, one mother was from PuskesmasMercubuana, PuskesmasMargaKencanawhile another 2 mothers were fromPuskesmasKartaraharja and as many as four mothers were from PuskesmasMargodadi). The 2015 report was from records of examination contained in ANC (Ante Natal Care) K1 91(Barat, 2017)(Lampung, Profil Dinas Kesehatan Provinsi Lampung, 2017).The purpose of this research is to know the influence that Tolobeans can have on the increaseof haemoglobin levels in anaemic pregnant women in TulangBawang Barat Year 2019. This research method is using a quasi-experimental design.

The study compared the group that received treatment and the control groups. The treatment group was given Tolo beans and TTD, and a control group treated with the standard treatment of Anaemia (TTD). The population in this study is the pregnant mother suffering from anaemia in the district of Tulang Bawang Barat 2019. The sample years of research respondents were 30 people. Hb measurements were taken before and after the intervention for a period of 15 days, the measurement of haemoglobin was taken on day 16. The data is processed and analysed with a T-test test. The results of the average assessment increase haemoglobin levels after intervention Tolo beans and TTD was 1.41, and the intervention of TTD was 1.11. Statistical test results obtained p-value 0.045, so it can be concluded that the intervention Tolo beans and TTD has a significant difference to the group TTD.The more intake of iron coming from different types of sources ensues a greater increase in haemoglobin levels therefore the respondents were not only given the standard treatment but also an additional intake of foods derived from vegetable protein, rich in iron. The success of this study is also due to the active role of health workers/professionals (midwives and Nutritionists) who directly monitor food consumption in the respondents, especially the women who are suffering from Anaemia.

Key words: *Tolo beans, Anaemia, pregnancy*

Introduction

Anaemia in pregnant women is a major cause of bleeding, and infection is a factor of maternal mortality. Maternal Mortality Rate (MMR) is one indicator of the success of the health care services in a country and affect the quality of Human Resources (HR) in Indonesia.Anaemia is a condition where there is a shortage of red blood cells or haemoglobin.Kadar Hb<11 g / dl (trimester I and III) or <10.5 g / dl (trimester II) (Bagu, Hariati, and Thamrin, 2019).

Anaemia in pregnant women is one health problem in Indonesia is often experienced by women of childbearing age, especially pregnant women. Pregnant women suffering from Anaemia are at risk of maternal death in the antenatal, perinatal, and in the postnatal period are at risk of having a baby with low birth weight (LBW) (Huang, 1991). In this situation, many mothers die due to bleeding. This infection affects maternaland child mortality(Cakrawati, Mustika NH, 2014)In developing countries, anaemia is a serious concern because of this impact on both mothers and the foetus contributing to maternal mortality(Ulya, 2018). Anaemia inwomen of childbearing age has been brought to the attention of the World Health Organisation which has it targeted to be reduced by 50% by 2025 (Aulia, Sunarto, & Rahayuni, 2018).

In Indonesia, the incidence of anaemia among pregnant women is still high. According to data from the Research and Development (2018). Anaemia in pregnant women is generally due to physiological changes in the body during pregnancy that affect their hemodilution(Abidi, Laskin, and Conney, 1991). Pregnant women can suffer from anaemia due to iron requirements increasing during pregnancy for foetal growth. Anaemia in pregnancy can be prevented if a mother has an excellent nutritional intake before pregnancy, so she has the iron stores in the body.

Anaemia in pregnancy can hurt the mortality and morbidity of both mother and foetus. Anaemia in pregnancy can result in uterine growth retardation (IUGR), preterm birth, low birth weight (LBW), and an increased risk of neonatal death. Effects on the anaemic pregnant mother can present as shortness of breath, fatigue, palpitations, sleep disturbances, increased risk of bleeding during labour, pre-eclampsia, and sepsis(Ulya, 2018). There are adverse effects of anaemia in pregnancy on the foetal development.Anaemia in developing countries is higher, than in industrialised countries.(Kozuma, 2009).

Anaemic pregnant women reported to beof 37.1% in 2013, and by 2018 this had increased to 48.9%. 26.8% of pregnant women still had not be given TTD (Tablet Add Blood) and 73.2% that were administered TTD and from the 73.2%, only 24% received ≥ 90 tablets.But in the consumption of <90 tablets of that 61.9% of pregnant mothers receiving> 90 pills only 38.1% were consumed by pregnant women and many pregnant women 76% <90 tablets (Litbangkes, 2018). As for the data in Lampung Province, the level of compliance of pregnant women who consume TTD> 90 tablets during pregnancy was 21.8%, and that consume TTD <90 tablets as much as 60% (Dinkes, 2016).

