DESCRIPTION OF THE RESULTS OF EXAMINATION OF BLOOD POTASSIUM LEVELS IN THE ELDERLY IN THE WORK AREA OF THE HEALTH CENTER OF KABILA

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ABSTRACT

Potassium is a major intracellular cation that plays an important role in cellular metabolism. This study aims to describe the results of examination of blood potassium levels in the elderly in the work area of the Kabila Health Center. This research method uses a quantitative research approach with the type of research used in this study is a descriptive type of research.

The results of this study indicate that the results of examination of blood potassium levels in the elderly from 26 respondents obtained normal results as many as 5 samples 919.23%, high as many as 5 samples 19.23%, and low as many as 16 samples 61.54%. The amount of low blood potassium is more because respondents have low potassium intake.

Conclusion Based on the risk factors that most influence the results of examination of blood potassium levels in the elderly, namely the lack of consuming foods containing potassium and not consuming very high amounts of potassium. Keywords: Blood Potassium.

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INTRODUCTION

Depending on the age group, the adult population can be divided into three categories: young adults (60-69 years), middle-aged or middle-aged (70-79 years) and older adults (80 years and over). The adult population needs a social and physical environment to support its activities to thrive. This organization aims to support seniors, provide job opportunities according to their expertise, and provide general opportunities for seniors to express ideas. The elderly who are neglected in nursing homes or social institutions also need religious, psychological and spiritual services such as health insurance to care for the elderly and not isolate them [12].

Aging (adult) is an unavoidable process, the role of nutritionists is very important to maintain the health of the elderly to prevent illness or disease, and parents can still meet their needs [8]. Adulthood is the process of experiencing anatomical, physiological, and biochemical changes in tissues or organs that can affect the function and ability of the body as a whole. In the elderly there is a decrease in body activity, one of which is a decrease in blood vessel activity [18]. According to the World Health Organization (WHO) in Southeast Asia, the adult population is around 8% or around 142 million. By 2050, the adult population is projected to increase threefold from this year. The adult population is about 5.300,000 (7.4%) of the total population, and the adult population is projected to reach 24,000,000 (9.77%) of the total population in 2010 and 28,800,000 in 2020. Of the total population (11,34%).

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In 2016, 22.6 million adults in Indonesia, or 8.75 percent of the population, were 28 years old. That number is projected to increase to 41 million by 2030, or 13.82 percent of the population between the ages of 32 and 32 [1].

Currently, the average age of the elderly worldwide is estimated at around 500 million people over the age of 60. The number of elderly people in 2025 is estimated to reach 1.2 billion. In developed countries such as the United States, the number of elderly people is increasing to 1000 people per day. In 1985 alone, about 50% of the US population was over 50 years old. The number of parents is very important, and in the past the term "Baby Boom" has been changed to "Population Explosion" (adults).

The World Health Organization (WHO) estimates that Indonesia's adult population will grow from 9.77 percent of the total population in 2010 to 11.34 percent, or 28.8 million, in 2020, making it the largest adult population in the world (Central Bureau of Statistics) . This figure is 17.9% in China aged 60 years and over and the fourth largest in Japan after 36.17% aged 60 years and over [1]. In the Asia-Pacific region, the number of elderly people is expected to grow rapidly from 410 million in 2007 to 733 million in 2025 and to 1.3 billion in 2050 [9].

Indonesia has 11 provinces with a population of more than 7%. West Sumatra is one of 44,403 adult provinces in West Sumatra, with a population of 28,896 people [1] and the largest population in the city of Padang [9]. With the increase in the health and welfare of the population, so will the Life Expectancy (UHH) in Indonesia. According to a 2011 UN report, life expectancy (UHH) is 66.4 years (7.74% of the adult population), and this number is expected to increase in 2045-2050, with an estimated life expectancy (UHH) at 77.6 years. (28.68% of the adult population in 2045). In addition, the Central Statistics Agency (BPS) report shows an increase in life expectancy (UHH). Life expectancy in Indonesia (UHH) is 64.5 years (7.18% of adults). This figure increased to 69.43 years in 2010 (7.56 percent of adults) and in 2011 reached 69.65 years of age (7.58 percent of adults).

Data from the Central Statistics Agency (BPS) of Gorontalo Regency shows that the adult population in Gorontalo Regency is 88,256 people or 7.55 percent of the total population. However, the participation of the community, the business world, the government, the private sector, and all other stakeholders is needed in an integrated program to improve the lives and welfare of the elderly [1].

