

## Knowledge, attitude and practices of diabetes mellitus amongst diabetic outpatients in rural Sindh

Muhammad Zafar Iqbal Hydrie<sup>1</sup>, Nazia Jameel<sup>2</sup>, Syed Muhammad Zulfiqar Hyder Naqvi<sup>3</sup>  
Munir Ahmed Shaikh<sup>4</sup>, Sheeraz Hyder<sup>5</sup>, Saima Asim<sup>6</sup>

### ABSTRACT

This cross-sectional survey to assess the knowledge, attitude and practices regarding diabetes mellitus and their associated factors was carried out over 384 patients aged  $\geq 30$  years of either gender with known diabetes mellitus type 2. Study results showed that 66.9% of the participants had adequate knowledge, 43.0% had adequate attitude while only 27.3% had adequate practices related to diabetes mellitus. Adequateness of both attitude and practices was significantly associated with age and education of the patients ( $p < 0.05$  for all). Attitude and practices of the diabetic patients were not satisfactory. Participants' age and educational status were significantly associated with their attitude and practices.

**Keywords:** Diabetes Mellitus, Demography, Knowledge, Attitude, Practices, Associated factors

### How to Cite This:

Hydrie MZI, Jameel N, Naqvi SMZH, Shaikh MA, Hyder S, Asim S. Knowledge, attitude and practices of diabetes mellitus among diabetic outpatients in rural Sindh. *Isra Med J.* 2021; 13(x): x-x.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-Noncommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### INTRODUCTION

Diabetes Mellitus (DM) type 2 is a serious public health problem globally as its incidence is on the rise, mainly in low- and middle-income countries. As estimated by International Diabetes Federation (IDF), the people living with diabetes

mellitus globally in the year 2017 were 451 million (age 18-99 years) and the figure is projected to rise to 693 million by 2045<sup>1</sup>. Proportion of people living with DM type 2 is on the rise globally, but this phenomenon is more marked in low- and middle-income countries where 79% of adults with diabetes are currently living<sup>2</sup>. In systematic review, the recent prevalence of diabetes mellitus type 2 in Pakistan is 11.8% and is a little higher among males than among females (11.2% vs. 9.2%); the province wise prevalence of the disease is higher in Sindh (16.2%) as compared to other provinces of Pakistan<sup>3</sup>. Pakistan is currently ranked 6th in terms of DM cases globally with prevalence of 6.9%<sup>4</sup>. As per recent IDF estimates, 7.5 million adult cases of diabetes mellitus are currently present in Pakistan; and in absence of appropriate interventional strategies, this figure may reach 16.7 million by 2045<sup>4</sup>. Demographic determinants and poor knowledge for health can be attributed to the epidemiological shift of diabetes mellitus in lower middle income countries<sup>5</sup>. A recent study from Pakistan showed that the knowledge of risk factors, management, and care of diabetes mellitus was low in the general population of Pakistan<sup>6</sup>. The most substantial method of controlling diabetes mellitus therefore is suggested to be the spread of awareness to motivate people to adopt a healthy lifestyle<sup>7</sup>. Local evidence particularly from rural Sindh is limited on this topic; hence this study was conducted with an objective to assess the knowledge, attitude and practices for diabetes mellitus and their associated factors among diabetic outpatients at Taluka hospital, Mirokhan, in rural Sindh.

### METHODOLOGY

A questionnaire based cross-sectional survey was carried out among outpatients at Taluka hospital, Mirokhan, Shahdadkot,

1. Professor of Community Medicine, School of Public Health, Dow University of Health Sciences, Ojha Campus, Karachi
2. Associate Professor of Community Medicine, Baqai Medical University, Karachi
3. Assistant Professor of Community Medicine, Baqai Medical University, Karachi
4. Senior Lecturer of Community Medicine, Baqai Medical University, Karachi
5. Field Program Officer, Health Department, Government of Sindh, Karachi
6. Assistant Professor of Community Dentistry, Hamdard College of Medicine and Dentistry, Karachi

### Correspondence:

Munir Ahmed Shaikh  
Senior Lecturer of Community Medicine,  
Baqai Medical University, Karachi  
Email: ahmad5785@gmail.com

