DESCRIPTION OF HEMOGLOBIN LEVELS IN PRE AND POST-OPERATING PATIENTS IN RSUD TOTO KABILA, BONE BOLANGO DISTRICT

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ABSTRACT

Hemoglobin (Hb) is a protein found in erythrocytes which acts as a marker of anemia. Anemia is a health problem in all over the world, especially in developing countries, it is estimated that 30% of the world's population suffer from anemia. One of the causes is bleeding, which is a condition of losing large amounts of blood. Surgery is an action by medical professionals performed to save a patient's life. However, during the operation there is also a risk of bleeding which can affect hemoglobin levels.

This study aims to determine the description of hemoglobin (Hb) levels in pre and postoperative patients. This type of research is quantitative descriptive with purposive sampling technique of sampling of 33 respondents divided based on pre-operation and post-operation.

The results of the examination found that all preoperative respondents had moderate anemia with a percentage of 12.1%, (4 respondents), mild anemia with a percentage of 21.2% (7 respondents), very mild anemia with a percentage of 9.1% (3 respondents), with normal hemoglobin levels, namely 69.7% (23 respondents). and for postoperative respondents who had mild anemia with a percentage of 15.2%, (5 respondents), very mild anemia with a percentage of 21.2%, (7 respondents) with normal hemoglobin levels of 51.5% (17 respondents).

The need for this research to be further developed regarding the description of pre and postoperative hemoglobin levels by using the characteristics of respondents based on age.

Keywords: hemoglobin, pre-operation, postoperative, anemia, erythrocytes

INTRODUCTION

Red blood cells function to transport oxygen from the lungs to body tissues for oxidation. In red blood cells there is hemoglobin which can bind oxygen. Hemoglobin has an important function in the human body, namely binding oxygen [10]. Hemoglobin will take oxygen from the lungs and oxygen will be released when red blood cells pass through the capillaries.

The normal state of hemoglobin will carry out its function properly, if the hemoglobin is below normal, then the oxygen distribution is also abnormal. As a result, bodily functions are also disrupted. For example in muscles, only with light activity the body will feel tired. Physical activity that a person does can affect hemoglobin levels in the body. Physical activity with moderate to heavy intensity can cause hemoglobin levels in the body to change.

Changes that occur in the human body can cause various diseases, one of which is anemia. Anemia is a condition when the number of red blood cells in the blood is abnormal or low. Doctors sometimes describe anemia as a person who has low blood pressure. A decrease in hemoglobin levels of less than 11 gr / dL indicates the occurrence of anemia which is further divided into several levels of anemia degrees [23]. health in Indonesia is marked by the high mortality rate caused by anemia.

Anemia is one of the health problems throughout the world, especially in developing countries, where an estimated 30% of the world's population suffer from anemia. Anemia is common in society, especially adolescents and pregnant women. Until now, anemia in young women is still quite high. In 2013, the prevalence of anemia in Indonesia was 21.7%, with a proportion of 20.6% in urban areas and 22.8% in rural areas and 18.4% for men and 23.9% for women [14].

Based on the age group, anemia sufferers 5-14 years were 26.4%, the 15-24 age group was 18.4% and the 25-34 group was 16.9%. Data on anemia sufferers based on age groups mostly occurred at the age of 5-14 years. Based on observational data from Toto Kabila Hospital, there were 205 people with anemia in 2017, while in 2018 there was an increase with 221 people with anemia.

Anemia can occur because it is caused by many things, one of which is large amounts of blood loss (accident or surgery). Anemia is a condition in which the blood's ability to carry oxygen is reduced, which is usually caused by a decrease in the number of circulating red blood cells, this condition is reflected in the low hemoglobin concentration. Iron deficiency anemia is the most common cause of anemia in the world. Anemia is a disorder that is very often found in both clinics and in the field [6]. Surgery is all treatment that uses an invasive way by opening or showing the body part to be treated. This opening of the body is generally done by making an incision. After the part to be treated is shown a corrective action will be taken which will end with closing and suturing the wound [25].

