

PREVALENCE OF DIABETES MELLITUS AND RISK FACTORS IN BELOW FOURTY YEAR URBAN SLUM POPULATION OF PESHAWAR

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Abstract

Objective: To study the prevalence and risk factors associated with diabetes mellitus in under 40 year population of urban slums of Peshawar.

Materials & Methods: A cross sectional analytical study was done in urban slums of Peshawar city. Simple random sampling was done a total of 700 samples were collected. Those below ages of 40 years and willing to participate were included and physical and mentally handicap were excluded from the study population. Information on socio-demographic variables and behavioural risk factors, such as smoking and physical exercise were obtained by using a structured questionnaire. Data was analyzed in SSPS version 20.

Results: 15% (105) of the respondent were diabetic. 61(15.7%) were males and 44(14.1%) were female who was diabetic. A positive association was found with age, family history, obesity, and hypertension.

Conclusion: Diabetes is prevalent in urban slums and measures are needed to introduce an early screening test at the community level and nutritional awareness program to be started in schools.

Keywords: Diabetes, age, family history, and obesity.

INTRODUCTION

The prevalence of diabetes among adults age 18 years and above has risen from 4.7% in 1980 to 8.5% in 2014 globally¹ and The overall number of diabetic people has risen from 108 million in 1980 to 422 million in 2014.¹ Pakistan, whose population is about 207.774 million, with an average annual growth rate of 2.4% over a period of 1998- 2017² the prevalence of diabetes in Pakistan is high, studies were done in the provinces of Sindh, Baluchistan and Khyber Pathankawa 13.9%, 8.6% and 11.7%

overall prevalence of type 2 diabetes comparable to other Asian populations.³ Pakistan ranks 6th highest diabetic population country.⁴ The prevalence of diabetes is on a steady rise in the adult population in the last two decades. It was 6.7% in 1995 while 7.1% in 20004. A study shows prevalence to be 6.9% in urban males while 6.0% of rural males were affected and 3.5% urban females and 2.5% rural females were found to be diabetic.⁵

Diabetes mellitus is a silent killer it has been reported to cause nephropathy in 5.5%, 2.9% neuropathy, and 7.7% had retinopathy.⁶ Globally the health care cost for diabetic persons of 20-79 years is estimated to be US \$153 billion annually,⁷ while in Bangladesh it is US\$13 and in the USA it is US\$11157.⁸ In developing countries with population explosion

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and limited expenditure on health, the diagnosis cases of diabetes mellitus are the tip of the ice berg. The reason is lack of awareness about the screening test and late diagnosis as early detection and early diagnosis can reduce a lot of complications and comorbidity factors associated with diabetes mellitus hence saving the resources.⁸ Also overall there is a lack of awareness of the complication associated with the disease as studies in Iran⁹, Karachi¹⁰ and Lahore¹¹ show a low level of awareness in the population.

So the study aims to study the prevalence and risk factors leading to diabetes mellitus in under 40 year population of urban slums of Peshawar.

MATERIALS AND METHODS

A Quantitative descriptive cross sectional study which was conducted using questionnaires and random blood sugar test was conducted from February 2017 to May 2017. The study area was the urban slums of Peshawar city. The sample size was 700 subjects below the age of 40 years and was selected by simple random sampling technique. Informed verbal consent was taken those who were already diagnosed with diabetes were and willing to participate in the study, were included in the study, physical and mentally compromised were excluded from the study population. Data were collected using structured questionnaires after a pilot study was conducted to check the validity of the questionnaire.

Initially, information on socio-demographic variables and behavioral risk factors, such as smoking and physical exercise were obtained by using a structured questionnaire. Then physical measurement was done standing height was measured with measuring tape and for weight, a weight machine was used. Asian specific BMI categorization recommended by WHO was applied. Normal (18.5 to <23kg/m²), over weight (> 23 to <27.5kg/m²) and Obese (>27.5kg/m²)¹². Blood pressure was measured using a sphygmomanometer. Respondents having systolic pressure higher than 140 mmHg or diastolic blood pressure higher than 90 mmHg were considered as hypertensive¹³.

In order to find the association of physical activity with diabetes, the following categories were considered: Walking, Jogging, Running, Cycling and amount of time spent on these activities in hours per week was added, that individual who spent > 2.5

hours per week on these activities were considered physically active¹⁴. In order to know about the family history, the respondents were asked if they have any history of diabetes in first degree relatives i.e. father, mother, grandparents, and siblings.