Received for Publication: October 30, 2019

1<sup>st</sup> Revision of Manuscript: March 18, 2020

2<sup>nd</sup> Revision of Manuscript: July 25, 2020

3<sup>rd</sup> Revision of Manuscript: September 30, 2020

Accepted for Publication: October 05, 2020

a rural area of Sindh, from 1<sup>st</sup> September 2018 to 30<sup>th</sup> November 2018 (IRB letter no. FHM 276-2019/MPH student/Batch 25). Patients aged  $\geq 30$  years of either gender with known diabetes mellitus type 2 were included in the study while patients who did not have diabetes mellitus or who refused to give verbal informed consent were excluded from the study. Systematic random sampling technique was used to include the patients in the study. A pre-tested structured questionnaire was used for participant interview by the principal investigator that had been checked both for face validity and reliability. First the face validity was checked by asking the participants how relevant the questionnaire appeared to the study objective; and then the reliability was checked by calculating Cronbach's alpha that was found to be

0.751, showing an acceptable level of internal consistency. At the completion of data collection, all the responses of dental outpatients were coded by giving the value of 1 to a correct response and a value of 0 to an incorrect response. By summing up the scores of dental outpatients, separate indices were generated to assess the adequacy of their knowledge, attitude and practices. Anyone with a score of 70% or above was considered to have adequate knowledge, attitude or practices regarding diabetes mellitus. Data were analysed on statistical package for social sciences (SPSS) version 20. Inferential analysis was performed using chi-square test whereas the significance level was set at 0.05.

**Table-I: Bivariate analysis of associations between participants' demographic characteristics and their knowledge, attitude and practices (N=384)**

Variables (n=384)	Knowledge		Attitude		Practices	
	Adequate (n=257)	Inadequate (n=127)	Adequate (n=165)	Inadequate n=(219)	Adequate n=(105)	Inadequate n=(279)
	(%)	(%)	(%)	(%)	(%)	(%)
<b>Gender</b>						
Male	129(65.8)	67(34.2)	78(39.8)	118(60.2)	46(23.5)	150(76.5)
Female	128(68.1)	60(31.9)	87(46.3)	101(53.7)	59(31.4)	129(68.6)
<b>p-value</b>	<b>0.637</b>		<b>0.2</b>		<b>0.082</b>	
<b>Age</b>						
28-50 Years	135 (65.9)	70(34.1)	105(51.2)	100(48.8)	72(35.1)	133(64.9)
51-70 Years	105 (67.3)	51(32.7)	55(35.3)	101(64.7)	29(18.6)	127(81.4)
71 Years and Above	17(73.9)	6(26.1)	5(21.7)	18(78.3)	4(17.4)	19(82.6)
<b>p-value</b>	<b>0.732</b>		<b>0.001</b>		<b>0.001</b>	
<b>Language</b>						
Urdu	22(62.9)	13(37.1)	16(45.7)	19(54.3)	8(22.9)	27(77.1)
Sindhi	137(63.1)	80(36.9)	100(46.1)	117(53.9)	57(26.3)	160(73.7)
Seraiki	37(77.1)	11(22.9)	21(43.8)	27(56.2)	12(25.0)	36(75.0)
Balochi	20(74.1)	7(25.9)	7(25.9)	20(74.1)	5(18.5)	22(81.5)
Brahvi	8(57.1)	6(42.9)	3(21.4)	11(78.6)	7(50.0)	7(50.0)
Other	33(76.7)	10(23.3)	18(41.9)	25(58.1)	16(37.2)	27(62.8)
<b>p-value</b>	<b>0.22</b>		<b>0.232</b>		<b>0.193</b>	
<b>Religion</b>						
Muslim	245(66.7)	122(33.3)	158(43.1)	209(56.9)	104(28.3)	263(71.7)
Christian	7(77.8)	2(22.2)	6(66.7)	3(33.3)	Nil	9(100.0)
Hindu	Nil	1(100)	Nil	1(100.0)	1(100.0)	Nil
Other	5(71.4)	2(28.6)	1(14.3)	6(85.7)	Nil	7(100.0)
<b>p-value</b>	<b>0.463</b>		<b>0.16</b>		<b>0.081</b>	
<b>Education</b>						
Illiterate	90(66.2)	46(33.8)	72(52.9)	64(47.1)	32(23.5)	104(76.5)
Studied in Madrasa	8(53.3)	7(46.7)	6(40.0)	9(60.0)	4(26.7)	11(73.3)
Primary	70(67.9)	33(32.1)	33(32.1)	70(67.9)	19(18.4)	84(81.6)
Matriculate	29(63.1)	17(36.9)	25(54.3)	21(45.7)	11(23.9)	35(76.1)
Intermediate	30(88.2)	4(11.8)	11(32.4)	23(67.6)	15(44.1)	19(55.9)
Graduate	26(59.1)	18(40.9)	16(36.4)	28(63.6)	23(52.3)	21(47.7)
Postgraduate	4(66.7)	2(33.3)	2(33.3)	4(66.7)	1(10.7)	5(89.3)
<b>p-value</b>	<b>0.131</b>		<b>0.016</b>		<b>&lt;0.001</b>	
<b>Occupation</b>						
Government Employee	49(68.1)	23(31.9)	27(37.5)	45(62.5)	27(37.5)	45(62.5)
Private Sector Employee	18(72.0)	7(38.0)	9(36.0)	16(64.0)	9(36.0)	16(64.0)
Self-Business	77(63.1)	45(36.9)	59(48.4)	63(51.6)	26(21.3)	96(78.7)
Unemployed	113(68.5)	52(31.5)	70(42.4)	95(57.6)	43(26.1)	122(73.9)

