

Behavioral Risk Factors of Diabetes and its Prevalence in the Faculty Members of Teaching Institutes of Ahmedabad city, Gujarat.

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Abstract: Communicable diseases are slowly getting controlled in low and middle income countries, and on the other side there is a significant rise in the numbers of non communicable diseases, including but not restricted to diabetes. As per the International Diabetes Federation (2013), approximately 50% of all people with diabetes live in just three countries named China (98.4 million), India (65.1 million) and the USA (24.4 million). The low levels of education and poor awareness of the disease in the country make its impact on health of their population.

In the eyes' of their students, the teachers are role models like "who followed what they said". And well observed habits of teachers at the school are usually adapted by them on long term. So, this study is carried out to know prevalence of Diabetes and its risk factors among teachers. A total 576 teachers of Ahmedabad city were interviewed and examined using pre-tested questionnaire. Among them 5.21% males in studied group were currently smoking while 12.15% males were consuming smokeless tobacco. Alcohol consumption was reported 5.90%. Overweight and obesity were more common among male faculty members. Family history is significantly associated with self reported Diabetes case. The findings of study suggest that the remarkable prevalence of risk factors of Diabetes among faculty members calls for a sound public-health approach.

Key Words: Burden, Diabetes, Teaching institute, Risk factors.

I. Introduction

Rapid urbanization and industrialization have produced advancement on the social and economic front in developing countries such as India which have resulted in dramatic lifestyle changes leading to lifestyle related diseases. The transition from a traditional to modern lifestyle, consumption of diets rich in fat and calories combined with a high level of mental stress has compounded the problem further. The major cause of death and disability are found to be shifted from nutritional deficiencies and infectious disease to non-infectious chronic disease. This shift is called "the epidemiological transition".⁽¹⁾

According to WHO estimate, globally, 171 million people suffered from diabetes in 2004, 220 million in 2005 and 230 million in 2007 and this figure is expected to increase by 300 million by 2025. This increasing trend of diabetes is more in developing nationals. For example, In India alone, an estimated 19.3 million people had diabetes in 1995, and this is expected to almost triple to 57.2 million in 2025. WHO projects that diabetes death will double between 2005 and 2030.⁽²⁾

In the eyes' of their students, the school teachers are role models who "practice what they preach". The teachers' dietary practices, physical activity and habits (tobacco and alcohol consumption) at the school are usually well observed by students. On the long term, the same may be adapted by them. So, the purpose of this study is to know prevalence of diabetes (self reported) and calculate risk factors among teachers, and if the teachers are well aware regarding the risk factors of diabetes, they can transfer this knowledge to their students.

II. Aims And Objective

1. To find out prevalence of diabetes (self reported) among faculty members of teaching institutes in Ahmedabad city.
2. To find out prevalence of different risk factors of diabetes among faculty members.

III. Material And Method

Sample size: In the pilot study, the prevalence of any of risk factors for diabetes was found out to be approximately 41%. Considering this prevalence for risk factors, sample size was calculated and allowable error was taken as 10%. Calculated sample size value came out to be 576.

Study Period: July 2012 to August 2013.

Study Design: Cross-sectional study.

Study Area: The study was carried out in schools/ colleges of Ahmadabad city.

Study Population: Total 288 male and 288 female faculty members from schools /colleges of Ahmedabad were included in the study.

Data Collection: List of schools and colleges of Ahmadabad was procured from Ahmadabad District Office and internet. Ahmadabad Municipal Corporation is divided into Six Zones. 96 faculty members including, 48 males and 48 females were taken as a study population from each zone thus sample of 576 faculty members were reached. Schools/colleges from each zone were selected by 'Random Sampling method' using the 'Random number table'. All the available teaching staff of the selected schools/colleges was taken as study population and next randomly selected school/college was taken in each zone to complete sample size. A pre-designed and pre-tested Performa was used for collection of data. Inclusion criteria include were age \geq 25years and a person who give valid consent regarding study.

Data analysis: Data was entered in master chart and then analyzed by Microsoft Excel and Epi info7.0

IV. Result

4.1: Age and sex distribution

Tables 1 show that majority of participants (42.54%) were from 45-54 years of age group followed by 35-44 years (29.16%) of age groups. Mean age of male and female were 45.47 years and 42.76 years respectively.

4.2: Details of tobacco and alcohol consumption – (Male)

Table 2 shows, 15(5.21%) male faculty members in studied group were currently smoking. Out of which 11 (73.33%) were smoking daily. Exposures to smoking at home or working place were reported by 58(20.13%) males.

