

A SURVEY OF AWARENESS REGARDING DIABETES AND ITS MANAGEMENT AMONG PATIENTS WITH DIABETES IN PESHAWAR, PAKISTAN

Zia Ur Rahman¹, Muhammad Irshad², Imran Khan³, Farhat Ali Khan⁴, Alija Baig⁵, Qazi Yasir Gaohar⁶

^{1,3,6} Department of Pharmacy, Sarhad University of Science and Information Technology, Peshawar - Pakistan

² Department of Pediatrics, Lady Reading Hospital, Peshawar - Pakistan.

Address for correspondence:
Zia Ur Rehman

Department of Pharmacy, Sarhad University of Science and Information Technology, Peshawar - Pakistan.

E-mail: zia.pharmacist@hotmail.com

Date Received:

March 11, 2014

Date Revised:

November 11, 2014

Date Accepted:

November 11, 2014

ABSTRACT

Objective: To determine and compare the level of awareness regarding diabetes mellitus, its complications and management in male & female diabetic patients of Peshawar, Pakistan.

Methodology: A cross sectional study conducted in Peshawar, from February to July 2013. A well organized questionnaire was used, having fourteen items. The participants were interviewed and the questionnaire was filled by trained persons (Diabetes Educators). The correct answers were marked as aware and incorrect as unaware, and made conversions to percentage. Total 561 diabetic patients were assessed. The data was analyzed using SPSS v.16 software and excel 2007.

Results: The level of awareness regarding diabetes and its management was found inadequate. Amongst, 36.3% male and 13% female diabetics were aware that why glycemic control is important, 63% male and 32.4% females were aware that diabetes could produce some complications. Similarly 23.7% male and 10% female respondents know importance of blood glucose monitoring. Only 181 male and 31 female diabetics were aware of hypoglycemia symptoms and management. Over all level of awareness in female patients as compared to male patients was found low.

Conclusion: The overall level of awareness in both male and female diabetics was found low; and comparatively female patients have poorer awareness.

Key Words: Diabetes Mellitus, Awareness, Diabetes education.

This article may be cited as: Rahman UZ, Irshad M, Khan I, Khan AF, Baig A, Gaohar QY. A survey of awareness regarding diabetes and its management among patients with diabetes in Peshawar, Pakistan. *J Post Med Inst* 2014; 28(4): 372-7.

INTRODUCTION

Diabetes mellitus is a complex, chronic illness requiring continuous medical care with multifactorial risk reduction strategies beyond glycemic control. Ongoing patient self-management, education and support are critical to preventing acute complications and reducing the risk of long-term complications. Significant evidence exists that supports a range of interventions to improve diabetes outcomes¹. Diabetes mellitus is associated with significant rates of morbidity and mortality resulting from micro and macro vascular complications². As a result of associated complications, diabetes intensifies the economic burdens both on Health departments and patient itself in non developed countries like Pakistan. Diabetes is one of the most prevailing disorders worldwide, the prevalence for which was estimated (globally), in 2013, 382 million people live with diabetes and this is expected to rise to 592 million by 2035. According to

International Diabetes Federation, currently 6.6 million people live with diabetes in Pakistan, and in 2025 the total number of people with diabetes is estimated to be 14.5 million; Pakistan has the eleventh largest population of diabetes³.

The self care practices of individuals are influenced by their knowledge about diabetes; the more they know about their illness, more they would have self management skills⁴. Many research work published^{5,6,7} have shown that, in Pakistan the diabetic population don't have enough awareness of diabetes, the proper use of medications, life style modifications, dietary plans, myths associated with insulin and other education programs on health issues⁸.

Patient awareness about diabetes, complications, medications adherence, diet plans and life style modifications can establish patient specific goals, like effec-

tiveness of medications and decrease in like hood of adverse events in all types of diabetes and in all age groups of diabetic population⁹.

The objective of this study was to determine the comparative level of awareness of male and female diabetic patients (irrespective of diabetes type), that to how much extent they know about diabetes, associated complications, problems and management.

