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Original Research Article

Prevalence of cardiovascular risk factors amongst teaching staff of IIMSR medical college, Badnapur, Jalna, Maharashtra

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ABSTRACT

Background: Cardiovascular diseases are the number one cause of death globally. The cause of heart attacks and strokes are due to combination of risk factors- tobacco use, unhealthy diet, obesity, physical inactivity, alcohol use, hypertension, diabetes and hyperlipidaemia. Most cardiovascular diseases can be prevented by addressing these behavioural risk factors. The objectives were to study the prevalence of cardiovascular risk factors among teaching staff and to know the association of age and gender with cardiovascular risk factors.
Methods: A cross-sectional study was carried out amongst teaching staff of IIMSR Medical College, Badnapur, Jalna, Maharashtra during the period of August to October 2016. All teaching staff of IIMSR Medical College was included in this study by purposive sampling method. Total number of staff who was more than 30 years of age was 80. The study was performed on 71 teaching staff as 9 denied participating (71 out of 80). Clinical parameters including weight, height, blood pressure and waist circumference was recorded. Blood sample was also collected. Statistical analysis was done by using appropriate statistical test like mean, percentage, standard deviation, student's t test and chi square test.
Results: Majority participants were male 50 (70.42%). The mean age of male was 42.6±13.4 yrs and female was 37.05±9.64 yrs. The mean weight (76.2±12.9), mean waist circumference (92.0±12.1) and mean BMI (27.02±4.44) were above the normal range amongst male participants. The mean height, mean weight, mean waist circumference, mean SBP, mean DBP, mean RBS, mean creatinine and mean BMI values were higher in males as compared to females. The difference was statistically significant. Hypertension was more common in older age with raised diastolic blood pressure which signifies that age is one of the most important risk factor.
Conclusions: This study showed a high prevalence of cardiovascular risk factors and signifies the importance of health awareness among the staff members regarding the various cardiovascular risk factors.

Keywords: Cardiovascular risk factors, Prevalence, Teaching staff

INTRODUCTION

Cardiovascular diseases (CVDs) are the number one cause of death globally.[1] The cause of heart attacks and strokes are due to combination of risk factors- tobacco use, unhealthy diet, obesity, physical inactivity and alcohol use, hypertension, diabetes and hyperlipidaemia. Most cardiovascular diseases can be prevented by addressing these behavioural risk factors.[2] An estimated 17.7 million people died from CVDs in 2015, representing 31% of all global deaths.[2] Cardiovascular diseases cause an estimated 3.7 million deaths or a quarter of all deaths annually in the South East Asia region.[3] Non-communicable diseases account for 60% of total adult deaths in India. Cardiovascular diseases account for over a quarter (26%) of this deaths.[4]

Despite this high burden, there is poor awareness among Indians, in addition to low detection and control rates.[5] The identification of these cardiovascular risk factors in a medical institute where one naturally expects a high level of awareness and commitment to preventive care will be one-way of reducing the burden of cardiovascular diseases among the population in the future.[1] No studies exist on cardiovascular risk factors in Jalna district so we undertook this study to determine the prevalence of cardiovascular risk factors amongst teaching staff of JIIU's Indian Institute of Medical Science & Research Medical College, Badnapur, Jalna, Maharashtra.

Objectives

1. To study the prevalence of cardiovascular risk factors amongst teaching staff.
2. To know the association of age and gender with cardiovascular risk factors.

METHODS

A cross-sectional study was carried out amongst teaching staff of JIIU's IIMSR Medical College, Badnapur, Jalna, Maharashtra during the period of August 2016 to October 2016.

People not willing to participate in the study were excluded. Purposive sampling was used. There were total 106 fulltime teaching staffs who were working in our institute. All teaching staff aged more than 30 years was included in the study. Total number of staff who was more than 30 years of age was 80. The study was carried out amongst 71 teaching staff as 9 denied participating; response rate was 88.75% (71 out of 80).