35(12.15%) male faculty members were consuming smokeless tobacco in one or other form such as chewing tobacco, betel nut, quid etc. and out of which 33(94.29%) were using smokeless tobacco daily. (Table 2)

Alcohol consumption was reported by 17 (5.90%) male faculty members. Among them, 16 (94.11%) males consumed alcohol occasionally. (Table 2)

All the 288 female faculty members were life time abstainer for tobacco and alcohol consumption.

4.3: Age distribution of Tobacco and Alcohol consumer - (Male)

Prevalence of smoking varied from 2.20% to 8.67% in the 25-54 years of groups. Prevalence of smokeless tobacco varied from 11.11% to 16.53% in the 25-54 years of age group. Alcohol consumption was higher in 35-44 years of age group (10.00%). (Figure 1)

4.4: Details of Exercise

229 (79.51%) males and 218 (75.60%) female faculty members engaged themselves in different kinds of exercise like walking, cycling, running, swimming, meditation or pranayam etc. Out of 229 male faculty members engaged in exercise, majority 201(87.77%) do so for more than 5 days in a week and out of 218 females, majority 150 (68.80%) also do so for more than 5 days in a week and this difference was found to be statistically significant. (Table 3)

4.5: Prevalence and Distribution as per Body mass index

More numbers of male faculty members were overweight & obese (30.55% & 10.41% respectively) as compared to female faculty members (22.91% & 7.29% respectively). (Figure 2)

4.6: Dietary factors- Fruits and vegetable consumption

Table 4 showed that female faculties were consuming more fruits and green leafy vegetables as compared to male faculty.

4.7: Details of Self reported Hypertension

Blood pressure of 165 (57.29%) female faculty members and 160 (55.55%) male faculty members was measured in last one year. Gender difference has been observed in the prevalence rate of **self reported hypertension** cases which was more in females (15.62%) compared to males (11.79%) but this difference was statistically not significant ($X^2= 1.77$, $d f= 1$, $p > 0.05$). (Table 5)

4.8: Details of self reported (diagnosed) diabetes

Blood sugar of only 75 (26.04%) female faculty members was tested for diabetes in last one year as compared to 127 (44.09%) male faculty members and this difference was also statistically significant. Prevalence of self reported cases of diabetes was higher among males 4.51% (13 out of 288) as compared to females 3.10% (9 out of 288) but this difference was not statistically significant. Among diabetics, 10 (76.92%) males and 6 (66.66%) females are taking medicines and 33.33% of females are taking insulin as per advice while none of male participants is taking insulin. Out of total 22 self reported Diabetes cases, 19 faculty members were in 45-64 years of age group. (Table 6)

4.9: Details of Family History and Diabetes

Out of 13 male faculty members who were suffering from diabetes, 7(53.84%) had positive family history. Out of 9 females faculty members who were suffering from diabetes, 6(66.66%) had positive family history. (Table 7)

V. Discussion:

A total of 576 faculty members were included as study participants. Teacher's age ranged from 25–64 years with mean age of female was 42.76 years and that of male was 45.47 years. (Table 1) Almost similar socio-demographic profile was observed in a study done by Nahla K.R. Ibrahim. ⁽³⁾

The prevalence of smoking among men was 5.21% (Table 2) which is lower to study done in Kerala (42%) while higher to study done in Botswana (3.2%).^(4,7) The prevalence of smokeless tobacco consumption among men was 12.15% which is lower to study done in urban setting of Gandhinagar district (23.1%).⁽⁵⁾ Lower prevalence of tobacco consumption in our study was due to most of the teachers were very well aware about the health hazards of tobacco use but still this prevalence was matter of concern to public health system. Women were lifetime abstainer for any kind of tobacco consumption while another study done by Sh Khosropanah et al found prevalence of smoking among females 1.08 %.⁽⁶⁾

Prevalence of alcohol consumption was in 5.90% (17/ 288) among male faculty members (Figure 1) which is lower than the prevalence of alcohol consumption found in a study done by K.R. Thankappan (26.5%).⁽⁷⁾ Gujarat being a dry state, details about alcohol consumption were not revealed by the study participants. A possibility of underreporting cannot be ruled out. None of women reported consuming alcohol and same finding was also found by SD Bhardwaj et al in their study.⁽⁸⁾

The physical inactivity was higher among female faculty members (53.13%) as compared to male faculty members (34.37%). Study done by Gandhari Basu et al in West Bengal found that 38.6% of females and 38.4% of males were physically inactive.⁽⁹⁾ (Table 3). The lower physical activity among female was mainly due to not getting enough time because of dual responsibility of job and household work.

