"Prevalence And Risk Factors Of Cardiovascular Diseases Among Adults Of Selected Rural Community At Siliguri, West Bengal."

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Abstract:

Background: Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels and include coronary heart disease, cerebrovascular disease, rheumatic heart disease, and other conditions. More than four out of five CVD deaths are due to heart attacks and strokes, and one-third of these deaths occur prematurely. Since there are not many studies on these rural communities to identify the prevalence rate and associated risk factors, so the investigators have selected this study for proper risk identification, assessing the prevalence rate and educating and motivating adults on appropriate screening, prevention, and treatment.

Materials and Methods: A descriptive cross sectional study was conducted in a rural community in West Bengal, India. Total 100 numbers of adults were selected for the study. The prevalence rate and risk factors of cardiovascular diseases were assessed using the structured interview schedule and physical measurements.

Results: The result reveals that regarding behavioural risk factors of Cardiovascular diseases, among the 100 participants, 60(60%) consume Tobacco products and 81 (81%) consume Alcohol, Adequate consumption of Fruits and vegetables is only 10(10%) i.e. more than 5 times in a week, 19(19%) perform sufficient physical activity/exercise i.e more than 150 minutes/week. Regarding physical assessments, the overweight was 19(19%) and obesity was 9(9%), the abdominal obesity in males was 31(31%), and in females was 35 (35%). The prevalence rate of Hypertension was 23(23%), Stroke was 2(2%), Coronary Heart Disease was 7(7%), High blood cholesterol was 2(2%), and Diabetes Mellitus was 11(11%).

Conclusion: The study demonstrated the high burden of fatal CVDs and identified the impact of CVDs risk factors such as hypertension, self-reported diabetes, high cholesterol, smoking, alcohol, and abdominal obesity. The significant incidence of CVDs risk factors in the rural communities, particularly among those who are overweight or obese, necessitates early clinical identification, referral and appropriate management of clients in primary health care settings.

Keywords: Prevalence, risk factors, cardiovascular diseases

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I. Introduction

Cardiovascular diseases are the leading cause of death globally, taking an estimated 17.9 million lives each year. The most important behavioral risk factors of heart disease and stroke are unhealthy diet, physical inactivity, tobacco use, and harmful use of alcohol. The effects of behavioral risk factors may appear in individuals as raised blood pressure, blood glucose, raised blood lipids, and overweight and obesity. These "intermediate risk factors" can be measured in primary health care facilities and they indicate an increased risk of heart attack, stroke, heart failure, and other complications. Cessation of tobacco use, reduction of salt in the diet, eating adequate amount of fruit and vegetables, regular physical activity, and avoiding harmful use of alcohol have been shown to reduce the risk of cardiovascular disease. Health policies that create conducive environments for making healthy choices affordable and available are essential for motivating people to adopt and sustain healthy behaviours. Identifying those at the highest risk of CVDs and ensuring they receive appropriate treatment can prevent premature deaths. Access to noncommunicable disease medicines and basic health technologies in all primary healthcare facilities is essential to ensure that those in need receive treatment and counselling. [1]

Cardiovascular diseases have now become the leading cause of mortality in India. A quarter of all mortality is attributable to CVDs. Ischemic heart disease and stroke are the predominant causes and are responsible for >80% of CVDs deaths. The Global Burden of Disease study estimate of age-standardized CVDs death rate of 272 per 100 000 populations in India is higher than the global average of 235 per 100 000 population. Premature mortality in terms of years of life lost because of CVDs in India increased by 59%, from 23.2 million (1990) to 37 million (2010). [1]

Clara Chow et. al conducted a study on Cardiovascular disease and risk factors among 345 adults in rural India-the Andhra Pradesh Rural Health Initiative. The study found that the prevalence of current smoking was 19.9%, hypertension 20.3%, diabetes 3.7%, overweight 16.9%, and obesity 4.4%. A medical diagnosis of cardiovascular disease (previous heart attack, stroke or angina) was reported by 2.5% (1.1–3.9%) in a selected rural community. [2]

According to The Economic Times Panache, in India, where cardiovascular diseases have turned into a silent epidemic of sorts, and account for at least 27 percent of deaths, the matter of taking utmost care of heart health is more important than ever. According to a 2022 report called 'Accidental Deaths & Suicides in India' the number of deaths caused by heart failure ranged from 25,000 to 28,000 in the last four years. [3] Considering the above, the need to assess the prevalence and risk factors of CVDs in rural Indian setting was felt. The current study was conducted to assess the prevalence and risk factors of CVDs for timely screening, awareness, risk identification and thereby reducing premature deaths and disabilities related to complications of CVDs.