Operations performed by professionals and carried out in a referral hospital that has received permission. In Gorontalo, one of the hospitals that performed surgery was Toto Kabila Hospital, Bone Bolango Regency. The number of patients who underwent surgery at the Toto Kabila Hospital, Bone Bolango Regency in July, recorded 102 people for various types of operations including 46 operations for cesarean patients, 21 DM patients, 35 other operations.

When making an incision in the body to be operated on, the body will lose a lot of blood and it is unlikely that heavy bleeding will occur as a result the body will experience anemia and blood transfusions will be carried out to normalize the blood in the body but as a result the blood will become thinner and the percentage of red blood cells will be reduced. In the end the formation of red blood cells will improve anemia.

In red blood cells there is hemoglobin (Hb) which functions as a carrier of oxygen from the lungs throughout the body and also transports a little carbon dioxide from the body cells to the lungs. An increase or decrease in hemoglobin levels during surgery, for example cesarean section surgery, depends on the intake of nutrients during pregnancy, bleeding and anemia. If there is heavy bleeding during cesarean section surgery which results in a decrease in hemoglobin levels close to the limit for blood transfusions, blood transfusions are given to help patients in critical conditions

[12]. Based on the explanation above, where hemoglobin levels can change at any time due to certain conditions, one of which is surgery, this study aims to determine the picture of hemoglobin levels in pre and postoperative patients.

RESEARCH METHODS

The type of research used is descriptive research with the aim of knowing the value of the variable without intending to compare or connect with other variables

The reason for this study was that the researchers wanted to see a picture of hemoglobin levels in pre and postoperative patients

This research design is descriptive quantitative which aims to describe or describe a phenomenon or event (one or more research variables) in depth and systematically in the form of quantitative data (numbers) without looking for relationships between research variables .

The sampling technique that will be carried out in this research is purposive sampling with a total of 33 respondents . Which is the determination of the number of samples using the malhotra formula as follows

Formula : $n = \frac{\sigma^2 Z^2}{D^2}$

Information :

n = many research samples

σ =population standard deviation (if not using sample standard deviation): 2,2

Z = standard unit value (Z-table value determined from the% confidence coefficient): 2.57

D = expected accuracy value (% confidence coefficient): 99% or 0.99

$$n = \frac{\sigma^2 Z^2}{D^2}$$

$$= \frac{(2{,}2^2)(2{,}57^2)}{0{,}99^2}$$

$$= \frac{(4{,}84)(6{,}6049)}{0{,}9801}$$

$$= 32{,}61679$$ or 33 samples

Patients who are made into the population are patients who will perform surgery (surgery) which is then filled in the informed conset as an agreement to become respondents. Subsequently, sampling was carried out using venous blood in pre and postoperative patients. The blood sample obtained was then examined using a Hematology Analyzer to determine the hemoglobin level. Then the hemoglobin level data obtained were analyzed to get a picture of the hemoglobin level.

The research instrument is a tool used by researchers in collecting data to make work easier and with better results.

The data obtained were recorded, collected, processed and presented in narrated tables and graphs .

RESEARCH RESULT

Based on table 1 below, this study used a sample of 33 respondents who met the research criteria consisting of 11 male respondents and 22 female respondents. The hemoglobin level of the respondents was divided into two groups, namely the hemoglobin level before the pre-operation and the hemoglobin level after the operation. From the data obtained, pre-operative and postoperative hemoglobin levels were varied with a tendency to decrease in postoperative hemoglobin levels.

Table 1 . Mean Hemoglobin in pre and postoperative patients at Toto Kabila Hospital.

