



PROFILE OF KNOWN DIABETICS IN A METROPOLITAN CITY

Physiology

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ABSTRACT

This cross-sectional community-based study was conducted in a metropolitan city using convenience sampling to determine the profile of diabetic patients. The prospective participants (known diabetics, aged 18+ years, of either gender) were explained about the study and informed consent was obtained. Primary data were collected using a pre-tested, formatted and pre-validated questionnaire. The gender differences in age, marital status, religion, educational attainment and urban/rural schooling were not statistically significant. Significant gender differences were observed in occupation-wise distribution, ($Z=3.281$; $p=0.001$) tobacco use, ($Z=2.263$; $p=0.023$) alcohol use, ($Z=2.659$; $p=0.007$) and intensity of physical exercise ($Z=2.527$; $p=0.011$). Significantly more females preferred to work out at home as compared to males, who preferred to exercise in a gym ($Z=2.335$; $p=0.019$). Female respondents self-reported higher levels of stress due to diabetes ($Z=2.263$; $p=0.023$) and stress due to other issues ($Z=2.659$; $p=0.007$). Community-based educational campaigns on requisite lifestyle changes are needed to keep diabetes under control.

KEYWORDS

Diabetes mellitus, Gender differences, Patient profile

INTRODUCTION

Diabetes mellitus (DM), a silent killer, is a chronic metabolic disorder, which has become a significant global public health problem. [1] DM is a major risk factor for coronary heart disease, nephropathy, [2] retinopathy, cataract, likelihood of limb amputation [3] and stroke. DM indirectly affects control of tuberculosis and HIV and also complicates pregnancy. [4] About 80% of patients with DM live in developing countries and about 50% are undiagnosed. [5] The ICMR-INDIAB study estimated that 62.4 million Indians were diabetics. [6] and the prevalence of DM in Maharashtra was 8.4%. [7] The modifiable risk factors associated with prevalence of DM in developing countries [8] include sedentary lifestyle, obesity, consumption of refined carbohydrates, tobacco and alcohol and deficient knowledge regarding this metabolic disorder. [9-11]

South Asia is rapidly becoming the epicentre of the DM epidemic. [12] Compared with other ethnic groups, South Asians are at higher risk for developing DM at relatively younger age and at a lower body mass index. [13] Indians are more at risk of developing DM due to the "Asian Indian Phenotype", which represents abnormal clinical and biochemical correlates, such as, higher waist circumference despite lower body mass index, lower adiponectin, increased insulin resistance, and higher levels of C-reactive proteins. [14]

In North India, most diabetics are females, [15] while male preponderance has been reported from South India. [16] Control of DM among female patients is complicated by observance of religious fasts and inadequate physical activity. [17] Walking barefoot, a habit seen especially among the rural people; increases the risk of diabetic foot ulcers. [18]

Chronic complications of DM are heralded by persistent dysglycemia. [19] Complications associated with DM, such as cardiovascular disease, cerebrovascular disease, nephropathy, neuropathy, and retinopathy can be delayed or prevented with suitable treatment of raised levels of blood glucose, blood pressure, and lipids. [20] The prevalence of complications among diabetics were neuropathy (60%), coronary heart disease (32.2%), cataract (20%), retinopathy (15.4%), peripheral vascular disease (11.5%) and stroke (6.9%). [21] Lower rates of diabetic retinopathy have been reported by other Indian studies. [22, 23]

DM is a "silent" and insidious disease in its early stages and the disease is diagnosed in patients presenting with neurological deficits, visual disturbances, or premature coronary, peripheral or cerebrovascular disease. These complications are mostly irreversible and sometimes,

untreatable. Moreover, complications of DM are known to occur even among patients on regular anti-diabetic treatment. [24]

The present study was conducted with the objective of determining the profile of diabetic patients in a metropolitan city in order to plan intervention programmes.

MATERIALS AND METHODS

This cross-sectional community-based study was conducted in a metropolitan city in Maharashtra state, India, using convenience sampling. The participants were known diabetics, aged 18+ years, of either gender. The prospective participants were explained about the study and informed consent was obtained before they were interviewed. During the interview, the interviewer did not attempt to inform or enlighten the respondents about DM. Primary data were collected using a pre-tested, formatted and pre-validated questionnaire.

