

Research Article

Knowledge about Diabetic Complications among Patients on Diabetic Follow up Clinic at Jimma University Medical Centre; 2019

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Abstract

Objective:

The main objective of this study is to determine level of knowledge about diabetic complications among diabetic patients on follow at Jimma University Medical Centre Diabetic clinic.

Methods:

Institutional based cross-sectional study design was conducted on randomly selected diabetic population from Jimma University Medical Center diabetic clinic by using systematic random sampling method from March 1st to 30th 2019.

Result:

Out of a total of 308 participants, 124(40.3%) knew poor wound healing as the most common complication followed by heart disease 114(37.0%), eye disease 112(36.4%), hypertension and renal disease 109 (35.4%), diabetic keto acidosis 93(30.2%). Comprehensive assessment of level of knowledge on the complications showed that majority 127(41 %) of type one and type two diabetic patients do not have knowledge on diabetes complications, 120 (39 %) had inadequate knowledge on diabetic complication while 61(20 %) had adequate knowledge. Higher proportion of diabetic patients did not have adequate knowledge on diabetic complications. Age, male gender, high income earners, higher level of education, and urban residency

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of type one and type two diabetic patients were significantly associated with diabetic complications.

Conclusion:

We need to educate our community in general focusing on diabetic patients and their families in particular to diagnose these complications early, treated properly to preclude mortality and long term morbidity.

Keywords: Complication; Diabetes Mellitus; Diabetic related complications; Diabetic related awareness

Introduction

Diabetes is a serious chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use it. Diabetes is an important public health problem and one of four priority Non-Communicable Diseases (NCDs) targeted for action by world leaders. Globally, an estimated 422 million adults were living with diabetes in 2014, compared to 108 million in 1980. Diabetes of all types can lead to complications in many parts of the body and can increase the overall risk of dying prematurely [1].

Unless treated correctly, it is only a matter of time before encountering an epidemic of the complications of diabetes, like chronic kidney disease, retinopathy, coronary artery disease, strokes and diabetic foot ulcer can affect most of the body organs especially heart, blood vessels, kidneys, eyes, nerves and teeth [2,3]. Death rates for heart disease and the risk of stroke are about 2-4 times higher among adults with diabetes than among those without diabetes. In addition, 67% of U.S. adults who report having diabetes also report having high blood pressure [4].

The complications of diabetes mellitus is the major health problem among diabetic populations and it is a significant burden of care on the individual, health care professionals and the wider health system. Individuals with diabetes are 2-4 times more likely to develop cardiovascular disease relative to the general population and have a 2-5 fold greater risk of dying from these conditions [5].

Ethiopia is one of the 32 countries of the International Diabetes Federation in Africa Region. Four hundred fifteen million people have diabetes in the world and more than 14 million people in the Africa Region. By 2040 this figure will be more than double. According International Diabetes Federation, in Africa Region there were over 1.33 million cases of diabetes and in Ethiopia in 2015 and the prevalence of diabetes in adult is 3% [6].

One of the reasons for occurrence Diabetes Mellitus (DM) complication is lack of knowledge. The common causes of diabetic complications are poor control of diabetes either due to nonadherence, poor attitude towards the disease and its complications, unhealthy diet, and insufficient physical activity, and due to poor management by the health care professionals. On top of these diabetes complications can predispose the patient for different infection [7]. The prevalence

of diabetes mellitus has risen exponentially over the last three decades, with resultant increase in morbidity and mortality mainly due to its complications [8]. Information about knowledge on complication of diabetic mellitus is crucial for health planning. But, little is known about knowledge about complications of diabetic mellitus in the study area. Therefore, this study was aimed to assess knowledge about complications of diabetic mellitus in Jimma University medical center southwest Ethiopia.

