

ORIGINAL ARTICLE

KNOWLEDGE AND PERCEPTIONS OF DIABETES IN URBAN AND SEMI URBAN POPULATION OF PESHAWAR, PAKISTAN

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Background: Diabetes mellitus is a major health issue in Pakistan. The aim of this study was to evaluate the knowledge and perceptions of diabetes in a sample population of Peshawar. **Methods:** This cross-sectional, descriptive study was carried out in seven different localities of Peshawar. A sample of 305 residents were interviewed aged from 15–60 years and above, using a questionnaire specifically designed and translated into Urdu language for convenience of selected subjects. **Results:** Knowledge of diabetes was suboptimal. The mean percentages of correct responses to questions regarding three classical symptoms and given complications were 47.1% and 30.8%. Excessive sugar intake, obesity, family history, lack of physical activities and stress were acknowledged by 46.2%, 42.3%, 39.3%, 33.4%, and 31.8% of the subjects respectively. Presence of family history and level of education were recognised to be associated with more knowledge. **Conclusion:** There is lack of awareness of major risk factors and some complications of diabetes mellitus. Level of education is a significant predictor regarding knowledge of diabetes and its prevention. Prevalence of diabetes has increased in Pakistan.

Keywords: Diabetes, Knowledge, Perceptions, Peshawar

INTRODUCTION

Diabetes mellitus is a major threat to the public health at global level.¹ It is estimated that 171 million people have diabetes worldwide by the year 2000 and this figure may increase up to 366 million by the year 2030.² Increase in prevalence of diabetes is associated with many factors like aging of the population, fatty and high caloric diet, and sedentary life styles, which ultimately lead to obesity.³ In industrialised and prosperous countries of the west, diabetes is common among elder population, while in developing countries, diabetes affect those aged from 34–65 years. In some countries diabetes also occurs in youth very frequently.⁴ Moreover, about 200 children suffer from type 1 diabetes daily which is also considered as one of the most common chronic diseases affecting children.⁵

Lack of proper facilities for screening of diabetes and identification of high risk groups, lack of awareness and knowledge regarding symptoms and risk factors may give a clue to failure of early diagnosis. Due to this the complications of diabetes may more worsen the situation. The real burden of diabetes is due to its chronic complications leading to increased morbidity and mortality.⁶ Preventing or delaying the onset of diabetes is a feasible option. Increased physical activities, appropriate diet and weight reduction, and proper pharmacological interventions can decrease the incidence and threat of diabetes complications significantly, even amongst high risk groups. Therefore, increasing awareness of people regarding modifiable risk factors, health education and developing strategies to identify and manage high risk groups, are few of various possible

ways, which may abolish this emerging problem of diabetes.

Prevalence of diabetes has increased in Pakistan. WHO ranked Pakistan 7th on diabetes prevalence list. More than 6.9 million people are affected by diabetes in Pakistan. International Diabetes Federation estimated that this number will grow to 11.5 million by 2025 unless measures are taken to control the disease.⁵ Sedentary life styles among affluent societies, lack of physical activities, inappropriate diet and obesity are considered to be the main culprits for the occurrence of this disease.

It is recognised that many ailments which were problematic in the past, are being coped with now through medical interventions, but need of appropriate knowledge and perceptions of a disease shouldn't be neglected. Various studies conducted in many parts of the world showed that there is lack of awareness and knowledge of various risk factors associated with diabetes among people.^{7,8}

This study aims to evaluate the knowledge about diabetes and its perceptions in the general population of Peshawar.

METRIAL AND METHODS

This cross-sectional, descriptive study was carried out in seven different localities of Peshawar, i.e., City area, Charsadda Road, University Road, Kohat road, Tehkal, Cantonment area and Hayatabad. Persons who reported presence of family history of diabetes among first degree relatives were taken into consideration as positive family history.

The sample included 350 eligible persons aged 15 years and above. The persons were interviewed by visiting their houses. If any eligible person was not

available to complete the interview, arrangements were made for their follow-up interview. A maximum of 5 attempts were made to contact every eligible member during the study period, which spanned from October 5 to December 10, 2010. A total of 305 eligible members were interviewed and the response rate was 87.1%.

A special questionnaire was designed for data collection.⁸ The questionnaire contained 25 questions besides demographic characteristics. Questionnaire was subdivided into five sections. The first two sections included questions on demographic characteristics and medical history. The 3rd section was designed for diabetic participants and covered their diabetic history and glycaemic control status. In 4th sections questions were put to test knowledge regarding symptoms, risk factors and complications of diabetes. The last section included questions regarding prevalence, prevention and awareness.

