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Research Article

ASSESSMENT OF MAJOR RISK FACTORS OF DIABETES MELLITUS AMONG DOCTORS IN URBAN AREA AT NORTH WEST RAJASTHAN

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ABSTRACT

Objectives: To determine the prevalence of diabetes mellitus and its association with risk factors among the study population.

Methods: This was a cross-sectional study including 297 doctors with the minimum qualification of MBBS/BDS, working in government health care facilities in urban Bikaner from December 2019 to May 2020 at the Department of Medicine, S.P. Medical College, Bikaner, Rajasthan.

Results: The mean age of the study population was 42.58±9.21 years. We found that 10.78% were current smokers, 9.18% consumed ≥6 drinks/occasion, 66% consumed <5 fruit servings/day, 75% consumed >5 g of salt/day, 49.84% were physically inactive, 46.47% were overweight and 6.73% were obese, 14.14% had a systolic BP ≥140 mmHg, and the prevalence of diabetes mellitus was 15.82%. Diabetes mellitus was associated with age group, gender, alcohol use, overweight and obesity, raised blood pressure, and raised total cholesterol ($p<0.05$).

Conclusion: The prevalence of risk factors for lifestyle diseases was high among health professionals. In this study, a higher prevalence of diabetes mellitus was observed than the WHO estimated prevalence of DM for India. Modifiable associated risk factors were current tobacco use, current alcohol use, raised blood pressure, and raised total cholesterol.

Keywords: Diabetes mellitus, Doctors, Non communicable diseases, Urban area.

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INTRODUCTION

All around the world, the prevalence of diabetes is rising at an alarming rate. Asian Indians regularly show a greater prevalence of diabetes in most studies, making it one of the most difficult health issues of the twenty-first century. According to studies, our nation's rural areas have a prevalence rate of almost half that in metropolitan areas and between 15% and 20% in the latter [1]. From 4.7% in 1980 to 8.5% in 2014, diabetes prevalence among adults over 18 years of age has increased globally. In India, nearly one in ten adults 18 aged and older had elevated blood glucose levels [2]. India holds the unenviable title of "diabetes capital of the world" for having the highest percentage of a diabetic population in the world. The World Diabetes Federation's 2006 Diabetes Atlas states that if immediate preventive measures are not taken, India's 40.9 million estimated diabetics will increase to 69.9 million by 2025 [3].

In the past, doctors have put their various personal and professional duties above their own health. The culture of medicine encourages the idea that doctors never become sick. Being self-reliant, competitive, and high achievers by nature, doctors frequently see attending to their own needs as a sign of weakness. Furthermore, they must fit healthy lifestyle practices into their hectic schedules. Increased emphasis on healthy living and health promotion among doctors can stop the progression to serious outcomes; it is also important since clinicians set an example for their patients. Only a few studies have been done to date on physicians' lifestyle choices and preventive healthcare. To support their recommendations for preventive care and health promotion, general practitioners should set an example for their patients by leading a healthy lifestyle. Due to their superior health literacy, education, and patient experience, health professionals may be believed to have healthier lifestyle choices and better health outcomes than the general population.

The degree to which a patient complies with the physician's advice is a reflection of the physician's attitude towards health. It is presumed that clinicians have a good level of knowledge and understanding of noncommunicable diseases (NCDs) and associated risk factors. It is unclear if this knowledge is enough to stop the emergence of NCDs among medical professionals. Physicians tend to have busy daily schedules, low levels of physical activity, and high levels of stress. So the present study is conducted to assess the prevalence and association of risk factors for diabetes among doctors.

Aim

To determine the prevalence of diabetes mellitus and the association of risk factors with diabetes mellitus among the study population.

METHODS

This was a cross-sectional study including 297 doctors with the minimum qualification of MBBS/BDS working in government health care facilities in urban Bikaner from December 2019 to May 2020 at the Department of Community Medicine in a tertiary care hospital. Other than government doctors, they were not willing to participate, and all those doing their postgraduation or superspecialization were excluded from study.