METHODOLOGY

The study was based on the collection of data over a period of six months, from February 2013 to July 2013, by visiting three main institutional setups of Peshawar, Pakistan, namely Khyber Teaching Hospital, Lady Reading Hospital, Hayatabad Medical Complex, and private clinical setups of Endocrinologists and Medical specialists consulting in diabetes management, in Peshawar. During whole period of study Medical wards, Endocrinology wards and OPDs of the above mentioned hospitals were visited frequently for collection of data. The data was collected through an interview of diabetic patients after permission of the concern physician, by trained diabetes educators and filling up a questionnaire. All questions were asked in lay man language (local language, pushto) instead of using medical terms, the questions were asked directly from patients and his/her correct response was filled as aware; for example, the patient was asked to be, "Do you know why glycemetic control is necessary", and then his/her correct response was marked as aware. The collected data was analyzed through statistical software SPSS version 16 for windows and excel 2007. For different investigated variables frequency (percentage) were reported. The Chi-square test was used to investigate the association

of awareness of diabetes mellitus. A p-value of ≤ 0.05 was taken as significant.

STUDIED DIABETIC POPULATION

Total 561 patients (430 male and 131 female patients) had been assessed during study from all group of age, including individuals with type I diabetes, type II diabetes and patients with gestational diabetes mellitus. The socio-demographic profile of studied diabetic population is shown in table 1.

SCORING CRITERIA

The questionnaire was divided into two sections (Annexure 1). Section I shows socio-demographic details of participants. Section II expresses questions from participants, and total number of basic questions were fourteen. A scoring method was built by marking correct answers as "aware" and incorrect as "unaware".

RESULTS

Total 561 diabetic patients were interviewed 76.6% (430) male and 23.4% (131) females. Their ages ranged between 15 to 65 years. About 22.3% of the respondents had previously received diabetes education (and remaining 77.7% of them had not been educated previously), as shown in Table 1.

Results of the level of awareness assessed in diabetic population are summarized in tabulated form, and are presented in percent awareness, table 2.

Although all the associations were statistically significant ($P < 0.001$) except awareness regarding basic diet plan / dietary misconception, and recommended & rational use of insulin ($P = 0.983$ & 0.367 respectively), that is, majority of both male and female diabetics were

Annexure 1: Questionnaire

S.no ____			
Age ____ years			
Sex Male [] Female []			
Diabetes mellitus type Type I [] Type II [] GDM []			
Family history of diabetes yes [] No []			
Previously counseled (Diabetes education) yes [] No []			
1	General idea of diabetes mellitus	Aware []	Unaware []
	<ul style="list-style-type: none"> • What you understand about condition called diabetes? • Do you know it's a life lasting chronic disorder? 		
2	Importance of glycemetic control	Aware []	Unaware []
	<ul style="list-style-type: none"> • Do you know why glycemetic control is important? • What happened if you have persistent high sugar levels? 		
3	General awareness of diabetes complications	Aware []	Unaware []
	<ul style="list-style-type: none"> • Do you any idea of diabetes associated complications? • Do you know persistent hyperglycemia can affect your eyes, heart and kidneys? • Do you know about diabetic foot and amputation? • Do you have any knowledge of neuropathy? 		

4	Why blood glucose monitoring is important?	Aware []	Unaware []
5	About insulin (patients on insulin) <ul style="list-style-type: none"> Do you know insulin is a life saving agent? Insulin is the last stage- its a myth Insulin can affect kidney – it a myth 	Aware []	Unaware []
6	Target blood sugar levels <ul style="list-style-type: none"> Do you have knowledge of target FPG levels? Do you have knowledge of target RBS levels? 	Aware []	Unaware []
7	Management of hypoglycemia <ul style="list-style-type: none"> Do you know symptoms of hypoglycemia? Do you know how to manage it? 	Aware []	Unaware []
8	Basics of diet modifications /diet misconceptions <ul style="list-style-type: none"> Do you know about your diet plan? Diabetics cannot eat fruits- it's a myth Underground vegetables are prohibited- it's a myth All Sugar free stuff can be consumed as much as diabetic patient can- it's a misconception 	Aware []	Unaware []
9	Basics of life style modifications <ul style="list-style-type: none"> Do you know advantages of daily exercise in diabetes? Do you follow foot care recommendations? 	Aware []	Unaware []
10	Recommended and rational use of insulin <ul style="list-style-type: none"> Do you know administration technique? Do you know proper body sites for injection? Do you know when to be administered your insulin? 	Aware []	Unaware []
11	Misconception that no dietary modifications with insulin?	Aware []	Unaware []
12	Safe fasting, medications/insulin use during Ramadan <ul style="list-style-type: none"> Do you know how to manage diabetes during Ramadan Do you know recommendations of safe fasting? 	Aware []	Unaware []
13	Importance of insulin/glycemic control in pregnant <ul style="list-style-type: none"> Do you know insulin is necessary in pregnancy? Do you know uncontrolled glycemic levels can harm fetus and mother? 	Aware []	Unaware []
14	Significance of physician follows up <ul style="list-style-type: none"> Do you know your medication regimen need to be change with time? Do you have any idea that why routine checkup is important? 	Aware []	Unaware []