p-value	0.726	0.417	0.07
---------	-------	-------	------

## RESULTS

A total of 384 diabetic patients were included in the study and the response rate was 100%. The study results showed that 257 (66.9%) of the participants had adequate knowledge, 165 (43.0%) had adequate attitude while only 105 (27.3%) had adequate practices related to DM.

When we explored the association between demographic factors, e.g., age, gender, education and occupation with adequateness of knowledge, we did not find any significant association. Moreover, it was seen that adequate attitude was significantly associated with age ( $p=0.01$ ) and education ( $p=0.016$ ) of the patients where patients in the youngest age group, i.e. 28-50 years, were more likely to have adequate attitude than those in the older age groups, i.e. 51-70 years or 71 years or above, while patients who had matriculation were more likely to have adequate attitude than those who were illiterate, studied in Madrasa, had primary, intermediate, graduate or post-graduate education. Furthermore, adequateness of practices was also significantly associated with age ( $p=0.001$ ) and education ( $p=0.001$ ) of the patients where patients in the youngest age group, i.e. 28-50 years, were more likely to have adequate attitude than those in the older age groups, i.e. 51-70 years or 71 years or above, while patients who were graduate were more likely to have adequate attitude than those who were illiterate, studied in Madrasa, had primary, matriculation, intermediate or post-graduate education (Table-I).

## DISCUSSION

Present study highlights deficiency in patients' knowledge showing that around 65% of the participants had adequate knowledge, while less than half (43%) had adequate attitude and only 27.3% had adequate practices related to diabetes mellitus. The level of awareness of diabetes mellitus was comparable to that reported earlier from Pakistan<sup>8</sup>. The study results showed that education of participants was significantly associated with both their attitude and practices related to diabetes mellitus, but not with their knowledge. Literature though reveals that level of education is directly linked with the knowledge about diabetes mellitus among respondents<sup>9</sup>. With an increase in their awareness, it is only natural that the attitude and practices of individuals are influenced in a positive way. Studies have related family history of diabetes mellitus with knowledge regarding the disease, as one learns about the disease and how to take care of that family member. Those who take care of family members are aware of the disease, but unfortunately this was not the case in our study since the patients had limited access to health care professionals especially in rural areas<sup>9</sup>. As seen in our study, earlier local research has shown that adequate awareness is not present in the masses regarding diabetes mellitus probably due to lack of educational programs<sup>10</sup>. As compared to urban areas, rural areas lack adequate knowledge, so it is recommended that there should be public awareness about diabetes mellitus

among the masses.

Findings from our study and previous similar work shows that diabetic patients are less educated in general, so providing them and their family members with awareness opportunities could prove to be more effective in bringing about the desired lifestyle changes and optimizing the clinical outcomes<sup>11</sup>.