No	Nama	Jenis Kelamin	Kadar Hemoglobin	
			Pra	Pasca
1.	H-01	P	11.4 g/dL	11.4 g/dL
2.	H-02	P	13.2 g/dL	11.2 g/dL
3.	H-03	L	16.2 g/dL	14.3 g/dL
4.	H-04	P	8.1 g/dL	7.4 g/dL
5.	H-05	P	11.9 g/dL	8.3 g/dL
6.	H-06	P	14.3 g/dL	13.1 g/dL
7.	H-07	P	9.6 g/dL	9.2 g/dL
8.	H-08	P	10.1 g/dL	10.1 g/dL
9.	H-09	P	8.5 g/dL	7.8 g/dL
10.	H-10	P	10.4 g/dL	7.5 g/dL
11.	H-11	L	14.3 g/dL	11.1 g/dL
12.	H-12	L	16.6 g/dL	16.3 g/dL
13.	H-13	P	11.9 g/dL	10.1 g/dL
14.	H-14	P	11.3 g/dL	10.4 g/dL
15.	H-15	P	11.2 g/dL	10.3 g/dL
16.	H-16	L	9.8 g/dL	9.5 g/dL
17.	H-17	P	10.8 g/dL	9.5 g/dL
18.	H-18	L	15.4 g/dL	12.3 g/dL
19.	H-19	P	11.8 g/dL	10.5 g/dL
20.	H-20	L	12.5 g/dL	12.5 g/dL
21.	H-21	L	13.3 g/dL	11.8 g/dL
22.	H-22	L	12.8 g/dL	11.8 g/dL
23.	H-23	P	12.2 g/dL	12.1 g/dL
24.	H-24	P	9.4 g/dL	9.1 g/dL
25.	H-25	P	8.2 g/dL	7.0 g/dL
26.	H-26	P	11.9 g/dL	11.1 g/dL
27.	H-27	P	11.2 g/dL	11.2 g/dL
28.	H-28	P	9.4 g/dL	8.8 g/dL
29.	H-29	L	12.2 g/dL	10.3 g/dL
30.	H-30	L	14.5 g/dL	13.4 g/dL
31.	H-31	P	11.5 g/dL	11.1 g/dL
32.	H-32	P	12.3 g/dL	10.7 g/dL
33.	H-33	L	13 g/Dl	12.1 g/dL

Table 2. Description of the levels of Hemoglobin p no preoperative patients according to sex

No	Kadar Hemoglobin Pra-Operasi	Jenis Kelamin				Jumlah	
		L	%	P	%	N	%
1	< 6.0	0	0,0%	0	0,0%	0	0,0%
2	6.0 - 7.9	0	0,0%	0	0,0%	0	0,0%
3	8.0 - 9.9	1	3,0%	6	18,2%	7	21,2%
4	10.0 - 11.0	0	0,0%	3	9,1%	3	9,1%
5	> 11.0	10	30,3%	13	39,4%	23	69,7%
	Total	11	33,3%	22	66,7%	33	100,0%

Sumber: Data diolah, 2020

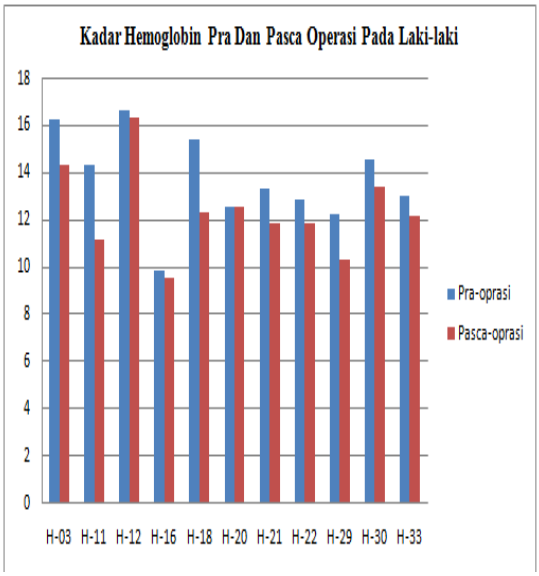
Based on Table 2. The results of preoperative hemoglobin levels are categorized based on the degree of anemia of the 33 pre-operative respondents, consisting of 11 male respondents, 1 respondent (3.0%) had mild anemia and 10 respondents (30.3%) had normal hemoglobin levels. Meanwhile, of the 22 female respondents, 6 respondents (18.2%) had mild anemia, 3 respondents (9.1%) who had very mild anemia, and 13 respondents (39.4%) with normal hemoglobin levels.

