Research Article

A Study to Assess the Prevalence of the Risk Factors of Coronary Artery Diseases among Women in Guwahati, Assam

Sijagurumayum Rashmi[1], Bijaya Thongam[1], Unmona Borgohain[2]

[1]Department of Community Health Nursing Speciality, Asian Institute of Nursing Education, Guwahati, Assam, India,
[2]Department of Medical-Surgical Nursing Speciality, Asian Institute of Nursing Education, Guwahati, Assam, India

ABSTRACT

Aim: The aim of the study was to assess the risk factors for coronary artery disease among women in Guwahati. **Materials and Methods:** Quantitative research approach was used, and descriptive design was adopted in the study. The samples were collected using purposive sampling technique from 100 women, who were in the age group of 30–65 years, residing in Guwahati, Assam, and who fulfill the inclusion criteria. Semi-structured questionnaire was used to assess the prevalence of risk factors of coronary artery disease and biophysiological measurement to measure the body mass index (BMI) and blood pressure (BP). **Results:** It was found that 16% of them were having systolic BP more than 140 mm of mercury, 53% do not perform exercise, and only 15% performed yoga. Nearly 57% of them express that they have stress. Nearly 45% of them were having BMI more than 25 kg/m². There was a statistically significant association of risk factor (BP) with age only and also a statistically significant association of risk factor (stress) with education and occupation. Finally, there was also a statistically significant association of risk factor (performance of exercise) with demographic characteristics, i.e., age, education, and occupation at 0.05 level of significance. However, there is no association of risk factor (BMI range) with any of the demographic variable. **Conclusion:** It was concluded that the risk factor for coronary artery disease was common among the women in Assam and since most of the risk factors were modifiable, timely intervention can help in reducing morbidity and mortality due to this disease.

Keywords: Coronary artery disease, Risk factors, Women

Address for Correspondence: Dr. Unmona Borgohain, Department of Medical-Surgical Nursing Speciality, Asian Institute of Nursing Education, Guwahati, Assam, India. Email: unmona@yahoo.com

Introduction

According to the World Health Report 2002, cardiovascular diseases (CVDs) will be the largest cause of death and disability by 2020 in India. In 2020 AD, 2.6 million Indians are predicted to die due to coronary heart disease which constitutes 54.1% of all CVD deaths. Nearly half of these deaths are likely to occur in young- and middle-aged individuals (30–69 years). At present, Indians experience CVD deaths at least a decade earlier than their counterparts in countries with established market economies (EMEs). The global burden of disease study estimates that 52% of CVD deaths occur below the age of 70 years in India as compared to 23% in EME, resulting in a profound adverse impact on its economy. The contributing factors for the growing burden of CVDs are increasing prevalence of cardiovascular risk factors, especially hypertension, dyslipidemia, diabetes, overweight or obesity, physical inactivity, and tobacco.[1] The WHO subsequently developed targets for prevention and control of non-communicable diseases in 2013, which included 25% relative reduction in overall mortality from

CVDs, 25% relative reduction in prevalence of high blood pressure (BP), halting the rise in diabetes and obesity, and ensuring that at least 50% of patients with CVDs have access to relevant drugs and medical counseling by 2025.[2]

Young Indian with coronary artery disease (CAD) has extensive coronary atherosclerosis with even premenopausal women having multivessel disease. Women have a poorer prognosis and a more severe outcome than men after myocardial infarction (MI), more likely to die after the first MI, and in survivors, there is higher risk of recurrent MI, heart failure, or death.[3]

Premature ischemic heart disease can have devastating consequences for the individual, the family, and the society[4] INTERHEART study reported that nine standard risk factors – dyslipidemia (high apolipoprotein B/apolipoprotein A1 ratio), smoking, hypertension, diabetes, high waist–hip ratio, unhealthy diet, low physical activity, irregular alcohol consumption, and psychosocial stress – explained more than 90% of the first acute MI.[5]

Objectives

The objectives of this study were as follows:
1. To assess the risk factors for CAD among women in Guwahati, Assam.
2. To find out the association between the risk factors of CAD such as BP, body mass index (BMI), stress, and exercises with the demographic variables such as age, education, and occupation.