Methods and Materials

Study area and period

An institutional based cross sectional study was conducted in Jimma university medical center at diabetic clinic from March, 1 to 30, 2017. Jimma town is found in Oromia Regional State, Jimma Zone which is located 352km south west of Addis Ababa. This hospital is one of the oldest public hospitals in the country. It was established in 1930 E.C by Italian invaders for the service of their soldiers. Currently, it is the only teaching and referral hospital in the southwestern part of the country, providing services for approximately 15,000 inpatient, 160,000 outpatient attendants, 11,000 emergency cases and 4500 deliveries in a year coming to the hospital from the catchment population of about 15 million people.

Sample size determination

The sample size was determined by sample size calculation formula and the final sample size was 316.

Data collection procedure and analysis

Data was collected by using questionnaire containing socio demographic variables and knowledge about diabetic complications. Two diploma nurses were recruited for data collection and the interview was conducted at the side of diabetic clinic at Jimma University Medical Center. About 15 minutes were used by data collectors to finish the interview sessions. The interview was conducted as exit interview and started immediately after the patient get all services at the follow up clinic. Initially, the participants were asked their willingness to participate on the study and verbal informed consent was assured. The collected data was compiled and coded on daily bases. Tally sheet and computer were used to analyze data. Descriptive statistics and chi-square test was used to analyze the data. P-value of less than 0.05 were used to declare statistical significance. Finally, the result was presented using frequency tables, graphs and pie chart.

Data quality assurance

Quality assurance measures were taken by providing adequate orientation for the study participants. The purpose and usefulness of the study was oriented for study participants and creating friendly conditions to reduce their stress. The data collection tool was prepared in English. Before actual data collection time, the tool was pretested for validity and reliability on the same group of source population but out of the actual sampled population. There by possible adjustment and modification was made on the tool.

Ethical consideration

Ethical clearance and approval of the study was obtained from Institutional Review Board of Jimma University Institute of Health formal letter of cooperation was given to JUSH medical director.

Verbal informed consent was obtained from each respondent and they will be told that they have the right not to participate in the study. The information from the client was kept confidential.

Results

Socio demographic characteristics

A total of 308 with response rate of 97.4% of type one and two diabetic patients were enrolled. The mean age of the patients in this study was 45.83 ± 15.73 years. A higher proportion (43.2%) of them was between the ages of 40-59 years. Among the type one and two diabetic respondents, 211(68.5%) were male, 226(73.4%) were Oromo, 183(59.4%) were married and 207(67.2%) were Muslims by religion. Concerning to educational and occupational status 106(34.4%) were attended primary education and 91(29.5%) were farmer respectively. Out of 308 respondents 135 (43.8%) had socio-economic income of > 1000Eth.birr, 128(41.6%) had 5- 10 years duration of type one and two diabetes, while 160(51.9%) were from rural residency (Table 1).

Knowledge about diabetic mellitus complications

The most common diabetic complication known by diabetic patients was poor wound healing 124 (40.3%), followed by Heart disease 114 (37.0%), Eye disease 112(36.4%), Hypertension and Renal disease 109(35.4%), DKA 93 (30.2%). In general higher proportions of them were not knowledgeable on diabetic complications. Out of 308 patients 176(57.1%) had no knowledge on diabetic foot ulcer, 144(46.8%) had no knowledge on heart disease, 143(46.4%) had no knowledge on Hypoglycemia, neuropathy 126(40.9%), arousal disorder (impotency) 128(41.6%), retinopathy 137 (44.5 %) (Table 2).

Level of knowledge on diabetic mellitus complications

In general majority 127 (41%) of type one and two diabetic patients did not have knowledge on diabetes complications (Figure 1).

