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Assessment and Laboratory Screening Test of Abnormal Blood Creatinine Level among Hypertensive Patient Attending at Some Selected Hospitals in Mogadishu Somalia

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ABSTRACT

High creatinine levels can indicate a range of underlying health conditions, including kidney infection and kidney failure and heprtantion (high blood pressure). Therefore, Hypertension is when the pressure in the blood vessels is too high (140/90 mmHg or higher). It is common but can be serious if not treated well. A higher than normal level may be due to: Blocked urinary tract. Kidney problems, such as kidney damage or failure, infection, or reduced blood flow. Loss of body fluid (dehydration). The creatinine blood test measures the level of creatinine in the blood. This test is done to see how well the kidneys are working. Creatinine can also be measured with a urine and Saliva test. The aim of the study was to determine and assess laboratory Screening test to the effect of abnormal creatinine level among hypertensive patients in some selected Hospitals Somalia. The Cross sectional Study was done in 430 samples out of 150 were randomly selected attended: Kalkaal Hospital (42/430), Somalia Sudanese Hospital (47/430) and Benadir Hospital (61/430) Samples in Mogadishu Somalia. The study period were From February to July 2023 respectively selected studied the hospital records and documented the demographic data of patients with hypertension which were demarcated as blood pressure of 140/90 mmHg. The hypertensive patients were classified into the normal or elevated serum creatinine (>135 µl/l) groups. One hundred and fifty hypertensive patients with a mean age of 43.2 years and a male to female ratio of 1:1.1 were studied. A normal result is 0.7 to 1.3 mg/dL (61.9 to 114.9 µl/L) for men and 0.6 to 1.1 mg/dL (53 to 97.2 µl/L) for women. The mean serum creatinine was 289.2 +/- 309.88 µl/l with 45.5 % of the patients having elevated serum creatinine. The alteration in age between the normal raised creatinine groups was not significant. This study showed that there is a significant optimistic relationship between blood serum and creatinine. Thus, the creatinine levels can be used non-invasively to detect serum and creatinine levels respectively cause in renal disease and diabetic and hypertensive

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nephropathy cases. Therefore, the presence of creatinine level in blood serum were 13.5% for hypertensive patients attending the hospitals and meanwhile preventive measure were immediately needed so as to reduce the damages.

Keywords: Assessment, Laboratory Screening test, Abnormal Blood Creatinine level, Hypertensive Patient Mogadishu Somalia

INTRODUCTION

Although the hypertension is very common in Mogadishu Hospitals and the creatinine levels commonly occur due to changes to kidney function, increased protein intake, or taking creatinine supplements. It can also happen due to more serious problems, like a kidney infection, diabetic ketoacidosis or high blood pressure (White et al. (2009) [1].

Creatinine is a substance produced by the muscles and eliminated by the kidneys through urine. This is why creatinine levels can be evaluated through a urine sample, as well as through blood work (Austdal, *et.al.* (2015) [2].

Normal blood creatinine levels were vary depending on several factors, like gender and lab reference ranges. The normal creatinine range for women is 0.6 to 1.2 mg/dL, and 0.7 to 1.3 mg/dL for men. High blood pressure can damage your blood vessels, which can lead to decreased systemic circulation (Bratchenko et al. (2022) [3].

This can decrease the kidney's ability to filter the blood, resulting in elevated creatinine in the blood. Understand the symptoms of high blood pressure that can occur if left untreated. What to do: To treat high blood pressure, the doctor may prescribe medications like diuretics or vasodilators. You should also exercise regularly and eat a healthy, balanced diet (Stefan and Kaufman R. (2020). [4].

There are also home remedies for high blood pressure that you can use to complement any recommended medical treatment. Excessive physical activity working out intensely and frequently can lead to increased creatinine levels in the blood. This increase is not related to changes in kidney function, but rather, is a consequence of increased muscle mass. Creatinine is a substance that is produced by the muscles. When elevated creatinine levels are related to increased muscle mass, treatment is not necessary. (Berta, *et.al.* (2019) [5].

Kidney infections can be caused by bacteria, viruses or fungi that are naturally present in the urinary tract. High creatinine levels generally occur with chronic infections, when treatment is not effective and microorganisms remain in the kidneys and cause damage. (Ernesto et, al. (2007) [6].

Learn more about kidney symptoms that may signal a problem. Kidney infections and related symptoms can be treated with medications like analgesics, anti-inflammatories and antibiotics. (Cukor *et.al.*(2007) [7].