## CONCLUSION

A majority of participants had adequate diabetes related knowledge, but not attitude and practices. Moreover, participants' age and educational status appeared to influence both their attitude and their practices. Further evaluation of study findings using more rigorous designs is recommended. It is acknowledged that instead of observation, interview based assessment of participants' practices was a limitation of this study.

## AUTHOR'S CONTRIBUTION

**Hydrie MZI:** Manuscript writing, Critical analysis of manuscript

**Jameel N:** Conceived idea, Designed methodology.

**Naqvi SMZH:** Data analysis, Critical revision of manuscript.

**Shaikh MA:** Data interpretation, Manuscript writing.

**Hyder S:** Data collection, Data analysis, Literature review.

**Asim S:** Manuscript writing.

**Disclaimer:** None.

**Conflict of Interest:** None.

**Source of Funding:** None.

## REFERENCES

1. Cho N, Shaw JE, Karuranga S, Huang Y, da Rocha Fernandes JD, Ohlrogge AW, et al. IDF Diabetes Atlas: Global estimates of diabetes prevalence for 2017 and projections for 2045. *Diabetes Res Clin Pract.* 2018; 1; 138: 271- 281. doi: <https://doi.org/10.1016/j.diabres.2018.02.023>
2. Bommer C, Sagalova V, Heesemann E, Goehler MJ, Atun R, Bärnighausen T, et al. Global economic burden of diabetes in adults: projections from 2015 to 2030. *Diabetes Care* 2018; 1; 41 (5): 963-970. doi: <https://doi.org/10.2337/dc17-1962>
3. Meo SA, Zia I, Bukhari IA, Arain SA. Type 2 diabetes mellitus in Pakistan: Current prevalence and future forecast. *J Pak Med Assoc.* 2016; 66 (12): 1637- 1642.
4. International Diabetes Federation. IDF Diabetes Atlas 9th edition 2019. Website: [<http://www.idf.org/diabetesatlas>] Accessed on June 14, 2019.
5. Demaio AR, Ogtontuya D, Courten DM, Bygbjerg IC, Enkhtuya P, Oyunbileg J, et al. Exploring knowledge, attitudes and practices related to diabetes in Mongolia: a national population-based survey. *BMC Public Health.* 2013; 13 (1): 236. doi: <https://doi.org/10.1186/1471-2458-13-236>
6. Gillani AH, Amirul Islam FM, Hayat K, Atif N, Yang C, Chang J, Qu Z, Fang Y. Knowledge, attitudes and practices

- regarding diabetes in the general population: A cross-sectional study from Pakistan. *Int J Environ Res Public Health*. 2018;15(9):1906. doi: <https://doi.org/10.3390/ijerph15091906>
7. Maskari AF, Sadig EM, Kaabi AJM, Afandi B, Nagelkerke N, Yeatts KB. Knowledge, attitude and practices of diabetic patients in the United Arab Emirates. *PLoS One*. 2013; 14; 8 (1): 1-8. doi: <https://doi.org/10.1371/journal.pone.0052857>
  8. Feng L, Naheed A, Silva DHA, Jehan I, Raqib R, Islam MT, et al. Regional Variation in Comorbid Prediabetes and Diabetes and Associated Factors among Hypertensive Individuals in Rural Bangladesh, Pakistan, and Sri Lanka. *J Obes*. 2019;2019:1-11. doi: <https://doi.org/10.1155/2019/4914158>
  9. Haseeb A, Bilal M, Farooqui WA, Soomro H, Khan MA, Nusrat K. Predictors of Awareness and Management Practices of Diabetes among Rural Dwellers of Sindh. *Glob J Health Sci*. 2017; 9 (5): 55- 66. doi: 10.5539/gjhs.v9n5p55
  10. Hussain A, Ali I. Diabetes mellitus in Pakistan: A major public health concern. *Arch Prama Pract*. 2016; 7 (1): 30-32.
  11. Bukhsh A, Khan TM, Nawaz MS, Ahmed HS, Chan KG, Goh BH. Association of diabetes knowledge with glycemic control and self-care practices among Pakistani people with type 2 diabetes mellitus. *Diabetes Metab Syndr Obes*. 2019;12:1409-1417. doi: <https://dx.doi.org/10.2147%2FDMSO.S209711>