In order to collect additional information, which otherwise were not possible to obtain, open ended questions were included in addition to closed ended questions. For example the closed ended question, ‘from your visits to doctor, what is your blood sugar level?’ was followed by an open ended question, ‘if high what are the reasons?’

Pilot testing was conducted at Islamia College University Peshawar on 35 subjects. Its items and components were found to be adequate for this study. Moreover, the questionnaire was translated into Urdu language for convenience of the subjects. In order to include illiterate persons questionnaires were read out to them rather than self-administered. The interviews were conducted by two students of 4th and 5th year MBBS from Ayub Medical College, Abbottabad. The data were analysed for frequencies and percentages using SPSS-16.

RESULTS

A total of 305 residents were surveyed. Demographic and clinical characteristics of the subjects along with gender differences are given in Table-1. It can be observed that 164 (53.8%) subjects were males and 141 (46.2%) were females. Besides this, subjects aged 15–45 years were 77.1%, 44.6% of subjects had studied up to secondary or intermediate level, 55.4% had studied up to graduation and post graduation, 58.4% were married and 39% were unmarried. Monthly household income was PKR 25,000 or below in 66.9% of the study group. Self reported diabetic subjects were 12.1%, those having hypertension were 17.4%, cardiac patients among them were 4%, those with hyperlipidaemia were 3.3% and 0.7% of subjects were having attacks of stroke. Cigarette smokers were 5.6%. Subjects who reported that they were having positive family history of diabetes were 63%.

Table-1: Demographic characteristics of selected sample and gender differences [n(%)]

Demographic characteristics	Males n=164	Females n=141	Total n=305
Age group			
15–30 years	71 (43.3)	75 (53.2)	146 (47.9)
31–45 years	47 (28.7)	42 (29.8)	89 (29.2)
46–60 years	41 (25)	20 (14.2)	61 (20.0)
>60 years	5 (3.0)	4 (2.8)	9 (2.9)
Educational status			
Illiterate	8 (4.9)	22 (15.6)	30 (9.8)
Less than primary	4 (2.4)	1 (0.7)	5 (1.6)
Primary	5 (3.0)	11 (7.8)	16 (5.2)
Matric	29 (17.7)	12 (8.5)	41 (13.5)
Intermediate	24 (14.7)	20 (14.2)	44 (14.5)
Graduation or more	94 (57.3)	75 (53.2)	169 (55.4)
Marital status			
Married	101 (61.6)	77 (54.6)	178 (58.4)
Unmarried	63 (38.4)	56 (39.8)	119 (39.0)
Divorced	- (-)	4 (2.8)	4 (2.8)
Widows	- (-)	4 (2.8)	4 (2.8)
Monthly household income (PKR)*			
<10000	22 (13.4)	20 (14.2)	42 (13.8)
10000–25000	87 (53.0)	75 (53.2)	162 (53.1)
25001–40000	33 (20.1)	23 (16.3)	56 (18.4)
40001–55000	12 (7.4)	10 (7.1)	22 (7.2)
>55000	10 (6.1)	13 (9.2)	23 (7.5)
Diabetic status- self reported			
Diabetic	15 (9.1)	22 (15.6)	37 (12.1)
Non-diabetic	141 (86.0)	111 (78.7)	252 (82.6)
Not sure	8 (4.9)	8 (5.7)	16 (5.3)
Hypertensive status-self reported			
Hypertensive	28 (17.1)	25 (17.7)	53 (17.4)
Non-hypertensive	136 (82.9)	116 (82.3)	252 (82.6)
Heart problems- self reported			
Heart diseases	6 (3.7)	6 (4.3)	12 (4.0)
No heart diseases	158 (96.3)	135 (95.7)	293 (96.0)
Stroke- self reported			
Attack of stroke	2 (1.2)	0 (0)	2 (0.7)
No attack	162 (98.8)	141 (100)	303 (99.3)
Hypercholesterolemia-Self reported			
Present	3 (1.8)	7 (5.0)	10 (3.3)
Not present	161 (98.2)	134 (95.0)	295 (96.7)
Smoking- self reported			
Smokers	17 (10.4)	0 (0)	17 (5.6)
Non-smokers	147 (89.6)	141 (100)	288 (94.4)
Any other problem			
Yes	18 (11.0)	27 (19.1)	45 (14.8)
No	146 (89.0)	114 (80.9)	260 (85.2)
Family history of diabetes			
Positive	84 (51.2)	108 (76.6)	192 (63.0)
No history	67 (40.9)	26 (18.4)	93 (30.5)
Not sure	13 (7.9)	7 (5.0)	20 (6.5)

*PKR=Pakistani Rupee= 0.01 US \$

Knowledge regarding symptoms of diabetes was such that 186 subjects (61%) identified polyuria, followed by polydipsia 130 (42.6%) and weight loss 115 (37.7%) (Table-2).

