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STUDY OF MICROALBUMINURIA AMONG TYPE 2 DIABETIC PATIENTS MOGADISHU-SOMALIA

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ABSTRACT

Background: *Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia caused by insulin secretion defects. Both type 1 and type 2 DM can cause chronic diabetic nephropathy complication. The early stage of nephropathy is detected by MAU test, when urinary albumin excretion (UAE) is 30–300mg/24h, or 20–200mg / min.*

Objective: *This study aims to assess the prevalence of microalbuminuria among type 2 diabetic patients.*

Methods: *Cross-sectional study was conducted at Ummah hospital, Mogadishu, Somalia during September 2019 to August 2020. A total of 50 clean random urine samples were collected from diabetic patients and then tested through urine analysis investigation following the standard procedure. Albumin and creatinine tests were performed for albumin creatinine radio (ACR) method. The study used SPSS (version 20.0) for analysis, and results were presented in frequencies, percentage, and bar charts.*

Results: *31 (62%) were normoalbuminuric while 19(38%) were microalbuminuria out of the total 50 samples collected, 31were normal with 28 control and 3 uncontrol while 19 were abnormal with 4 control and 15 uncontrol, 31were normal with duration <5 (13), 5-10 (15) and >10 (3) while 19 were abnormal with duration <5 (4), 5-10 (2) and >10 (13).*

Conclusion: *The results from the study showed high the prevalence of microalbuminuria 38%, Microalbuminuria exhibits a direct relationship with increased duration of mellitus diabetes, Uncontrol of diabetic increase level of microalbuminuria, recommend annual microalbuminuria screening from the early diagnosis of type 2 diabetes and early treatment where microalbuminuria is found,*

Keywords: *Albumin, Diabetes mellitus, Microalbuminuria*

1.0 BACKGROUND OF THE STUDY

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia caused by insulin secretion defects, insulin action, or both usually break down the sugars and carbohydrates we intake into a specific sugar called glucose. Glucose powers our body's cells. Diabetes mellitus (DM) continues to be an international public health concern as its complications have been a major cause of morbidity and mortality. It is the most serious metabolic syndrome disorder with chronic hyperglycemia and carbohydrate, fat, and protein metabolism abnormalities.(Ufuoma et al., 2016)

Both type 1 and type 2 DM can cause chronic diabetic nephropathy complication.(Karar et al., 2015). Microalbuminuria, an early diabetic nephropathy marker and may advance to macroalbuminuria and ESRD.(Efundem et al., 2017). Globally the prevalence of diabetes (DM) is rising at an alarming rate

throughout the world. An estimated 415 million people worldwide suffered from this disease, according to the International Diabetes Federation in 2015. DM complications represent increased morbidity, disability, and mortality and pose a threat to all countries' economies, especially developed ones.(Papatheodorou et al., 2016)

Type 2 diabetes accounts for about 90% of diabetes cases, with the remaining 10% mainly due to type 1 diabetes mellitus and gestational diabetes.(Jangid et al., 2017)

Diabetes affects 246 million people around the world and it is estimated that around 380 million people will be diabetic by 2025, and that its prevalence will be in developed countries. The global estimate of the number of diabetics in Africa in 2010 was approximately 12 million people (age group adults 20-79 years old) and it is estimated that around 23 million Africans will be diabetes by 2030.(C et al., 2017)

Diabetes and its complications have become a major public health concern. If blood sugars are not controlled, the effects of diabetes can be devastating. In sub-Saharan Africa, at some stage of their lives, 10.0-15.0 percent of diabetic patients develop foot ulcers, and approximately 50.00 percent of all diabetes-related admissions are due to diabetic foot problems. The prevalence of diabetic foot ulcer ranged from 1.0% to 4.10% in the U.S., 20.40% in the Netherlands and 20.00% in Iran among diabetics. The prevalence of diabetics in Kenya was also about 4.60%. Hospital studies have shown that the prevalence of limb ulceration in Nigeria ranged from 11.70% to 19.10% among people with diabetes. Hospital studies have shown that the prevalence of limb ulceration in Nigeria ranged from 11.70% to 19.10% among people with diabetes. Diabetic patients with high levels of glycosylated hemoglobin in Ghana are susceptible to micro-vascular complications such as nephropathy and retinopathy, and patients with impaired glycemic control are typically the patients with these complications.(C et al., 2017)