In present study, the prevalence of overweight (male=30.55%, female=22.91%) and obesity (male=10.41, female=7.29%) was lower (Figure 2) than that was found in the study done by Balkees Abed Bakhotmah on teachers of Western Saudi Arabia.⁽¹⁰⁾

In our study, prevalence of self reported Hypertension cases was more in females (15.62%) compared to males (11.79%). This finding is contradicted with the finding given by Sh Khosropanah in which males (21.30%) were more hypertensive than females (16.20%).⁽⁶⁾ The possible reasons of higher prevalence among female were sedentary life, lower physical activity and stress due to dual responsibility of job as well as house.(Table 5)

The prevalence of self-reported diabetes mellitus in the studied sample was 3.81% (male 4.51%, female 3.10%) (Table 20) which is lower than the prevalence (4.5%) found among teachers in Western Saudi Arabia.⁽¹⁰⁾ (Table 6)

VI. Conclusion

Even though prevalence of self reported diabetes is low as compared to other studies, risk factors of Non Communicable Disease (like diabetes) are more and more prevalent even in high sophisticate background also. If the present trend remains same, the health systems in developing country like India will be not able to support the burden of disease. Prominent causes for diabetes can be prevented but urgent preventive actions are needed to deal with risk factors like smoking, alcohol, physical inactivity and hypertension.

VII. Figures And Tables

Table 1: Age and sex distribution

Age-group (in years)	Sex				Total	
	Male		Female			
	No.	%	No.	%	No.	%
25-34	34	5.90	62	10.76	96	16.66
35-44	90	15.62	78	13.54	168	29.16
45-54	127	22.04	118	20.48	245	42.54
55-64	37	6.24	30	5.20	67	11.64
Total	288	50	288	50	576	100

Table 2: Details of tobacco and alcohol consumption – (Male)

Sr. No	Consumption habits	No.	%	
1	Smoking	15/288	5.21	
	Current	Daily	11/15	73.33
		Occasionally	4/15	26.67
		Total	15	100
2	Past smokers	27/288	9.37	
3	H/o exposure to passive smoking	58/288	20.13	
4	Smokeless tobacco	35/288	12.15	
	Current	Daily	33/35	94.29
		Occasionally	2/35	5.71
		Total	35	100
5	Past smokeless tobacco users	8/288	2.78	
6	Alcohol consumption	17/288	5.90	
	Current	Daily	1/17	5.88
		Occasionally	16/17	94.11
		Total	17	100
7	Past alcohol consumer	7/288	2.43	

Figure 1: Age distribution of Tobacco and Alcohol consumer - (Male)

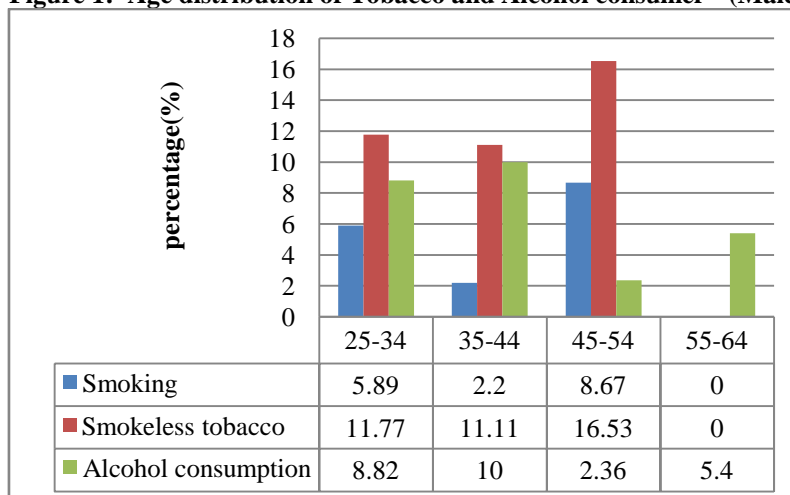


Table 3: Details of Exercise

Details	Exercise*	
	Male No. (%)	Female No. (%)
Yes	229(79.51)	218(75.60)
No	59(20.48)	70(24.30)
Frequency of exercise (more than 30mins a day)**		
1 to 2 days in a week	3(1.31)	17(7.79)
3 to 4 days in a week	25(10.91)	51(23.39)
> 5 days in a week	201(87.77)	150(68.80)
Total	229(100)	218(100)