Cranberry juice is often recommended during treatment, because it is rich in bioactive antioxidants that prevent the build-up of bacteria in the urinary tract. A high creatine level is more an indication of a potential health problem, rather than a problem itself. (Deutch et,al, (2019) [8].

If your creatine level increase is caused by a kidney issues, you may experience related symptoms. Kidney conditions often cause bladder and fluid retention issues. If your kidneys aren't working well enough to remove toxins and waste from your body, you could notice a wide range of symptoms, including: Nausea, Chest Pain, Muscle Cramps, Vomiting, and Fatigue. (Carey, *et.al.* (2018) [9].

These symptoms are more frequent in people who have extremely high creatinine levels, however they can be present in people with a family history of kidney problems, in people over 50, and in those with chronic health issues like diabetes and high blood pressure. Crump, Casey, et. al. (2019) [10].

The pair of kidneys acts as a filter in humans and excretes all the chemical substances present in the blood. Creatinine is a waste product created by the metabolic activity of the muscles. It is converted from creatine to creatinine every day and excreted by the kidneys into the urine. After a certain age, it is advised to go for a regular checkup of creatinine levels in the body.

Creatine is a chemical that your body uses to supply your muscles with energy. As you muscles use energy the tissue that makes up your muscles breaks down. This natural breakdown of muscle tissue causes creatinine to be released into your bloodstream. This is when creatine becomes creatinine. (Carey, *et.al.* (2018) [9].

High creatinine levels can indicate a range of underlying health conditions, including kidney infection and kidney failure.

A higher than normal level may be due to: Blocked urinary tract. Kidney problems, such as kidney damage or failure, infection, or reduced blood flow. Loss of body fluid (dehydration) (Charles et.al, (2017) [11].

The creatinine blood test measures the level of creatinine in the blood. This test is done to see how well your kidneys are working. Creatinine can also be measured with a urine test. A normal result is 0.7 to 1.3 mg/dL (61.9 to 114.9 µmol/L) for men and 0.6 to 1.1 mg/dL (53 to 97.2 µmol/L) for women. (Delgado, *et.al.* (2021) [12].

Women often have a lower creatinine level than men. This is because women often have less muscle mass than men.

Creatinine level varies based on a person's size and muscle mass.

The examples above are common measurements for results of these tests. Normal value ranges may vary slightly among different laboratories. Some labs use different measurements or test different samples. So that the study concern the laboratory diagnosis of creatinine level among hypertensive patient in Blood (Ferrannini, *et.al.* (2017) [13].

METHODOLOGY

A cross sectional study was accompanied in three different location Hospitals in Mogadishu Somalia. 100 Patients of either sex aged between 20 to above 50 years. An ethical clearance was obtained from hospitals. The study were grouped in to three grouped from the hospital: group having symptoms of High blood pressure, group have Dehydration and Other group hade Kidney infections. The diagnosed patients with clinical Kidney Disease, diabetes and hypertension were included the study and patients with other diseases that could affect blood, such as chain-smokers, alcoholics, pregnant women, with recent history of hospitalization, infusions and trauma, subjects the informed consent were excluded from the study.(Di Daniele et al. (2021) [14].

Both quantitative and qualitative data design in depth investigation of an individual, group, Hospitals. The cross sectional helps the researcher to study multiple entities in depth in order to gain insight into the larger cases and to describe and explain rather than predict a phenomenon. The Target population of the study Target population of this study was be considered for the study was 100 patient with high creatinine level admitted in the Hospital in different department. Same as be done (Kamila et al. (2021) [15].

And people having hypertensive disorders those admitted to the hospital and elevated their creatinine level to know the risk factors of patient with high blood pressure.

The study was conducted at the three selected hospital in Mogadishu Somalia

SAMPLING PROCESS

The sample size of 80 out 100 was selected using the Slovene's formula which state that representative population sample can be drawn out of using formula with probability sampling. 80 3.7. Data collection tools and technique after receiving informed consent, data will collected by two different phases. All the participants will invited to finish all of these three phases as made similarly by (*et.al.* (2015) [16].

SAMPLING PROCEDURES

About 80 persons were selected randomly from the hospital, inpatient Department. 2ml of the patient's intra-venous blood was obtained and centrifuged at 4000rpm for 8-10 minutes. As shown similarly both (Rosenberg AZ, Kopp JB. (2017) [17].