The International Diabetes Federation (IDF) reports that 19.8 million people in Africa have diabetes where about 75% are still undiagnosed. Type 2 diabetes (T2D) is responsible for up to 90 per cent of all diabetes cases. The rise in the prevalence of diabetes in sub-Saharan Africa (SSA) has increased in tandem with the increase in obesity and other risk factors for the cardiovascular. Countries with the highest reported diabetes population are Nigeria (3.9 million), South Africa (2.6 million), Ethiopia (1.9 million) and Tanzania (1.7 million). Diabetes possesses an enormous burden on society by increasing quality of life and life expectancy. As well as causing the individuals and nations economic loss.(Chiwanga et al., 2016)

Today, diabetes burden continues to remain one of Africa's major health problems that have resulted in high mortality and morbidity. Diabetes is a widespread chronic medical condition in countries of sub-Saharan Africa including the Ethiopian population. However, due to very limited country studies the overall incidence and prevalence of diabetes in Ethiopia are unknown.(Teshome et al., 2018)

Locally Diabetes is a medical problem in Somalia, although in the 20-79 age bracket, the incidence among adults is lower than in many other countries This is not necessarily because of a lack of insulin exposure. However, because they fail to follow medical advice or treatment plans, many Somali

diabetics develop serious or even fatal complications. Because many patients with type 1 diabetes died from complications, help workers found that most patients with diabetes seeking hospital treatment had type 2 diabetes. Diabetic patients can be treated in hospitals without complications, whereas in any of the country's hospitals complex cases with complications cannot be managed. Therefore, those who can afford to seek treatment outside the country Proper education and guidance on how to handle diabetes is helpful in their daily lives for diabetics. Nonetheless, even highly educated people with good knowledge of their own condition would face the same challenges as other Somali diabetics.(*3510_1.Pdf*, n.d.)

1.1 Specific objectives

to assessment of microalbuminuria levels among type 2 diabetic patients.

to study of relationship between microalbuminuria levels and duration of diabetic.

to compare microalbuminuria between controlled diabetic patients and uncontrolled diabetic patients.

2.0 METHODOLOGY

2.1 Research design
The research design was descriptive quantitive, cross-sectional research design.

2.2 Study area
The study was conduct at Ummah hospital because Ummah is one of the largest hospitals in diabetic patients at Banadir region and located about ABDIAZIZ district from Mogadishu, Somalia.

2.3 Sample size
The sample size was consisting of 50 respondents out of respondents attending Ummah hospital in Mogadishu-Somalia.

2.4 Data collection
Data on the occurrence of type 2 diabetic patients among populations was obtained by laboratory investigations of the collect urine specimen. By an interviewing questionnaire, then we analyzed statistical tool (SPSS).

2.5 Data analysis interpretations
Scientific Program for Social Sciences (SPSS, Version 20) software and Microsoft Excel will use to analyze the responses from the completed questionnaires.

2.6 Ethical consideration
First in considering the research ethics the researcher will receive permission letter from Jamahiriya University for science and technology as well as same selected Mogadishu hospitals for them to be allow that they can carry out their research wisely.

3.0 RESULT

3.0 Distribution of the study sample according to their gender

the table below shows that the majority of respondents 28(56%) were female, 22(44%) were male.

Table 3.0 Gender distribution

Gender distribution	Frequency	Percent%
Male	22	44%
Female	28	56%
Total	50	100%

3.1 Distribution of the study sample according to their age

The majority of the respondents of this study 24(48%) were aged between 31—50 years, followed by those 14(28%) who aged between 15--30 years, and the rest 12(24%) were aged above 50 year.

Table 3.1 Age distribution

Age distribution.	Frequency	Percent%
15-30	14	28%
31-50	24	48%
>51	12	24%
Total	50	100%

3.2 Distribution of the study sample according their marital status

Most of the respondents of this study 29(58%) were married, while 12(24%) were divorced and 9(18%) were single.

Table 3.2 marital status

marital status.	Frequency	Percent%
Single	9	18%
Married	29	58%
Divorced	12	24%
Total	50	100%

3.3 Distribution of the study sample according their duration of diabetic

According to table respondent of this study 17 (34%) were duration <5 years, while 17(34%) were duration between 5—10 years and 16(32%) were duration >10 years.

Table 3.3 Duration of diabetic

duration of diabetic	Frequency	Percent
<5yrs	17	34%
5-10yrs	17	34%
>10yrs	16	32%
Total	50	100%

3.4 Distribution of the study sample according their control of diabetic

Most of the respondents of this study 33(66%) were control and 17(34%) were uncontrolled.

