

OVERVIEW OF SERUM CREATININE LEVELS IN TRADITIONAL GOLD MINING WORKERS IN EAST MAMUNGA'A VILLAGE

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ABSTRACT

Creatinine is a kind of chemical in the body indicating damage to body cells. The levels in the blood indicate how much damage to body cells. The purpose of this study was to determine the description of serum creatinine levels in traditional gold mining workers in East Mamunga'a Village in 2021.

This research is descriptive with a quantitative approach. The population in this study were all traditional gold mining workers with a total sample of 35 people. The sampling method used *Accidental Sampling*. The examination of serum creatinine levels using the *Jaffe Reaction* method and measured using a *Spectrophotometer biosystem* BTS 350. The types of data used were primary data and secondary data with data sourced from interviews and documentation. Furthermore, the data were analyzed univariate.

The results show that 15 samples (42.9%) of serum creatinine are abnormal and 20 samples (57.1%) are normal. Serum creatinine levels that do not increase or are declared normal are caused by traditional gold mining workers adopting a healthy lifestyle. The conclusion is that traditional gold mining workers experience an increase in serum creatinine levels less than normal. The need to maintain a healthy lifestyle such as adequate rest during mining activities, consuming mineral water, and not consuming excessive supplements so as not to increase serum creatinine levels.

Keywords: Traditional Gold Mine, Serum Creatinine

INTRODUCTION

Indonesia is an archipelagic country in the world that has many normal assets, especially regular assets that can be rebuilt or are inexhaustible. Continuing normal assets are a form of regular assets which, when supplies run out, in a short period of time and are easily available again by means of reproduction. Normal types of renewable assets, such as water, plants, and animals, thoughts supply on this earth is unlimited and must be maintained in its use. While the normal types of assets that cannot be replenished are the types of ordinary assets which if the supply runs out it is difficult or even difficult to access

again. Because it spends most of the day, even thousands to millions of years, if ecological conditions allow. Examples of these regular assets include coal, oil, petroleum gas, tin, iron, gold, and others[5]. A normal asset like gold, for example, required an intricate and relentless cycle in the superheated center of a cosmic explosion to form. Conditions like this are hard to track on the planet, so gold is becoming uncommon, valid. Generally, if the recovery speed of normal assets is slower than the rate of utilization, these regular assets will be called non-sustainable regular assets [5].

Gold mining in Bulawa District, especially in East Mamunga'a Village, in ancient times had been processed by the community in the traditional way, namely the community did it by making mining holes in the form of vertical or horizontal wells. This mining pit has a depth of up to tens of meters made using traditional tools such as hammers, crowbars, hoes and other simple tools. Wood and bamboo are used as a buffer for the holes to prevent landslides. Wood and bamboo on the other side of the hole are made of stairs down as a way for miners to reach the bottom of the mine pit. Not only that, there are air pump machines that are connected by using a small pipe to the inside of the mine pit which is used to supply air to the miners in the mine pit. Because the depth of the mine pit can reach 50-70 meters. Mined ore or rocks are then transported manually to the surface using a pulley system. When mining activities are completed, the rocks containing gold are crushed using a crusher with a size of 7-10 mm, then processed using a drum measuring 50-55 cm long with a diameter of 35 cm. The grinding tool is then inserted into the drum up to 2-4 iron rods. The drum that has been filled with iron rods is then add 5000 milliliters of water and let it spin for 3-4 hours [13].

Based on population data obtained from the Bulawa District government in 2021, Bulawa District has 7 leading villages, where the average livelihood in this District is as gold mining workers, there have been recorded the number of gold mining workers in Settlement Village as many as 64 people, Kaidundu Village West 93 people, Mopuya Village 71 people, Dungilata Village 163 people, Patoa Village 69 people, West Mamunga'a Village 47 people and in East Mamunga'a Village as many as 117 people. East Mamunga'a Village ranks second in the

community of gold mining workers in the Bulawa District.

Gold mining is a job that requires muscle due to strenuous physical activity and requires a lot of energy to increase muscle mass in the body. Gold mining workers often neglect work safety and health aspects. Aspect (K3) Occupational health and safety is an important aspect. If the aspects of occupational health and safety are neglected, it can cause work-related diseases and work-related diseases. These occupational diseases, among others, occur in the skin, respiratory system, nervous system, heart system, blood vessels, urinary tract, kidney failure and others. The aspect of health and safety is an important aspect both in terms of the formal sector and in the informal sector [2].