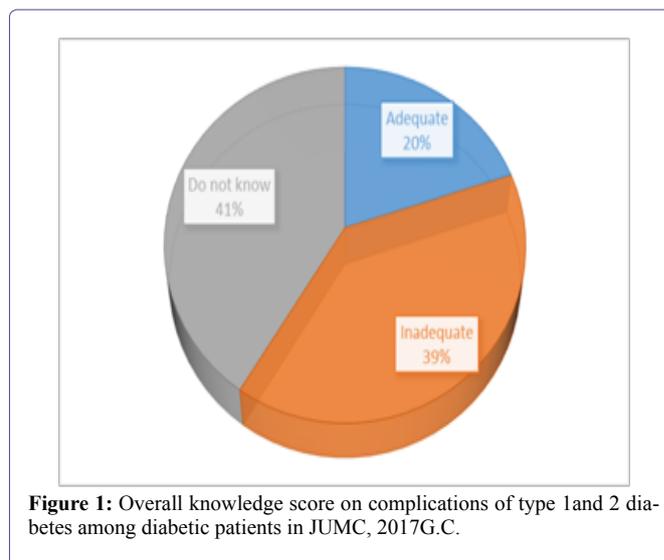


Figure 1: Overall knowledge score on complications of type 1 and 2 diabetes among diabetic patients in JUMC, 2017 G.C.

Association between levels of knowledge of diabetic mellitus complication and socio-demographic characteristics

The association between age groups, gender, marital status, monthly income, and duration of type one and two diabetes, individual

area of residency and level of understanding of diabetic complication. Higher proportion (25.2%) of age (20-39year) had adequate knowledge on diabetic complications than 20-39 year (15.8%), 40-59 (22.5%), and 60-80year (4.4%). Age was significantly associated with patient's level of understanding of diabetic complications ($p=0.020$). Gender was significantly associated with the degree of understanding of diabetic complications ($p=0.0016675$). More female had no adequate knowledge on diabetic complications (47.4%). Singles (32.2%) followed by those divorced (25%) and those who were married (15.3%) had adequate knowledge on diabetic complications. Marital status was significantly associated with the degree of understanding of diabetic complications ($p=0.001$).

Participants (28.8%) who financially earned between >1000 Ethio birr had adequate knowledge compared to 7.1% of patients with <500 Ethio birr ($P=0.00056$). Above half of the participants (54.4%) who had completed tertiary education and College and above had adequate knowledge followed by those who had completed primary school(18.8%) ($p <0.0001$). Those (55.8%) had no education had no adequate knowledge on diabetic complications. There was significant association between area of residence and the knowledge on diabetic complications ($p<0.00001$). However, patients from the urban (31.8%) had adequate knowledge than their counterparts from the rural settings (8.75%) (Table 3).

Variables	Category	Frequency (n=308)	%
Age	< 19	20	6.5
	20-39	87	28.2
	40-59	133	43.2
	60-80	68	22.1
Sex	Male	211	68.5
	Female	97	31.5
Ethnicity	Oromo	226	73.4
	Amhara	37	12.0
	Gurage	21	6.8
	Yem	12	3.9
	Others*	12	3.9
Marital status	Single	96	31.2
	Married	183	59.4
	Divorced	8	2.6
	Widowed	21	6.8
Religion	Muslim	207	67.2
	Orthodox	72	23.4
	Protestant	27	8.8
	Catholic	2	.6
Educational status	No education	102	33.1
	Primary school	106	34.4
	Secondary – high school	43	14.0
	College and above	57	18.5
Current job	Government employed	58	18.8
	Merchant	31	10.1
	Farmer	91	29.5
	Housewife	73	23.7
	Retired	14	4.5
	Others**	41	13.3
Monthly income (in Eth Birr)	< 500	28	9.1
	500-1000	57	18.5
	>1000	135	43.8
	None	88	28.6
Duration of diabetes(- years)	<5	98	31.8
	5-10	128	41.6
	11-15	40	13.0
	>16	42	13.6
Residence	Urban	148	48.1
	Rural	160	51.9

Table 1: Socio demographic Characteristics of the diabetic patients in JUMC, 2017.

Others*: konta, kefa, Tigire others**: student, driver, daily laborer.