The data were tabulated in Microsoft Excel Spreadsheet (Microsoft Corporation, Redmond, WA, USA) and were statistically analyzed using EpiInfo Version 7.0 (public domain software package from the Centers for Disease Control and Prevention, Atlanta, GA, USA). Categorical data were presented as percentages and continuous data as mean and standard deviation (SD). 95% Confidence interval (CI) was calculated using the formula: $[\text{Mean} - (1.96) \times \text{Standard error}] - [\text{Mean} + (1.96) \times \text{Standard error}]$. The standard error of difference between two proportions and standard error of difference between two means were calculated. Statistical significance was established at $p < 0.05$.

RESULTS AND DISCUSSION

There were 49 participants (females: $n=13$; 26.53% and males: $n=36$; 73.47%). The average age of female participants was 52.15 ± 14.87 years (95% CI: 44.08 – 52.15 years), while that for their male counterparts was 51.86 ± 12.02 years (95% CI: 47.93 – 55.79 years). The gender difference in average age was not significant ($Z=0.063$; $p=0.949$). The average body mass index (BMI) of female and male participants was $27.11 \pm 3.98 \text{ kg/m}^2$ (95% CI: 24.95 – 27.11 kg/m^2) and was $26.89 \pm 4.29 \text{ kg/m}^2$ (95% CI: 25.48 – 28.29 kg/m^2), respectively, without significant gender difference ($Z=0.167$; $p=0.867$). The BMI has been reported to be an independent and significant predictor of glucose tolerance in the Bedford Study. [25] Active lifestyle interventions for over six years, can reportedly, prevent or postpone DM for up to 14 years. [26]

The gender differences in marital status, religion, educational

attainment and urban/rural schooling were not statistically significant. However, significant gender differences were observed in occupation-wise distribution, ($Z=3.281$; $p=0.001$) tobacco use, ($Z=2.263$; $p=0.023$) and alcohol use ($Z=2.659$; $p=0.007$).

Only two (15.38%) females and 14 (38.89%) males exercised on a daily basis, while most of the respondents exercised irregularly. There was no significant gender difference in regularity ($Z=1.549$; $p=0.121$)

and duration ($Z=0.614$; $p=0.541$) of physical exercise. But, there was significant gender difference in the intensity of physical exercise ($Z=2.527$; $p=0.011$) and significantly more females preferred to work out at home as compared to males, who preferred to exercise in a gym ($Z=2.335$; $p=0.019$). The gender differences in profile of respondents were not significant on most parameters (Table-1). But, female respondents self-reported higher levels of stress due to diabetes ($Z=2.263$; $p=0.023$) and stress due to other issues ($Z=2.659$; $p=0.007$).

Table-1: Gender differences in profile of respondents

Parameter	Females (n=13)	Males (n=36)	Z value	'p' value
Duration of DM <5 yrs	07 (53.84%)#	12 (33.34%)	1.301	0.193
Duration of DM 5+ yrs	05 (38.46%)	24 (66.67%)	1.773	0.076
Family history of DM	11 (84.61%)	29 (80.55%)	0.324	0.749
Treated by specialist	08 (61.53%)	30 (83.33%)	1.614	0.107
Follow-up visits <5 / yr	05 (38.46%)	21 (58.33%)	1.230	0.218
Follow-up visits 5+ / yr	06 (46.15%)	14 (38.89%)	0.456	0.645
Blood sugar test done in lab	11 (84.61%)	33 (91.67%)	0.719	0.471
Blood sugar tested last month	07 (53.84%)	19 (52.77%)	0.066	0.944
Neurological examination	05 (38.46%)	19 (52.77%)	0.885	0.373
Fundoscopy examination	09 (69.23%)	25 (69.44%)	0.014	0.992
Stress due to DM	13 (100.0%)	25 (69.44%)	2.263	0.023 *
Stress due to other issues	11 (84.61%)	15 (41.67%)	2.659	0.007 *
History of angina pectoris	01 (07.69%)	05 (13.88%)	0.584	0.561
Concomitant hypertension	03 (23.07%)	12 (33.34%)	0.687	0.490

Z= standard error of difference between two proportions; * Significant
#One female respondent had history of pregnancy-induced DM

CONCLUSION

The findings of this study revealed significant gender differences were observed in occupation-wise distribution, tobacco and alcohol consumption by males and self reported stress among female respondents. Since active lifestyle changes are required to keep diabetes under control, it is necessary to organize community-based educational campaigns after involving all stakeholders in the community

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