Table-2: Knowledge of symptoms of diabetes and gender differences

Symptoms	Males n=164	Females n=141	Total n=305
Polyuria	84 (51.2)	102 (72.0)	186 (61.0)
Polydipsia	62 (37.8)	68 (48.2)	130 (42.6)
Loss of weight	57 (34.8)	58 (41.1)	115 (37.7)

Mean percentage of the total=47.1%

Excessive sugar intake as a major risk factor was identified by 141 (46.2%) subjects. Obesity, family history of diabetes, lack of physical activities and stress as other risk factors for diabetes mellitus were identified

by 129 (42.3%), 120 (39.3%), 102 (33.4%), and 97 (31.8%) subjects respectively. Awareness of excess intake of sugar as a risk factor was more common in females than males. Recognition of stress as a risk factor was infrequent among the subjects (Table-3).

Table-3: Knowledge about risk factors in relation to gender differences

Risk factors	Males n=164	Females n=141	Total n=305
Excessive intake of sugar	70 (42.7)	71 (50.4)	141 (46.2)
Obesity	64 (39.0)	65 (46.1)	129 (42.3)
Family history	50 (30.5)	70 (49.6)	120 (39.3)
Lack of physical activities	63 (38.4)	39 (27.7)	102 (33.4)
Stress	47 (28.7)	50 (35.5)	97 (31.8)

Knowledge regarding complications leading to severe consequences was suboptimal. Kidney diseases were identified as a major complication of diabetes by 168 (55.1%) subjects. Eye diseases and visual problems were identified by 156 subjects (51.1%), followed by heart diseases 86 (28.2%), decreased sexual appetite 82 (26.9%), diseases of brain and nerves 61 (20%), and delayed wound healing and diabetic foot 11 (3.6%) as other important complications (Table-4).

Table-4: Knowledge regarding complications of diabetes in relation to gender differences

Complications	Males n=164	Females n=141	Total n=305
Kidney diseases	81 (49.4)	87 (61.7)	168 (55.1)
Eye diseases	80 (48.8)	76 (53.9)	156 (51.1)
Heart diseases	39 (23.8)	47 (33.3)	86 (28.2)
Decrease in sexual appetite	49 (29.9)	33 (23.4)	82 (26.9)
Effect on brain and nerves	30 (18.3)	31 (22.0)	61 (20.0)
Delayed wound healing & diabetic foot	6 (3.7)	5 (3.5)	11 (3.6)

Mean percentage of the total=30.8%

Subjects who perceived diabetes to be a fatal diseases were 212 (69.5%), those who perceived it to be a non fatal were 48 (15.7%), and 45 (14.8%) subjects were not sure whether it was a fatal or non-fatal disease. Diet care as a preventive measure was mentioned by 166 (57.7%) subjects, 157 (51.5%) subjects perceived increased physical activities while 114 (37.4%) subjects felt that avoiding obesity and reducing weight are important measures to prevent diabetes (Table-5).

Table-5: Perceptions of fatality of diabetes and the ways to prevent diabetes

Perceptions of fatality and prevention	Males n=164	Females n=141	Total n=305
Fatal	110 (67.1)	102 (72.3)	212 (69.5)
Non-fatal	32 (19.5)	16 (11.3)	48 (15.7)
Not sure	22 (13.4)	23 (16.3)	45 (14.8)
Diet care	95 (57.9)	81 (57.4)	176 (57.7)
High physical activity	88 (53.7)	69 (48.9)	157 (51.5)
Avoid obesity	54 (32.9)	60 (42.6)	114 (37.4)

Media was perceived to be an important source for awareness of the public by 236 (77.4%) subjects. Social work was mentioned by 134 (44%) subjects as an important source; while 2.8% of the subjects mentioned that knowledge regarding diabetes should be included in the curriculum at school level, which is very important. Perception regarding

improvement of awareness through media was more among males than females (Table-6).