Each participant was invited to fill a data form which included information such as age, gender, department, highest level of education, previous history of hypertension or diabetes, known family history of hypertension or diabetes, history of alcohol or cigarette smoking. Clinical parameters including weight, height, waist circumference at the mid portion between anterior superior iliac spine and lowermost rib during mid-expiration was recorded. The blood pressure was taken from left arm according to standardized protocols with the subject having rested for at least 5 minutes. Blood sample was taken for random blood sugar and serum lipid profile including triglycerides, total cholesterol, high density lipoprotein-cholesterol, low density lipoprotein-cholesterol. Blood glucose was done using glucose oxidase method. History of smoking including duration and number of pack per year was obtained. Permission from head of institution and clearance from institutional ethics committee was obtained. Statistical analysis was done by using appropriate statistical tests like mean, percentage, standard deviation, student's t test and chi square test.

RESULTS

It has been observed from Table 1 that majority of the study participants were male 50 (70.42%) followed by female 21 (29.57%).

Table 1: Age and gender wise distribution of study subjects.

Age (in years)	Male (%)	Female (%)	Total
25-34	22 (66.67)	11 (33.33)	33
35-44	13 (68.42)	06 (31.58)	19
45-54	03 (60)	02 (40)	05
55-64	08 (80)	02 (20)	10
65-70	04 (100)	00 (0)	04
Total	50 (70.42)	21 (29.57)	71

Table 2: Distribution of study subjects according to gender and risk factors.

Variable	Male (n=50) Mean±SD	Female (n=21) Mean±SD	P value
Age	42.6±13.4	37.05±9.64	0.19
Mean height	167.96±7.31	156.57±5.48	0.000
Mean weight	76.2±12.9	58.38±6.88	0.000
Mean waist circumference	92.0±12.1	82.2±12.2	0.004
Mean SBP	125.72±7.99	119.24±7.08	0.002
Mean DBP	81.92±5.74	76.24±6.10	0.001
Mean RBS	119.24±7.08	76.24±6.10	0.000
Mean triglyceride	138.2±62.2	130.0±60.5	0.610
Mean total cholesterol	172.9±29.4	169.0±27.9	0.598
Mean HDL	44.09±8.90	47.89±7.65	0.077
Mean LDL	101.8±30.0	102.2±21.1	0.942
Mean VLDL	27.0±12.6	22.48±9.31	0.097
Mean creatinine	1.007±0.267	0.811±0.266	0.007
Mean urea	26.86±7.55	24.52±6.24	0.184
Mean BUN	11.86±3.53	10.86±2.71	0.201
Mean billirubin	0.650±0.286	0.721±0.334	0.283
Mean SGOT	26.3±37.5	21.31±7.72	0.362
Mean SGPT	24.7±11.3	19.5±12.2	0.105
Mean alkaline phosphate	71.8±22.2	66.1±18.8	0.280
Mean BMI	27.02±4.44	23.81±2.58	0.000

It was seen from Table 2 that the mean age of male was 42.6±13.4 years and female was 37.05±9.64 years. The mean weight (76.2±12.9), Mean waist circumference (92.0±12.1) and Mean BMI (27.02±4.44) were above the normal range among the male participants. The mean height, mean weight, mean waist circumference, mean SBP, mean DBP, mean RBS, mean creatinine and mean BMI values were higher in the males compared to females. The difference was statistically significant.

Table 3: Distribution of subjects according to sex and presence of risk factors.

