Introduction

Cardiovascular disease (CVD) is the number one cause of death globally, killing almost 17.5 million people every year, representing 30% of all global deaths. Projections suggest that by 2013, over 23 million people would die of CVDs annually. Diabetes mellitus, hypertension and obesity are very strongly
associated with cardiovascular diseases all over the world\textsuperscript{1-4}.

Doctors and nurses play a vital role in the health and welfare of the people of a nation. Health of the doctors and nurses is of paramount importance because they themselves must be healthy to perform their jobs optimally under challenging work environments. Additionally, evidence suggests that there is a strong and consistent relationship between physician’s health choices and the recommendations he or she makes to his or her patients\textsuperscript{5}.

Knowledge and awareness regarding CVDs and the associated risk factors is expected to be good among doctors and nurses since they have access to information. However, they are also known to have a sedentary lifestyle with high levels of stress, lack of proper rest and irregular eating habits making them highly vulnerable to Cardio-vascular diseases\textsuperscript{6-7}.

Though there are multiple studies that have looked at the prevalence of cardio-vascular risk factors in the general population, there are only few studies looking at the cardio-vascular risk factors among doctors and nurses in India\textsuperscript{8-10} or abroad\textsuperscript{11-13}. The prevalence of risk factors for CVDs among the doctors and nurses in a tertiary care hospital will help in designing necessary interventions for the prevention of CVDs among them. Hence, we aimed to assess the prevalence of diabetes mellitus, hypertension and obesity among doctors and nurses in a tertiary care medical college hospital in Tamil Nadu, India.

Methods

A cross sectional study was conducted among doctors and nurses between 18 and 65 years of age working at a tertiary care Medical College Hospital in Tamil Nadu. Data were collected between June and August 2013. Visiting consultants and doctors and nurses who joined within one year of the start of data collection were excluded from the study.

Taking the prevalence of hypertension among doctors as 35.6\%\textsuperscript{14} and with an absolute precision of 6\%, the sample size was estimated to be 245. A total of 250 doctors and nurses were selected using a stratified random sampling technique. A written informed consent was obtained from all the study subjects and confidentiality was maintained throughout the conduct of the study. The institutional ethical committee approved the conduct of the study.

An appropriate case record form was developed for the purpose of this study that was used to record relevant socio demographic data, blood pressure, anthropometric data and blood glucose values. Blood Pressure, weight, and height were measured using the guidelines recommended by WHO-STEPS\textsuperscript{18}. Standard guidelines recommended by WHO\textsuperscript{16} were used to measure waist and Hip circumferences. An individual was considered to have Diabetes Mellitus if his or her random blood sugar value was $\geq$180 mg/dl. An individual was considered to be hypertensive if the blood pressure was found to be more than 140/90 mm of Hg. The cut-off value of body mass index (BMI) to define overweight and obesity was $\geq$25.0 kg/m\textsuperscript{2}. The cut-off value of Waist-hip ratio (WHR) used to define central obesity was >0.85 among females and >0.9 for males. Data collected were entered in Microsoft Excel spread sheet. Simple measures of central tendency, dispersion and proportions were used to analyze the data.

Results

Mean age of the study population was 35.132 ($\pm$11.589) years. Most of the study subjects were females (68.4\%). Doctors formed 50.4\% while nurses formed 49.6\% of the study population. More than half of the study population had completed post-graduation (50.4\%), followed by diploma (24.8\%) and graduation (24.8\%). The nursing staff in the study population comprised of staff nurses (44.4\%) & nursing supervisors (5.2\%). Doctors were Professors (17.2\%), Consultants (16\%), Associate Professors (6.4\%), Assistant professors (10.4\%) & Tutors (14.8\%). Table 1 depicts the prevalence of diabetes mellitus, hypertension and obesity in the study population.

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Prevalence of Diabetes Mellitus was found to be 15.6%. Mean random blood glucose value was found to be 108.4 mg/dl (±33.01 mg/dl). Among doctors, the prevalence of Diabetes Mellitus was 25.4% while among nurses it was 5.6% and this difference was found to be statistically significant ($\chi^2 = 18.518$, ‘p’ = 0.00016) (Table 1).

