



ASSESSMENT OF CARDIOVASCULAR DISEASE RISK FACTORS AMONG NURSING STAFFS OF A GOVERNMENT MEDICAL COLLEGE HOSPITAL IN EASTERN INDIA

Medicine

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ABSTRACT

Background- Cardiovascular disease is recognized as the leading cause of morbidity, mortality. The known risk factors are advanced age, obesity, high cholesterol, high blood pressure, diabetes mellitus. Due to shift work, nursing staffs are at increased risk of having these risk factors.

Methods- It was a cross sectional study involving 102 female nursing staffs in a government Medical college hospital in Westbengal. Following parameters were measured- Age, Family history, Body weight, Drug history, Blood pressure, Random blood sugar, Total cholesterol, LDL Cholesterol, HDL cholesterol, Triglyceride.

Results- Our study revealed strong correlation between body weight and mean BP, random blood sugar, total cholesterol, triglyceride level, strong correlation between blood sugar and total and LDL cholesterol level. Mean BP is significantly correlated with cholesterol level.

Conclusions- Prevalence of dyslipidemia among nursing staffs is more than the general population. Being shift worker, due to increased dyslipidemia prevalence, they have higher chance of developing cardiovascular disease early.

KEYWORDS

Nurses, Dyslipidemia, mean Blood pressure, random blood sugar

Introduction

Worldwide, Cardiovascular disease (CVD) is recognized as the leading cause of morbidity, mortality and disability. It is predicted that by 2020, globally the CVD would be the most leading cause of mortality and morbidity over infectious diseases.¹ In 2008, a study from India reported that India alone is burdened with approximately 25% of cardiovascular-related deaths and would cater to more than 50% of the patients with heart ailments worldwide within next 15 years.² The seriousness of CVD in India is that, most of the CVD sufferers are to be in their productive age which may potentially give a huge socioeconomic burden on country. In 2005, Reddy et al. reported that India has incurred the highest loss in productive years of life worldwide.³

The known existing CVD risk factors, including advanced age, obesity, tobacco use, high blood cholesterol, high blood pressure, diabetes mellitus.^{4,5} In health care sector, chemical exposure, radiation, injuries from needle sticks, and musculoskeletal disorders are well-known occupation-related health hazards among the nursing staff. ⁶ However recently nursing staff are at high psychological stress due to workload, duty schedule, job satisfaction and other work related factors which may increase the risk of CVD among them which is still not clear.

A cross sectional study was conducted in nursing staff working in tertiary health care centre located in rural area of Satara of Maharashtra, India in the month of February 2013.⁷ Prevalence of risk factors of CVD like overweight, hypertension (HTN), diabetes (DM) and hypercholesterolemia is 16.90%, 13.52%, 10.62% and 21.73% respectively. The prevalence of HTN, DM and hypercholesterolemia was significantly higher in married nurses.

The present study aimed to evaluate the health status of nursing staff from tertiary health care centre in west Bengal to address the risk factors of CVD.

Methodology

Study type: observational cross sectional study

Target population: female nursing staffs in college of medicine and JNM Hospital, Kalyani

Study population: female nursing staffs who will give consent to participate in this study.

Study area: college of medicine and JNM Hospital, Kalyani

Study duration: May 2017 to July 2017

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Objectives of the study:

1. To assess prevalence of hypertension, diabetes mellitus, dyslipidemia among female nursing staffs of college of medicine and JNM Hospital, Kalyani, Nadia.
2. To find correlation of body weight with mean BP, blood sugar, cholesterol and triglyceride level.
3. To assess correlation of mean BP with blood sugar and cholesterol level.

After explaining the need and methods of the study and after getting the clearance from institutional ethics committee, female nursing staffs working in different department of this institute, were given the informed consent form. Those who agreed to sign the informed consent form, they were included in the study.

Following data are recorded in the case record form.

