JAMP

EPIDEMIOLOGICAL STUDY OF DIABETES MELLITUS AND ITS DETERMINANTS IN AN URBAN SLUM AREA IN A CITY OF WESTERN MAHARASHTRA

Rajesh B. Chaugule[1], Nilima J. Gupta[2], Rohan G. Bembre[3]

[1]Assistant Professor, Department of Community Medicine, Dr. Vaishampayan Memorial Government Medical College, Solapur, Maharashtra, India
[2]Assistant Professor, Department of Biochemistry, Government Medical College, Dharashiv, Solapur, Maharashtra, India
[3]Assistant Professor, Department of Community Medicine, Parbhani Medical College RP Hospital and research institute, Parbhani, Maharashtra, India

Abstract

Background: India ranks second to China for the highest number of diabetes cases in the world. Fifty percent or more of those with the disease are unaware of their condition. Early detection and treatment reduce the complications of DM. **Materials and Methods:** Community based Descriptive study with cross-sectional design carried in urban slum area. Sample size was calculated to be 200. **Result:** Overall prevalence of Diabetes Mellitus in the study population was 22%. There was rise in number of cases with increasing age which was statistically highly significant. Prevalence was maximum (39.29 %) in 60-70 years age group. Prevalence of diabetes mellitus was more in male gender (24.05 %), rural area (26.53 %), obese individuals (27.03 %) and married individuals. however the difference was statistically not significant. **Conclusion:** In present study prevalence of diabetes increased with age, in male gender, married individuals, Obese and those from rural area.

INTRODUCTION

Globally about 9.3 per cent of adults (i.e. about 463 million people) are living with diabetes. India ranks second to China for the highest number of diabetes cases in the world.[1]

Fifty percent or more of those with the disease are unaware of their condition. Early detection and treatment reduce the complications of DM. Early detection can be enhanced by screening people even when consulting the physician for other ailments. The onset of NIDDM may occur 4-7 years before the clinical diagnosis of the disease. During this time, diabetic complications are silently setting in. Studies have shown that many people with undiagnosed DM already have complications such as chronic kidney disease, heart failure, retinopathy and neuropathy. Those who are not diagnosed of DM will not take steps to manage their blood glucose or change their lifestyles.[2]

Globe is witnessing a rapid socioeconomic and epidemiological transition. As a result of this transition, there is a reversal trend in terms of communicable diseases; whereas, the noncommunicable diseases such as cardiovascular diseases, diabetes mellitus (DM), and obesity are taking the toll of major mortality and morbidity.[3]

In India, urbanization, changes from traditional healthier diets to high-refined carbohydrate intake, and sedentary lifestyle have contributed to a steep increase in the prevalence of diabetes.[4]

MATERIALS AND METHODS

Study Area: The present study was carried out in an urban slum area.

Study design: Community based Descriptive study with cross-sectional design.

Period of Study: The period of study was from 1st May 2022 to 31st July 2022.

Sampling Unit: Sampling unit was the household having adult with an age 20 years and above.

Sample size: Based on 11.8% prevalence of Diabetes Mellitus6 in adults in an urban area and non response rate of 20 % the minimum sample size calculated was 192, so sample size was taken as 200. Total 200 individuals >20 years of age group were interviewed from urban slum.[5,6]

Data collection: A house to house survey was carried out by Convenience sampling method. During house visit detailed history was taken, clinical examination was done. The Diabetes Mellitus was defined according to WHO guidelines.[7] Body Mass Index was calculated by formula Weight (kg)/ Height2 (m2).[8]

517

International Journal of Academic Medicine and Pharmacy (www.academicmed.org)
ISSN (O): 2687-5365; ISSN (P): 2753-6556

RESULTS

In the present study 200 subjects were surveyed. Overall prevalence of Diabetes Mellitus in the study population was 22%. Maximum age recorded was 87 years. [Table 1] indicates that, there was rise in number of cases with increasing age which was statistically highly significant. Prevalence was maximum (39.29 %) in 60-70 years age group. [Table 2] shows that Males had slightly more cases of Diabetes Mellitus (24.05 %) compared to females (20.66 %) and difference was found to be non-significant.

