Awareness of Diabetic Patients about their Illness and Associated Complications in Ethiopia

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Abstract

Diabetes mellitus is the commonest of all metabolic diseases all over the world, as it is as well in Ethiopia. At present it is estimated that about 150 million people are affected by diabetes mellitus worldwide. In Ethiopia diabetes is being recognized as one of important health problem. Diabetes mellitus is associated with chronic complications like neuropathy, nephropathy, retinopathy and cardiovascular disease. Cardiovascular complications are the major cause of morbidity and mortality in diabetic patients. To assess the awareness of diabetic patients about their illness and associated complications in Ethiopia. Institution-based cross sectional study was conducted in Tertiary care hospital Ethiopia. Current medication use data were collected by reviewing patients' charts in the diabetic care follow up clinic and by interviewing diabetic patients who were on follow-up during data collection period using semi-structured questionnaire in Jimma University Specialized Hospital (JUSH). A total of 118 diabetic patients were included in the study. 53 (44.92%) of the respondents did not know the type of diabetes they were inflicted with, of those who know the type,40 (33.90%) of respondents were type II and 25 (21.20%) were type I. Incidental finding, or medical checkup as the main cause of first presentation with the disease was 61(51.69%) respondents. 52(61.18%) patients replied that meal omission is the main cause for developing acute complications, followed by insulin omission. 80 (67.79%) had knowledge about long-term complications. Majority of patients had good knowledge on actions to be taken on occurrence of acute complications and reasons for developing acute complications. In order to increase patient's awareness, health care providers should provide regular diabetic education for patients during follow-up and pamphlets should be prepared and distributed consistently.

Key words: Awareness, complications, diabetes

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Introduction

Diabetes mellitus (DM) is a group of metabolic disorders characterized by hyperglycemia and abnormalities in carbohydrate fat and protein metabolism. It results from defects of insulin secretion, insulin sensitivity or both. Elevated level of blood glucose (hyperglycemia) leads to spillage of glucose in theurine, hence the term sweet urine [1,2].

The prevalence of diabetes mellitus increases with age and there is considerable geographic variation in incidence of both type I and type II diabetes mellitus. In 2000 the prevalence of DM in the USA was 13% in African Americans; 10.2% Hispanic Americans; 15.5% in native Americans and 7.8% in non Hispanic whites [3].

Diabetes mellitus is associated with chronic complications like neuropathy, nephropathy retinopathy and cardiovascular disease. Over time, diabetes mellitus can lead to blindness; kidney failure and nerve damage. It is also an important factor in accelerating hardening and narrowing of arteries (atherosclerosis) leading to stroke, coronary heart disease (CHD) and other large blood vessel diseases [4,5].

Insulin is the mainstay treatment for all type I DM and many types II DM. When necessary, insulin may be administered intravenous or intramuscular, however long term treatment lays predominantly on subcutaneous injection of the hormone [6].

In one cross sectional study conducted in Pakistan from January 2006- June 2006 on glycemic control, diabetic complications and patient awareness, a total of 200 patients with type 2 diabetes mellitus were evaluated. On interviewing about disease awareness and education, only 39% of patients had recalled an educational consultation with a doctor or health care worker about diabetic complications, their prevention or about lifestyle changes [7].

Across- sectional survey conducted at a foundation clinic, Shifa College of Medicine, Islamabad, in April 2004, the majority of patients (67.5%) had type II diabetes. 27.5% did not have knowledge about their illness. Hypertension was present in 37.5% of the study participants and about 52.5 had family history of diabetes. Sedentary lifestyle was noted in 52.5% of diabetes patients. The awareness of the participants was low (15%). In that study 57.5% of participants were not aware about any kidney problems but 52.5% reported ophthalmologic and eye related issues [8].

In one study conducted on barriers to optimum control of type 2 diabetes in Malaysia patients new the complex nature of the disease that they had to manage, but with in-depth interviews, they showed a lack of understanding and were unable to explain the diseases [9].

In one cross sectional study conducted in southern India, on awareness about diabetes and its complications in general and the diabetic population, details regarding awareness, healthy and unhealthy diet causes, symptoms, complications and measures to improve health were collected and 50% of the population had poor disease insight and overall knowledge. The knowledge was lower in women than in men. The awareness was generally low in women and subjects with low education [10].