Table 1: Socio-demographic profile of surveyed diabetic population (n=561)

	Frequency	Percentage
Age distribution		
<35 years	70	12.5
35-45 years	161	28.7
>45 years	330	58.8
Sex distribution		
Male	430	76.6
Female	131	23.4
Diabetes mellitus type		
Type I	42	7.5
Type II	512	91.3
GDM	7	1.25
Family history of diabetes	203	36.2
Previously counseled (Diabetes education)	125	22.3

Table 2: Awareness regarding diabetes

	Variables	Males		Females		P-Value	Odds ratio (95% CI)
		Number	Percent	Number	Percent		
1	General idea of diabetes mellitus?	327	76%	70	53.2%	<0.001	2.767 (1.839,4.163)
2	Importance of glycemic control?	156	36.3%	17	13%	<0.001	3.612 (2.383,5.474)
3	General awareness of diabetes complications?	271	63%	42	32.4%	<0.001	3.612 (2.383,5.474)
4	Importance of blood glucose Monitoring	102	23.7%	13	10%	0.001	2.823 (1.527,5.218)
5	Importance of insulin (as therapeutic agent/myths about insulin)?	66	15.4%	12	9.2%	0.027	2.194 (1.094,4.401)
6	Target FPG and RBS levels?	151	35.2%	11	8.4%	<0.001	5.904 (3.087,11.292)
7	Management of hypoglycemia?	181	42%	31	23.6%	<0.001	2.345 (1.501,3.663)
8	Basics of diet modifications (diet plan) /diet misconceptions?	135	31.4%	41	31%	0.983	1.005 (0.659,1.532)
9	Basics of life style modifications (exercise etc)?	272	63.2%	27	20.6%	<0.001	6.631 (4.159,10.573)
10	Recommended and rational use of insulin?	344	80%	100	76.3%	0.367	1.240 (0.777,1.978)
11	Misconception of no dietary modifications with insulin?	184	42.7%	44	33.5%	0.061	1.479 (0.982,2.228)
12	Safe fasting, medications/insulin use during Ramadan?	151	35%	15	11.5%	<0.001	4.185 (2.360,7.424)
13	Importance of insulin/glycemic control in pregnancy?	271	63%	50	38%	<0.001	2.761 (1.845,4.132)

The number and respective percentage indicates the individuals aware of the concern variable; total diabetic population n=561; male=430 and female=131 *(Chi-Square Test was used; A p-value of ≤ 0.05 was taken as significant)

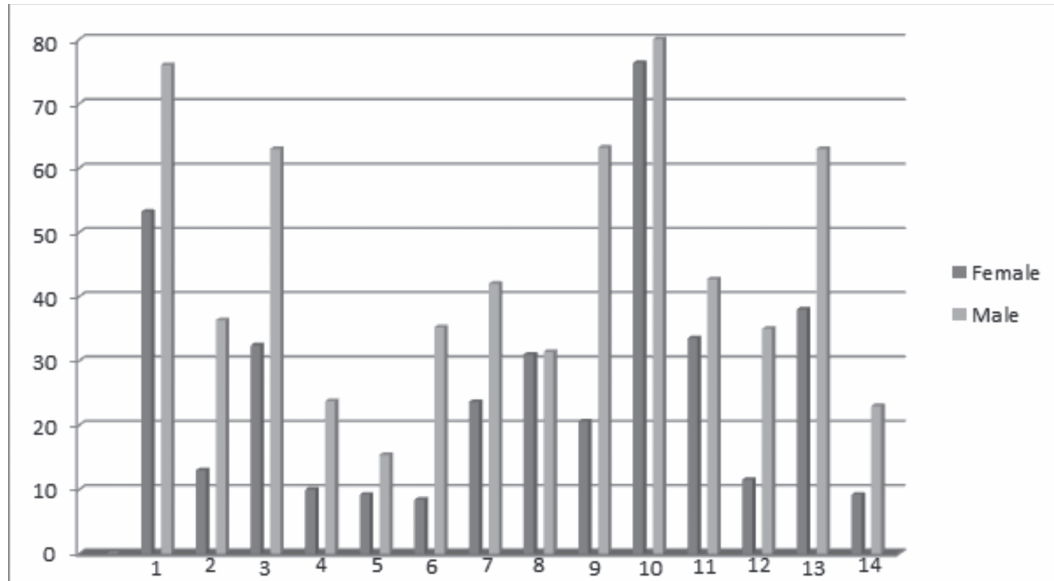
found almost equally aware in that regard; Only 31.4% male and 31% female were aware of basic diet plan, and 80% male and 76.3% female were found aware of rational use of insulin.

