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Original Research Article

Assessing Complications and Contributing Factors of Diabetes at Jimma University Specialized Hospital in South West Ethiopia

Tamirat Kumsa[1], Sadikalmahadi Hussen[1] and Fikadu Kumsa[2]*

[1]*Department of Pharmacy, Jimma University, Ethiopia*
[2]*Department of Biology, Ambo University, Ethiopia*

Corresponding author.

Abstract

Diabetes mellitus (DM) is a major public health problem worldwide, that requires continuing medical care and ongoing patient self-management education. Study assessed complications and contributing factors of diabetes among patients at Jimma University Specialized Hospital (February to June, 2016). Overall 154 (77.3%) of the patients were affected by diabetic complications. Acute complications were identified mainly among type II diabetic patients. The occurrences of most chronic complications (hypertension, visual disturbance, and neuropathy) were increased with increasing ages of the patients. The present study determines that the prevalence of complications among diabetic patients in Jimma University specialized hospital were significant.

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Introduction

Diabetes mellitus (DM) is a major public health problem worldwide, that requires continuing medical care and ongoing patient self-management education (King et al., 1998). The worldwide prevalence of diabetes mellitus has increased dramatically over the past decades. Previous literature suggested that diabetes mellitus was the 5th leading cause of death worldwide and is responsible for almost 3 million deaths annually (Alvin, 2008).

Based on the current trend more than 360 million individuals will have diabetes by the year 2030 (Seyum et al., 2001). WHO estimate the number of cases of diabetics in Ethiopia had been about 800,000 in 2000 and projected that it would increase to about 1.8 million by the year 2030 (Feleke and Enquselassie, 2005).

Diabetes mellitus leads to acute and chronic complications. The acute complications include diabetic ketoacidosis (DKA), hyperosmolar hyperglycemic state (HHS) and hypoglycemia during treatment. While chronic complications include neuropathy, nephropathy, retinopathy, ischemic heart disease, myocardial infarction, stroke, peripheral arterial disease and impotence. Diabetes mellitus is a leading cause of blindness, end stage renal disease and stroke (Akbar and Al-Gamdi, 2000). Prevalence of diabetes were 4.8% in Africa, 6.8% in Europe, 10.9% in middle east, 9.6% in north America and 8.7% in south east Asia (Cho et al., 2013). Diabetes mellitus exerts a heavy economic

burden on society. This burden is related to health system costs incurred by society in managing the disease. It also deals with indirect costs resulting from productivity losses due to patient disability and premature mortality, time spent by family members accompanying patients when seeking care, and intangible costs (Liu et al., 2010). Since diabetes mellitus were recognized as series health problems, identifying level of its complications and contributing factors are so much needed (Gill et al., 1999).

Accordingly, this study was designed to assess the current complications and factors contributing to diabetes mellitus among patients in Jimma University specialized hospital.

Materials and methods

Jimma University specialized hospital (JUSH) is one of the oldest public hospital which is located in Jimma city 346 km southwest of Addis Ababa. The study was conducted at diabetic clinic of hospital for five consecutive months (February to June, 2016). A source of population was all diabetic patients with attending follow-up at diabetic clinic of JUSH.

Direct questionnaires were used to collect the study data. Additional secondary data were collected from hospital registered records. The collected data includes contributing factors and diabetes complications. Collected data were subjected to analysis of variance (ANOVA). Treatments and mean differences were separated by the least significant difference test at 0.05 probability level. All statistical analyses were performed using the SPSS version 16.0 statistical software.

Results

From 199 interviewed patients', 128 (64.3%) were male and 71 (35.7%) female. About 44 (22.1%) and 155 (77.9%) of the patients were found with type 1 and type 2 diabetes, respectively. Most of the patients were registered from urban 147 (73.9%). The majority of patients (37.7%) had been diabetics when their age is increased to >55years (Table 1).

Only 2% were recorded with smoking. About 24% of the patients were participating in taking of coffee. (31%) of the patients were not taking the substances. According to this finding it is not only the family history (12.1%) which contribute to DM, there were also other factors that can contribute about 87.9% of DM patients. About 56 (28.1%) patients were overweight (BMI >25.0 kg/ m^2) (Table 2).

Table 1. Gender, age and geographical distributions of diabetic patient at JUSH.

Characteristics	Frequency	Percent
Gender		
Male	128	64.3
Female	71	35.7
Total	199	100
Age		
< 15	4	2
15 - 34	32	16.1
35 - 44	24	12.1
45 - 55	64	32.2
> 55	75	37.7
Total	199	100
Geographic distribution		
Urban	147	73.9
Rural	52	26.1
Total	199	100

Table 2. Assessed factors among diabetic patients at JUSH.