The study was started after obtaining permission from the Institutional research board and the principal and controller of the medical college in Bikaner. Details had been received from respective central and state government authorities (Chief Medical and Health Officer, Principal and Controller of Medical College, and Associated Group of Hospitals) regarding the number and distribution of doctors with minimum qualifications (MBBS/BDS) working in urban areas. A list of departments (facilities) was formed in alphabetical order. The purpose of the study was explained to all participants, verbal informed consent was obtained, and once all the doctors of one facility (department) were interviewed, we move on to the next facility. Every effort was made to complete the proforma by all the participants. The sociodemographic profile and behavioral risk factors (smoking, alcohol consumption, fruit and vegetable consumption, and physical activity) of the participant were recorded using a face-to-face interview.

Statistical analysis

Collected data were entered into a Microsoft Excel spreadsheet, a master chart was prepared, and data were presented in the form of tables, bars, pie, lines and dot graphs. Chi-square statistical tests were applied using primer for biostatistics (2005) version 6.0 and Epi-info (2019) version 7.2.3.1 software.

RESULTS

The majority of males (42.36%) and females (52.13%) in the study population belonged to the age group 31–40 years, while the least proportion of males (4.93%) and females (2.13%) belonged to the age group >60 years. The mean age of the study population was 42.58±9.21 years (Table 1).

On screening, 31.65% had fasting blood glucose of 100–125 mg/dL (prediabetic), and ≥126 mg/dL fasting blood glucose was found in 13.81% of the study population. Six subjects on treatment had normal fasting blood glucose. The mean fasting blood glucose of the study population was 103.36±19.56 mg/dL (Table 2).

The prevalence of diabetes mellitus was 15.82%. If we compare the number of people screened for diabetes mellitus (fasting blood sugar [FBS] ≥126 mg/dL) and those on treatment, it was found that 6 were on treatment with FBS <126 mg/dL and 20 were on treatment with FBS ≥126 mg/dL.

In this study, a higher prevalence of diabetes (41.67%) was found in the >60-year age group, whereas a minimum prevalence (8.34%) was found in the age group 21–40 years. Thus, implying that the prevalence of diabetes is increasing with age (p<0.0001), there were no diabetics in the 21–30 age group. Among males, 20.19% were diabetic, whereas 6.38% of females were diabetic (p<0.05), 16.67% of reserved caste (SC, ST, and OBC) had diabetes, whereas 14.81% of unreserved caste had diabetes (p>0.05), Among Hindu participants, 16.30% had diabetes, whereas 11.12% of the other communities (Muslim, Jain, Sikh, etc.) had diabetes (p>0.05), 16.61% of married participants had diabetes, whereas among single group (Unmarried, Widowed, Divorced), only 5% had diabetes (p>0.05), 17.39% of graduates, 15.74% of postgraduates, and 15% of super-specialist had diabetes (p>0.05), 15.71% of doctors working at medical college and PBM AGH had diabetes, whereas 17.65% of doctors working under CMHO had diabetes (p>0.05) (Table 3).

Association, between diabetes and current tobacco use (p=0.025), current alcohol use (p=0.043), raised blood pressure (p=0.0001), and raised total cholesterol (p=0.0001) were statistically significant, whereas associations with <5 fruit and vegetable servings (p=0.820), salt intake >5 g/day (p=0.276), physical activity <150 min/week (p=0.353), body mass index ≥25 kg/m^2 (p=0.80), and waist circumference (p=0.694) were found to be statistically insignificant (Table 4).