The level of awareness in female population was found inadequate as compared to male patients, as illustrated graphically (figure 1).

Results of the level of awareness assessed in diabetic population are summarized in tabulated form, and are presented in percent awareness, table 2.

DISCUSSION

The data collected empirically shows that the level of awareness of patients about diabetes, its complications and management in the diabetic population of Peshawar - Pakistan is shockingly poor and especially in the females. To our knowledge, this was the first research reporting the level of awareness in diabetic population of Peshawar - Pakistan; and to plan the public health policies with special reference to implementation of National Diabetic Control Program, such data is very important.

Figure 1 Graphical illustration of awareness between male and female diabetic population (from table 03)

Knowledge about complications of diabetes was not satisfactory in female diabetics, only 32.4% female diabetics and 63% of male diabetics were aware of the complications. Ulvi et al. in a study conducted in rural Islamabad and Ali et al in Quetta observed that knowledge about diabetes; including awareness of complications of diabetes was poor^{6,8}. This indicates that majority of the diabetic patients have not been taught about diabetes by their physicians & other healthcare professionals, although some studies have shown that even some healthcare professionals don't have enough knowledge regarding diabetes^{10,11}.

Male and female diabetics are about equally unaware of basic dietary plan and misconceptions, only 31.4% male and 31% female diabetic respondents were aware of the facts, study by Mahmood et al in Karachi also observed that more than 80% of respondents in their study had misconceptions about diet⁴.

Other studies in Pakistan were conducted to evaluate the awareness level in diabetic patients, but unfortunately the overall results are nearly same^{5,7,12,13}. In fact not only in Pakistan but the awareness level of diabetic population regarding diabetes, its complications and management is also not good in both developed and developing countries. Studies conducted for this purpose in India¹⁴, Saudi Arabia¹⁵, Singapore¹⁶, Turkey¹⁷, and Iran¹⁸ also brought such results. In India Muninarayana et al concluded that more than half (75%) of the participants of their study were not aware of the long term effects of diabetes and diabetic care. Similarly Mohield-ein et al in Saudi Arabia observed that the diabetes knowledge score among the study subjects was 67.4%, whereas general knowledge regarding the disease, risk factors, symptoms and complications were 71.1, 63.4,

80.8 and 47.7% respectively. Another study by Wee et al in Singapore presented their results as; 22 to 83% (General knowledge), 31 to 91% (Risk factors), 48 to 81% (Symptoms and complications), 35 to 87% (Treatment and management), meaning that they also noted low level of awareness in some areas. Bahreini et al in Iran concluded that the male awareness rate was more than that of female ($P = 0.001$). In Turkey, in 2008 Arslantas et al concluded that only 14.5% of the patients were able to check their plasma glucose levels by themselves, and they were found unaware of what HbA1c signifies or what it entails.

It was observed that level of awareness in male diabetic population was found more as compared to female population almost in all aspects, other studies also evaluated that level of awareness in female population was comparatively low as observed by Ulvi et al in rural Islamabad, and Bahreini et al in 2007 in Iran^{8,18}.

This study reveals that overall level of awareness in diabetic population is very poor. Studies previously conducted in Pakistan also had been evaluated that those who know much about diabetes and its complications, management and other aspects is due to affected family members rather than national education system. A Study of Ulvi et al concluded that participants having family history of diabetes, the percent awareness and unawareness ratio was 65 to 35%⁸. During our whole survey only 22.3% of diabetics were found who had been received diabetes education and it was observed that those patients who were frequently in touch with healthcare professionals or had been counseled by a diabetes educator or other healthcare professionals, had some degree of awareness This highlights the role of healthcare professionals, particularly the professional

Diabetes Educators but unfortunately this approach is not being fully considered in Pakistan specially in public sectors although some private institutes have established diabetes education system like Baqai Institute of Diabetology and Endocrinology¹⁹ It had previously been shown that, the management of chronic life lasting disorders like diabetes not only requires rational treatment approaches, but also proper education and counseling by healthcare professionals to prevent long term complications and decrease financial burdens and rates of morbidity and mortality¹³. The shortcomings of this study include the limited pool of sample selection.