* $X^2 = 1.20$, $d f = 1$, $p > 0.05$ ** $X^2 = 25.85$, $d f = 2$, $p < 0.05$

Figure 2: Prevalence and Distribution as per Body mass index

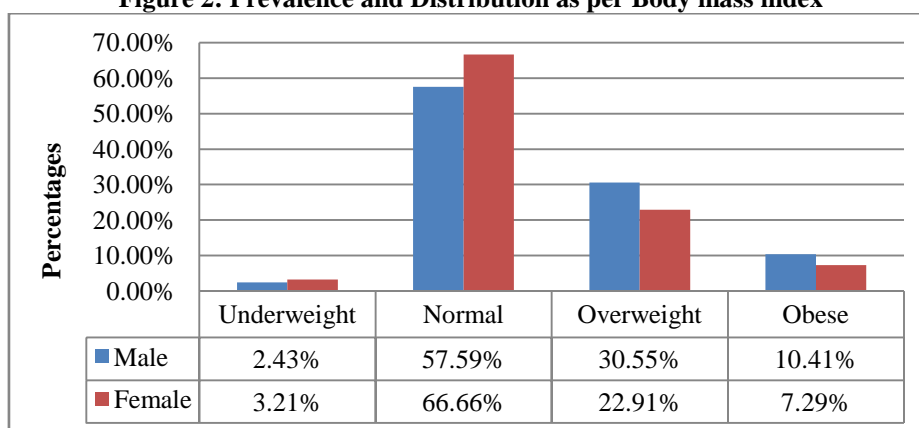


Table 4: Dietary factors- Fruits and vegetable consumption

Frequency in a week	Fruits		Vegetables	
	Male No. (%)	Female No. (%)	Male No. (%)	Female No. (%)
Less than 3 days	94(32.63)	36(12.50)	2(0.69)	0
3 to 5 days	108(37.50)	156(54.16)	33(11.45)	15(5.20)
More than 5 days	84(29.16)	93(32.29)	253(87.84)	273(94.79)
Not consumed in last one week	2(0.69)	3(1.04)	0	0
Total	288(100)	288(100)	288(100)	288(100)
Average consumption(serving) in one of those days	1.97	1.95	2.47	2.63

Table 5: Details of Self reported Hypertension

Sr. no.	Variables	Sex			
		Male (n=288)		Female (n=288)	
		No.	%	No.	%
1.	When was your blood pressure last measured				
	Last one year	160	55.55	165	57.29
	One to five Years	52	18.05	54	18.75
	More than Five years	15	5.20	6	2.08
	Never	61	21.18	63	21.87
	Total	288	100	288	100
2.	Self reported cases of hypertension	34/288	11.79	45/288	15.62

Table 6: Details of self reported (diagnosed) diabetes

Sr. no.	Variables	Sex			
		Male(n=288)		Female(n=288)	
		No.	%	No.	%
1.	Blood was tested for diabetes in last one year				
	Yes	127	44.09	75	26.04
	No	161	55.90	213	73.95
2.	Self reported cases of Diabetes	13/288	4.51	9/288	3.10
	Taking any special diet	6/13	46.15	3/9	33.33
	Taking any insulin	0	0.00	3/9	33.33
	Taking medicine	10/13	76.92	6/9	66.66
	Advised for weight loss	4/13	30.76	0	0.00
	Advised to stop smoking	0	0.00	0	0.00
	Advised for physical exercise	8/13	61.53	7/9	77.78
3.	Age group				
	25-34	0	0.00	0	0.00
	35-44	3	23.08	0	0.00
	45-54	5	38.46	9	100
	55-64	5	38.46	0	0.00

Blood tested for Diabetes $X^2 = 20.61$, $d f = 1$, $p < 0.05$

Table 7: Details of Family History and Diabetes

Risk Factor		Diabetes (DM)					Total
		Male*		Total	Female**		
		Yes	No		Yes	No	
Family history of DM	Yes	7 (53.84%)	41 (14.90%)	48 (16.66%)	6 (66.66%)	42 (15.05%)	48 (16.66%)
	No	6 (46.16%)	234 (85.10%)	240 (83.34%)	3 (33.34%)	237 (84.96%)	240 (83.34%)
	Total	13 (100%)	275 (100%)	288 (100%)	9 (100%)	279 (100%)	288 (100%)

*Family history of DM $X^2 = 13.55$, $d f = 1$, $p < 0.01$

**Family history of DM $X^2 = 16.72$, $d f = 1$, $p < 0.01$

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