Original article:

Assessment of knowledge, attitude and practice among diabetic patients attending a health care facility in North India

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Abstract

Background: Diabetes mellitus (DM) is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. It is an important risk factor for blindness, vascular disease, brain diseases renal failure, and limb amputations. DM is increasing in developing countries due to unhealthy lifestyle, rapid westernization, and poor knowledge and practice of disease.

Objectives: To study the knowledge, attitude and practice of diabetic patients attending Urban Health and Training Centre (UHTC).

Methodology: An Out Patients Department based, descriptive, observational study was carried out among adult diabetic patients attending UHTC. Detailed history and physical examination was done. Level of knowledge, attitude and practice towards diabetes mellitus was assessed.

Results: Total 124 Diabetes mellitus Type 2 patients were included in the study. 62.13% were males and 37.9% were females. Majority of patients (52.4%) were in the age group of 50 – 59 years. 22.6% were illiterate. 16.1% of patients were unemployed or unskilled workers. 34.7% were from middle socio economic class. 75 (60.5%), 88 (71.0%), and 98 (79.0%) had poor score of knowledge, attitude and practice of diabetes respectively.

Conclusion: Adequate knowledge, positive attitude and good practices are important for effective control of diabetes mellitus. Patients require continuous support from family members to bring about a change in lifestyle. Also, people have to be educated through mass media on diabetes mellitus and its risk factors for its effective control in the community.

Key words: Diabetes mellitus, knowledge, attitude, practice

Introduction

Diabetes mellitus (DM) is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar [1]. Diabetes mellitus has become a cause of growing public health concern in developing countries, as it has been for a long time in the most developed ones [2, 3]. Hyperglycaemia, or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels. Diabetes mellitus is also an important risk factor for blindness, vascular disease, brain diseases, renal failure, and limb amputations [4, 5]. In 2014, 9% of adults 18 years and older had diabetes. In 2012 diabetes was the direct cause of 1.5 million deaths. More than 80% of diabetes deaths occur in low- and middle-income countries [6]. Type 2 diabetes mellitus (DM) is a chronic metabolic disorder associated with high morbidity and mortality

among patients [7, 8]. The prevalence of Type 2 is projected to increase, making type 2 DM a pandemic [9].

The reasons for the increase in the prevalence of diabetes mellitus in developing countries may include unhealthy lifestyle, rapid westernization, poor knowledge, negative attitude and poor practices towards DM among the general population. There exists a large gap between the knowledge, attitude and practice towards diabetes among diabetic patients [7]. Knowledge about diabetes mellitus, appropriate attitude and practices are vital to reduce the prevalence and morbidity associated with DM [10, 11]. However, very few studies have focused on this area and there is a lack of the knowledge, attitude and practices data among Indian diabetic patients. Therefore, the present study was conducted to study the knowledge, attitude and practice of diabetic patients attending Urban Health and Training Centre (UHTC).

Materials and methods

Study Design: An observational, descriptive, Out Patients Department based study was carried out among adult diabetes type 2 patients, attending the Urban Health and Training Centre (UHTC) for the assessment of knowledge, attitude and practice of hypertensive patients. This study was carried out from January to June, 2013.

Sampling technique: Purposive sampling was done.

Study Material: All diabetes type 2 patients reporting to the UHTC.

Inclusion criteria: Adult diabetes type 2 patients were included in the sample.

Exclusion criteria: Individuals who refused to participate and those suffering from acute illness and seriously ill were excluded.

Study subjects: A total of 124 adult diabetes type 2 patients were included in the study.