Gold mining really requires physical activity so that it can have a negative impact on every individual, especially if it is done excessively or individuals who are not accustomed to doing physical activity [2]. Mining in East Mamunga'a Village is Miners whose activities are manual or mining workers are required to have more power in order to produce a role that is in accordance with the expected results, especially in the bones and muscles, because bones and muscles are important tools and are needed when doing work. however, there are complaints that are suffered by the mining workers, but they usually don't see it as a problem. Because in general the complaints that arise in the form of fatigue, dizziness, shortness of breath and fatigue after doing activities. Mining workers are not aware of the impact of the symptoms caused because the diseases that appear are usually chronic diseases (usually occurring over a long period of time), while the losses that can be caused can result in loss of working hours, disruption of production, so that it can damage or disrupt organ function body [3].

In addition to strenuous physical activity, these miners in Mamunga'aTimur Village also have a poor lifestyle such as less nutritious food intake, especially protein, dehydration (inadequate fluid consumption and excessive sweating), and the use of supplements/energy drinks. Protein is a compound that makes up the organs in humans, especially stored in the muscles in the body. The metabolism of muscle cells is then converted to creatinine in the blood. The kidneys are in charge of removing creatinine from the blood which will be channeled into the urine. If the role of the kidneys is decreased, the amount of creatinine in the blood will increase. So this is what triggers the relationship between creatinine levels and protein [9]. Serum creatinine levels may be elevated in people who experience less consumption of mineral water, this is due to a decrease in the Glomerular Filtration Rate (GFR), this is in line with Isnabella's research.

In addition, supplementary drinks are complementary drinks for the community, especially mining workers, which are used to maintain body health and stamina. This supplemental drink is usually drunk and has become one of the habits of gold mining workers in order to restore stamina after doing heavy work or as an energy boost if you want to do a mining activity. But most of the mining workers do not know the dangers of consuming supplementary drinks for health. Mine workers only think that supplemented drinks are drinks to restore stamina quickly, mining workers prefer to consume supplemented drinks so that the body becomes fresh and overcomes fatigue. There are several supplementary beverage products that have been circulating among the wider community which contain substances that can be detrimental to the body's organs [12].

Several previous studies have suggested that consuming enhanced

supplement drinks can seriously affect health, if consumed in large quantities. Utilization of these enhancements may be a hazard factor for constant kidney infection [20]. Based on the research of Hidayati, et al, it was found that respondents who consumed booster drinks under 7 sachets or teapots every week, 7-14 sachets or teapots every week, and more than 14 sachets or teapots every week has a higher chance of causing gradual kidney damage, to some extent, more important than people who do not consume beneficial drinks. Then, at that time, respondents who consumed 1 sachet or a bottle of soft drink every day and 2 sachets or a teapot every day had the opportunity to develop ongoing kidney disease which was many times more severe in its development than those who did not consume supplementary drinks. From this examination based on the time of using soft drinks, respondents who consumed soft drinks for less than 1 year, 1-4 years, and over 4 years had a higher chance of causing persistent kidney disease from many times to many times more times.

The decrease in kidney work, triggered by one of the factors, namely the age of a person, occurs a process that causes some nephrons to disappear, thus leading to a decrease in the number of creatinine levels. filtration, leading to an increase in the amount of creatinine present in the bloodstream [15].

This is in accordance with Isnabella's research which stated that when the age of the individual ranged from 25-34 years, 9 individuals with a percentage of 60% had odd or high serum creatinine levels, followed by age. 35-44 years in which 4 individuals had a 26.7% percentage rate had elevated creatinine levels.

The level of the amount of creatinine in the blood is an indication used to assess a person experiencing abnormalities in the work of kidney function, because

creatinine in the blood can increase if kidney function decreases. Creatinine level 2.5 mg/dl possible indicates renal impairment. Creatinine is important in assessing glomerular capacity, therefore creatinine will be more sensitive, especially in kidney disease. so that serum creatinine examination is the most specific for detecting impaired renal function [11].

Creatinine is a product of the metabolism of creatine and phosphocreatine. Creatinine has a subatomic load of 113-Dalton. Creatinine is in the glomerulus and then reabsorbed in a cylindrical manner. Plasma creatinine is incorporated in skeletal muscle which causes its amount to depend on muscle mass. If you have kidney damage, the filtering capacity of the amount of creatinine will decrease so that the amount of creatinine in the blood will increase. A twofold expansion in the serum creatinine level indicates a decrease in half of the renal capacity, just as a threefold expansion in the serum creatinine level reflects a 75% reduction in renal capacity [10].