According to the profile data of the Gorontalo Provincial Health Office in 2013, the success rate for elderly services was 56.93% and female elderly services was 61.48%, down 57.77% from 59.37% compared to 2014. 56.50% were male. male and 58.83% were female [6]. Based on data obtained from 10,125 adults in Pohuwato Regency in 2017, there were 19,365 adults in Gorontalo Regency in 2018, 12,324 adults in Boalemo Regency in 2016, and the number of adults in Gorontalo City was around 14,456. Nutritional status of adults in the working area of the West Limboto Health Center. According to data from the Health Service of Bone Bolango Regency, the number of elderly people in Bone Bolango Regency in 2014 was 11,165 people. The number of adults at the Suwaawa Health Center was 1,564. people in 2018, the number of adults at the North Toto Health Center was 1,786 people in 2019, the number of adults at the Tilon Kabila Health Center was 1,423 people in 2018 and the number of adults in Bulango Timur was 1,352. Puskesmas Kabila has the highest number of adults, namely 2,782 [5].

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The elderly are one of the groups or populations at risk that are increasing in number saying that the population at risk is a collection of people whose health problems are likely to develop worse because of the risk factors that influence them. Elderly: 60-74, Elderly: 75-90, Very old age > 90. Elderly as a population at risk have three health risk characteristics, namely, biological risks including agerelated risks, social and environmental risks and behavioral or behavioral risks. lifestyle [4].

Old age begins when a person begins to enter the age of 60 years. Seniors are people aged 60 years and over. According to Hurlock, old age is the final stage of the cycle of human development, a period in which everyone hopes to live a calm, peaceful life, and enjoy retirement with their beloved children and grandchildren with great care [13]. The number of elderly people who continue to increase in number in Indonesia raises a new reality, namely the increasing number of elderly people living in nursing homes. From year to year the number of residents of the orphanage he manages continues to increase. In recent years, the number of elderly residents of the orphanage has reached the maximum limit of 100 people [13].

Old age (elderly) is a process that cannot be avoided, the role of nutritionists is needed to maintain the health status of the elderly in order to avoid disease or disease disorders and the elderly can still meet their needs independently [8]. The elderly experience a decrease in the function of organs and body systems so they need a lot of potassium consumption. Potassium plays a role in maintaining skeletal muscle function, heart function, and smooth muscle contraction that plays a role in movement and digestion. Potassium in the body of the elderly serves as the main positive ion in cells, potassium also plays a role in influencing muscle contraction,

fluid and electrolyte balance in the body [10].

Potassium is a major intracellular cation that plays an important role in cellular metabolism. As much as 2% of potassium is in the extracellular fluid and is maintained within narrow limits. Potassium is present in cells 20 times more than in blood vessels (intravascular fluid or plasma). The ratio of intracellular fluid to extracellular fluid potassium helps determine the resting potential of nerve and muscle cell membranes, so that most of the potassium is located inside the cell. Changes in plasma potassium levels can affect neuromuscular and cardiac function [10].

Potassium is responsible for controlling intracellular fluid which will prevent the accumulation of fluid and sodium in the cells. Potassium is a mineral that is good for controlling blood pressure. Potassium also has the benefit of triggering the work of muscles and nerves, facilitating the transportation of oxygen to the brain and helping the balance of fluids in the body [10].

Potassium levels in the body can be increased through the consumption of foods that contain potassium such as meat, fruit and vegetables. Extracellular fluid can add potassium at any time when there is damage to cells (tissue catabolism) or movement of potassium out of cellular tissue. An increase in potassium levels in the body occurs when there is a decrease in kidney function. Potassium is lost from the body through the kidneys and skin. Potassium may also be lost from the extracellular fluid due to intracellular displacement or renal anabolism. The main regulator of potassium balance in the body is the kidneys. The regulation of the amount of potassium is carried out by means of urine excretion. The presence of the hormone aldosterone can increase the excretion of potassium. The kidneys are not able to store potassium as strongly as

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the kidneys store sodium, so the amount of potassium can still be lost through the urine [11].

Examination of potassium levels in the blood can affect the use of drugs, such as IV penicillin potassium can cause hyperkalemia, penicillin sodium can increase potassium excretion. Potassiumsparing diuretic drugs (spironolactone) can also increase potassium levels. Age can affect blood potassium levels in the elderly because there will be instability of blood potassium caused by increasing age. Elderly people are very at risk for disease and are at risk for foods that will cause blood potassium levels to decrease and increase.