Variable	Male (n=50) N (%)	Female (n=24) N (%)	Total	P value
Family h/o hypertension	35 (74.47)	12 (25.53)	47	0.44
Family h/o sudden deaths	10 (71.43)	4 (28.57)	14	0.92
Family h/o DM	29 (70.73)	12 (29.27)	41	1.00
History of hypertension	16 (88.89)	2 (11.11)	18	0.04
History of DM	5 (83.33)	1 (16.67)	6	0.79
History of cigarette intake	6 (100)	0 (0)	6	0.23
History of alcohol	5 (100)	0 (0)	5	0.31
Total cholesterol >200	7 (77.78)	2 (22.22)	9	0.89
HDL <40	13 (81.25)	3 (18.75)	16	0.44
Triglyceride >160	15 (83.33)	3 (16.67)	18	0.27
VLDL >35	9 (81.82)	2 (18.18)	11	0.58
LDL >160	2 (100)	0 (0)	2	0.88
SBP ≥160	3 (100)	0 (0)	3	0.61
DBP ≥90	4 (100)	0 (0)	4	0.44
RBS >140	5 (100)	0 (0)	5	0.31
BMI ≥30	9 (100)	0 (0)	9	0.09

Table 4: Distribution of subjects according to age and presence of risk factors.

Variable	25-<35 N (%)	35-<45 N (%)	45-<55 N (%)	55-<65 N (%)	65-<70 N (%)	Total	P value
Family h/o hypertension	21 (44.68)	13 (27.65)	5 (10.63)	5 (10.63)	3 (6.38)	47	0.40
Family h/o sudden deaths	7 (50)	2 (14.28)	1 (7.14)	2 (14.28)	2 (14.28)	14	0.49
Family h/o DM	19 (46.34)	13 (31.70)	3 (7.31)	4 (9.75)	2 (4.87)	41	0.68
History of Hypertension	3 (16.66)	1 (5.55)	2 (11.11)	8 (44.44)	4 (22.22)	18	0
History of DM	2 (33.33)	0 (0)	0 (0)	2 (33.33)	2 (33.33)	6	0.01
History of cigarette smoke	2 (33.33)	2 (33.33)	0 (0)	2 (33.33)	0 (0)	6	0.57
History of alcohol	1 (20)	2 (40)	0 (0)	2 (40)	0 (0)	5	0.35
Total cholesterol >200	4 (44.44)	3 (33.33)	0 (0)	2 (22.22)	0 (0)	9	0.74
HDL <40	10 (62.50)	1 (6.25)	0 (0)	3 (18.75)	2 (12.5)	16	0.09
Triglyceride >160	9 (50.00)	4 (22.22)	1 (5.55)	2 (11.11)	2 (11.11)	18	0.77
VLDL >35	4 (36.36)	5 (45.45)	0 (0)	1 (9.09)	1 (9.09)	11	0.49
LDL >160	0 (0)	1 (50)	0 (0)	1 (50)	0 (0)	2	0.47
DBP ≥90	2 (50.00)	0 (0)	0 (0)	1 (25.00)	1 (25.00)	4	0.32
RBS >140	3 (60.00)	1 (20.00)	0 (0)	1 (20.00)	0 (0.00)	5	0.89
BMI ≥30	3 (33.33)	2 (22.22)	0 (0)	1 (11.11)	3 (33.33)	9	0.004

It was observed from Table 3 that all the risk factors were more commonly present among the males than the females.

It was noticed from Table 4 that family h/o hypertension, family h/o DM were more in the 25-35 years age group. In lipid profile, the raised total cholesterol, raised triglycerides and reduced HDL was more commonly seen in 25-35 years age group, raised VLDL was seen in 35-45 years age group followed by 25-35 years age group and raised LDL was seen in 35-45 years age group and 55-65 years age group equally. History of hypertension was more common in the older age group with raised diastolic blood pressure which signifies that age is one of the most important risk factor. History of diabetes mellitus was seen equally in the aged and the younger age groups. In the younger age group (25-35 years) the high prevalence is due to family history of diabetes.