Methods

This research method using a quasi-experimental design. The study compared groups treated Tolo beans and TTD, with groups controlled by standardanaemia treatment. The location of this research carried out in the district of TulangBawang Barat conducted from June to December 2019.

Samples were taken from pregnant women with anaemia in the district of TulangBawang Barat in 2019. Based on the above calculations obtained from several 15 respondents in each group, with a ratio of 1: 1, so that the total respondents were 30 respondents. So that the sample characteristics do not deviate from the population, then the determination criteria of each group of samples were determined by inclusion and exclusion criteria. Analysis of the data used in this research is descriptive statistics and inferential statistical data analysis.

Result

Univariate analysis

Analysis for each variable of the research that will result in the distribution and presentation of each variable in a study of 30 samples based on primary data sources in Puskesmas Panaragan Jaya, KencanaMarga, Kartaraharja, and MargodadiTulangBawang Barat. Here are the results of the univariate analysis of each variable. Average distribution obtained from the treatment in group 1 given Tolobean treatment , as well as a control group treated with the standard treatment of Anaemia (TTD), with a sample of 60 pregnant women as follows.

Table 1. Distribution Effect of Tolo Bean and TTD Against Increased Haemoglobin Anaemia in the Pregnancy Health Centre Panaragan Jaya, Margodadi, Kartaraharja, and Highways KencanaTulangBawang Barat 2019

No.	Treatment	N	The average increase in HB
1	Tolo beans and TTD	15	1.41
2	TTD	15	1.11
	Total	30	1.26

According to the Table 1 shows that Average visible sign that the average assessment increase haemoglobin levels after intervention with Tolo beans and TTD with the mean increase in haemoglobin of 1.41, and a control group was given intervention TTD with the mean increase in haemoglobin of 1.11.

Bivariate Analysis Results

Table 2. Distribution Effect of the Tolo Bean Against Increased Haemoglobin Anaemia in Pregnancy Health CenterPanaragan Jaya, Margodadi, Kartaraharja, and Highways KencanaTulangBawang Barat 2019

stimulation Intervention	mean	SD	SE	P-Value	N
1. Tolo beans and TTD	1.41	0.55	0,14		15
				0.045	
2. TTD	1.11	0.26	0.07		15

The bivariate analysis was conducted to determine the difference between the independent variables (Tolo beans) with the dependent variable (increased levels of haemoglobin) using the T-Test test to determine the Tolo beans administration to increase haemoglobin levels of pregnant women withanaemia. Table 2 shows that the with the intervention of Tolo beans and

TTD There was an increased inhaemoglobinfrom an average of 2.35 with a standard deviation of 0.55, while for the control group who were given interventionof TTD the increased haemoglobin rate average is 1.43 with a standard deviation of 0.26.

Statistical test result p-value = 0.045, meaning it can be concluded that there is a significant difference—increased average in haemoglobin with the intervention of Tolo beans and TTD to that of the intervention with TTD intervention alone.

Discussion

Influence of ToloBeans and the Tablet Add to Blood (TTD) Increased Haemoglobin Blood Pregnancy Anaemia

Based on Table 1 the average increase of haemoglobin levels were 1.41 after the intervention with Tolo beans and TTD, and in the control group given the intervention of TTD onlythere was an increase in haemoglobin of 1.11. Statistical test results obtained the p-value below 0.05, meaning it can be concluded that there is a significant difference in the average increase in Haemoglobin with the intervention of Tolo beans and TTD to TTD intervention alone.

Anaemia is a condition where there is a shortage of red blood cells or haemoglobin in which past or future erythrocytes and haemoglobin in circulation does not fulfil its function to provide oxygen to the body tissues. Increased levels of haemoglobinisnot spared as well as the majority of maternal age between 20-35 years old (70%) ,aged between 20-35 years, is the safest period for delivery. At the age of reproductive function in optimal condition, while a mother younger than 20 years is still in the growing phase so that food intake is widely used for capital growth, which can lead to impaired foetal growth, while pregnant women over the age of 35 years tend to suffer from anaemia due to the effect of the decline in iron stores in the body(Khelil S 2011), (Proverawati, A & Wati, 2011).

Maternal education level also plays a role in the incidence of anaemia. Pregnant women with a low level of knowledge or poor education would be at a higher risk of anaemia than pregnant women with high levels of education. Pregnant women with low education received minimal information about the nutrients needed by the body during pregnancy, signs of Anaemia, prevention, and treatment (Damiati, 2012, 2013)(Ariningtyas & Hardianti, 2018; Chandra, Junita, & Fatmawati, 2019; Scarlet, 2013).

Other factors that also affect the success of this study is the number of parity (Multipara 58.3%). Mother becoming pregnant more than four times also can increase the risk of anaemia. Higher equality, higher maternal mortality (Di & Haurpanggung, 2019).