1. Age
2. Family history
3. Body weight
4. Drug history-
5. Blood pressure (in mm of Hg)-
6. Random blood sugar-
7. Total cholesterol
8. LDL Cholesterol-
9. HDL cholesterol-
10. Triglyceride

Parameters of Evaluation

1. Prevalence of hypertension (SBP>140 or DBP>90 mm of Hg)
2. Prevalence of diabetes mellitus (random blood sugar> 200 mg/dl)
3. Prevalence of dyslipidemia (LDL>100 mg/dl, HDL<50 mg/dl, TG> 150 mg/dl)

Plan of data analysis and statistics: prevalence of hypertension, diabetes mellitus and dyslipidemia among nursing staffs were calculated in percentage. Then Pearson's correlation studies were done to assess correlation between body weight and mean blood pressure, random blood sugar, cholesterol and triglyceride and also correlation between mean BP and blood sugar, cholesterol level, blood sugar and cholesterol, triglyceride level

Results

Data from 102 nursing staffs were collected during the study. The mean age of the nurses were 46.18 years, and mean weight was 62.11 Kg. Mean of the random blood sugar level of the staffs came out 102.58 mg/dl. only 4 of them had random sugar level above 140 mg/dl, which is above the normal random blood sugar level. Mean Blood pressure of the staffs (which is equal to diastolic blood pressure+ 1/3 rd of pulse pressure) was 94.14 mm of Hg.

12 staffs (11.76%) among the study population are diabetic and 19 (18.63%) had hypertension and they were receiving drugs for controlling these. According to lipid profile result, 42 nursing staffs are dyslipidemic (41.17%).

Mean total cholesterol level was 173.88 mg/ dl, whereas mean LDL

cholesterol level was 101.53 mg/dl, which is higher than the current normal level of LDL cholesterol (100 mg/dl). Mean triglyceride level of the staffs were 149.4 mg/dl, which was within normal range (upto 150 mg/ dl). Mean HDL cholesterol was 50.91 mg/dl, which is in normal range.

The study aimed to see correlation of different biochemical parameters with body weight and also to see correlation among age and blood pressure, age and cholesterol level, blood sugar and cholesterol level, blood sugar and triglyceride level.

So, Pearson's correlation test was done.

It revealed the following data-
Correlations

Table 1: correlation study of different cardiovascular risk factors among nursing staffs

| | Weight | mean BP | Random blood sugar | Total cholesterol | LDL cholesterol | Triglyceride | |
|--------------------|---------------------|---------|--------------------|-------------------|-----------------|--------------|--------|
| weight | Pearson Correlation | 1 | .300** | .314** | .216* | .152 | .287** |
| | Sig. (2-tailed) | | .002 | .001 | .029 | .126 | .003 |
| | N | 102 | 102 | 102 | 102 | 102 | 102 |
| mean BP | Pearson Correlation | .300** | 1 | .132 | .220* | .125 | .282** |
| | Sig. (2-tailed) | .002 | | .188 | .026 | .209 | .004 |
| | N | 102 | 102 | 102 | 102 | 102 | 102 |
| Random blood sugar | Pearson Correlation | .314** | .132 | 1 | .232* | .274** | .137 |
| | Sig. (2-tailed) | .001 | .188 | | .019 | .005 | .171 |
| | N | 102 | 102 | 102 | 102 | 102 | 102 |
| Total cholesterol | Pearson Correlation | .216* | .220* | .232* | 1 | .916** | .503** |
| | Sig. (2-tailed) | .029 | .026 | .019 | | .000 | .000 |
| | N | 102 | 102 | 102 | 102 | 102 | 102 |
| LDL cholesterol | Pearson Correlation | .152 | .125 | .274** | .916** | 1 | .381** |
| | Sig. (2-tailed) | .126 | .209 | .005 | .000 | | .000 |
| | N | 102 | 102 | 102 | 102 | 102 | 102 |
| Triglyceride | Pearson Correlation | .287** | .282** | .137 | .503** | .381** | 1 |
| | Sig. (2-tailed) | .003 | .004 | .171 | .000 | .000 | |
| | N | 102 | 102 | 102 | 102 | 102 | 102 |

** . Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

So the study revealed the following-

1. Body weight of the study population and their mean BP had very significant correlation (2 tailed significance 0.002)
2. Body weight of the study population and their random blood sugar level had very significant correlation (2 tailed significance 0.001)
3. Body weight of the study population and their total cholesterol level had significant correlation (2 tailed significance 0.029)
4. Body weight of the study population and their LDL cholesterol level didn't have significant correlation (2 tailed significance 0.126)
5. Body weight of the study population and their triglyceride level had very significant correlation (2 tailed significance 0.003)
6. Mean BP and total cholesterol level had significant correlation (2 tailed significance 0.026).
7. Mean BP and triglyceride level had very significant correlation (2 tailed significance 0.004)
8. Random blood sugar level and total cholesterol level had significant correlation (2 tailed significance 0.019)
9. Random blood sugar level and LDL cholesterol level had significant correlation (2 tailed significance 0.005)
10. Random blood sugar level and triglyceride level didn't have significant correlation (2 tailed significance 0.171)
11. Total cholesterol and triglyceride level had very significant correlation (2 tailed significance was less than 0.001)
12. LDL cholesterol and triglyceride level had very significant correlation (2 tailed significance was less than 0.001)
13. Also, correlation between age and mean BP, age and total cholesterol was measured. It revealed that age of the subject had very significant correlation with both mean BP and total cholesterol level (in both the cases, 2 tailed significance was less than 0.001).

Discussion

The present study aimed to assess presence of existing CVD risk factors among nursing staffs of a government medical college hospital in eastern India.

In our study, prevalence of hypertension, diabetes among nursing

staffs were similar to one similar study but prevalence of dyslipidemia was much higher in our study.

A study on total of 424 rail road workers between the ages of 21 and 64 years showed that high serum total cholesterol and LDL-C level were more common in shift workers than in day workers. This finding persisted after adjustment was made for age and food type. But there was no difference in the prevalence of fasting blood glucose and hypertension between shift working and day working.8 This result supported our study finding that nursing staffs, being shift worker had increased prevalence of dyslipidemia and thus, have increased risk of cardiovascular disease in future.

Another study on 493 nurses, nurse technicians and assistants, in a large general hospital setting, night shift work did not increase blood pressure and was not associated with hypertension or pre-hypertension in nursing personnel.9 Here in our study also, there was no increased prevalence of hypertension among nursing staffs.

Correlation studies done in this study revealed strong correlation between body weight and mean BP, body weight and random blood sugar, body weight and total cholesterol, body weight and triglyceride level, which is a well known fact.

Our study also depicted strong correlation between blood sugar level and total cholesterol level, LDL cholesterol level and this is supported by a previous study, where among 401 patients, Patients with HbA1c value greater than 7.0% had significantly higher value of cholesterol, LDL-C, and LDL-C/HDL-C ratio compared with patients with an HbA1c value up to 7.0%.¹⁰

We have also found that mean blood pressure is significantly correlated with high cholesterol level.in a large cross sectional study on approximate 16000 subjects, it was found that Total and non-HDL cholesterol levels increased significantly with increasing systolic or diastolic blood pressure in both sexes.¹¹

Though diabetes, hypertension and diabetes mellitus are known risk factors for development of cardiovascular disease, their prevalence

among nursing staffs have not been studied much. Their workload and responsibility towards health care system is immensely important for society. So early detection of these risk factors among nursing staffs is very important, so that proper lifestyle measures and drug therapy can reduce the chance of development of cardiovascular disease among them.

Conclusions :

This cross sectional study revealed that prevalence of dyslipidemia among nursing staffs of a government medical college hospital is more than the general population. Prevalence of hypertension and diabetes mellitus is comparable to general population. There is strong correlation between body weight and mean BP, body weight and random blood sugar, body weight and total cholesterol, body weight and triglyceride level, between blood sugar level and total cholesterol level, between mean blood pressure and blood sugar, mean blood pressure and total cholesterol level. Thus nursing staffs, being shift duty worker, due to increased dyslipidemia prevalence, may have higher chance of developing cardiovascular disease early.

Acknowledgement- 1. Prof. Dr. Keshab Mukhopadhyay, Head, Department of Pharmacology, College of Medicine & JNM Hospital, Kalyani 2. Raju Dasgupta, Assistant professor and statistician, Department of community medicine, College of Medicine & JNM Hospital, Kalyani

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