Objectives:
1. To identify sociodemographic characteristics associated with an increased risk of cardiovascular diseases among adults in the selected rural community.
2. To determine the risk factors of cardiovascular diseases among adults in the selected rural community.
3. To assess the prevalence of cardiovascular diseases among adults in the selected rural community.

II.   Materials And Methods

Approach and design: A quantitative approach with a Descriptive Cross-sectional survey research design was adopted.

Setting of the study: The study was conducted in Girmit Line Village, Siliguri, West Bengal.

Sample: Hundreds of adults who fulfill the following criteria were selected by non-probability purposive sampling technique.

Sampling criteria:
Adults who are in the age group of 22 - 64 years.
Adults who can speak and understand Bengali and Hindi.
Adults who are willing to participate.
Adults who are mentally unstable are excluded.

Measurement tools
Section I: Socio-Demographic Performa consisting of 11 items.
Section II: **Section II A: Structured interview schedule** on Behavioural risk factor assessment consists of 4 questions related to tobacco consumption, alcohol consumption, fruit and vegetable consumption, and physical activity.
Section II B: Physical measurements which consists of Height, Weight, Waist circumference, Hip circumference, Blood pressure, and Heart rate.
Section III: Structured interview schedule to assess the prevalence and related factors of Cardiovascular diseases consists of 9 questions.

Validity and Reliability of the tools The tools were validated by six subject experts. Reliability of the structured knowledge questionnaire was tested by using split half method. The tools (structured knowledge questionnaire were found to be reliable at r (correlation coefficient) = 0.88. The data was collected in the month of September 2024.

Statistical Analysis The SPSS (statistical package for social science) were used for the analysis of the collected data. Descriptive statistics like frequencies, percentages, mean, and standard deviation were used for the interpretation of the data.

III.   Result

Section I: To identify sociodemographic characteristics associated with an increased risk of cardiovascular diseases among adults

Majority of the respondents, 47(47%) were in the age group of 45-64 years, 31(31%) were in 35-44 years and 21(21%)were in the age of 22 – 34 years. Sixty (60%) were male and 40(40 %) were female. Fifty (59%) were Christian and 41(41%) were Hindu. Sixty five (65%) belong to the nuclear family and 35(35%) are from

the joint family. Eighty five (85%) were married, 9(9%) were widow/widower and 66(%) were unmarried. Regarding the occupation, 63(63%) had private employment, 10 (10%) were housewives, 10(10%) were farmer, 8(8%) were in business and 2(2%) were in Govt. employment. Eighty eight (88%) have no family history of Cardiovascular diseases and only 12(12%) have history of CVDs out of which among the father 7(7%) and mother 5(5%) have CVDs. Eighty (83%) have no information about CVDs, 10(10%) heard from family and friends, and 7(7%) heard from health professionals.

Section II: To determine the risk factors of Cardiovascular diseases among adults
Table 1: Frequency and percentage distribution of data on risk factors of Cardiovascular diseases (n=100)

Sl No	Prevalence of Cardiovascular diseases	Frequency	Percentage
1.	**A. Behavioural risk factors** Consumption of Tobacco products a) Yes	60	60
	b) No	40	40
2.	Consumption of Alcohol a) Yes	81	81
	b) No	19	19
3.	Consumption of Fruits and Vegetables in a week a) 1-2 times	14	14
	b) 2-3 times	3	3
	c) 3-4 times	64	64
	d) 4-5 times	8	8
	e) > 5 times	10	10
4.	Performing physical activity/Exercise in a week a) No	33	33
	b) 50 - 100 minutes	39	39
	c) 100 – 150 minutes	9	9
	d) > 150 minutes	19	19
5.	**B. Physical assessments** a) Overweight	19	19
	b) Obesity	9	9
6.	c) Abdominal obesity in male	31	53
	d) Abdominal obesity in female	35	83