On one geographical based case-control study conducted in America, Almosa and Conejos counties among both males and females, greater proportion of diabetics had positive family history, there was less diabetes education reported with low economic status [11].

This study will show the scope of the problem in the study area and information gathered from this study will provide baseline data for further study. Furthermore, this study will provide baseline data to assist policy makers in developing appropriate evidence-based strategies to promote health education given for patients. The aim of this study is to assess the awareness of diabetic patients about their illness and associated complications in JUSH diabetic clinic.

Participants and Methods

Study area and study period:

The study was conducted in Jimma University specialized Hospital (JUSH) Diabetic clinic. Jimma University specialized hospital is a teaching hospital and the largest hospital in south western part of Ethiopia. The hospital is around 355 km from the capital Addis Ababa. The diabetic clinic is among the major clinic in the chronic illness care center of the hospital.

Study design:

Cross sectional interview of patients who were on follow-up during the data collection period in Jimma University Specialized Hospital (JUSH). Patients who were on follow-up during the data collection period and who participated in the study were 118.

Data were collected by a well structured pre-tested questionnaire which was filled carefully by the principal investigators. The questionnaire contained information about socio-demographic characteristics (age, sex, marital status, and patient source), patient awareness on illness, chronic and acute complications and actions to be taken.

Ethics

A formal letter written from school of pharmacy, Jimma University to Student Research Program (SRP) and permission was obtained. Consent was obtained from the respondents and brief explanation of aim of study was provided with the questionnaire. The right of individuals not to participate in the study was respected and participation in the study was on voluntary basis.

Statistical analysis

The validity of the questionnaires was assessed through in-depth discussion with an experienced pharmacist working at the College of Public Health and Medical Science of Jimma University. The collected data was clearly categorized, entered in to software, edited, cleaned and analyzed using Statistical Package for Social Sciences (SPSS) for Windows version 16.

Results

A total of 118 diabetic patients were included in the study. Among the respondents, 70 (59.33%) were males and 30 (25.42%) respondents were in the age group of 40 -49 years. Majority 90 (76.27%) of the respondents were literate of which, 30 (25.42%) had completed grade 9-12 and 16 (13.56%) respondents completed grade 12 (Table 1).

The most 45 (38.14%) common age range of diabetes onset was 40-49 years. Majority 53 (44.92%) of respondents, did not know the type of diabetes they had. Of those who knew, 40 (33.90%) were type II and 25 (21.2%) were type I. In all cases, distribution was most common in males than in females. From the total respondents, 33 (28.00 %) think that the cause of their illness was familial, and 27 (22.88%) think it was due to stress (Table 2).

Patients interviews revealed that, 61 (51.69%) of the patients were first presented with incidental finding (for medical cheek up), 44(37.29%) were presented with multiple

symptoms and 13 (11.02%) of them were presented with acute and chronic complications of the illness.

Among respondents, 85 (72.03%) patients had knowledge about acute complications while 80 (67.80%) patients had knowledge about chronic complications. The literacy status is statically associated with the knowledge about acute (P-value=0.03), as well as chronic complications (P-Value=0.029) (Table 4).

Of 85 (72.03%) patients who had knowledge about acute complications, 50 (58.82%) patients experienced hypoglycemia. Of which 32 (37.65%) patients experienced Diabetic Ketoacidosis and 3 (3.53%) patients experienced both Diabetic Ketoacidosis and hypoglycemia (Table 4).

Out of 85 patients who had experienced acute complications, 52 (61.17%) replied that the cause for developing acute complication is meal omission, 31 (36.47%) insulin omission, 26 (30.59%) infection and 6 (7.06%) replied other reasons such as much exercise. Twenty one (67.74%) patients replied that the cause of DKA was insulin omission and the commonest cause of hypoglycemia was reported to be meal omission 43 (82.70%) (Table 5).

Table 1: Sociodemographic characteristics of the study participants. Jimma University Specialized Hospital, Jan 27-Feb 12, 2011.