Table-6: Perceptions regarding improvement of awareness in relation to gender differences

Awareness improvement	Males n=164	Females n=141	Total n=305
Media	132 (80.5)	104 (73.8)	236 (77.4)
Social activities	71 (43.3)	63 (44.7)	134 (44.0)
As a part of curricula	5 (3.0)	4 (2.8)	9 (2.9)

DISCUSSION

Pakistan hasn't succeeded in reducing the incidence of communicable diseases, despite modern pharmacological interventions. This is due to enormous increase in population and the facilities are limited to meet the demands of growing population. On the other side, non-communicable diseases like diabetes and hypertension are more common in affluent societies of Pakistan. Higher consumption of soft drinks, taking fatty meals and sedentary life style are the main causes for diabetes. Male to female ratio as a result of our study was mismatching with that conducted in Oman.⁸ It might be due to social restrictions in our society that led to decreased percentage of females to be interviewed during our study as compared to that study conducted in Oman.⁸ According to our study, self reported diabetics amongst males are 9.1% and amongst females are 15.6% while prevalence of diabetes in urban areas in Pakistan is 6.0% in males and 3.5% in females; while in rural areas the prevalence rate of 6.9% in males and 2.5% in females is there.⁹ The mismatching of the results may be due to time period as that study was conducted in 2006 or my selected sample might be comprised of many diabetics. Even diabetes exists in low socioeconomic groups to some extent. The conditions have become more worsened because people of low socioeconomic group can't afford the proper treatment due to financial problems. Stress should also be taken into consideration as it is also a risk factor for many other major illnesses besides diabetes. The knowledge about diabetes is limited according to the study, even one third of the subjects were unaware of the term 'diabetes' which is matching with the results of the study conducted in Chennai, India.¹⁰

It is known that health promotion, based upon knowledge and perceptions of diseases in a society, is the back-bone of any strategy aimed to control or prevent those diseases. It is widely accepted that excessive intake of dietary sugar is a major risk factor for incidence of diabetes mellitus. Even higher consumption of sugar-sweetened beverages is associated with a greater magnitude of weight gain and an increased risk for development of type 2 diabetes in women, which is probably by providing excessive calories and large amount of rapidly absorbable sugar.¹¹ It is also observed that affluent societies in Pakistan have adopted sedentary life style and unhealthy dietary

habits like intake of excessive sugar and fatty meals. About 46% of the subjects surveyed identified excessive sugar intake as a major risk factor for diabetes mellitus and had got first priority among the risk factors, but this is quite discouraging as compared to Omani population, because the identification of the said risk factor was 60% during a study, conducted at Oman in 2007.⁸

The results of perceptions regarding preventive measures of diabetes are congruent with those mentioned in the study conducted in Oman in order of priority but the percentages are different.⁸ Moreover, according to findings of our study, knowledge regarding risk factors of diabetes is more amongst females than males which isn't congruent with the findings of above mentioned study in Oman.⁸ The present study shows that one's level of education influences directly on one's level of knowledge regarding symptoms, risk factors and complications. So this finding is congruent with a study conducted in Manchester Diabetes Center.¹² Prevalence, preventive measures and increasing awareness regarding diabetes have perceived properly by well educated subjects of the sample. In addition to education, family history of diabetes mellitus also seems to be associated with more knowledge according to our study. Persons with positive family history may develop a sense of susceptibility, which may increase their awareness. This finding is in congruence with the study conducted in UK in 2004.¹³ Risk perception is an essential concept in a number of theoretical models which address protective behaviour related to health. Perceived risk is considered to be the primary aim to change within the Health Belief Model, which believes that, the higher the perceived risk the more likely an individual will modify his/her, behaviour to outwit that threat.¹⁴

The present findings show that though there is limited knowledge of diabetes, yet we may motivate the public through health education. This may bring fruitful results.

LIMITATIONS

The data were collected from urban and semi-urban areas comprising seven localities of Peshawar. No data were derived from rural areas and peripheries of Peshawar. However, the present findings would lay footing for further similar studies in other parts of our country.

CONCLUSION

There is considerable lack of knowledge and perceptions about diabetes in the population of Peshawar. Level of education is a significant predictor of optimum knowledge and perceptions of risk factor, symptoms, complications and prevention of diabetes. Creating awareness among masses through health education will help in controlling diabetes by promoting screening, early diagnosis and initiation of effective treatment resulting in preventing diabetes associated complications and disabilities.

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