Gender is a form of difference between women and men. Men are more at risk for decreased or increased blood potassium levels as a result of hypogonadism, alcohol consumption or excessive use of corticosteroids. Hyperkalemia can be found in patients with renal impairment. A decrease in potassium levels of 0.4 mEq/L may occur after insulin administration, but the manifestations in this case were not significant. Administration of glucose during glucose tolerance testing or intake and administration of large amounts of glucose in patients with cardiac disorders can cause a decrease of 0.4 mEq/L of potassium in the blood [9].

Potassium is the main intracellular cation that plays an important role in the human body, and has a composition of 0.36% in the formation of the human body. Potassium along with sodium and chloride are the main electrolyte components in the body. These three electrolytes form an ion gradient across membranes, maintain fluid and electrolyte water balance in the body, and neutralize positive and negative charges on proteins and other molecules.

In addition, potassium in the human body functions as the main positive ion in cells, potassium also plays a role in influencing muscle contraction, fluid and electrolyte balance in the body [13]. Electrolyte analyzer Cornley K-Lite is a supporting tool in clinical laboratories that is supported by electrolyte solutions that have the function of changing a solution. Electrolyte analyzer for electrolyte checking.

Its working principle is to analyze the levels of Na +, K +, Cl-, and Li + in whole blood, serum, urine (not applicable for Li +), and plasma. Advanced software and hardware, including an optional bar code reader, keeps track of all analysis results. By using this clinical laboratory equipment, it can be ensured that the operational process becomes more economical and the cost per sample is low.

Potentiometric method, This method measures the voltage that develops between the surfaces. This method measures the voltage that develops between the inner and outer surfaces of an ion-selective electrode. The electrode (membrane) is made of inner and outer ion selective electrodes. The electrode (membrane) is made of a material that is selectively permeable to the ion being measured, from a material that is selectively permeable to the ion being measured.

The normal value of potassium in the human body differs between adults, children and infants. The normal value of potassium in adults and children is 135 – 145 mEq/L, while in infants it is 134 – 150 mEq/L. Excess levels of potassium in the body is called hyperkalemia, while lack of potassium levels in the human body is called hypokalemia [10].

Hypokalemia is a condition where potassium levels in the body are below normal limits. Hypokalemia can occur due to loss of potassium from the body, or due to the movement of potassium into cells. Hypokalemia is rare because there is no potassium intake. Changes in serum potassium levels indicate changes in

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extracellular potassium. Changes in potassium levels do not always indicate changes in total body levels.

Hypokalemia is characterized by fatigue, muscle weakness, leg cramps, flaccid or loose muscles, nausea, vomiting, ileus, and decreased urine concentration (polyuria). In addition, it can also be characterized by decreased bowel sounds due to smooth muscle weakness, weak and irregular pulse, and decreased tone [13].

Hyperkalemia is an abnormal condition, in which the serum potassium (potassium) concentration in the body is too high. Hyperkalemia occurs when the intake of potassium for the body is not able to balance the work of the kidneys to remove potassium levels from the body. Diseases that can result in the accumulation of excess potassium due to decreased excretion.

Hyperkalemia can also result from an intracellular shift of potassium into the circulation. This can occur due to the rupture of red blood cells (hemolysis) or the occurrence of tissue damage as in trauma or severe burns. Symptoms of hyperkalemia include tingling in the hands and feet, muscle weakness, and temporary paralysis [14].

RESEARCH METHODS

Sample Study A detailed statistical methods study. Study estimates describe the results of testing blood potassium levels in adults. Explain the type of research used! evaluates the value of a variable without intending to compare or relate it to other variables. In this study, researchers wanted to see the results of testing blood potassium levels in adults. Research time in September to October 2021.

The research location is at the Kabila Health Center, Bone Bolango Regency. Alasa took the research location at the Kabila Health Center, because in this place there were quite a lot of elderly people.

The data used in this study are only preliminary data, namely data obtained from the results of testing blood potassium levels in the research sample. The source of this data comes from the results of the respondent's questionnaire and research documentation.

Population is a general area of objects and subjects whose size and characteristics will be studied and concluded by researchers [16]. Puskesmas Kabila Puo Village has a population of 179 people and 26 samples were taken from the calculation formula.

The model is part of the number and characteristics possessed by the population [16]. The sample in this study consisted of 26 adults with the following criteria: The requirements for acceptance of guidelines or attitudes that must be achieved by individuals in the population can be used as examples [11].

Part of the population and its characteristics [15]. To determine the sample size in this study is calculated by the formula:

$$n = \frac{NZ^{21-\propto}\overline{z}P(1-P)}{(N-1)\,d2 + Z21-\propto/ZP(1-P)}$$

Quiz is a method of collecting data by asking a number of written questions to respondents to obtain information or data. The use of questionnaires allows researchers to identify in detail the information they need [14]. Once collected, the data is processed through the stages of Editor, Label, and Sequence [7].