Age group		**Frequency**	**%**
Age group	10-19	2	1.70
	20-29	8	6.78
	30-39	18	15.25
	40-49	30	25.42
	50-59	27	22.86
	60-69	23	19.50
	> 69	10	8.47
Sex	Male	70	59.33
	Female	48	40.67
Marital status	Married	86	72.88
	Single	22	18.65
	Divorced	10	8.47
Literacy status	Illiterate	28	23.73
	1-5	27	22.78
	5-8	17	14.06
	8-12	30	25.42
	12^{+}	16	13.56

Table 2. Distribution of diabetes patients by their knowledge about the cause of illness versus literacy status. Jimma University Specialized Hospital, Jan 27-- Feb 12-2011.

Literacy status	Knowledge about cause of illness						
	Familiar	Infections	Stress	Luxurious Lifestyle	Taking sweet things	Lack of food	God's will
Illiterate	1	2	5	2	1	4	5
1-5	3	3	8	3	2	3	10
5-8	5	2	4	4	1	0	1
8-12	8	5	6	3	3	2	4
12^{+}	8	2	4	0	0	1	1
Total	33	14	27	12	7	10	21

Interviews revealed that among 80 patients who had knowledge about a chronic complications, majority 68 (25.37%) had retinopathy, 54 (20.15%) had hypertension, 46 (17.24%) had neuropathy, 36(13.43%) had a diabetic foot ulcer, 34 (12.7%) had heart attack and 30 (11.20%) had nephropathy. Retinopathy and hypertension were the most common chronic complications among patients who had complications (Figure 2).

Out of total patients included in the study, 60 (50.85%) patients were taking oral glucose lowering agents, 55 (46.61%) patients were taking insulin and only 3 (2.54%) patients were undergoing lifestyle modifications alone (Figure 1).

Table 3. Distribution of diabetic patients by their knowledge on the measures to be taken on occurrence of acute complications in JUSH diabetic clinic from Jan 27- Feb 12, 2011

Actions to be taken on occurrence of acute complications	No	%
Increase the dose of drug for blood sugar elevation	25	24.5
Taking more sugar for hypoglycemic symptoms	45	44.12
Visiting health institution for both	31	30.39
Others	1	0.98
Total	102	100

Table 4: Knowledge about acute and chronic complications by literacy status among the patients, Jimma University Specialized Hospital, Jan 27 – Feb 12, 2011.

Literacy status	**Knowledge about acute complications**			**Knowledge a about chronic complications**		
	Yes	No	Total	Yes	No	Total
Illiterate	15	13	28	17	11	28
1-5	20	7	27	17	10	27
5-8	14	3	17	13	4	17
8 -12	21	9	30	17	13	30
>12	18	1	16	16	0	16
Total	85	33	118	80	38	118

From the respondents who had attended health education service, 92 (77.96%) replied that heath education was given about the treatment, 88 (74.58%) patients reported the education included information about the illness and 67 (56.78%) replied education was about complications of the disease.

Table 5. Distribution of response given by diabetic patients as to why diabetics develop acute complications in Jimma University Specialized Hospital, Jan 27 –Feb 12, 2011.

Acute complications	**Reasons for developing acute complications**							
	Insulin Omission		Meal omission		Infection		Others	
	No	%	No	%	No	%	No	%
Diabetic ketoacidosis	21	67.74	9	17.30	6	23	0	0
Hypoglycemia	10	32.28	43	82.70	20	77	6	100
Both	0	0	0	0	0	0	0	0
Total	31	100	52	100	26	100	6	100

Table 6. Distribution of diabetic patients by frequency of health education given during follow- up in Jimma University Specialized Hospital, Jan 27-Feb 12, 2011.

Frequency of health education	No	%
In each visit	18	17.67
Every other visit	8	7.84
At the time of diagnosis	32	31.37
Rarely	44	43.17
Total	102	100

Majority 44 (43.17%) of patients replied that the health education was not given on a regular basis, 32 (31.37%) patients replied that health education was given only at the time of diagnosis, and the remaining patients replied that health education was given during each visit 18 (17.67%) and during every other visit 8 (7.84%) (Table 6).