Table 1: Distribution of study population according to their age and gender

Age group (years)	Male	Female	Total
	No. (%)	No. (%)	No. (%)
21–30	13 (6.41%)	8 (8.51%)	21 (7.07%)
31–40	86 (42.36%)	49 (52.13%)	135 (45.46%)
41–50	58 (28.57%)	22 (23.40%)	80 (26.94%)
51–60	36 (17.73%)	13 (13.83%)	49 (16.50%)
>60	10 (4.93)	2 (2.13%)	12 (4.04%)
Total	203 (100%)	94 (100%)	297 (100%)
Mean±SD	42.58±9.21		

Table 2: Prevalence of diabetes mellitus in study population

Diabetes mellitus (mg/dL)	Study group (n=297)	
	No.	%
On screening (FBS ≥126)	41	13.80
On medication (FBS <126)	6	2.02
Non diabetics	250	84.18
Total	297	100

FBS: Fasting blood sugar

DISCUSSION

In our study, the majority of men (42.36%) and women (52.13%) belonged to the age group of 31–40 years, while the least number of men (4.93%) and women (2.13%) did so for the age group of >60 years. similarly According to Sahar *et al*. (2018) [4], 30% of PHC doctors are between the ages of 30–39. The mean age of the study population in our study was 42.58±9.21 years. Ramachandran *et al*. [5] and Olawuy *et al*. (2018) [6] observed that doctors from urban and semi-urban locations had similar mean ages. The similarity in results may be attributable to the common pattern of admission age in medical and health departments across the nation.

In our study, the majority were male (68.35%); similarly, male predominance was found in Olawuy *et al*. (2018) [6]. On the contrary, female predominance was found in a study done by González-Ortiz *et al*. [7] and Sharma *et al*. (2014) [8].

In our study, 31.65% of participants had fasting blood glucose of 100–125 mg/dL, and ≥126 g/dL fasting blood glucose was found in 13.81% of the study population, and the mean fasting blood glucose of the study population was 103.36±19.56 g/dL, whereas Olawuy *et al*. (2018) [6] observed that 7.1% of participants had raised blood sugar. Also in the study done by González-Ortiz *et al*. [7], the impaired fasting glucose was found in 2.1% of the population. Zafar *et al*. [9] found the prevalence of impaired fasting glucose (IFG) at 5.61% in the urban population of Punjab.

15.82% of the participants in our study had diabetes mellitus. Similarly, Zafar *et al*. [9] and Ramachandran *et al*. [5] reported that 13.3% of doctors had diabetes, which was lower than the national rate of 10%. In a study by Sharma *et al*. (2014) [8], 19 were discovered. In our study, males (20.19%) and those over 60-years-old (41.67%) had a greater prevalence of diabetes. Diabetes prevalence was rising as people aged. Age (p<0.0001) and gender (p<0.05) were found to be statistically significant predictors of diabetes. In a similar vein, Zafar *et al*. (2011)[9] discovered that the prevalence of diabetes grew gradually as people aged. Moreover, Ahmad *et al*. [10] discovered important differences between men and women (p<0.05).

In our study, higher diabetes prevalence was identified in Hindus (16.30%), members of reserved castes (16.67%), members of joint families (18.09%), married individuals (16.61%), graduates (17.39%), and doctors employed by CMHO (17.65%). Diabetes and caste, religion, marital status, type of family, educational attainment, and place of employment were found to be significantly unrelated (p>0.05). However, Ekpenyong *et al*. [11] observed that both genders' educational status was significantly (p<0.05) related to T2DM.

In our analysis, there was a statistically significant correlation between diabetes and current tobacco use (p=0.025), current alcohol consumption (p=0.043), elevated blood pressure (p=0.0001), and elevated total cholesterol (p=0.0001). Similarly, Shrestha *et al*. (2017) [12] discovered that there was a statistically significant (p=0.05) link between cigarette use and diabetes. Moreover, Ekpenyong *et al*. [11] discovered that whereas alcohol intake was not statistically substantially related to diabetes (p>0.05), smoking was statistically significantly connected with diabetes (p<0.05). Aynalem *et al*. (2018) [13] discovered a similar relationship between diabetes mellitus, total cholesterol levels, and hypertension.