Method: Informed consent was obtained and the patients were interviewed followed by a detailed clinical examination. A pre-designed interview schedule was used to collect the necessary information from the participants. The information was collected about various socioeconomic factors, illness perceptions, family history, addiction, duration of disease, exercise, life style etc. on a preformed, pre tested interview schedule. Common weighing machine and measuring tape were used to record weight in kilograms and height in centimetres of all the study subjects. Body mass index (BMI) was calculated as weight in kg / square of height in meters. Fasting Blood Sugar (FBS) and Post Parandial Blood Sugar (PPBS) measurement was done using standard protocol and technique. Blood Pressure (BP) was measured using a standard mercury manometer in a seated position by appropriate technique [12]. Socioeconomic status was calculated using the Kuppuswamy's socio economic status scale [13]. Appropriate scoring was done for the assessment of knowledge, attitude and practice regarding diabetes.

Statistical analysis: Data from the interview schedule was transferred to a computer and SPSS Data Editor Software version 19 was used for analysis. Chi-square test and unpaired t-tests were performed and p value ≤ 0.05 were considered statistically significant.

Modified questionnaire for the assessment of knowledge, attitude and practice [14].

Each correct answer = 1 mark; each incorrect answer = 0 mark. Minimum score was "0" and maximum score was "6", for each knowledge, attitude, and practice. **Poor scorer:** Who scored up to 3 marks; **Good scorer:** Who scored more than 3 marks.

Assessment of knowledge	
1.	Do you know what Diabetes mellitus is?
2.	Do you know the normal blood sugar level?
3.	Do you know about the symptoms of Diabetes mellitus?
4.	Do you know about the complications of Diabetes mellitus?
5.	Do you know that Diabetes can be controlled?
6.	Do you know that diet control (salt, sugar, and fat restrictions) and exercise are important for Diabetes control?

Assessment of attitude towards hypertension	
1.	Do you think it is good to include green leafy vegetables and fruits in your daily diet?
2.	Do you think it is good to avoid extra added salts and sugar in your diet?
3.	Do you think it is good to avoid extra cooking oil and fat in your diet?
4.	Do you think it is good to have fruits rather than sweets?
5.	Do you think excess alcohol can worsen the blood sugar level?
6.	Do you think regular physical exercise is essential to control raised blood sugar?

Assessment of practice towards hypertension	
1.	Are you taking prescribed medicines and going for follow-up regularly?
2.	Are you taking healthy diet (green vegetables and fruits)?
3.	Are you doing physical exercise to maintain your weight?
4.	Are you avoiding extra added salt and sugar in your daily diet?
5.	Are you getting your eyes checked at regular intervals?
6.	Are you getting your blood pressure and blood sugar checked at regular intervals?

Results

Total 124 Diabetes Type 2 patients were included in the study. 62.13% were males and 37.9% were females. Majority of patients (52.4%) were in the age group of 50 – 59 years. The mean age of patients was 54.42 ± 7.14 years. Mean post parandial blood sugar (PPBS) was 158.27 ± 20.87 mg/dl , and mean fasting blood sugar (FBS) was 134.19 ± 18.87 mg/dl. The mean Body Mass Index (BMI) of the patients was 26.68 ± 5.81 kg/m$^{2.}$.

Among the patients 22.6% were illiterate and 28.2% had primary education. 16.1% of patients were unemployed or unskilled workers. Majority

(34.7%) of the patients were from socio economic class III (Table 1).

Addiction of some kind was present in 75.8% of patients. Tobacco chewing was present in 35.5% patients, whereas, 30.6% were smokers and 14.5% were alcoholics. 66.9% of the patients were performing less physical activity and only 33.1 % of the patients were performing regular physical activity for more than 30 minutes daily (Table 2).

Out of 124 patients, 75 (60.5%), 88 (71.0%), and 98 (79.0%) had poor score of knowledge, attitude and practice of diabetes respectively (Table 3). Poor scorers of knowledge, attitude and practice

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were having higher mean post parandial and fasting blood sugar levels which was found to be statistically significant (Table 4).Out of 124 patients, only 4.8% were having their blood sugar checked at 15 days interval, whereas, 54.0% were getting their blood sugar checked after 6 months intervals (Table 5). Out of 124 patients included in the study, only 20.2% were getting their eyes examined every year, whereas, 28.2% were getting their eyes examined at more than 4 years interval (Table 6).