Table 1: shows that 60(60%) consume Tobacco product and 81(81%) consume Alcohol. Regarding Fruits and vegetables consumption only 10(10%) consume adequately i.e. more than 5 times in a week. Only 19(19%) performs sufficient physical activity i.e more than 150 minutes/week. Regarding physical assessments, the overweight was 19(19%) and obesity was 9(9%). As per Waist to Hip Ratio, the abdominal obesity in male was 31(31%) and in female was 35(35%).

Section III: To assess the prevalence and related factors of Cardiovascular diseases among adults
Table 2: Frequency and percentage distribution of data on prevalence of Cardiovascular diseases (n=100)

Sl No	Prevalence of Cardiovascular diseases	Frequency	Percentage
1.	Presence of any Cardiovascular diseases as diagnosed by a doctor a) Yes	45	45
	b) No	55	55
2.	The presence of any medical reports a) Yes	21	21
	b) No	79	79
3.	1. Duration of diagnosis a) 0 – 1 year	18	18
	b) 1 year – 2 years	10	10
	c) 2 years – 3 years	4	4
	d) > 3 years	5	5
4.	e) Presence of any associated illnesses a) No	52	52
	b) Thyroid disorders	3	3
	c) Vision problem	7	7
	d) Kidney problem	3	3
	e) Joint pain/Arthritis	23	23
	f) Nerve problem	2	2

5.	f) History of Hypertension as diagnosed by a doctor a) Yes	23	23
	b) No	77	77
6.	g) History of Stroke as diagnosed by a doctor a) Yes	2	2
	b) No	98	98
7.	c) History of Coronary Heart Disease as diagnosed by a doctor a) Yes	7	7
	b) No	93	93
8.	Diagnosed with High Blood Cholesterol by a doctor a) Yes	2	6
	b) No	94	94
9.	History of Diabetes as diagnosed by a doctor a) Yes	11	13
	b) No	87	87
10.	Taking medication regularly a) Yes	9	9
	b) No	91	91

Table 2: shows that 45(45%) have cardiovascular diseases and only 21(21%) have medical reports. The duration of diagnosis was 0-1 year in 18(18%), 10(10%) for 1-2 years, 4(4%)for 2-3 years, and 5(5%) were diagnosed for > 3 years. Regarding any associated illnesses, 3(3%) have thyroid disorders, 7(7%) have vision problems, 3(3%) have kidney problems, 23(23%) have joint pain and only 2(2%) have nerve-related problems. Among all CVDs patients, the prevalence rate of Hypertension was 23(23%), Stroke was 2(%), Coronary Heart Diseases was 7(7%), High blood cholesterol was 2(2%), and Diabetes Mellitus was 11(11%).

Table 3: Mean and Standard deviation of data on Blood Pressure and Heart rate (n=100)

Characters	Mean	SD(±)
SBP(Diastolic Blood Pressure)	125	±37.75
DBP(Systolic Blood Pressure)	82.1	±15.69
HR(Heart Rate)	80.5	±9.89

Table 3 shows that the mean SBP was 125±37.75 mmHg, the mean DBP was 82.1 ± 15.69 mmHg and the mean HR was 80.5 ± 9.89 bpm.

IV.   Discussion

Section II: Data on risk factors of Cardiovascular diseases

The result of the current study findings reveals that 60(60%) consume Tobacco products and 81(81%) consume Alcohol. Regarding Fruits and vegetables consumption only 10(10%) consume adequately i.e. more than 5 times in a week. Only 19(19%) perform sufficient physical activity i.e. more than 150 minute/week. Regarding physical assessments, the overweight was 19(19%) and obesity was 9(9%). As per Waist to Hip Ratio, abdominal obesity in males was 31(31%) and in females was 35(35%).