Materials and Methods

The research approach adopted for the study was quantitative approach. Descriptive design was adopted for this study. Purposive sampling technique was used to select the samples. The samples were 100 women in the age group from 30 to 65 years and who fulfill the inclusion criteria. The study was conducted in Guwahati, Assam.

Semi-structured questionnaire was used to assess the prevalence of risk factors of CAD and biophysiological measurement to measure the BMI and BP.

Technique used was self-report and biophysiological measurement.

Data collection procedure

To conduct the main study, the investigator took the ethical clearance from respected authority. Permission was also taken from the head man of the area to conduct the study in the locality. House-to-house survey was done and the respondents were selected based on the purposive sampling technique. Brief introduction of the investigator was given and the purpose of the study was explained to them. The respondents were then asked to fill the semi-structured questionnaire, and then, the investigator collected back the tool. Simultaneously, the investigator checks biophysiological measurement.

Table 1: Frequency and percentage distribution of respondents according to the demographic characteristics of the respondents *n*=100

Demographic pro forma	Frequency (%)
Age in years	
30–34	37 (37)
35–44	34 (34)
45–54	13 (13)
55–65	16 (16)
Education	
Illiterate	9 (9)
High school	32 (32)
Higher secondary	27 (27)
Graduate	28 (28)
Postgraduate and above	4 (4)
Occupation	
Unemployed	61 (61)
Employed	39 (39)
Type of family	
Joint	33 (33)
Nuclear	67 (67)
Number of children	
Nil	7 (7)
One	37 (35)
Two	34 (37)
Three	13 (13)
Four and above	9 (9)
Dietary habits	
Vegetarian	1 (1)
Non-vegetarian	99 (99)

Results

Section 1

Analysis of demographic characteristics of the respondents [Table 1].

Section 2

Analysis for the presence of risk factors [Table 2].

Section 2a

Association of risk factor (BP) with selected demographic characteristics.

The data presented in Table 3 depict that there is a statistically significant association of risk factor (BP) with their selected demographic characteristics, i.e., age and no association with other demographic characteristics such as education and occupation at 0.05 level of significance.

Section 2b

Association of risk factor (BMI range) with selected demographic characteristics.

The data presented in Table 4 depict that there is a statistically no significant association of risk factor (BMI range) with

their selected demographic characteristics at 0.05 level of significance.

Section 2c

Association of risk factor (stress) with selected demographic characteristics.

The data presented in Table 5 depict that there is a statistically significant association of risk factor (stress) with their selected demographic characteristics, i.e., education and occupation, and no association with other demographic characteristics such as age at 0.05 level of significance.

Section 2d

Association of risk factor (performance of exercise) with selected demographic characteristics.

The data presented in Table 6 depict that there is a statistically significant association of risk factor (performance of exercise) with their selected demographic characteristics, i.e., age, education, and occupation at 0.05 level of significance.

Table 2: Frequency and percentage distribution of respondents according to the presence of risk factors *n*=100

Risk factors	Frequency (%)
Systolic BP (mmHg)	
<120	43 (43)
120–129	28 (28)
130–139	13 (13)
140 and above	16 (16)
BMI (kg/m^2)	
18.5 and less than 18	3 (3)
18.5–24.9	52 (52)
25–29.9	33 (33)
30 and above	12 (12)
Family history of CAD	
Present	11 (11)
Absent	89 (89)
Performance of exercise	
Yes	47 (47)
No	53 (53)
Presence of stress	
Yes	57 (57)
No	43 (43)
Consumption of tobacco	
Yes	19 (19)
No	81 (81)
Performance of yoga	
Yes	15 (15)
No	85 (85)
Intake of pickle	
Yes	71 (Out of which 21 respondents takes pickle on a regular basis)
No	29 (29)

BMI: Body mass index, CAD: Coronary artery disease, BP: Blood pressure

Discussion

Of 100 respondents, 16% of respondents were having BP ranging from 140 and >21.87% of respondents were having a history of hypertension but were not under medication. Nearly 45% were having BMI more than 25 kg/m^2, 11% were having family history of CAD, 53% were not performing exercises, and 57% were having stress. Nearly 19% were consuming tobacco, 85% were not performing yoga, 38% expressed that they have family problems leading to stress, 21% have daily intake of pickle, and 20% had daily intake of salted biscuit.