The blood container methods were used for collection of unstimulated whole blood sample and were immediately subjected to analysis, to avoid weakening due to incubation and also to avoid modification of creatinine level in the Blood. Approximately 3ml of Blood was collected in a sterile graduated tube with the subjects in a seated position after a minimum of 5 minutes. Blood collections were mostly done between 8.00 a.m. to 1.00 afternoons to avoid daily distinctions and serum was taken into a disposable test tube and centrifuged at 2000rpm for 2-3 minutes. Similarly made (Pereira *et.al.* (2022) [18].

The use of micro-pipette 1ml of the serum and mixed creatinine reagents were taken in for five different test tubes. This was then kept in a temperature controlled water bath at 37°C for 15 minutes.

STATISTICAL CONFORMATION

The data collection tool used in this study was both experimental and questionnaire the obtained data of the study was tabulated. Frequency, percentage, means, and maximum values of variables were calculated. The p-value<0.05 was considered statistically significant. Therefore, the main purpose of the questionnaire is to collect a lot of information short period.

After data was be understandable, edit and summarize quantitatively in Data analysis was done using Statistical Package for Social Sciences (SPSS) version 20.0 for windows. Showing the mean, mode and standard deviation. As some other researchers has been done (Pandya D, *et.al.* (2016) [19].

The data was be thereafter presented in tables and count. The totals was be converted into numbers to enable, analyze excel and describe the data systematically to reach logical conclusions on the effect of the study variables. Therefore same of the technique was use by (Deepak *et.al.*. (2022) [20].

Inclusion criteria and exclusion criteria in the study, the following inclusion criteria were used/applied: All patient with high creatinine level admitted in the Hospital in different department. The exclusion criteria include participants: patients who have no creatinine level but complained sign of kidney infection with oliguria, and their creatinine was normal. (Norton, et al. (2016) [21].

RESULTS

The total samples of 100 out 80 were used for analysis an interpretation due to the group of the data from the selected hospitals the minim age grouped were 35 years old for male

(37.7%) while females were considered 45 (55.2%). (Liang. *et.al.*. (2023) [22] There were no statistical significant between the groups of the hospital accordingly to age and gender (p > 0.05).

Table 1: Abnormal creatinine is as a result of impairment of kidney function.

	Frequency	Percent
Agree	21	40.4%
Strongly Agree	5	9.6%
Neutral	10	19.2%
Disagree	14	26.9%
Strongly Disagree	2	3.8%
Total	52	100.0%

Above Table 1 according to the Functional the majority of respondents 21(40.4%) were said Agree while the next respondents 14(26.9%) were said Disagree while the next respondents 10(19.2%) were said Neutral while the next respondents 5(9.6%) were Strongly Agree and the remaining of respondents 2(3.8%) were said Strongly Disagree. Therefore the disease and non-diseased groups have mad different of data significant and they mad different values as shown the table:

Table 2: Causes abnormal creatinine diseases are such as; kidney infections, impairment of kidney function.

Groups	Mean	Medium	P-value
Kidney Diseases (n=29)	41.5	102.81	P=0.001 significant differed
Hypertension (n=22)	19.2	46.3	P=0.001 significant differed
Diabetes (n= 29)	9.91	42.70	P=0.001 significant differed

Table 3: Causes abnormal creatininee are diseases such as; kidney infections, impairment of kidney function.

	Frequency	Percent
Agree	20	38.5%
Strongly Agree	4	7.7%
Neutral	10	19.2%
Disagree	15	28.8%
Strongly Disagree	3	5.8%
Total	52	100.0%

Above Table 3 according to the Causes the majority of respondents 20(38.5%) were said Agree while the next respondents 15(28.8%) were said Disagree while the next respondents 10(19.2%) were said Neutral while the next respondents 4(7.7%) were Strongly Agree and the remaining of respondents 3(5.8%) were said Strongly Disagree (Xiao *et.al.* (2023) [23].

Table 4: Abnormal creatinine happens when the kidney does not work properly.

	Frequency	Percent
Agree	22	42.3%
Strong Agree	3	5.8%
Neutral	11	21.2%
Disagree	14	26.9%
Strongly Disagree	2	3.8%
Total	52	100.0%

Above Table 4 according to the Overflow the majority of respondents 22(42.3%) were said Agree while the next respondents 14(26.9%) were said Disagree while the next respondents 11(21.2%) were said Neutral while the next respondents 3(5.8%) were said Strongly Agree and the remaining of respondents 2(3.8%) were said Strongly Disagreesimilary done (Yao, *et.al.* (2020) [24].