Creatinine is a type of compound in the body that shows damage to body cells. Levels in the blood indicate how dangerous the body's cells are. There are various factors that cause the amount of creatinine in the blood to increase, including specific dryness, extreme weakness, use of drugs that are harmful to the kidneys, kidney damage due to inflammation, irregular thymus blood pressure, and kidney damage [1].

In recent periods, serum creatinine has become a very well-known and simple serum marker for determining renal function [21]. The Public Organization for Welfare accepts that serum creatinine analysis can be used as a strategy to guide treatment for someone with impaired kidneys. The level of the amount of creatinine in the blood is used as a significant marker to decide if a person

has decreased kidney function that requires hemodialysis or not. A blood test that is usually tested as an actual assessment feature if a person is on medication is a serum creatinine check. Serum creatinine can make it easier to assess the work of the kidneys in a person. The capacity of measuring the amount of creatinine in the blood is a limitation as a form of measuring kidney function, because the volume in the blood is then excreted in the urine over a 24 hour period. The amount of creatinine in the blood which is important to indicate the work of the kidney is defective. The usual incentive for a man's serum creatinine count is 0.7-1.3 mg/dL while that of a woman is 0.6-1.1 mg/dL [10].

The phase before the sample was analyzed from the creatinine assessment had an effect on the test results, which included the phase of test selection, treatment and implementation of tests and patient components. In treating and supervising the examination, several aspects need to be considered, especially the blood creatinine examination. The handling process in order to get a good serum, the blood is centrifuged for 1 hour after the blood collection. If centrifuged 2 hours after sampling it affects creatinine levels [7].

Another pre-analytical stage that has not been focused on by some analysts in the laboratory is the capacity of the blood sample. Sample capacity is carried out if the assessment is delayed, the sample will be sent from another research center or stored because it is hoped that there will be additional examinations so that the patient will not be followed up for blood collection. Drawn-out serum capacity at the temperature will not have an impact in protein fixation caused by the breakdown of the protein that separates the peptide securities and then there will be a change of protein into amino acids, so the protein level is lower during the capacity. Protein

breakdown is the underlying phase of protein denaturation which causes protein loss due to high temperature and heating. Low protein levels will affect the results of laboratory tests including side effects of serum creatinine levels because creatinine is an amino acid carried by the liver, pancreas and kidneys [7].

Figure 1. Serum Creatinine Check Tool



(Source: Primary Data, 2021)

Spectrophotometer is a technique in coherent science that can determine sample designs from either quantitative or qualitative by relying on the correspondence between matter and light. The light on the spectrophotometer is in the form of pseudo light, UV and infrared [17].

The light source comes from electromagnetic radiation. The rule of function is that the test is carried and then sucked into the pulley so that it enters the cuvette and is infiltrated by the lamp shaft then the sample will be pulled back by peristalsis directly to be conveyed [17].

his tool is equipped with the following features:

- a. Full Range of LEDs (340, 405, 505, 535, 560, 600, 635, 670 nm) + 3 free positions for optional filters.
- b. Black BOX-Optik Sealed Optic Systems-no Filter Wheel.
- c. Monochromatic/bichromatic reading.
- d. Photometric (0.0 to 3.5A) for all wavelengths.
- e. Inhaled volume from 100 L – 5000 L.
- f. The system temperature from 25° – 40°C (1°C difference) is controlled by the peltier.
- g. Cuvette flow 18 L.
- h. Program memory up to 150 Techniques.

- i. 320 x 240 pixel backlit graphic display with contrast settings

Examination of serum creatinine levels in gold mining workers is a very important factor because many conditions are found to be carrying out heavy activities on a job, even the unhealthy lifestyle found in traditional gold mining workers in East Mamunga'a Village.

RESEARCH METHODS

This research includes a quantitative approach, with the type of descriptive research. The type of data used is the type of primary and secondary data, while the type of data comes from a questionnaire. The total population is 117 people with a total sample of 35 people. The sample size in this study can be determined using the Stanley Lemeshow formula with the following formula:

$$n = \frac{NZ^2 P(1 - P)}{(N - 1)d^2 + Z_{1-\alpha/2}^2 P(1 - p)}$$

The sampling technique used is the Accidental Sampling technique. The measurement scale in this study is using the ordinal measurement scale. The data obtained were analyzed using the SPSS (Statistical Package For Social Science) program.