Table 3. Description of hemoglobin levels in patients after surgery according to sex

No	Kadar Hemoglobin Pasca-Operasi	Jenis Kelamin				Jumlah	
		L	%	P	%	N	%
1	< 6.0	0	0,0%	0	0,0%	0	0,0%
2	6.0 - 7.9	0	0,0%	4	12,1%	4	12,1%
3	8.0 - 9.9	1	3,0%	4	12,1%	5	15,2%
4	10.0 - 11.0	1	3,0%	6	18,2%	7	21,2%
5	> 11.0	9	27,3%	8	24,2%	17	51,5%
	Total	11	33,3%	22	66,7%	33	100,0%

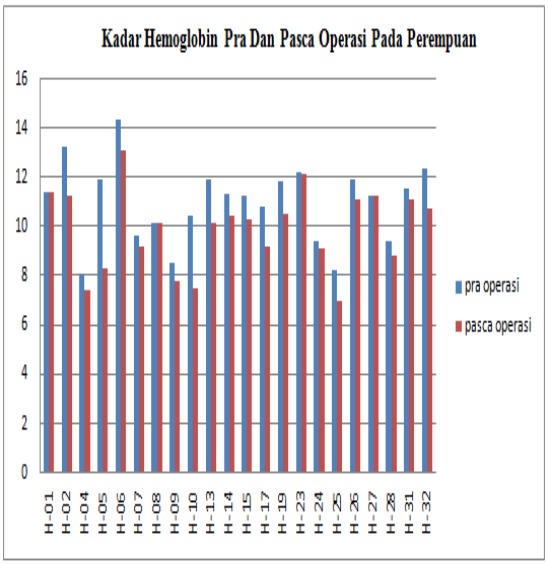
Based on Table 3. The results of postoperative hemoglobin levels are categorized based on the degree of anemia. Of the 33 postoperative respondents consisting of 11 male respondents, it was found that 1 respondent (3.0%) had mild anemia, and 1 respondent (3.0%) had very mild anemia. And 9 respondents (27.3%) had normal hemoglobin levels. Meanwhile, of the 22 female respondents, 4 respondents (12.1%) had moderate anemia, and 4 respondents (12.1%) had mild anemia, and 6 respondents (18.2%) had very mild anemia and 8 respondents (66.7%) had normal hemoglobin levels.

Figure 1 . Graph of Hemoglobin levels in pre and postoperative patients in men



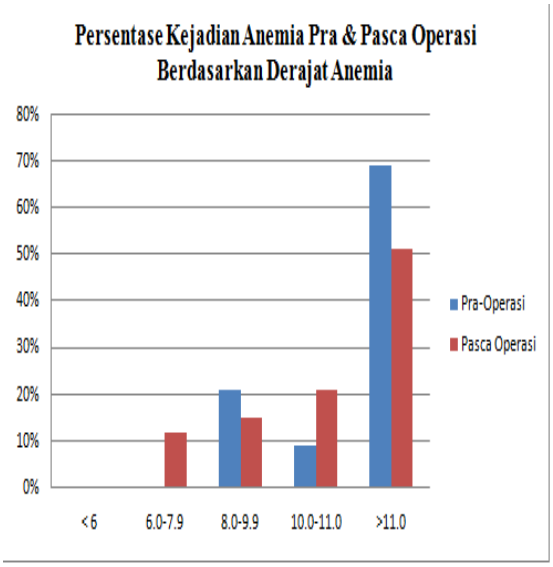
Based on Figure 1, it can be seen that of the 11 samples only the H-20 sample had no difference in hemoglobin levels between pre and post surgery, while the other 10 samples had differences in pre and postoperative hemoglobin levels where preoperative hemoglobin levels were higher than the postoperative hemoglobin.

Figure 2. Graph of hemoglobin levels in pre and postoperative patients in women



Based on Figure 2, it can be seen that of the 11 samples only the H-20 sample had no difference in hemoglobin levels between pre and post surgery, while the other 10 samples had differences in pre and postoperative hemoglobin levels where the preoperative hemoglobin level was higher than the preoperative hemoglobin level. postoperative hemoglobin.

Figure 3. Graph hemoglobin levels in patients pre- and post-operative overall (Male and Female)



Based on figure 3 . It can be seen that out of 33 samples, none of the respondents had severe degrees of anemia (<6) both pre and post surgery. The preoperative respondents did not have moderate anemia (6.0-7.9) and for the postoperative respondents had moderate anemia (6.0-7.9) with a percentage of 12 , 1 % , (4 respondents) .