In our study, associations with low fruit and vegetable servings (p=0.820), high salt intake (p=0.276), physical inactivity (p=0.353), overweight and obesity (p=0.80), abnormal waist circumference

Table 3: Association of diabetes with the age group of the study population

	Diabetics (n=47)	Nondiabetics (n=250)	χ^2	p-value
	No. (%)	No. (%)		
Age group (year)				
21–40	13 (8.34%)	143 (91.66%)	16.879	0.0001
41–50	18 (22.50%)	62 (77.50%)		
51–60	11 (22.44%)	38 (77.56%)		
>60	5 (41.67%)	7 (58.33%)		
Gender				
Male	41 (20.19%)	162 (79.81%)	8.196	0.004
Female	6 (6.38%)	88 (93.62%)		
Caste				
Reserved	27 (16.67%)	135 (83.33%)	0.076	0.738
Un reserved	20 (14.81%)	115 (85.19%)		
Religion				
Hindu	44 (16.30%)	226 (83.70%)	0.183	0.669
Others	3 (11.12%)	24 (88.88%)		
Marital status				
Married	46 (16.61%)	231 (83.39%)	1.116	0.291
Single	1 (5%)	19 (95%)		
Type of family				
Nuclear	28 (14.58%)	164 (85.41%)	0.392	0.531
Joint	19 (18.09%)	86 (81.91%)		
Educational qualification				
Graduate	4 (17.39%)	19 (82.61%)	0.054	0.974
Postgraduate	40 (15.74%)	214 (84.26%)		
Superspecialty	3 (15.0%)	17 (85.0%)		
Workplace				
Medical college	44 (15.71%)	236 (84.29%)	0.17	0.896
Under CMHO	3 (17.65%)	14 (82.35%)		

Table 4: Association of risk factors with diabetes mellitus in study population

Risk factor	Diabetics (n=47)	Non diabetics (n=250)	χ^2	p-value
Current tobacco use (N=37)	11 (29.73%)	26 (70.27%)	5.00	0.025
Current alcohol use (N=98)	22 (22.45%)	76 (77.55%)	4.104	0.043
Fruit and vegetable servings (<5 servings)	30 (15.23%)	167 (84.77%)	0.052	0.820
Salt intake (>5 g/day)	32 (14.29%)	192 (85.71%)	1.185	0.276
Physical inactivity (<150 min/week)	20 (13.51%)	128 (86.49%)	0.863	0.353
Overweight and obesity (BMI ≥25)	31 (19.62%)	127 (80.38%)	3.067	0.080
Waist circumference	10 (18.52%)	44 (81.48%)	0.155	0.694
Raised blood pressure	24 (39.35%)	37 (60.65%)	29.695	0.0001
Raised total cholesterol	11 (42.31%)	15 (57.69%)	12.903	0.0001

BMI: Body mass index

(p=0.694) were found to be statistically insignificant. Similarly, Mandil (2016) [14] found no significant association between physical inactivity and diabetes among physicians. Whereas Shrestha *et al*. (2017) [12] found that consuming less than the recommended amount of fruits was significantly associated with diabetes. Furthermore, Ekpenyong *et al*. [11] found that poor dietary habits were significantly associated with diabetes mellitus (p<0.05). Whereas Ahmad *et al*. [10] found that obesity (body mass index >25 kg/m^2) and central obesity were significantly associated with the presence of diabetes mellitus (p<0.001). Whereas Aynalem *et al*. (2018) [13] found that obesity (body mass index >25 kg/m^2) was significantly associated with the presence of diabetes mellitus, p<0.001.

CONCLUSION

The prevalence of risk factors for lifestyle diseases was high among health professionals. In this study, a higher prevalence of diabetes mellitus was observed than the WHO estimated prevalence of DM for India. Modifiable associated risk factors were current tobacco use, current alcohol use, raised blood pressure, and raised total cholesterol.

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AUTHORS' CONTRIBUTION

All the authors have contributed equally.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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