Table 5: Kidney infections are maintained by having normal urine output.

	Frequency	Percent
Agree	18	34.7%
Strongly Agree	5	9.6%
Neutral	10	19.2%
Disagree	15	28.8%
Strongly Disagree	4	7.7%
Total	52	100.0%

Above Table 5 according to the Continence the majority of respondents 18(34.7%) were said Agree while the next respondents 15(28.8%) were said Disagree while the next respondents 10(19.2%) were said Neutral while the next respondents 5(9.6%) were said Strongly Agree and the remaining of respondents 4(7.7%) were said Strongly Disagree.

Table 6: Psychological causes such as depression are believed to be related to abnormal creatinine.

	Frequency	Percent
Agree	18	34.6%
Strongly agree	4	7.7%
Neutral	12	23.1%
Disagree	16	30.8%
Strongly Disagree	2	3.8%
Total	52	100.0%

Above Table 5 according to the Psychological the majority of respondents 18(34.6%) were said Agree while the next respondents 16(30.8%) were said Disagree while the next respondents 12(23.1%) were said Neutral while the next respondents 4(7.7%) were said Strongly Agree and the remaining of respondents 2(3.8%) were said Strongly Disagree.

Table 7: Stress abnormal creatinine can cause prolapsed in later life.

	Frequency	Percent
Agree	20	38.5%
Strongly Agree	4	7.7%
Neutral	11	21.2%
Disagree	15	28.8%
Strongly disagree	2	3.8%
Total	52	100.0%

Above Table 7 according to the Stress the majority of respondents 20(38.5%) were said Agree while the next respondents 15(28.8%) were said Disagree while the next respondents 11(21.2%) were said Neutral while the next respondents 4(7.7%) were said Strongly Agree and the remaining of respondents 2(3.8%) were said Strongly Disagree.

Table 8: Some other health cognitive complications cannot practice this.

	Frequency	Percent
Agree	19	36.5%
Strongly Agree	5	9.6%
Neutral	10	19.2%
Disagree	15	28.8%
Strongly Disagree	3	5.8%
Total	52	100.0%

According to the practice the majority of respondents 19(36.5%) were said Agree while the next respondents 15(28.8%) were said Disagree while the next respondents 10(19.2%) were said Neutral while the next respondents 5(9.6%) were said Strongly Agree and the remaining of respondents 3(5.8%) were said Strongly Disagree.

Above Table 8 according to the differences the majority of respondents 20(38.5%) were said Agree while the next respondents 15(28.8%) were said Disagree while the next respondents 12(23.1%) were said Neutral while the next respondents 3(5.8%) were said Strongly Agree and the remaining of respondents 2(3.8%) were said Strongly Disagree.

Table 9: It is difficult to quantify the personal and economic costs of living with abnormal creatinine.

	Frequency	Percent
Agree	20	38.5%
Strongly Agree	4	7.7%
Neutral	11	21.2%
Disagree	14	26.8%
Strongly Disagree	3	5.8%
Total	52	100.0%

Above Table 9 according to the difficult the majority of respondents 20(38.5%) were said Agree while the next respondents 14(26.8%) were said Disagree while the next respondents 11(21.2%) were said Neutral while the next respondents 4(7.7%) were said Strongly Agree and the remaining of respondents 3(5.8%) were said Strongly Disagree.

Table 10: There are also indirect costs, as persons with kidney infections are more likely to have accidental falls.

	Frequency	Percent
Agree	18	34.6%
Strongly Agree	4	7.7%
Neutral	12	23.1%
Disagree	16	30.8%
Strongly Disagree	2	3.8%
Total	52	100.0%

Above Table 10 according to the indirect the majority of respondents 18(34.6%) were said Agree while the next respondents 16(30.8%) were said Disagree while the next respondents 12(23.1%) were said Neutral while the next respondents 4(7.7%) were said Strongly Agree and the remaining of respondents 2(3.8%) were said Strongly Disagree.

Table 11: As many hypertensive persons do not seek medical help.

	Frequency	Percent
Agree	18	34.6%
Strongly Agree	5	9.6%
Neutral	9	17.3%
Disagree	16	30.8%
Strongly Disagree	4	7.7%
Total	52	100.0%

Above Table 11 according to the medical the majority of respondents 18(34.6%) were said Agree while the next respondents 16(30.8.5%) were said Disagree while the next respondents 9(17.3%) were said Neutral while the next respondents 5(9.6%) were said Strongly Agree and the remaining of respondents 4(7.7%) were said Strongly Disagree.