RESEARCH RESULT

At first, East Mamunga'a Village was only an area of two hamlets from Mamunga'a Village, Bone Raya District, but because of the existing developments and the wide open opportunities to be able to form one village area, the community leaders of the two Hamlets in question gathered and agreed to separated from Mamunga'a Village and formed a new village, namely East Mamunga'a Village.

Several processes were carried out well and finally in 2007 the East Mamunga'a Village was inaugurated as a preparatory village which was also

accompanied by the expansion of the Bulawa District led by the Head of the Preparatory Village, Mr. Saleh Gunibala. Then in early 2008 the East Mamunga'a Village gained the trust of the Bone Bolango Regency government to become the Definitive Village, which was marked by the election of the first Village head and the result was that Mr. Saleh Gunibala was again elected as the first Village Head in East Mamunga'a Village.

The name East Mamunga'a Village is a name taken from the main village, namely Mamunga'a Village which just happens to be in the East, then added with the word Timur or more specifically, Mamunga'a Village which is located in the East.

The government of East Mamunga'a Village, Bulawa Sub-district, is still in a conducive state even though there are ripples, but it is only a spice for social life and is not a significant obstacle. The relationship between the East Mamunga'a Village Government and other village governments, even with the District and Regency governments to the Province is very good so that the wheels of government can be carried out properly and smoothly.

Figure 2. Map of East Mamunga'a Village



(Source: Primary Data, 2021)

East Mamunga'a Village consists of 5 hamlets, namely Hamlet I Tuna Balap (547.6 Ha), Dusun II Tunas Jaya (with an area of 525.7 Ha), Hamlet III Ampera Jaya (with an area of 558.01 Ha), Hamlet IV SukaMaju (with an area of 547.0). Ha) and Dusun V Green Fin (Area 559.9 Ha).

East Mamunga'a Village is included in the Administrative Village of Bulawa District Government, Bone Bolango Regency. Based on Village Potential Data, the total area of East Mamunga'a Village is 2,738 Ha.

The sampling location in this study was in Mamunga'a Timur Village, Bulawa District, while the sample analysis in this study was at the Tombulilato Regional General Hospital Laboratory which was held on 15-22 June 2021, with the aim of knowing serum creatinine levels in mining workers. gold in the village of East Mamunga'a. The sample used in this study was 35 gold mining workers with the criteria of traditional gold mining workers

Table 1. Results of Examination of Serum Creatinine Levels in Traditional Gold Mining Workers.

Serum Creatinine Level	Frequency	(%)
Abnormal	15	42,9
Normal	20	57,1
Total	35	100,0

(Source: Primary Data, 2021)

Based on Table 1 above, it can be seen that traditional gold mining workers have abnormal creatinine levels as many as 15 samples with a percentage of 42.9%, while traditional gold mining workers who have normal creatinine levels are 20 samples with a percentage of 57.1%, so that the total a total of 35 samples with a percentage of 100% in East Mamunga'a Village, Bulawa District, Bone Bolango Regency.

Table 2. Frequency Distribution of Traditional Gold Mine Workers Based on Consumption of Supplemented Drinks.

Consumption Of Supplementary	Abnormal		Normal		Total	(%)
	F	%	F	%		
	Often	11	31,5	13		
Never	4	11,5	7	20	11	31,5
Amount	15	43	20	57	35	100,0

(Source: Primary Data, 2021)

Based on Table 2 above, it can be seen that traditional gold mining workers who often consume supplementary drinks obtained abnormal creatinine levels in traditional gold mining workers as many as 11 samples with a percentage of 31.5%, compared to the results of normal creatinine levels in traditional gold mining workers who consumed Supplemented drinks are as many as 13 samples with a percentage of 37% so that the overall results of traditional gold mining workers who consume beverages are 24 samples with a percentage of 68.5%. Meanwhile, for traditional gold mining workers who have never consumed supplement drinks, the results of abnormal creatinine levels are 4 samples with a percentage of 11.5%, compared to the results of normal creatinine levels, which are 7 samples with a percentage of 20% with the overall results of traditional gold mining workers who do not have ever consumed supplementary drinks, namely as many as 11 samples with a percentage of 31.5%.