CONCLUSION

The overall level of awareness in both male and female diabetics was found low; and comparatively female patients have poorer awareness. There is a big space for raising the educational awareness about diabetes through formal, well organized approaches by healthcare professionals in hospitals, clinics and community based healthcare centers. Because the American Diabetes Association, clearly defined, the critical role of diabetes education in quality diabetes care; diabetes self-management education is a critical element of care for all people with diabetes and is necessary in order to improve patient outcomes. It is recommended that health-care professionals both collaboratively and individually develop programs and projects to meet this objective.

REFERENCES

- American Diabetes Association. Standards of medical care in diabetes-2014. *Diabetes Care* 2014;37:514-80.
- Chinenye S, young E. Management of diabetes mellitus in developing countries. The relevance of post prandial hyperglycemia. *Pak J Med Sci* 2011;27:677-81.
- International Diabetes Federation. IDF diabetes atlas 6th edition [Online]. 2013 [cited on 2013 Dec 21]. Available from URL: <http://www.idf.org/diabetesatlas/6e/Update2013>
- Mahmood K, Akhtar ST, Haider I, Abbassi B, Jalib A, Salekeen SU. Dietary misconceptions in Pakistani diabetic patients. *Pak J Med Sci* 2011;27:128-32.
- Jabbar A, Ebrahim MA, Mahmood K. Standard of knowledge about their disease among patients with diabetes in Karachi Pakistan. *J Pak Med Assoc* 2001;89:216-9.
- Ali M, Khalid GH, Pirkani GS. Level of health education in patients with type 2 diabetes mellitus in Quetta. *J Pak Med Assoc* 1998;48:334-7.
- Sabri AA, Qayyum MA, Saigol NU, Zafar K, Aslam F. Comparing knowledge of diabetes mellitus among rural and urban diabetics. *Mcgill J Med* 2007;10:87-9.
- Ulvi OS, Chaudhery RY, Ali T, Alvi RA, Khan MF, Khan M, et al. Investigating the awareness level about diabetes mellitus and associated factors in Tarlai (rural Islamabad). *J Pak Med Assoc* 2009;59:798-801.
- Grossman S. Management of type 2 diabetes mellitus in elderly, role of the pharmacist in a multidisciplinary health care team. *J Multidiscip Healthc* 2011;4:149-54.
- Shera AS, Jawad F, Basit A. Diabetes related knowledge, attitude and practices of family physician in Pakistan. *J Pak Med Assoc* 2002;80:465-73.
- Hughes GD, Puoane T, Bradley H. Ability to manage diabetes, community health worker knowledge, attitude and beliefs. *J Endocrinol Metab Diabetes South Afr* 2006;11:10-4.
- Chutto MA, Qadri HR, Abro HA, Shaikh MA, Shaikh BA. Awareness of diabetes mellitus and its complications in diabetic patients. *Med Channel* 2009;15:53-6.
- Hasnain S, Sheikh NH. Knowledge and practices regarding foot care in diabetic patients visiting diabetic clinic in Jinnah Hospital, Lahore. *J Pak Med Assoc* 2009;59:687-90.
- Muninarayana C, Balachandra G, Hiremath SG, Iyengar K, Anil NS. Prevalence and awareness regarding diabetes mellitus in rural Tamaka, Kolar. *Int J Diabetes Dev Ctries* 2010;30:18-21.
- Mohieldein HA, Al Zohairy MA, Hasan M. Awareness of diabetes mellitus among Saudi non-diabetic population in Al-Qassim region, Saudi Arabia. *J Diabetes Endocrinol* 2011;2:14-9.
- Wee HL, Ho HK, Li SC. Public awareness of diabetes mellitus in Singapore. *Singapore Med J* 2002;43:128-34.
- Arslantas D, Unsal A, Metintas S, Koc F. Knowledge of diabetic patients about diabetes at the primary stage in Eskisehir, Turkey. *Pak J Med Sci* 2008;24:263-8.
- Soltanian AR, Bahreini F, Ardekani MA. People awareness about diabetes disease and its complications among aged 18 years and older in Bushehr port inhabitants (Iran). *Diabetes Metab Syndr* 2007;1:245-9.
- Baqai Institute of Diabetology & Endocrinology. Diet & education program [Online]. 2013 [cited on 2014 Jan 04]. Available at URL: <http://www.bideonline.com/AboutUs-Diet.aspx>

CONTRIBUTORS

ZUR conceived the idea and helped in manuscript writing. MI, IK, IB, QYG did data collection. FAK did the statistical analysis. All the authors contributed significantly to the final manuscript.