Characteristics	Frequency	Percent
Smoker		
No	195	98
Yes	4	2.0
Total	199	100
Substances use		
Alcohol	32	16.1
Chat	36	18.1
Coffee	48	24.1
Alcohol and chat	4	2.0
Alcohol and coffee	8	4.0
Chat and coffee	8	4.0
No	63	31.7
Total	199	100
BMI		
< 20	20	10.1
20 - 25	123	61.8
> 25	56	28.1
Total	199	100
Family history of DM		
Yes	24	12.1
No	175	87.9
Total	199	100

Table 3 showed that, 32 (16.1%) had hypertension (BP>140/90 mmHg), 56 (28.1%) were hyperglycemic (FBS >126mg/dl) and 4 (2%) had missed medication.

Table 4 shows that, more than half, 155 (77.9%), of the patients have experienced at least one complication in type II DM patients; while, about 44 (27.1%) were

identified as type I DM patients. Acute DKA was found in 16 (8%) of type I; while, high distribution of nephropathy, 16 (8%) was found in type II DM patients.

Table 3. Assessed complications factors among diabetic patients at JUSH.

Complication factors	Frequency	Percent
FBS		
< 70	8	4.0
70 - 99	51	25.6
100 - 126	84	42.2
> 126	56	28.1
Total	199	100
Systolic BP		
80 - 120	56	28.1
121 - 140	111	55.8
141 - 160	32	16.1
Total	199	100
Diastolic BP		
< 80	28	14.1
81 - 90	139	69.8
> 90	32	16.1
Total	199	100
Missed medication		
Yes	4	2.0
No	195	98.0
Total	199	100

Table 4. Distribution of diabetic complications based on the type of diabetes among JUSH diabetic patients.

Complications		Type of DM		Total
		Type I 44 (22.1%)	Type II 155 (77.9%)	199 (100%)
Acute	DKA	16 (8%)	0	16 (8%)
	Hypoglycemia	0	12 (6%)	12 (6%)
	HHS	0	12 (6%)	12 (6%)
	DKA and hypoglycemia	4 (2%)	7 (3.5%)	11(5.5%)
Chronic	Visual disturbance	0	11(5.5%)	11(5.5%)
	Nephropathy	0	16 (8%)	16 (8%)
	Hypertension	4 (2%)	12 (6%)	16 (8%)
	HTN and visual disturbance	0	12 (6%)	12 (6%)
	HTN and nephropathy	0	4 (2%)	4 (2%)
	Visual disturbance and neuropathy	0	4 (2%)	4 (2%)
	HTN and neuropathy	0	4 (2%)	4 (2%)
Others	Skin infection	4(2%)	4 (2%)	8 (4%)
	Foot ulcer	0	12 (6%)	12 (6%)
	Tooth pain	0	12 (6%)	12 (6%)
	Impotence	0	4 (2%)	4 (2%)

Discussion

Among the 199 diabetic patients in this study, the majority of the patients were type II which, is in consistent with other reports in Ethiopia (Abejew, 2015).The investigated report of this study were 44 (22.1%) with type I and 155 (77.9%) with type 2 diabetes. Nearly similar reports were recovered at Yekatit 12 Hospital in 1984, which reported that 20.1% type I and 79.1% type II (Lester, 1987). Across sectional study conducted in the diabetic clinic of Dessie Referral Hospital from April to May 31, 2013, reported that, the majority of the patients, 145 (67.1%), were of type II with the remaining 71 (32.9%) being type I patients. The majority 147 (73.9%) of the patients had been living in urban. This is high when compared with study conducted in October 2008 at JUSH's diabetic follow-up clinic (Dawit et al., 2011). Only 2% were recorded with smoking. About 24% of the patients were participating in taking of coffee. Maximum numbers (31%) of the patients were not taking the substances. According to this finding it is not only the family history (12.1%) which contribute to DM, there were also other factors that can contribute about 87.9% of DM patients. About 56 (28.1%) patients were overweight (BMI >25.0 kg/ m^2). This result in line with study conducted in Kigali University Teaching Hospital (CHUK) May 2010, risk factors for diabetic complications of the total sample, 31% had hypertension (BP>140/80 mmHg), 33% were overweight (BMI >25.0 kg/ m^2) and 23% were hyperglycemic. Thus risk factors like smoking and alcohol abuse at JUSH were low when compared with this study which reported eighteen percent (18%) had been smoking and 35% continued to take alcohol regularly (Rudasingwa, 2010).

In this study, more than half, 154 (77.3%), of the patients have experienced at least one complication of which 126 (81.8%) were from type II patients. Different acute and chronic complications were investigated in this study (Table 4). This is high when compared to study conducted in the diabetic clinic of Dessie Referral Hospital from April to May 31, 2013, which stated that, the overall complications were 129 (59.7%) of which 105 (48.6%) were from type II patients (Seyum et al., 2001).

Conclusion

Diabetic complications and contributing factors were investigated in Jimma University Specialized Hospital. Type II patients were more prone to complications in the hospital. The frequency of chronic complications was high. The occurrence of most chronic complications (hypertension, visual disturbance, and neuropathy)

increased with increasing age of the patient. Even though, patients are less experienced in commonly known contributing factors, both acute and chronic complications are present with the patient which, need further investigation other than this study.

Conflict of interest statement

Authors declare that they have no conflict of interest.

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