DISCUSSION

In the study we report there is high rates of abnormal creatinine level in Blood and screening test had conformed to such as sodium potassium and chloride and disturbingly high rates of impaired kidney function in the hospitalized hypertensive in Mogadishu Somalia. Similarly the same studies have been made by (Furuhashi, *et.al.* (2015) [25].

A determinedly elevated serum creatinine is a risk factor for chronic kidney Infection (CKI) and an independent factor always lead improper for progression of CKD to kidney failure. (Glassock, *et.al.* (2017) [26].

During the past three Groups, the occurrence Renal Disease has risen increasingly most important reasons for rapid increase in patients were rapidly increasing worldwide incidence of diabetes and hypertension.(Zilbermint *et.al.* (2019) [27].

in a recent estimate, approximately 380 million people worldwide (7.6%) in the 20-70 years age group had diabetes in 2023 and by 2030, while other 638 million people (9.8%) of the adult population are expected to develop Hypertension and Diabetes. (Haider, et.al, (2013) [28].

In addition, In Somalia, the Kidney infections and other related syndromes of blood creatinine level is expected to increase from 21.7 million in 2006 to 29.4 million in 2030 About 1/2nd of those affected will eventually have progressive deterioration of renal Failure. (Haji *et.al.* (2021) [29].

As some of the vested Hospital which were included public and private suggested by of hypertension, 19.6% of Somali

men and 20.9% of women were suffering from hypertension in 2023, therefore, The highest number of the respondents 30 (58%) while female, 22 (42%) while male Presented the majority of respondents 20 (38%) were aged between 18-27 years, while 19 (37%) whose were between 28-39 years. (James, and Matthew (2015) [30].

The remaining 11 (21%) respondents aged between 40-50 years, while another respondent 2 (4%) above 51 Presented the majority of the respondents the study suggested more ever of patient misconstrue of their food from the homage and other signs. (Nicholas *et.al.*. (2015) [31]

As kidneys are the main target of organ damage in hypertension and long term exposure to elevations in blood pressure even within normotensives can induce early renal damage and High blood sugar levels damage the kidney and other important organs of the body. (Kucirka, *et.al.* (2011) [32].

The majority of respondents in this study 21(40.4%) were said Agree. According to the Causes Kidney Infection in blood leading by creatinine level the majority of respondents 20(38.5%) were said Agree (Nishijima *et.al.* (2010) [33].

The Overflow, the majority of respondents in this study 22(42.3%) were said According to the practice the majority of respondents 19(36.5%) were said Agree, therefore they were in visited the major of the diagnoses and laboratory screening test is much more beneficial and confirmatory then saliva and other test, (Matsuo, *et.al.* (2009) [34].

CONCLUSION

The Blood has always remained as one of the most numerous and effective indication to assess renal status and other diseases, although, creatinine associated with serum values could not always accurately predict exact alteration in renal status and there could also be variations in other method of collection which could have affected the results. The pair of kidneys acts as a filter in humans and excretes all the chemical substances present in the blood. Creatinine is a waste product created by the metabolic activity of the muscles. Few studies demonstrating the correlation between the serum and salivary parameters, no other studies were found to demonstrate the Blood creatinine estimation in Kidney Infections, diabetic and hypertensive groups together. It is converted from creatine to creatinine every day and excreted by the kidneys into the urine. After a certain age, it is advised to go for a regular checkup of creatinine levels in the body.

Creatine is a chemical that your body uses to supply your muscles with energy. As the muscles use energy the tissue that makes up your muscles breaks down. This natural breakdown of muscle tissue causes creatinine to be released into your bloodstream. This is when creatine becomes creatinine. Anyone can be at risk for a kidney disease at some point in their life. However, some people have a higher risk of developing a kidney problem than others. Thus present study has the potential to transfigure for the diagnostic protocol for patients with renal diseases and other elated creatinine in the blood. The impairments of kidney function occurs frequently on a patients with hypertension in the Mogadishu Hospitals. The need for early detection of kidney disease and the risk factors for cardiovascular disease such as hypertension and diabetes is further highlighted by this study. It is expected that the institution of preventive for the screening test in blood if confirmed well.

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