Data was collected after ethical approval from the ethical review committee of the institute. The data obtained from questionnaires were tabulated and presented in different graphical form using SPSS version 21. For association chi-square test was calculated.

RESULTS

A total of 700 individuals were interviewed off which non diabetics were 595(85%) while diabetes was found in (15%)105, for males the prevalence was 61(15.7%) and for females the prevalence was 44(14.1%). The chi square value was 0.355 and the p value was 0.55 the result was not significant at p<0.05 since the chi square value (0.355) was less than the critical tabled value of 3.84 (Table 1).

The diabetes was more common in people of age >40(20.4%) as compared to the 18-39-year age group (7.8%). The chi square value was 21.277 and the p value was 0.00001. The result was significant at p<0.01 with an odds ratio of 3.00.

An association was found of diabetes with obesity and a positive family history of diabetes and blood pressure. The association of diabetes with risk factors (exercise, tobacco use, and socioeconomic status) was found to be not significant.

DISCUSSION

According to our analyzed data, 105 out of 700 people were diagnosed diabetic, this is 15% of total respondents. This termed to be a very high rate and is strongly in contexts with previous papers which have shown that south Asians appear to be at greater risk for diabetes than other ethnic groups¹⁵ According to WHO research in 2000 which stated that there will be doubling of diabetes prevalence in 2030, this greater increase in prevalence is however expected to occur in Asia and Africa where most patients will be found diabetic by 2030.⁶⁸ In a study done on 1035 adults in NWFP the overall prevalence was 11.1%.¹⁶

According to our studies, diabetes is strongly associated with age and increase in age results in the increased number of diabetics; this is in context with the previous studies that also show that the risk

Table 1: Risk factors and its association with diabetes in under 40 year population in urban areas of Peshawar city

Variable	Total N=700	Diabetes N=105 15%	Non diabetics N=595	P-value	X2	Odd ratio
Gender						
Male	388 (55.4%)	61(15.7%)	327(84.2%)	0.55	0.355	1.13
Female	312 (44.6%)	44(14.1%)	268(85.8%)			1.00
AGE						
18-39	304 (43.4%)	24(7.8%)	280 (92.1%)	0.00001	21.277	1.00
>40	396 (55.6%)	81(20.4%)	315(79.6%)			3.00
Family Hx						
Yes	233 (33.3%)	48(20.6%)	185(79.3%)	0.003	8.59	1.86
No	467 (66.7%)	57(12.2%)	410(87.8%)			1.0
Obesity						
Obese	292 (41.7%)	58(19.8%)	234(80.1%)	0.002	9.292	1.9
Non-obese	408 (58.3%)	47(11.5%)	361(88.4%)			1.0
Tobacco use						
Yes	82 (11.7%)	11(13.4%)	71 (86.6%)	0.66	0.183	0.86
No	618 (88.3%)	94(15.2%)	524(84.8%)			1.0
Income						
5-25000	89 (12.7%)	15(16.8%)	74(83.2%)	0.48	1.444	1.00
26-50000	355 (50.7%)	57(16%)	298(84%)			0.94
>50000	256 (36.6%)	33(12.8)	223(87.2%)			0.73
Exercise						
Seldom	317 (45.3%)	52(16.4%)	265(83.6%)	0.633	0.912	1.00
2-3 days/w	256 (36.6%)	35(13.6%)	221(86.3%)			0.80
4 or more day/w	127 (18.1%)	18(14.2%)	109(85.8%)			0.84
Blood Pressure						
Normal	518 (74%)	65(12.5%)	453(87.5%)	0.002	9.392	1.00
Hypertensive	182 (26%)	40(22%)	142(78%)			1.96

of diabetes increases with an increase in age 16 due to nutritional transition and globalization. Also, the study found a strong association of hypertension with diabetes which is consistent with previous studies which also show that hypertensive patients are at high risk of developing diabetes¹⁷ as hypertension is one of the co morbidity factors for diabetes.

No association of physical activity with diabetes was found it is contradictive to the previous studies which show physical activity can prevent and control diabetes. Low physical activity observed among urban slum populations in the present study is consistent with other urban surveys.^{18,19,20} A sed-

entary lifestyle has resulted in the high prevalence of overweight and obesity which predisposes them to chronic diseases

The study also shows that obesity has a strong association with diabetes which is in context with the previous studies stating BMI's strong association with diabetes²¹ as obese person is more prone to eat carbohydrate especially refined ones which predisposes them to this double burden of non communicable disease.