RESEARCH RESULT

Based on the results of research that has been carried out at the Toto Kabila Hospital, Bone Bolango Regency for 7 days, from 18 to 24 September 2021 on 26 samples.

In the research above, the results of the lack of blood potassium are more than normal and high blood potassium in the elderly, the low intake of potassium is due

to the respondents consuming small amounts of food sources of potassium. This can be seen from the questionnaires that have been distributed by researchers to respondents. Potassium is found in all foods. derived from plants and animals. The main sources of potassium are raw/fresh foods, especially vegetables and legumes.

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To find out the results of the examination of blood potassium levels in the elderly, the respondents were first grouped according to the inclusion criteria that the researchers had determined. After the group of respondents who fall into the inclusion category is obtained, the next step is to provide questionnaires and informed consent to respondents to fill out and sign. After the respondents filled out and signed the questionnaire and informed consent, the researcher then checked the completeness of the contents of the questionnaire and the informed consent. After filling out the questionnaire and complete informed consent, the researcher proceeded to take the patient's blood [17].

The respondent's blood that has been taken by the researcher is then used as serum by the researcher by inserting the blood into a tube that does not contain anticoagulant and then allowing the blood to clot completely. After freezing, the blood was then spun with a centrifuge at 3000 rpm for 10 minutes. Serum obtained by centrifugation then researchers pipette

500 serum for blood electrolyte examination, after that enter the patient's id then wipe the tip of the needle with a tissue. The results of the electrolyte levels obtained were then recorded by the researchers on a sheet that the researchers had prepared. The number of samples or respondents obtained is as many as 26 people [17]. Then the results of laboratory tests are obtained as follows:

Table. 1 Characteristics of Respondents Based on Gender

No	Gender	Normal		Tinggi		Rendah		Total	%
		F	%	F	%	F	%		
1	Male	4	15.4	2	7.7	6	23.1	13	50
2	Famale	1	3.9	3	11.5	10	38.4	13	50
Total		5	19.3	15	19.2	16	61.5	26	100

(Source: Primary Data 2021)

Based on the table above, it shows that of the 26 respondents who studied blood potassium levels in the elderly, based on male sex who had normal potassium levels, 4 people with a percentage (15.4%), 2 people with a high percentage (7 ,7%), which is low as many as 6 people with a percentage (23.1%). Then based on the gender of women who have normal potassium levels, namely 1 person with a percentage (3.9%), the high is 3 people with a percentage (11.5%), the low is 10 people with a percentage (28.4%).

Table. 2 Frequency Distribution of Blood Potassium Level Examination Results in the Elderly

No	Checking blood potassium levels	Frequency	%
1	Normal	5	19.23
2	Tinggi	5	19.23
3	Rendah	16	61.54
Jumlah			10260

(Source: Primary Data 2021)

Based on the table above shows that the results of examination of blood potassium levels in the elderly, obtained normal results as many as 5 samples with a percentage (19.23%), high as many as 5 samples with a percentage (19.23%), and low as many as 16 samples with a percentage (61.54%).

DISCUSSION

Potassium is a large intercellular cation that plays an important role in cellular metabolism. About 2% of potassium is present in the extracellular fluid and is stored in narrow limits. Potassium is 20 times more abundant in cells (endothelial fluid or plasma) than in blood vessels. The ratio of intracellular fluid to extracellular fluid potassium helps determine the resting capacity of nerve cells and muscle tissue to obtain high levels of potassium in the cells. Changes in plasma potassium levels affect neuromuscular and cardiovascular function. To find out the results of examination of blood potassium levels in the elderly, the respondents were first grouped according to the inclusion criteria that the researchers had determined. After the group of respondents who fall into the inclusion category is obtained, then the next stage is to provide questionnaires and informed consent to respondents to be filled out and signed. After the respondents filled out and signed the questionnaire and informed consent, the researcher then checked the completeness of the contents of the questionnaire and the informed consent. After filling out the questionnaire and complete informed consent, the researcher continued by taking the patient's blood.

The respondent's blood that has been taken by the researcher is then used as serum by the researcher by inserting the blood into a tube that does not contain anticoagulant and then allowing the blood to clot completely. After freezing, the blood was stirred with a centrifuge at 3000 rpm for 10 minutes. The serum was obtained by centrifugation then the researchers pipette 500 serum for blood electrolyte examination, after that enter the patient's id then wipe the tip of the needle with a tissue. The results of the electrolyte levels obtained were then recorded by the researchers on a sheet that the researchers had prepared. The number of samples or respondents obtained is as many as 26 people.