Complications	Participants responses		
	Yes	No	I don't know
Hypertension	109(35.4%)	72(23.4%)	127(41.2%)
Heart disease	114(37.0%)	50(16.2%)	144(46.8%)
Renal disease	109(35.4%)	72(23.4%)	127(41.2%)
Eye disease	112(36.4%)	59(19.2%)	137(44.5%)
Diabetic Keto acidosis (DKA)	93(30.2%)	121(39.3%)	94(30.5%)
Hypoglycemia	85(27.6%)	143(46.4%)	80(26.0%)
Neuropathy	71(23.1%)	126(40.9%)	111(36.0%)
Diabetic foot ulcer	85(27.6%)	47(15.3%)	176(57.1%)
Impotency	72(23.4%)	108(35.1%)	128(41.6%)
Poor wound healing	124(40.3%)	108(35.1%)	76(24.7%)
Infections (Urinary Tract Infection, respiratory, skin)	73(23.7%)	129(41.9%)	106(34.4%)

Table 2: Knowledge about different complications of diabetes mellitus in JUMC, 2017G.C.

Discussion

In Ethiopia, there is limited information regarding knowledge of the patients on complication of diabetes with type one and two diabetes mellitus. This study has tried to assess the knowledge on complications of diabetes mellitus among type one and two diabetic patients visiting the diabetic clinic at the JUMC Jimma.

In this study, the proportion of complication of type one and two diabetes commonly known by diabetic patients were poor wound healing 40.3%, followed by heart disease 37.0%, eye disease 36.4%, hypertension and renal disease 35.4%, DKA 30.2%, diabetic foot ulcer 27.6% and impotency 23.4%. A study conducted in Ghana 51.5% knew diabetic foot as the most common complication followed by hypertension 35%, neuropathy 29%, arousal disorder 21.5%, eye diseases 17%, heart disease 9%, and renal disease 5% [9] and other study conducted in Hossana, South Ethiopia showed hypertension 24%, diabetes related eye disease 12%, neuropathy 10% and nephropathy 6% [10]. A study conducted in Bangladesh shows that, 49% knew that heart disease was the complication of DM [11]. One study conducted in Pakistan showed awareness regarding other complications of DM was foot ulcer/gangrene 73%, renal diseases 66%, eye diseases 55%, diabetic ketoacidosis 57%, hypoglycemia 52%, and symptoms of diabetic neuropathy ranging from 47-65% [12]. The difference may be due to in response of patients' knowledge on diabetic complication and level of educational status and also difference in study population. Increased response of patients' knowledge on Poor wound healing as the most common complication indicates that majority of participants had experienced this complication.

Variables	Category	Total	Level of understanding for diabetic complications			P-value (X ²)
			Adequate (n =61)	Inadequate (n=120)	Don't Know (n = 127)	
Age	< 19	20	6(30%)	9(45%)	5(25%)	0.020(15.066)
	20-39	87	22(25.2%)	30(34.6%)	35(40.2%)	
	40-59	133	30(22.5%)	54(40.6%)	49(36.8%)	
	60-80	68	3(4.4%)	27(39.7%)	38(55.8%)	
Gender	Male	211	45(21.3%)	74(35.1%)	92(43.6%)	0.0016675(24.2967)
	Female	97	16(16.4%)	46(47.4%)	35(36.2%)	
Marital status	Single	96	31(32.2%)	37(38.6%)	28(29.2%)	0.001(23.198)
	Married	183	28(15.3%)	64(34.9%)	91(49.7%)	
	Divorced	8	2(25%)	4(50%)	2(25%)	
	Widow /widower	21	0	15(71.4%)	6(28.6%)	
Income	< 500	28	2(7.1%)	19(67.9%)	7(25%)	0.00056(29.1853)
	500-1000	57	6(10.5%)	17(29.8%)	34(59.7%)	
	>1000	135	39(28.8%)	53(39.2%)	43(32%)	
	None	88	14(15.9%)	31(35.2%)	43(48.8%)	
Educational status	No education	102	7(6.8%)	38(37.2%)	57(55.8%)	<0.00001(66.5357)
	Primary school	106	20(18.8%)	40(37.7%)	46(43.4%)	
	Secondary to high school	43	3(6.9%)	24(55.8%)	16(37.3%)	
	College and above	57	31(54.4%)	18(31.5%)	8(14.1%)	
Duration of DM	<5	98	17(17.4%)	38(38.7%)	43(43.8%)	0.07327(11.5317)
	5-10	128	35(27.3%)	42(32.8%)	51(39.8%)	
	11-15	40	6(15%)	19(47.5%)	15(37.5%)	
	>16	42	3(7.1%)	21(50%)	18(42.9%)	
Area of residence	Urban	148	47(31.8%)	58(39.1%)	43(29.1%)	<0.00001(30.8012)
	Rural	160	14(8.75%)	62(38.75%)	84(52.5%)	