The study was supported by another study which was done in Kerala to study the prevalence of CAD and its risk factors. A community-based cross-sectional study selected 5167 adults using a multistage cluster sampling method. Information on sociodemographic, smoking, alcohol use, physical activity, dietary habits, and history of diabetes and hypertension was collected using structured interview scheduled. Anthropometric, BP, electrocardiogram, and

Table 3: Association of risk factor (BP) with selected demographic characteristics

Demographic variables	Chi-square value	df	Remarks
Age	29.31	3	Significant
Education	4.356	3	Non-significant
Occupation	6.224	3	Non-significant

BP: Blood pressure

Table 4: Association of risk factor (BMI range) with selected demographic characteristics

Demographic variables	Chi-square value	df	Remarks
Age	1.455	3	Non-significant
Education	0.766	3	Non-significant
Occupation	1.233	3	Non-significant

BMI: Body mass index

Table 5: Association of risk factor (stress) with selected demographic characteristics

Demographic variables	Chi-square value	df	Remarks
Age	1.34	2	Non-significant
Education	6.425	3	Significant
Occupation	8.036	3	Significant

Table 6: Association of risk factor (performance of exercise) with selected demographic characteristics

Demographic variables	Chi-square value	df	Remarks
Age	3.649	3	Significant
Education	14.17	3	Significant
Occupation	11.06	3	Significant

biochemical investigation were done using standard protocol. It was found that the physical inactivity was reported by 17.5% and 18% reported family history of CAD.[6] A study was also done in community in east Nepal among 140 adults with the aim to assess the prevalence of CAD using various parameters such as history of diabetes mellitus, hypertension, smoking hereditary history, family history, measurement of blood pressure, anthropometric measurement etc. It was found that the most common risk factor for CAD was hypertension 35.5%, BMI (more than 25kg/m^2) was 33.6% and central obesity was 42.1%.[7] The above two studies are more or less consistent with the present studies. The present results can be compared with the findings in 739 subjects (451 men and 288 women) of the Jaipur Heart Watch-5 study by Gupta *et al*. that study found that 46.2% of men and 50.7% of women were overweight or obese. The prevalence of hypertension was 39.5% in men and 24.6% in women, diabetes was present in 15.5% of men and in 10.85% of women, and 33% of men and 32.7% of women had high cholesterol levels.[8]

Another study in 2008 by Mohan and Deepa showed the following prevalences of major risk factors for CVD: Diabetes 11.9%, hypertension 25.4%, dyslipidemia 40.2%, hypertriglyceridemia 28.3%, overweight (BMI $\geq$23 kg/m^2) 60.2%, and metabolic syndrome 34.1%.[9]

Significant association was found between risk factor (BP) and age, and also a significant association of stress with education, occupation, and income at 0.05 level of significance. There was also a significant association of risk factors (stress) with education, occupation, and income at 0.05 level of significance. The study also reveals that there is a statistically significant association of risk factor (performance of exercise) with their selected demographic characteristics, i.e., age, education, and occupation at 0.05 level of significance. A study was conducted among 1619 participants at Greece in 2002. The result revealed that coronary risk increases by 82% ($P < 0.05$) for individuals with a lower level of education and by 65% for individuals with an average education, compared to those with an academic education.[10] The above study is consistent with the findings of the current study. Rapid change in dietary habits coupled with decreased physical activity in India as consequence of urbanization may partly explain the increase in CAD. India is experiencing an epidemiological transition with high rates of urbanization.

Conclusion

From the study, it is concluded that the risk factor for CAD is common among the women in Assam and since most of the risk factors are modifiable, timely intervention can help in reducing morbidity and mortality due to this disease.

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