A. Results of Examination of Blood Potassium Levels in the Elderly

The results of the examination of blood potassium levels in the elderly at Toto Kabila Hospital using the percentage formula obtained normal results as many as 5 samples with a percentage (19.23%), high results as many as 5 samples with a percentage (19.23%), and low results as many as 16 sample with a percentage (61.54%). From the results obtained, the cause of high potassium levels is consuming high amounts of potassium will have symptoms of decreased excretion or increased potassium levels may include tingling in the legs, muscle weakness, and temporary paralysis.

Furthermore, the cause of the decrease in potassium levels is a decrease in the amount of potassium in the respondents. This may be due to the patient's knowledge of appropriate foods, especially the choice of foods containing potassium, because low potassium levels can be caused by loss of potassium or movement of potassium into cells. Fatigue, weak muscles. Leg pain, thin or stiff muscles, nausea, vomiting, reduced urination and polyuria. In addition, it can also be manifested by the reduction of weak and irregular pulse noise, and decreased intestinal tone due to decreased muscle tone.

Based on the table of examination of blood potassium levels in the elderly in the work area of RSUD Toto Kabila Kab. Bone Blolango showed 26 elderly people who had their blood potassium levels checked, 5 samples were normal, 5 high and 16 low. Based on the results of the examination, it was found that the amount of low blood potassium was more, this is in line with the questionnaire that I distributed to respondents that 16 respondents admitted that they did not consume adequate

amounts of potassium due to lifestyle factors of people who do not know the importance of potassium intake in the body. . And based on the results of the examination the amount of high potassium is not much, namely 5 respondents who have high potassium, This is also in line with the questionnaire that I distributed to the respondents that the 5 respondents admitted that they were consuming an excessive source of potassium, resulting in an increase in the amount of potassium in the blood and influenced by other factors such as being on drugs because they had a history of illness which was recommended to consume. the drug. Because according to the questionnaire 5 respondents had a history of gout and diabetes mellitus.

This study is in line with previous research conducted by Susanti R, which showed that the elderly who had a low potassium intake were 34 (64.2%) and 28 (52.8%) were adults with a high potassium intake. Potassium is found in many raw or fresh foods. The cooking process can cause a loss of potassium in food.

This study is in line with previous research conducted by Imammudin, that potassium in the response study was 1 (2.8%) in the positive group and 35 in the poor group (97.2%). This happens because it is rarely consumed in response to foods containing potassium, so it is easier to find potassium in the foods we eat every day, such as fruits and vegetables. Eat regularly, but poor nutrition is the main cause of potassium deficiency.

B. Age and Gender

Age can affect blood potassium levels in the elderly because there will be instability of blood potassium caused by increasing age. Elderly people are very at risk for disease and are at risk for foods that will cause blood potassium levels to decrease and increase. Aging (adult) is an unavoidable process, requiring the role of servants in maintaining the health of the elderly to prevent illness or disease and for adults to be able to meet their needs independently [8]. Adults need large amounts of potassium because they experience decreased activity of organs and body systems. Potassium plays a role in maintaining skeletal muscle function, heart function and muscle breakdown, it also plays a role in movement and flexibility. Potassium in the adult body acts as a key positive ion in cells,

Gender is a form of difference between women and men. Potassium levels are low in women than men. One of the reasons is because the composition of a woman's body mass affects the total amount of potassium in the body, then women often experience prolonged vomiting which causes the potassium content to decrease.

CONCLUSION

Based on the results of research regarding the results of examination of blood potassium levels in the elderly in the working area of the Kabila Health Center, it can be concluded:

1. The results of the examination of blood potassium levels in the elderly were obtained from 26 respondents, there were 5 samples (919.23%), high 5 samples (19.23%), and low 16 samples (61.54%).

2. Based on the risk factors that most influence the results of examination of blood potassium levels in the elderly, namely the lack of consuming foods containing potassium and not consuming very high amounts of potassium.

Based on the conclusions above, several suggestions that may be useful are presented, including:

1. For patients

It is expected that medical health analysts carry out routine controls and regulate eating

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patterns such as foods that contain potassium, for example, fresh vegetables, fruits, meat, and nuts. Because consuming these foods can produce normal blood potassium levels and is very good for the body so that it can prevent other complications in the elderly.

2. For further researchers

It is hoped that further researchers will conduct research on the description of blood potassium levels in the elderly in terms of factors that influence blood potassium levels to become hypokalemia or hyperkalemia.

3. For the Community

It is expected that the public will frequently check blood potassium levels in the nearest laboratory and often consume foods containing potassium.

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