Table 3: Shows the association between demographic characteristics and level of understanding for diabetic complications of diabetic patients in DM follow-up clinic of JUMC, 2017.G.C.

Note: Values are presented as N (%) frequency (percentage), (X², df) Chi-square, degree of freedom.

In this study the decreased proportion of patients' knowledge on impotency (arousal disorder) compared previous study could be explained that either the diabetic patients had inadequate knowledge.

Results from the present study showed that majority (41%) of type two diabetic patients did not have knowledge on diabetes complications. One hundred and twenty (39%) had inadequate knowledge on diabetes complication while only 20% of the sample population had adequate knowledge. Previous study conducted in Ghana among diabetic mellitus patients revealed that majority 60.0% of diabetic patients did not have knowledge on diabetes complications, 27% had inadequate knowledge on diabetic's complication while 13% had adequate knowledge [9] and also study conducted in Pakistan, 37% had good, 25% had average and 37% had poor knowledge about diabetic complications [12]. This difference might be due to difference in study population and level of understanding of diabetes mellitus and its complications.

This study also observed a significant association between gender and the level of knowledge for diabetic complications. Male diabetic participants had adequate knowledge of diabetic complications compared to their female counterparts. These results are consistent with the findings of conducted among diabetics living in Pakistan [12]. Another study conducted in rural Ghana regarding knowledge of diabetes among patients showed that high proportion of males have better understanding of diabetes symptoms, signs and complication as compared to females [8].

Another interesting finding of this study was between levels of education and patient's knowledge on diabetic complications. The result revealed that patients with tertiary education had adequate knowledge on diabetic complications compared to the others. The result is consistent with findings of study conducted at Ghana which shows diabetic patients with higher level of education had greater knowledge of diabetic complications [8]. Other study conducted in Bangladesh also supports that higher education level was significantly associated with greater knowledge of diabetic symptoms, risk factors, complications and presentation [11]. The significant association between education especially tertiary education and knowledge on diabetic complications is expected because, patients who had completed tertiary education might have attended workshop, conference, and seminar and health talk on health-related issue. This study also found a significant association between socio-economic income and the level of knowledge on diabetic complication. In this present study, diabetic patients irrespective of low, moderate or high economic income were significantly associated with adequate knowledge on diabetic complication compared to patients without economic income. A higher household income has been found to be significantly associated with adequate knowledge on diabetic complications ($p < 0.05$) [9].

Conclusion

In this study, the most common complication of type 1 and 2 diabetes known by diabetic patients was Poor wound healing, followed by Heart disease, Eye disease, and Hypertension and Renal disease,

DKA. Higher proportion of the type one and two diabetic patients did not have adequate knowledge on diabetic complications. Age, Male, high income earners, higher level of education, and urban residency of type one and two diabetic were significantly associated with degree of understanding for diabetic complications. We found that many patients especially women and uneducated patients are unaware of these complications.

Conflict of Interests

All authors declared that they have no conflict of interests. Jimma University covered only the survey cost for this study and there is no any funding organization

Authors' Contribution

Yeshitila Belay contributed to the study conception and design, supervised the study, conducted data analysis and wrote the manuscript. Admasu Belay planned the study, involved in data collection, prepared the first draft proposal and paper Dagmawit Braun contributed on data analysis, supervised the study and critically revised the manuscript.

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