Table 3.4 Control of diabetic

control of diabetic	Frequency	Percent%
Control	33	66%
Uncontrolled	17	34%
Total	50	100%

3.5 Distribution of the study sample according their microalbuminuria

According to table the majority of the respondent of this study 31 (62%) were normoalbuminuric while 19(38%) were microalbuminuria.

Table 3.5 Microalbuminuria

Microalbuminuria	Frequency	Percent%
1-29 normal	31	62%
30-300 abnormal	19	38%
Total	50	100%

3.6 distribution of the study sample according the relationship between diabetic control and microalbuminuria

According to table the majority of the respondent of this study 31were normal with 28 control and 3 uncontrol while 19 were abnormal with 4 control and 15 uncontrol.

Table 3.6 relationship between diabetic control and microalbuminuria

Microalbuminuria	1-29 normal (31)	30-300 abnormal (19)
Control	28	4
Uncontrol	3	15
Total 50	31	19

3.7 Distribution of the study sample according the relationship between duration of diabetic and microalbuminuria

According to table the majority of the respondent of this study 31were normal with duration <5 (13), 5-10 (15) and >10 (3) while 19 were abnormal with duration <5 (4), 5-10 (2) and >10 (13).

Table 3.7 relationship between duration of diabetic and microalbuminuria

Microalbuminuria	1-29 normal (31)	30-300 abnormal (19)

Duration <5yrs	13	4	
Duration 5-10yrs	15	2	4.0
Duration >10	3	13	
Total 50	**31**	**19**	

DISCUSSION

The study was a hospital based cross-sectional study, which included 50 subjects with type 2 diabetes mellitus. In our study, 28 were females and the other 22 were males. A 34% were duration <5 years, while 34% were duration between 5-10 years and 32% were duration >10years. A 66% were control and 34% were uncontrolled.

This study showed that 38% of the patients have MAU 62% were normoalbuminuric %) as shown in **table (4.6)** and **fig (4.6)** This result may indicate that the study community has a heavy burden of diabetic nephropathy. this is more than the prevalence of Rates shown the study from Sagamu 35.1%.(Amballi et al., 2018) and also study in southern India reported that the prevalence of MAU was 36.3%.(Varghese et al., 2001) and study Iran reported that the prevalence of MAU was 14.2%.(Afkhami-Ardekani et al., 2008) there are more varies studies that higher prevalence of MAU in our study. Study showed that the prevalence of MA of 44.6% among patients with type 2 DM attending in a tertiary clinic in Botswana.(Molefe-Baikai et al., 2018) also another study from Pokhara, Nepal reported the prevalence MAU was 45.5%.(Sigdel et al., 2008)

According the relationship between duration of diabetic and microalbuminuria, 19 of the respondents were microalbuminuria patient with duration <5yrs (4), 5-10yrs (2) and >10yrs (13) as shown in **table (4.8.)** This indicates the relationship between duration of diabetic and microalbuminuria, if increases duration of diabetic it develops diabetic nephropathy which cause increase of microalbuminuria. This agrees with a study from Pakistan which showed that there is a relationship between duration of diabetic and microalbuminuria.(Sheikh et al., 2009) also study from southern India showed same result.(Varghese et al., 2001)and also study from United Arab Emirates shows that.(Al-Maskari et al., 2008) but disagree with other study showed there is no relationship duration of DM.(Ramzi & Sulaiman, 2017)

There is relationship between microalbuminuria and glycemic control the study showed 19 of respondents had microalbuminuria 4 of them are controlled and 15 of them are uncontrolled as shown in **table (4.7)** which was in agreement with other studies.(Sheikh et al., 2009) , (Ramzi & Sulaiman, 2017) and (Bunza et al., 2014) so glycemic control is important risk factor of microalbuminuria.

5.0 CONCLUSION

This study is to explore assess the prevalence of microalbuminuria among type 2 diabetic patients at Ummah hospital in ABDIAZIZ district. The sample size of this study is 50 respondents 28 are female while 22 are male. The prevalence of microalbuminuria of this study is 38%. Microalbuminuria exhibits a direct relationship with increased duration of mellitus diabetes. Uncontrol of diabetic increase level of microalbuminuria.

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Screening for Helicobacter pylori infection among Mogadishu Somalia using serum antibody and stool antigen detection methods.

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