Table 3. Frequency Distribution of Traditional Gold Mine Workers by Activity.

Activity Type	Abnormal		Normal		Total	(%)
	F	%	F	%		
	Heavy	15	42,9	20		
Light	0	0	0	0	0	0
Amount	15	42,9	20	57,1	35	100,0

(Source: Primary Data, 2021)

Based on Table 3 above, it can be seen that traditional gold mining workers

based on activity are divided into two types, namely heavy and light activities. In traditional gold mining workers who carry out strenuous activities, the results of abnormal creatinine levels are 15 samples with a percentage of 42.9%, compared to the results of normal creatinine levels in traditional gold mining workers who carry out strenuous activities, which are 20 samples with a percentage of 57.1%. , so that with a total of 35 traditional gold mining workers doing strenuous activities with a percentage of 100%. Meanwhile, traditional gold mining workers who carry out light activities have a percentage of 0% this is because all traditional gold mining workers in East Mamunga'a Village carry out heavy activities.

DISCUSSION

Based on the results of research that has been carried out on traditional gold mining workers who are in East Mamunga'a Village, Bulawa District, Bone Bolango Regency, sampling was carried out by Accidental Sampling using the Stanley Lemeshow formula so that 35 respondents were obtained. Creatinine levels were carried out using the Jaffe Reaction method and measured using a spectrophotometer biosystem 350.

Based on the results of the research conducted, it can be seen that almost half of the respondents of traditional gold mining workers have serum creatinine levels above normal, the results of the examination of serum creatinine levels of traditional gold mining workers are 42.9% abnormal or have an increase, while 57.1% do not experience an increase or under normal circumstances with a total of 35 samples with a percentage of 100%.

Researchers believe in the results of the study that the effect of abnormal serum creatinine levels is due to several factors, namely traditional gold mining

workers who consume supplementary drinks and do strenuous physical activity.

Consuming supplement drinks, these drinks contain several harmful substances, including: caffeine, taurine, vitamins, herbal supplements, and artificial sweeteners marketed to increase energy, stamina, performance, and concentration. Supplement products in circulation are suspected to contain one or more ingredients that can pose a risk of chronic kidney failure in their consumption [4].

Based on the results of this study, it showed that traditional gold mining workers who consumed supplementary drinks were 11 samples with a percentage of 31.5% who experienced an increase in serum creatinine levels and 13 samples with a percentage of 37% did not get serum creatinine levels that increased or were still in normal condition, so that the total number of traditional gold mining workers who consume supplementary drinks is 24 samples with a percentage of 68.5%. Meanwhile, 4 samples who never consumed supplemented drinks with a percentage of 11.5% experienced an increase in serum creatinine levels and 7 samples with a percentage of 20% did not experience an increase in serum creatinine levels, so that the total total of traditional gold mining workers who never consumed supplements was 11 sample with a percentage of 31.5%.

Serum creatinine levels in traditional gold mining workers who consumed supplemented drinks did not increase or were declared normal due to traditional gold mining workers consuming supplemented drinks regularly, generally supplemented drinks, in low doses functioning as tissue binders and prevention of scurvy. Traditional gold miners don't know enough about how supplemental drinks work and react in the body.

However, a small percentage of traditional gold mining workers

experience an increase in serum creatinine levels, this is influenced by the use of high supplements or consuming excessive supplements. Beneficial drinks consumed a lot can cause poisoning. For example, nutrient B6 consumed in excess is 1.0 g daily for long periods of time can cause loss of muscle coordination and loss of motion. Many nutrients (more than 1 g daily) can cause kidney stone problems. In general, portions more than a few times the RDA (prerequisite) are considered large doses, and are only taken under the management of a specialist. Meanwhile, traditional gold mining workers who did not consume beneficial drinks were found to have increased serum creatinine levels, this was due to the gold mining workers' lifestyle problems such as the absence of body fluids.

Lack of fluids is often mentioned because not drinking can trigger organ damage and the development of toxins in the blood so that the kidneys cannot work as expected. The kidneys interact with 200 liters of blood each day, filter waste, and transport urine to the bladder. Absence of fluids can also lead to lack of hydration, hypotension and decreased kidney function. Lack of hydration causes a decrease in extracellular volume which causes a decrease in tissue perfusion so that the capacity of the body's organs is disrupted, one of which is a decrease in kidney work [16].