[Table 3] shows that prevalence of Diabetes Mellitus was more in rural area (26.53 %) compared to urban area, the difference was statistically not significant. [Table 4] shows that prevalence of Diabetes Mellitus was maximum on obese individuals (27.03 %), followed by preobese individuals (25 %), the difference was statistically not significant.

[Table 5] shows that Diabetes mellitus is maximum in married individuals (23.30 %) and minimum in unmarried individuals (7.14 %). Table 6 shows that prevalence of Diabetes mellitus is maximum in those educated up to SSC (31.58 %), The difference was statistically not significant.

Table 1: Age wise distribution of study subjects.

Age groups (Years)	Diabetes Mellitus		Total
	Present	Absent	
20 – 30	1 (3.85 %)	25 (96.15 %)	26 (13.00 %)
30 – 40	5 (11.90 %)	37 (88.10 %)	42 (21.00 %)
40 – 50	10 (21.74 %)	36 (78.26 %)	46 (23.00 %)
50 – 60	11 (29.73 %)	26 (70.27 %)	37 (18.50 %)
60 – 70	11 (39.29 %)	17 (60.71 %)	28 (14.00 %)
> 70	6 (28.57 %)	15 (71.43 %)	21 (10.50 %)
Total	44 (22 %)	156 (78 %)	200 (100 %)

$[\chi^2 = 14.18, \text{d.f.} = 5, p < 0.001; \text{Highly Significant}]$

Table 2: Gender wise distribution of study subjects

Gender	Diabetes Mellitus		Total
	Present	Absent	
Male	19 (24.05 %)	60 (75.95 %)	79 (39.5 %)
Female	25 (20.66 %)	96 (79.34 %)	121 (60.50 %)
Total	44 (22 %)	156 (78 %)	200 (100 %)

$[\chi^2 = 0.32, \text{d.f.} = 1, p > 0.05; \text{Not Significant}]$

Table 3: Distribution of study subjects according to residence

Residence	Diabetes Mellitus		Total
	Present	Absent	
Urban	31 (20.53 %)	120 (79.47 %)	151 (75.50 %)
Rural	13 (26.53 %)	36 (73.47 %)	49 (24.50 %)
Total	44 (22 %)	156 (78 %)	200 (100 %)

$[\chi^2 = 0.77, \text{d.f.} = 1, p > 0.05; \text{Not Significant}]$

Table 4: Distribution of study subjects according to BMI

BMI	Diabetes Mellitus		Total
	Present	Absent	
Underweight	1 (6.25 %)	15 (93.75 %)	16 (8.00 %)
Normal	16 (20.25 %)	63 (79.75 %)	79 (39.50 %)
Pre Obese	17 (25.00 %)	51 (75.00 %)	68 (34.00 %)
Obese	10 (27.03 %)	27 (72.97 %)	37 (18.50 %)
Total	44 (22 %)	156 (78 %)	200 (100 %)

$[\chi^2 = 3.35, \text{d.f.} = 3, p > 0.05; \text{Not Significant}]$

Table 5: Distribution of study subjects according to Marital status

Marital Status	Diabetes Mellitus		Total
	Present	Absent	
Married	41 (23.30 %)	135 (76.70 %)	176 (88.00 %)
Unmarried	1 (7.14 %)	13 (92.86 %)	14 (7.00 %)
Other	2 (20.00 %)	8 (80.00 %)	10 (5.00 %)
Total	44 (22 %)	156 (78 %)	200 (100 %)

$[\chi^2 = 1.99, \text{d.f.} = 2, p > 0.05; \text{Not Significant}]$

Table 6: Distribution of study subjects according to Educational status

Educational status	Diabetes Mellitus		Total
	Present	Absent	
Iliterate	14 (26.92 %)	38 (73.08 %)	52 (26.00 %)
Primary	10 (20.83 %)	38 (79.17 %)	48 (24.00 %)

Secondary	8 (21.05 %)	30 (78.95 %)	38 (19.00 %)
S.S.C.	6 (31.58 %)	13 (68.42 %)	19 (9.50 %)
H.S.C.	2 (13.33 %)	13 (86.67 %)	15 (7.50 %)
Graduate	3 (12.50 %)	21 (87.50 %)	24 (12.00 %)
Post Graduate	1 (25.00 %)	3 (75.00 %)	4 (2.00 %)
Total	44 (22 %)	156 (78 %)	200 (100 %)