DISCUSSION

The global burden of disease is shifting from infectious diseases to non-communicable diseases (NCDs.) and this shift in the pattern of diseases from communicable to

non-communicable is occurring at a faster rate in developing countries than in industrialized nations. It has also been suggested that about 70% of the total increase of worldwide prevalence of CVD in the next decade will come from developing nations. India at present is facing double burden of both communicable and non-communicable diseases.[5]

In the present study, most of the teaching staffs were in the middle age and the mean age was (40.88±12.44) which was similar to studies done by Akintunde et al was (45.3±7.9), Sabale et al was (43.63± 8.42), Alzeidan et al was (39.3± 13.4) and Sharma et al was (43.3±9.5).[1,5-7]

Our study showed a high prevalence of cardiovascular risk factors which included family history of hypertension, family history of sudden deaths, family history of DM, history of hypertension, history of DM, HDL<40, Triglyceride>160, VLDL>35, Total cholesterol>200, RBS>140, BMI≥30, history of cigarette smoking, history of alcohol, increased mean weight, increased mean waist circumference, high mean SBP, high mean DBP, mean RBS, mean creatinine and mean BMI. Similarly the study done by Sabale et al showed a lower prevalence (19.6%) of hypertension than our study but the prevalence of hypertension in our study was lower than the study done by Akintunde et al (40.8%), Ketkar et al (52%) and Anchala e al (33%).[1,6,8,9] This could be as the first two studies included all the staffs in the institute and the study done by Anchala et al was the prevalence in urban India.[9]

In the present study, obesity was found in 12.68% subjects. Mean BMI was 27.02±4.44 in males and 23.81±2.58 in females. Mean weight was 76.2±12.9 kg in males and 58.38±6.88 kg in females. Mean waist circumference was 92.0±12.1 cms in males and 82.2±12.2 cms in females. The study done by Alzeidan et al showed 59% abdominal obesity and 36% obesity which was more in woman, but in our study it was more in males.[7] Study done by Sharma et al showed a high prevalence of obesity 77.3%, central obesity in males 80.1% and 80.7% in females.[5] A study done by Pradeep et al showed that generalized obesity and abdominal obesity of 16.6% and 18.7% respectively.[10] Study by Sabale et al showed a mean waist circumference of 91.3 cms in males and 92.4 cms in females, obesity in 56% and abdominal obesity of 55.5% in males and 63.5% in females.[6] Study by Akintunde et al showed that generalized obesity of 38.3%.[1] The substantially high prevalence of overweight, obesity and central obesity as per India specific guidelines may be owing to the sedentary life-style and desk job of administrative employees who formed a major portion of the study population. The overall high prevalence of obesity and central obesity among highly educated study population of a tertiary care hospital suggests serious lack of awareness regarding physical activity and diet. This indicates a pressing need to initiate health promotion and disease prevention programmes at local, state and national level.[5]

Our study showed hypercholesterolemia in 12.68%, hypertriglycerides in 25.35%, raised LDL in 2.82%, raised VLDL in 15.49% and low HDL in 22.82% which were much lower than the other studies done by Sharma et al, Alzeidan et al and Akintunde et al.[1,5,7] The prevalence of cigarette smoking was in 8.45% among males and none of the women smoke which was similar to Sabale et al was (6.2%) and Ketkar et al and was much lower than Takur et al was (24.3%), Sharma et al was (12.8%) and Alzeidan et al was (12%).[5-8,11] The habit of alcohol consumption was seen in 7.04% which was lower than Sabale et al was (13.04%) as this study included all staff and higher than Sharma et al was (2.6%) as the study included only the habit of heavy drinking.[5,6]

Limitations

This is an institution based cross-sectional study, so it cannot be generalized to general population.

CONCLUSION

This study showed a high prevalence of cardiovascular risk factors which included family history of hypertension, family history of sudden deaths, family history of DM, history of hypertension, history of DM, HDL <40, triglyceride >160, VLDL >35, total cholesterol >200, RBS >140, BMI ≥30, history of cigarette smoking, history of alcohol, increased mean weight, increased mean waist circumference, high mean SBP, high mean DBP, mean RBS, mean creatinine and mean BMI. This signifies the importance of health awareness amongst staff members regarding the various cardiovascular risk factors.

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