The above study is supported by a similar community-based cohort study conducted by K. Pradeep et.al which demonstrated that the prevalence rate of cardiovascular event or death was 4.6 per 1000 person-years. Current smoking (HR 1.6, 95% CI 1.1 to 2.6) and hypertension (HR 2.2, 95% CI 1.5 to 3.4) were the risk factors among men and accounted for 47% of the PAF. Among women, hypertension (HR 1.8, 95% CI 1.0 to 3.4), self-reported diabetes (HR 4.3, 95% CI 2.2 to 8.1) and central obesity (HR 2.2, 95% CI 1.2 to 4.0) were associated with CVD and accounted for more than half of the PAF. [4]

Another study by Khan A. et. al showed that the mean values of hip circumference, waist circumference, waist and hip ratio, and diastolic blood pressure were higher among females than males. Waist and hip circumference in male participants whereas in female participants body mass index with systolic blood pressure and diastolic blood pressure were significantly correlated. [5]

A study by Adewale et. al revealed that the key risk factors such as hyperlipidaemia, hypertension, and elevated body mass index (BMI). Approximately 40% of the population have multiple risk factor counts of two. Analytical measures revealed a population risk factor cluster with elevated BMI [77.5% (1570/2025)] that is mostly either hyperlipidaemic [9.43%, co-eff. (17), $P = 0.007$] or hypertensive [22.72%, co-eff. (17), $P = 0.99$] as key risk factor clusters. [6]

Section III: Data on the prevalence and related factors of Cardiovascular diseases

The current study finding revealed that the prevalence rate of Hypertension was 23(23%), Stroke was 2(2%), Coronary Heart disease was 7(7%), High blood cholesterol was 2(2%), and Diabetes Mellitus was 11(11%).

The above finding is supported by a study by Bhatt D et. al which showed that the prevalence of CVDs was 5.2% among adults ≥45 years (women: 4.6%; men: 5.9%), hypertension was 46.7% (women:48.9%; men:44%). Men and women have a similar prevalence of diabetes (11.9%) and cholesterol (2.3%). Prevalence of physical inactivity was 30.3% (women:27%; men:34.1%). Hypertension (adjusted odds ratio; aOR women:2.60, 95% CI: 2.08–3.25, men:1.88, 95% CI 1.54–2.29), hypercholesterolemia (a OR women:1.70; 95% CI 1.07–2.69, men 3.55; 95% CI 2.66–4.74), diabetes (aOR women:2.53; 95% CI 1.83–3.51, men:1.77 95% CI 1.44–2.17), obesity, physical inactivity, and smoking in men were significantly associated with CVDs.[7]

A similar study by K. Jhumki et. al indicated that the overall self-reported prevalence of diagnosed CVDs was 29.4% for older adults aged 45 and above in India. Age was associated with increased risk of CVD Female older adults were more likely to have CVDs than male. The place of residence also had a stronger association with CVDs. In addition, high cholesterol, diabetes, and physical inactivity were key risk factors for CVDs.[8]

A study conducted by Joshi R et al. demonstrated that among 2424 elderly (51% women, mean age 67), the prevalence of smokeless tobacco use was 50.8% (95% CI 48.1–52.8; smoking 10.5% (95% CI 9.3–11.8); and hypertension46.3% (95% CI 44.3–48.4). Only 10.2% of participants were previously known to have had hypertension, and the remaining 36.1% were detected to be hypertensive during the survey. A total of 8.2% (95% CI 7.0–9.5) participants were overweight and 4.1% (95% CI 3.3–4.9) had central obesity. The prevalence of dyslipidaemia in those who underwent blood based tests was 40.6% (95% CI 36.5–44.9); and hyperglycaemia 4.9% (95% CI 3.2–7.1). [9]

V. Conclusion

The study demonstrated the high burden of fatal CVDs and identified the role of CVDs risk factors such as hypertension, self-reported diabetes, high cholesterol, smoking, alcohol, and abdominal obesity. The significant incidence of CVDs risk factors in the selected rural community, particularly among those who are overweight or obese, necessitates early clinical identification and appropriate management of clients in a primary health care setting.

Conflicts of interest
None.

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