Prevalence of hypertension was found to be 21.6% while that of pre-hypertension was found to be 37.6%. Of those with hypertension, 47 (18.8%) were known hypertensives on treatment. Mean systolic and diastolic blood pressures were found to be 120.226 (±12.96) mm of hg and 79.81 (±8.45) mm of hg respectively. Among doctors, the prevalence of Hypertension was 29.4% while among nurses it was 13.7% and this difference was found to be statistically significant ($\chi^2 = 9.045$, ‘p’ = 0.0026) (Table 1).

Mean height, mean weight and mean body mass index (BMI) values were found to be 163.7 (±8.58) cms, 64.16 (±12.8) kgs and 23.84 (±4.0) respectively.

The prevalence of overweight was found to be 24.8%, 36.5% and 12.9% in the overall study population, among doctors and among nurses respectively. The prevalence of obesity was found to be 9.2%, 15.1% and 3.2% in the overall population, among doctors and among nurses respectively. The difference in the prevalence of overweight and obesity between doctors and nurses was found to be statistically significant.

Mean WHR was found to be 0.944 (±0.04) in the overall study population while it was 0.968 (±0.03) among males and 0.93 (±0.03) among females. The prevalence of central obesity was found to be 94.4%, 94.45% and 94.35% in the study population, among doctors and among nurses respectively.

**Discussion**

Most of the study subjects were females (68.4%) since we included both doctors and nurses and nursing staff comprised entirely of female staff members.

The prevalence of Diabetes Mellitus was found to be 15.6%. Sharma D et al\(^8\) in their study among tertiary hospital employees reported a prevalence of diabetes of only 5.8% which was much lesser than the present study. This difference could probably be because they included all health care providers while the present study only included doctors and nurses. Gupta A et al in their study among physicians reported that the prevalence of diabetes was 9.4% among males and 12.9% among females\(^10\). Also, Ramachandran A et al in their study among general population in an urban area found the prevalence of diabetes to be 12.1%\(^18\). The prevalence was much higher in the present study since the study population comprised of doctors and nurses who probably get themselves investigated more often.
Prevalence of hypertension was found to be 21.6%. Sharma D et al\textsuperscript{8} reported that the prevalence of hypertension was 20.7%, which is similar to our study. Also, Fanghanel-Salmón G et al\textsuperscript{13} reported that the prevalence of hypertension was 22.2% among health care workers.

In the present study, the prevalence of overweight and obesity was found to be 24.8% and 9.2% respectively. Also, the prevalence of central obesity among males was found to be 97.5% while that among females was found to be 93%.

Gupta A et al\textsuperscript{10} in their study found the prevalence of obesity to be 48.6% among males and 51.4% among females. They also reported that in their study the prevalence of truncal obesity was 72.4% among males and 65.7% among females.

Sharma D et al\textsuperscript{8} found the prevalence of overweight and obesity to be 77.3% and that of central obesity to be 80.1% among males and 80.7% among females. These differences could be attributed to the different age structures of the study populations and different methodologies used for taking the anthropometric measurements.

In the present study there was a significant difference in the age of doctors and nurses i.e. doctors were significantly older than the nurses. The statistically significant difference in the prevalences of diabetes, hypertension, overweight and obesity between the doctors and nurses can be attributed to this difference in the age structure. Hence, it is possible that with age being matched, nurses would have the same kind of prevalence as doctors. This was one of the limitations of the study.

Conclusions

The prevalence of Diabetes mellitus was found to be significantly higher among doctors (25.4%) as compared to nurses (5.6%). Also, the prevalence of Hypertension was found to be significantly higher among doctors (29.4%) as compared to nurses (13.7%). The prevalence of overweight was also found to be significantly higher among doctors (36.5%) as compared to nurses (12.9%) while the prevalence of obesity was found to be significantly higher among doctors (15.1%) as compared to the nurses (3.2%). Thus, we conclude that the prevalence of critical risk factors for Cardiovascular Diseases that include Diabetes Mellitus (15.6%), Pre-Hypertension (37.6%), Hypertension (21.6%), Overweight (24.8%), Obesity (9.2%) and Central Obesity (94.4%) is high among doctors and nurses and hence is a cause for concern.

Note: This study was carried out successfully under the Short Term Studentships Programme of the Indian Council of Medical Research, for the year 2013 (Research Reference ID = 2013-01720)

References


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