Table 1: Distribution of patients according to socio-demographic characteristics.			
Characteristics		**Number of participants (N= 124)**	**Percent**
Age	40 - 49 years	35	28.2%
	50 - 59 years	65	52.4%
	≥ 60 years	24	19.4%
Sex	Male	77	62.1%
	Female	47	37.9%
Marital Status	Single	16	12.9%
	Married	108	87.1%
Educational Status	Illiterate	28	22.6%
	Primary Education	35	28.2%
	Secondary Education	29	23.4%
	Graduation and above	32	25.8%
Employment Status	Unemployed / Unskilled Worker	20	16.1%
	Skilled Worker	33	26.6%
	Professionals	23	18.5%
	Retired	18	14.5%
	Housewife	30	24.2%
Socio Economic Status	Class I	18	14.5%
	Class II	30	24.2%
	Class III	43	34.7%
	Class IV	27	21.8%
	Class V	6	4.8%

Table 2: Distribution of patients according to lifestyle factors and co-morbidities.			
Variables		**Number of participants (N= 124)**	**Percent**
Family history of diabetes	No	85	68.5%
	Yes	39	31.5%
Body Mass Index (BMI)	< 25 kg/m^2	46	37.1.1%
	≥ 25 kg/m^2	78	62.9%
Physical exercise	< 30 minutes / day	83	66.9%
	≥ 30 minutes / day	41	33.1%
Addiction	None	30	24.2%
	Tobacco Chewing	44	35.5%
	Smoking Tobacco	32	25.8%
	Alcohol	6	4.8%
	Both Smoking and Tobacco	12	9.7
Co-morbidity	None	53	42.7%
	Hypertension	45	36.3%
	Visual Defect	13	10.5%
	Renal Pathology	8	6.5%
	Ischemic Heart Disease	5	4.0%

Table 3: Distribution of patients according to knowledge, attitude and practice scores.						
Variable	**Poor Score**		**Good Score**		**Total**	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Knowledge	75	60.5%	49	39.5%	124	100%
Attitude	88	71.0%	36	29.0%	124	100%
Practice	98	79.0%	26	21.0%	124	100%

Table 4: Association of knowledge, attitude and practice with blood sugar level (mg/dl).						
Blood Sugar	Knowledge Score	N	Mean	SD	Unpaired t - test	p value
PPBS	Poor	75	167.43	19.68	7.18	p < 0.001
	Good	49	144.24	13.68		
FBS	Poor	75	142.87	16.47	7.68	p < 0.001
	Good	49	120.92	14.00		
Blood Sugar	Attitude Score	N	Mean	SD	Unpaired t - test	p value
PPBS	Poor	88	165.98	19.39	7.86	p < 0.001
	Good	36	139.42	9.02		
FBS	Poor	88	141.56	16.10	8.56	p < 0.001

	Good	36	116.19	11.69		
Blood Sugar	Practice Score	N	Mean	SD	Unpaired t - test	p value
PPBS	Poor	98	163.99	19.41	6.98	p < 0.001
	Good	26	136.69	8.31		
FBS	Poor	98	139.95	16.23	8.17	p < 0.001
	Good	26	112.50	10.50		

N = Number of patients. PPBS = Post Parandial Blood Sugar level mg/dl. FBS = Fasting Blood Sugar mg/dl. SD = Standard Deviation. p < 0.05 was considered as statistically significant.

Table 5: Practice of Blood sugar measurement among diabetic patients.					
Gender	Frequency of Blood Sugar measurement				Total
	15 Days	1 Month	3 Months	≥ 6 Months	
Male	3 (3.9%)	10 (13.0%)	16 (20.8%)	48 (62.3%)	77 (100%)
Female	3 (6.4%)	12 (25.5%)	13 (27.7%)	19 (40.4%)	47 (100%)
Total	6 (4.8%)	22 (17.7%)	29 (23.4%)	67 (54.0%)	124 (100%)
χ2 = 6.146; df = 3; p = 0.105					

χ2 = Chi-Square test; df = degree of freedom. p < 0.05 was considered as statistically significant.