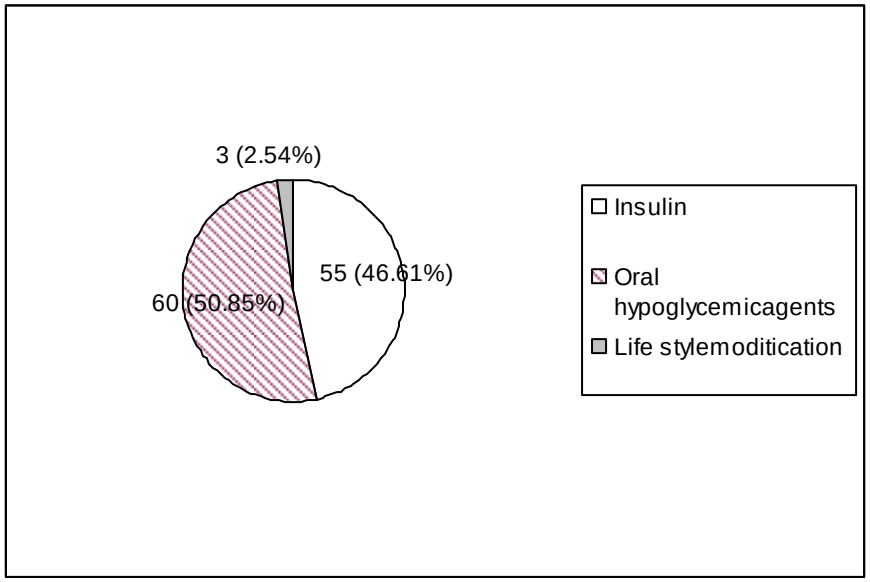

Figure 1. Distribution of diabetic patients by the type of drugs they take, Jimma University Specialized Hospital, Jan 27 –Feb 12, 2011.

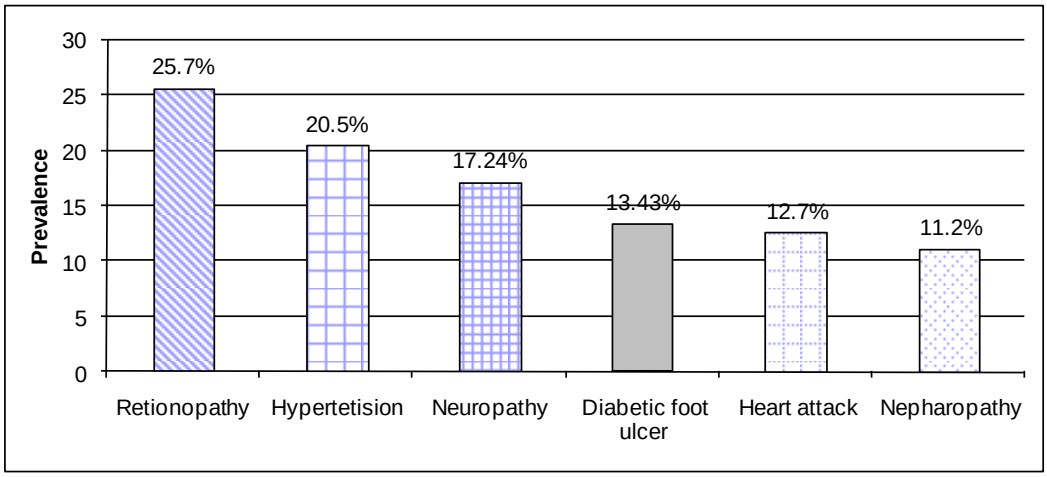

Figure 2. Frequency of chronic complications among diabetic patients during follow- up, Jimma University Specialized Hospital, Jan 27-Feb 12, 2011.

Discussion

The age distribution of diabetic patients in this study was found in the range of 40 -59 years. The sex distribution of the respondents showed that the male diabetics outnumbered the female diabetics with the sex ratio of 1.5 to 1. This finding is similar with other study done in in Tikur Anbessa Hospital, Ethiopia, in which male diabetics outnumbered female one [11].

In the present study, 53 (44.92%) patients did not know their type of diabetes but out of those who knew their DM type, 40 (33.90%) were type II DM and 25 (21.20%) were type I DM. our finding showed that type II DM the was most common among the study participants which is similar to other studies done in JUSH [3, 14] and TikurAnbesa Hospital [11] in which type II DM out numbers type I DM.

Among the study participants, 33 (27.97%) of them replied that the cause of their illness was familial. in which the finding matches with other studies done in Almosad and Conejos countries of America [9] and Shifa College of Medicine [6].

In the present study, majority 61 (51.69%) of the patients had leading cause of presentation to a health institution due to incidental finding (medical checkup). This is in line with the results

from the study conducted in Tikur Anbesa Hospital, Ethiopia, in which the leading cause of admission was infection [11].