In general, substances that enter the body will go through the process of digestion, transportation, digestion, and disposal. Kidneys are vital excretory organs that are vital for eliminating metabolic wastes, including toxic substances that accidentally enter the body. This is because many synthetic substances are excreted in the urine. In addition, the kidneys also get a very large blood flow and the kidney glomeruli have a large surface area that allows the opening of synthetic substances. The

ability of the kidneys to focus substances and substances also make them impervious to synthetic breakdown [6].

Caffeine and taurine have a diuresis effect that causes the loss of water and sodium from the body where taurine works by inhibiting the secretion of Anti Diuretic Hormone (ADH) which is a hormone that can increase water reabsorption in the collecting duct. While caffeine works by blocking sodium reabsorption in the proximal tubule and causing the macula densa to detect high sodium levels in the distal tubule and activate the renin-angiotensin-aldosterone system [18].

Caffeine is an adenosine A1 receptor antagonist, which inhibits renovascular effects and increases angiotensin secretion. Angiotensin will trigger arteriolar vasoconstriction, postglomerular peritubular capillary hypoperfusion and tubulointerstitial hypoxia which will reduce the delivery of oxygen and nutrients to the tubules so that it can cause tubular damage. Caffeine is also an antagonist of adenosine A2 receptors which causes increased polymorphonuclear cell (PMN) activation so that it can increase the risk of inflammation which in turn will cause slow progressive changes in renal histology [18].

Based on the activities undertaken by traditional gold mining workers, it shows that all traditional gold mining workers carry out strenuous activities, the results obtained are 15 samples with a percentage of 42.9% abnormal or increased, compared to normal creatinine levels in traditional gold mining workers who carrying out strenuous activities as many as 20 samples with a percentage of 57.1% so that the total number of gold mining workerstraditional activities that do strenuous activity as many as 35 samples with a percentage of 100%.

Serum creatinine levels that do not increase or are declared normal are caused, because traditional gold mining workers who carry out strenuous activities can pay attention to the length of time while working, but a small percentage of traditional gold mining workers experience increased creatinine levels when doing strenuous activities.

Increased levels of creatinine in the blood after exhausting active work is caused by the breakdown of stored phosphocreatine and is one of the body's systems to meet the increased demand for ATP during exercise. The breakdown of phosphocreatine then, at that point, produces particles of creatine and phosphate. Phosphate particles are utilized for the development of new ATP while creatine begins to be excreted in the urine as creatinine [6].

Under normal conditions, creatinine is completely filtered by the glomerulus and then excreted in the urine. If damage occurs to the glomerulus, creatinine will not be filtered as a whole then there will be an increase in the blood this affects the amount of creatinine in the urine. Creatinine in the blood increases when kidney function is present in conditions of acute glomerular damage. Creatinine levels will remain normal if the patient has not experienced impaired kidney function. Other factors that can influence the increase in serum creatinine levels in traditional gold mining workers are gender and age [15].

Creatinine levels are the result of muscle digestion that is influenced by mass, so that unnatural movements in men cause higher creatinine levels than women. Men generally have a larger mass and therefore have higher creatinine levels than women [19].

If a person's age increases, this will experience kidney work, because with increasing age, the most common way is to lose nephrons, causing incorrect

creatinine filtration so that creatinine levels in the blood increase [13]. In Isnabella's research, it was revealed that the maturity period was 25-34 years with 9 respondents (60%) having unusual (expanding) serum creatinine levels, followed by age 35-44 years with a total of 4 respondents. (26.7%) had high creatinine levels.

CONCLUSION

Based on the results of research regarding the examination of serum creatinine levels in traditional gold mining workers in East Mamunga'a Village, it can be concluded that:

1. Examination of serum creatinine levels in traditional gold mining workers in Mamunga'a Timur Village in 2021, obtained abnormal results with a percentage of 42.9%, while traditional gold mining workers who have normal creatinine levels are with a percentage of 57.1%.
2. Based on the risk factors that can affect serum creatinine levels in traditional gold mining workers, it is known:
 - a. Traditional gold mining workers who consumed supplementary drinks were examined for abnormal serum creatinine levels in 11 samples (31.5%) and had normal creatinine levels in 13 samples (37%). So a total of 24 samples with a percentage of 68.5%
 - b. Traditional gold mining workers with physical activity, were examined for abnormal serum creatinine levels as many as 15 samples (42.9%), while the normal ones were 20 samples (57.1%).

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