Respondenpra operating experience mild anemia (10.0-11.0) premises n percentage of 21 , 2 % (7 respondents) and for postoperative respondents who experienced mild anemia with a percentage of 15.2% (5 respondents). In preoperative patients who had very mild anemia with a percentage of 9.1% (3 respondents) and for postoperative respondents who had very mild anemia with a percentage of 21.2%, (7 respondents) and (> 11.0) preoperative respondents with hemoglobin levels normal, namely 69.7% (23) and

postoperative with a percentage of 51.5% (17 respondents).

DISCUSSION

This study used a sample of 33 respondents who met the predetermined requirements. The sample was examined at the Laboratory of the Regional General Hospital of Toto Kabila, Bone Bolango Regency, to check the hemoglobin level using the hematology analyzer method. This research is a quantitative descriptive study which aims to determine the description of hemoglobin levels in pre and postoperative patients.

Based on the examination that was conducted on 33 respondents who underwent surgery consisting of 11 respondents (33.3%) male and 22 respondents (66.7%) female, of all respondents the majority were women 14 respondents out of 22 respondents (66.7 %) women with decreased postoperative hemoglobin levels. Seen from table 2. Pre surgery, where 6 female respondents (18.2%) had a mild degree of anemia (8.0 g / dl - 9.9 g / dl), 3 respondents (9.1%) women had mild anemia at one time (10.0 g / dl - 11.0 g / dl), and 13 female respondents had normal hemoglobin levels (> 11.0 g / dl) and from table 4.1.3. Postoperative shows where 4 respondents (12.1%) women had moderate degrees of anemia (6.0 g / dl - 7.9 g / dl), 4 respondents (12.1%) women had mild anemia degrees (8.0 g / dl - 9.9 g / dl), 6 respondents (18.2%) women had very mild degrees of anemia (10.0 g / dl - 11.0 g / dl), and 8 respondents (24.2%) women had normal hemoglobin levels (> 11.0 g / dl).) which means that the value of hemoglobin levels in female respondents decreases.

Whereas for male 2 respondents from 11 respondents whose hemoglobin levels decreased, it can be seen from table 4.1.2. pre-surgery where 1 respondent (3.0%) had a mild degree of anemia (8.0 g / dl - 9.9 g / dl) and 10 respondents (30.3%) had normal hemoglobin levels (> 11.0 g / dl) after the operation was seen from table 4.1.3. where 1 respondent (3.0%) occupied the degree of mild anemia, namely (8.0 g / dl - 9.9 g / dl), 1 respondent (3.0%) occupied very mild anemia, namely (10.0 g / dl - 11.0 g / dl) , and 9 respondents (27.3%) had normal hemoglobin levels, namely (> 11.0 g / dl), which means that the value of hemoglobin levels in male respondents decreased even though they did not decrease drastically.

Hemoglobin levels based on the overall (male and female) are different as seen from table 3. It can be seen that out of 33 samples, none of the respondents had severe degrees of anemia (<6) both pre and post surgery. Preoperative respondents did not have moderate anemia (6.0-7.9) and postoperative respondents experienced moderate anemia (6.0-7.9) with a percentage of 12.1%, (4 respondents).

Preoperative respondents who experienced mild anemia (10.0-11.0) with a percentage of 21.2% (7 respondents) and for postoperative respondents who had mild anemia with a percentage of 15.2%, (5 respondents). In preoperative patients who had very mild anemia with a percentage of 9.1% (3 respondents) and for postoperative respondents who had very mild anemia with a percentage of 21.2%, (7 respondents) and (> 11.0) preoperative respondents with hemoglobin levels normal, namely 69.7% (23) and postoperative with a percentage of 51.5% (17 respondents).

The decrease in postoperative hemoglobin levels is due to an incision in the patient's body so that the hemoglobin level of the patient decreases because at the time of the incision, a lot of blood will be produced and it is likely that anemia will occur. According to [6]. Anemia can occur because it is caused by many things, one of which is large amounts of blood

loss (accident or surgery). Anemia is a condition in which the blood's ability to carry oxygen is reduced, which is usually caused by a decrease in the number of circulating red blood cells, this condition is reflected in the low hemoglobin concentration. Iron deficiency anemia is the most common cause of anemia in the world. Anemia is a disorder that is very often found both in the clinic and in the field.