Table 6: Practice of Eye examination among diabetic patients.					
Gender	Frequency of Eye examination				Total
	1 Year	2 Years	3 Years	≥ 4 Years	
Male	12 (15.6%)	28 (36.4%)	16 (20.8%)	21 (27.3%)	77 (100%)
Female	13 (27.7%)	10 (21.3%)	10 (21.3%)	14 (29.8%)	47 (100%)
Total	25 (20.2%)	38 (30.6%)	26 (21.0%)	35 (28.2%)	124 (100%)
χ2 = 4.347; df = 3; p = 0.226					

χ2 = Chi-Square test; df = degree of freedom. p < 0.05 was considered as statistically significant.

Discussion

In our study majority of the patients were having low level of education, and majority of the patients belonged to middle socioeconomic class. Studies have reported that level of awareness depends on socioeconomic gradient, culture and ethnic variation [15-17]. Understanding of these variables is highly important in designing strategies for the prevention of diabetes . In our study patients had poor score of knowledge, attitude and practice of diabetes. A recent study conducted among the diabetic patients of Western Nepal reported poor

KAP scores [7] and the plausible factors could be lack of awareness, unavailability of information and literacy level of the study population. Another recent study involving young diabetic Saudi women also reported poor KAP scores [18]. In a study done in Malaysia, it was reported that diabetic patients in a primary care centre had good knowledge and better attitude towards the care of their own disease [19].

The findings of the present study were quite similar to a Chennai study, which found that knowledge about the role of obesity and physical inactivity in

the occurrence of diabetes was very low [20]. However, a study conducted in Saudi Arabia reported that obesity and lack of physical exercise were identified as the risk factors of diabetes most frequently by the respondents [21].

In the present study majority of the patients were getting their blood sugar checked at six monthly intervals during their consultation with the doctors. Another study reported patients to have checked their blood glucose levels only during their scheduled consultation with the doctor every three months [22]. The lack of frequent self-monitoring of glucose levels maybe one of the factors responsible for poor diabetic control among the study participants. Self- monitoring of blood glucose aims to collect information of blood glucose level on a daily or regular basis to allow for timely and prompt high glucose level identification, thus allowing measures to be taken to ensure adequate blood glucose control. A systematic review concluded that diabetes patients might perceive better self-efficacy in disease management with self-monitoring of blood glucose, and would have a better understanding about the possible factors that affect diabetes management [23]. Moreover, self-monitoring of blood glucose might also improve medication adherence and motivate patients to make necessary lifestyle changes.

In our study only 33.1 % of the patients were performing regular physical activity for more than 30 minutes daily. Another study reported less than 50% of the study participants were exercising regularly [11]. People with diabetes often find it difficult to initiate and sustain physical activities in their daily lives. Physical activity is another vital factor that has been linked to numerous metabolic improvements and lower overall mortality [24].

Lifestyle modifications are vital to combat this life-changing chronic disease. Initiation and sustaining motivation towards lifestyle modification could be addressed by physicians [25]. Family members can provide assistance by monitoring patients' progress in behaviour change and accommodate the dietary needs and lifestyle changes in the patients [26].

Conclusion and recommendations

It was observed that majority of the patients in the study had inadequate knowledge, lack of attitude and poor practice regarding diabetes control. Adequate knowledge, a positive attitude and good practices are important for effective control of diabetes mellitus. Patients require continuous support from family member in order to initiate the lifestyle and behavioural modifications and also to have sustainable changes so as to achieve control on diabetes mellitus. Also, people have to be educated through mass media on diabetes mellitus and its risk factors for its effective control in the community.

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