[$\chi^2 = 3.43$, d.f. = 5, p > 0.05; Not Significant]

DISCUSSION

In the present study Overall prevalence of Diabetes Mellitus in the study population was 22%. In study by Vishwanath GR et al prevalence of diabetes was similar to present study i.e. 21.7%.[9] The prevalence of self-reported diabetes was 20.8% in study done by A Vigneswari.[10]

Maximum age recorded was 87 years. There was rise in number of cases with increasing age which was statistically highly significant. Prevalence was maximum (39.29 %) in 60-70 years age group. Similar to present study, in study by Patil RS et al, In males maximum prevalence of 13 (32.5%) was found in the age group of 60 years and above while maximum diabetic females 15 (35%) found in the age group of 51-60 years.[11]

Males had slightly more cases of Diabetes Mellitus (24.05 %) compared to females (20.66 %) and difference was found to be non-significant. In study done by Qureshi KF et al Association between diabetes was statistically significant with gender (P = 0.018).[12]

The prevalence of Diabetes Mellitus was maximum on obese individuals (27.03 %), followed by preobese individuals (25 %), the difference was statistically not significant. In study done by Qureshi KF et al the Association of diabetes was also statistically significant with obesity by BMI (P = 0.019).[12]

CONCLUSION

In present study prevalence of diabetes increased with age, in male gender, married individuals, Obese and those from rural area.

Recommendations: Screening should be done to focus on above high risk group for early diagnosis of Diabetes and prevent complications.

REFERENCES

1. Sreeja Nittoori, Vidhya Wilson. Risk of type 2 diabetes mellitus among urban slum population using Indian Diabetes Risk Score. Indian J Med Res. September 2020; 152: 308-311.

2. Dagdiya KR,ThakreSS, ThakreSB. Assessment of risk of developing type 2 diabetes mellitus in urban slums of central India: a community based cross sectional study. Int J Community Med Public Health2016;3:3241-5.

3. Oruganti A, Kavi A, Walvekar PR. Risk of developing Diabetes Mellitus among urban poor South Indian population using Indian Diabetes Risk Score. J Family Med Prim Care. 2019; 8: 487-92.

4. Dyavarishetty P, Kowli S. Population based screening for diabetes: experience in Mumbai slums, Maharashtra, India. Int J Res Med Sci 2016;4:2766-9.

5. Dixit JV. Principles and Practice of Biostatistics, 5th edition. Jabalpur, India: M/S. Banarsidas Bhanot (Publishers) 2011 Nov: p. 77.

6. Praveen Vashist, Suraj S Senjam, Vivek Gupta, Souvik Manna, Noopur Gupta, B R Shamanna et al. Prevalence of diabetic retinopahty in India: Results from the National Survey 2015-19. Indian Journal of Ophthalmology. 2021; 69 (11): 3087 – 3094.

7. Definition, Diagnosis and Classification of Diabetes Mellitus and its classification. [Internet] [Cited on 2023 Oct 4]. Available from: www.who.int/bitstream/handle/10665/66040/WHO_NCD_NCS_99.2.pdf.

8. Diet, nutrition and the prevention of chronic diseases. WHO Technical Report Series 916. [Internet] [Cited on 2023 Oct 4]. Available from: www.who.int/bitstream/handle/10665/42665/WHO_TRS_916.pdf

9. Vishwanath GR, Sangrulkar TV, Shrarma SK, Patil P. An epidemiological study of type-2 diabetes mellitus in an adopted urban slum area. Int J Community Med Public Health. 2018; 5: 4522-6.

10. A Vigneswari, R Manikandan, K Satyavani, S Archana, R Rajeswari, Vijay Viswanathan. Prevalence of Risk Factors of Diabetes Among Urban Poor South Indian Population. Journal of The Association of Physicians of India. October, 2015; 63: 32 - 34

11. Patil RS, Gothankar JS. Prevalence of type-2 diabetes mellitus and Associated risk factors in an urban slum of pune city, India. National journal of medical research. Oct – Dec 2013; 3 (4): 346 – 349.

12. Qureshi KF, Karnedy M, Pawar A, Totala YV, Qureshi SS. Prevalence of type 2 diabetes mellitus and its associated risk factors in an urban slum of a metropolitan city. Prev Med Res Rev 2025;2:57-61.