The results obtained, all male respondents experienced a decrease in hemoglobin levels after surgery, but only a few male respondents experienced anemia. Found in respondents who performed minor surgery (appendectomy) appendectomy is an operation that is classified as a minor operation where the risk of postoperative bleeding is very small which can cause hemoglobin deficiency (anemia) Referring to table 3. it can be seen that respondents with the limit of normal hemoglobin levels after surgery was 27.3% (9 respondents), while those with very mild anemia were 3.0% (1 respondent) and mild anemia was 3.0% (1 respondent).

It is known that most who experienced a decrease in hemoglobin levels were female respondents who underwent cesarean section surgery. Cases that occur in the field regarding pregnant women are found that hemoglobin levels in pregnant women tend to be lower than normal limits. This greatly affects the condition and safety of the mother and child, especially for pregnant women who will undergo cesarean surgery because it can cause anemia. Anemia is more often found in pregnancy, because in pregnancy the need for food substances increases and changes in blood also occur, pregnant women experience more abnormal hemoglobin levels, this is due to insufficient diet and nutritional intake, so that erythrocyte metabolism in the formation of hemoglobin is disturbed. The availability of hemoglobin in the body is very important. Hemoglobin plays a role in transporting oxygen from the lungs to the tissues and transporting carbon dioxide from the tissues to the lungs to be secreted. According to [21], nutritional intake in the form of nutrients that are quite influential on the amount of hemoglobin in the blood, one of the nutrients that can help the formation of red blood cells is Fe, protein, vitamin B12 and folic acid.

Based on the results, 3 female respondents who experienced a drastic decrease in hemoglobin levels, namely female respondents who underwent cesarean surgery, can be seen in Figure 4.1.2. respondent H-02 with pre Hb levels 13.2 g / dl and post Hb levels 11.2 g / dl, respondent H-05 with pre Hb levels 11.9 g / dl and post Hb levels 8.3 g / dl, and respondent H-10 with levels Pre Hb 10.4 g / dl and post Hb 7.5 g / dl. So that it can be seen that by doing cesarean surgery in pregnant women, the tendency to decrease hemoglobin is very possible so that it can cause anemia. Therefore, it is very necessary to pay special attention to dealing with these problems.

The special attention referred to is that pregnant women should pay close attention to nutritional intake for their bodies which is very much needed for the fetus that is being conceived, such as the need for carbohydrates, protein, ions, folic acid, calcium, and a series of vitamins that are important for fetal development [29].

In table 3. that out of 11 male respondents, 1 respondent (3.0%) had mild anemia and 10 respondents (30.3%) had normal hemoglobin levels. The difference between pre and post surgery was not very significant. This can happen because the type of surgery performed by some respondents tends to be mild so that the condition of losing a lot of blood is not experienced.

Based on the description of the results of the examination of hemoglobin levels in pre- and postoperative patients, which was carried out on 33 respondents, it can be seen that female respondents have a tendency to develop anemia during postoperative time, although the percentage is not high. To prevent this, it is necessary to increase the consumption of several food sources of iron, namely green vegetables, beef, chicken, fish and goat. The quality of food derived from animals is usually better than plant-based foods [12].

CONCLUSION

From this research it can be concluded that b erdasarkan the results obtained, the image of hemoglobin in patients pre- and post-operation is based on the degree of anemia ialahtidak there are occurrences of severe anemia hemoglobin <6 g / d l, anemia were hemoglobin 6.0 - 7.9 g / dl (consecutive , 0% and 12.1%), mild anemia of hemoglobin 8.0 - 9.9 g / dl (21.2% and 15.2%, respectively), very mild anemia of hemoglobin 10.0 - 11.0 g / dl (respectively, 9.1% and 21.2%) and the normal limit of hemoglobin> 11.0 g / dl (69.7% and 51.5%, respectively).

The results obtained indicate that there is a tendency towards anemia in patients as seen from the decrease in hemoglobin levels in preoperative and postoperative patients.

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