CONCLUSION

The high prevalence of diabetes calls for the

establishment of a surveillance mechanism at the community level to monitor, evaluate, and guide policies and programmes. To reduce risk factors community-based behavioral and lifestyle modification interventions are needed to be implemented as soon as possible. To reduce the modifiable risk factors interventions are needed for the control tobacco use, production and supply of healthy foods, regulation of unhealthy foods, and urban planning are the need of the day to promote physical activity in this age group.

REFERENCES

1. Projections of global mortality and burden of disease from 2002 to 2030. Mathers CD, Loncar D. *PLoS Med*, 2006, 3(11):442.
2. www.statistics.gov.pk/assets/publications/Population_Results.pdf retrieved on July 2018
3. J.E.Shaw R.A.Sicree. P.Z.Zimmet Global estimates of the prevalence of diabetes for 2010 and 2030 *Diabetes Research and Clinical Practice*.2010, 87(1), 4-14
4. Bliss ES, Whiteside E. The Gut-Brain Axis, the Human Gut Microbiota and Their Integration in the Development of Obesity. *Frontiers in Physiology*. 2018;9:900.
5. L.Guariguata, D. R.Whiting, I.Hambleton J.Beagley U.Linnenkamp J.E.Shaw Global estimates of diabetes prevalence for 2013 and projections for 2035 *Diabetes Research and Clinical Practice* 2014.103, 137-149
6. Syed.M, Khawaja, F., Saleem, T., Khalid, U., Rashid, A., Humayun, K. (2011). Clinical profile and outcomes of paediatric patients with diabetic ketoacidosis at a tertiary care hospital in Pakistan. *Journal of the Pakistan Medical Association*, 61(11), 1082-7
7. Seuring, T., Archangelidi, O. & Suhreke, M. *PharmacoEconomics* (2015) 33: 811. <https://doi.org/10.1007/s40273-015-0268-9>
8. Logminiene Z, Norkus A, Valius L. direct and indirect costs in the world. *Medicina (Kaunas)* 2004;40(1):16-26
9. I Masood, A Saleem, A Hassan, A Zia, AT Khan Evaluation of diabetes awareness among general population of Bahawalpur, Pakistan *Primary Care Diabetes* 2016,10(1)3-9
10. Nisar N, Khan IA,Qadri MH, Sher SA. Knowledge and Risk assessment of diabetes mellitus at primary care level: A Preventive approach required combating the disease in a developing country.. *Pak J Med Sci* 2008;24(5):667-72.
11. S Saurabh, S Sarkar, K Selvaraj. Effectiveness of foot care education among people with type 2 diabetes in rural Puducherry, India *Indian J Endocrinol Metab*. 2014 Jan-Feb; 18(1): 106–110.
12. C Agyemang, K Meeks, E Beune Obesity and type 2 diabetes in sub-Saharan Africans–Is the burden in today’s Africa similar to African migrants in Europe? The RODAM study, *BMC Medicine*2016;14:166
13. Sujala Sunil , HariPriya H. and Vishnu Das evaluation of proportion, risk factor assesment of hypertension and assesment of knowledge, attitude and practice (Kap) in hypertensive patient in tertiary care hospital *Ejpmr*, 2016,3(9), 266-273
14. DER Warburton, S Charlesworth A systematic review of the evidence for Canada’s Physical Activity Guidelines for Adults *International Journal of Behavioral Nutrition and Physical Activity*2010;7:39
15. K Tziomalos, CN Weerasinghe, DP Mikhailidis Vascular risk factors in South Asians. *International Journal of Cardiology* 2008: 128(1)5-16
16. Mohan V. age body mass index and type 2 diabetes association modified by ethnicity *diabetologia* 2003.46(8) 1063-1070
17. Manicia G. the association of hypertension and diabetes 2005.42(11), 17-25
18. A Misra, L Khurana Obesity-related non-communicable diseases: South Asians vs White Caucasians *International journal of obesity*, 2011; 35, 167–187
19. Allender S, Lacey B, Webster P, Rayner M, Deepa M, Scarborough P, et al. Level of urbanization and noncommunicable disease risk factors in Tamil Nadu, India. *Bull World Health Organ*. 2010;88:297–304.
20. Vaz M, Bharathi AV. Practices and perceptions of physical activity in urban, employed, middle-class Indians. *Indian Heart J*. 2000;52:301–6
21. M Ng, T Fleming, M Robinson, B Thomson, N Graetz. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease . *The lancet*, 2014; 384 766-781