This research has been carried out more thoroughly than in previous studies as a field officer directly controlled the consumption of food every day, so we could ensure that the intake of food given to researchers plays the most significant role in increasing haemoglobin levels of pregnant women. Additionally, in this study the number of Tablet Add to Blood (TTD) given daily customised with modules issued by Litbangkes (2018) as one of the general treatments of anaemia in pregnant women is Tablet Add toBlood (TTD)two (2) tablets each day until an average haemoglobin level is reached.Some research has also shown that mothers who consumed regular Fe Hb levels tend to be higher than that those who do not consume Fe (Anggraini, 2018; Nugroho, Merdekawati, & Hekakaya, 2017; Restipa, Fausiska, & Alifah, 2018).

The active role and behaviour of health workers in the provision of food intake (especially Tablet Add Blood) indirectly factor intocontributing significantly to the increase in maternal haemoglobin levels (Demmouche A, 2011; Meihartati, 2019) as monitoring maternal food consumption speeds up resolving the problems of anaemia in pregnant women as well as improving maternal nutrition (Basith, Agustina, & Diani, 2017).

Effect of Tolo Beans Against Pregnant Women Increased HaemoglobinAnaemia

In Table 2 there was an average increase in haemoglobin if given the Tolo beans and TTD intervention of 1.41 with a standard deviation of 0.55, while for the control group who were given the intervention TTD alone showed an average increase in haemoglobinof 1.11 with a standard deviation of 0.26. Statistical test result p-value = 0.045, meaning it can be concluded that there is a significant difference in the average increase in Haemoglobin with the intervention of Tolo beans and TTD to TTD intervention alone.

It is consistent with the theory, according to Hinawati (2019), that one of the efforts to prevent anaemia is consuming lots of foods that contain iron from plant materials (dark green vegetables, legumes (Tolobeans, and tempeh). Tolo beans contain many nutrients that nourish the body, including fat, calories, protein, fibre, potassium, iron, and many others. Tolo beans contained in 100g of 13.9 mg of iron that can help raise the level of haemoglobin in the blood.

This study is also in line with research conducted by EtiRimawati et al. (2018) on the intervention of dietary supplements to increase haemoglobin levels in pregnant women. The analysis showed that giving supplements Fe, consumption of food that contain iron such as yams, and use of foods containing substances absorption aide's Fe (enhancer Fe) such as fruits that contain vitamin C. As well as foods high in vitamin B9 and B12 such as beans (green beans, tolo beans) can increase blood haemoglobin levels in pregnant women.

Based on the similarity between the results with theory and related research that has been done before, the researchers concluded that Tolo beans are one of the sources of food derived from vegetable protein that have an effect onanaemia because of the Tolo bean contains iron which is almost equal to other animal protein, because 100g of tolobeans contained 13.9 mg of iron that can help raise the level of haemoglobin in the blood (Aprilia et al., 2015; Safitri, Ningsih, Ismail, & Waluyo, 2016).

In this study, researchers have provided treatment every day in the form of 2 Add Blood tablets (TTD as well as 100g of Tolo Beans (adding 20% of the beef liver to the total of the Tolo beanto provide an additional food intake to create a balance between Plant Protein and Animal Protein for the respondents.The average increase in haemoglobin between the intervention and the control group was quite different when compared to the intervention group taking chicken liver. It can be seen that the mean haemoglobin average increase was not much different.

Given that the success of this study was due to the active role of health professionals (midwives and Nutritionists) that directly monitored the food consumption of the respondents it should be an ongoing role of health personnel to provide a positive influence on the health of mothers, especially mothers who have anaemia.

Conclusion

Based on analysing the data, testing hypotheses and the discussion of the research, the findings of this study concluded that the averagehaemoglobin levelin respondents showed varying results. This study found the averagehaemoglobin levels reviewed by intervention Tolo beans TTD was 1.41, and interventions TTD was 1.11. The test results obtained statistically significant differences in the average increase in Haemoglobin with the intervention of Tolo beans and TTD to the intervention of TTD alone with p-value = 0.045. The provision of health education aims to change a person's behaviourto a healthy lifestyle which includes healthy eating habits by providing this treatment to the gestation period, so it will then become common knowledge that allows for a healthy mother and child. The active role midwives play in delivering health information and regular inspections is indispensable in the prevention of anaemia in pregnant women and for all general health problems in the community. None the less important is theof nutrition experts who continuously monitor the mother's food intake as a significant role in the prevention of anaemia in pregnant women. Health workers are now increasingly active in monitoring the consumption of food and improving the maternal nutrition and health of the mother to quickly address the ongoing problems of anaemia in pregnant women.

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