In our study, majority 102 (86.44%) of the patients had knowledge of measures to be taken on occurrence of acute complications. This finding is inconsistent and much greater than other findings of studies done in 21 health centers and 5 regional hospitals in Addis Ababa, in which 75 (32.8%) patients had knowledge on blood glucose and on prevention of further complications [13]. This inconsistency might be due to literacy status of the patients and health education provided.

Most 68(25.37%) respondents had experienced retinopathy followed by hypertension 54 (20.15%). This finding was similar with the results of study done in Shifa College of Medicine, Islamabad, in which the majority (52.5%) of patients had eye problems and were followed by that of hypertension (37.5%) [6].

Among the study population more than 50% of patients had attended diabetic education even though the time interval of education service was not regular. This value is much greater than the study done in Addis Ababa, Ethiopia, in which only 24% of the patients had attended diabetic education and 76% had not attended any diabetic education [13]. This might be due to recommendation forwarded by previous researchers attach same clinic on related topics.

In conclusion, this study showed that most diabetic patients have good knowledge on actions to be taken on occurrence of acute complications and reason for development of acute complications but health education should be given on a regular basis in order to update patients with the disease.

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References

1. Wells B, DiPiro J, Schwinghammer T, DiPiro C. Pharmacotherapy Handbook. 7th ed. NY: McGraw-Hill Inc, 2009; 201-37.
2. Kasper DL, Braunwald E, Hauser S, Longo D, Jameson JL, Fauci AS. eds, Harrison's Principle of Internal Medicine. 16th ed. NY: McGraw-Hill Inc, 2004; 2152-85.
3. Tsehayneh K, Amare M, Yoseph M. Assessment of distribution of risk factors for chronic complications of diabetic patients in JUSH diabetic clinic. Ethiopian Journal of Health Science. 2005, 15 (2): 187 – 193.
4. Yeweyenhareg F, Fikre. An assessment of the health care system for diabetes in Addis Ababa, Ethiopia Ethiop; J Health Dev. 2005;19(3):203-210.
5. Rubin R, Strayer DS. eds, Rubin's Pathology: Clinicopathologic Foundations of Medicine 5th ed. Philadelphia: Lippincott Williams & Wilkins, 2007; 980-8.
6. Laurence L, John S. Good man and gel man. Pharmacological Basis of Therapeutics. 1995:pp 1686-1692.
7. Uddin Azam H, Hayat Z, Wazir B, Khanzada ZS, Khan UA, Khan S. Glycemic control, diabetic complications and their awareness. J Med Sci. 2009;17(1):45-9.
8. Malik M, Tora J. Knowledge of type 2 diabetic patients about their illness. (www. Jpma.org, Pk/ full- article- text- php? Article- id= 747- cached)
9. Solmiah M. Barriers to optimum control of type 2 diabetes. (www.cc senet, org/jounal/index.php/gish/ article/ view/3943/3479- similar).
10. Murugesan N, Snehalath R, Roglic G, Shobhan R. Awareness about diabetes and its complications in general and diabetic population. Diabetes Res Clin Pract. 2007; 77(3): 433-7.
11. Julie AM, Richard FH, Judith B, Elizabeth JM, Deborah LF. Ethnic difference in risk factors associated with the prevalence of NIDDM. American Journal of Epidemiology. 1993;137 (7):706- 19.
12. Ellen BM, Jack PS, Takuji H. Association of diabetes mellitus with coronary atherosclerosis and myocardial lesion. American Journal of Epidemiology. 1993;137 (12):1328-41.
13. Berhane S, Jemal A, Bekele A. Analysis of diabetic patients admitted to TikurAnbesa Hospital, Ethiopia. Ethiopian Journal of Health Development. 1999;13 (1):9-13.
14. Abera E. Pattern of chronic complications of diabetic patients in Menelik II hospital, Ethiopia. Ethiopian Journal of Health Development. 2000;14(1):113-6.
15. Tsehayneh K, Amare M, Yoseph M. Assessment of distribution of risk factors for chronic complications of diabetic patients in JUSH diabetic clinic. Ethiopian Journal of Health Science. 2005;15 (2):187-93
16. Problems of insulin therapy (http://www.mins.co.uk/news/796204/expertopinion-subcutaneous- problem- insulin, therapy).