

# Analysis of Risk Factors for Cardiovascular Disease among Adults Living in Rural Areas of India: A Survey

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## Abstract

Cardiovascular diseases (CVD) are a collective term for issues with the heart, blood vessels, and other organs. High blood pressure, diabetes, smoking, excessive fat, obesity, or inactivity are the primary risk factors. The research shows that 30–40% of all fatalities are caused by cardiovascular illnesses, while there is limited information on the frequency of heart disease in India. Cross-sectional research looked at how stress affected the cardiovascular system. The SPSS program and Likert Scale were used in the current study to gather 100 participants. The author acquired information about demographics, diet, alcohol use, smoking, as well as drinking habits using a standardized questionnaire. The finding shows Stress and cardiovascular disease were strongly positively statistically correlated ( $r = 0.00$ ,  $p < 0.005$ ), and alcohol use and CVD were also highly statistically correlated ( $r = 0.01$ ,  $p < 0.005$ ). According to the result, stress and alcohol consumption is positively correlated with cardiovascular disease. The main goal of this paper is to analyze the risk factor of CVD among adults in rural areas in India. In the future, this paper will make the reader aware of health factors that can reduce the risk of heart disease.

## Keywords

Cardiovascular, Disease (CVD), Diabetes, Hypertension, Likert Scale, SPSS, Stress

## Imprint

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## 1. INTRODUCTION

Heart and blood vessel problems collectively known as cardiovascular diseases (CVD) include cerebrovascular illnesses, “deep vein thrombosis, coronary heart disease, deep vein thrombosis,” pulmonary embolism, and other heart-related conditions (WHO, 2014). The risk factors for cardiovascular illnesses are classified by National Heart Institute (NHI) into two categories: significant contributing factors and minor contributing factors [1]. Obesity, high blood pressure, smoking, a high-fat diet, diabetes, and inactivity are the key risk factors. Stress brought on by worry, the use of sex hormones, birth control pills, as well as alcohol use is among the minor risk factors. The biggest cause of death worldwide is cardiovascular disease, which is responsible for an increasing number of fatalities each year (WHO, 2014). According to WHO data, there are seventeen million CVD-related fatalities per year, and by the end of 2030, this number is projected to increase to twenty-three million [2]. Cardiovascular illnesses are the main cause of morbidity and death in India [3]. The prevalence of the cardiovascular disease is low; in India, cardiovascular illnesses account for 35–45% of all fatalities.

Men are also affected by this condition, in addition to women. Men and women both have an equal chance of developing cardiovascular illnesses, according to research. Every young person and an adult must be aware of the risk factors for CVDs [4], [5]. A study revealed that the risk of cardiovascular illness was rising in the population of young individuals [6], [7]. The main risk factors in this study that can be changed were smoking, physical inactivity, eating poorly, having high cholesterol, or stress. Lack of physical exercise, excessive sugar consumption, obesity, family history, and stress are all risk factors for cardiovascular illnesses, but research from Delhi, India, found that awareness of these variables is low [7], [8].

A survey found that smoking shisha is very common among young adult Hindustani students. Physical inactivity is another risk factor that may be changed. The phrase “sedentarism” is another name for physi-

cal inactivity. It is caused by a lack of exercise (WHO, 2011). Consuming fast food and drinking fizzy beverages might be harmful to your health. About 12% of Indians have excessive cholesterol levels, which is largely attributable to junk eating [9]–[11]. The minuscule risk factor is stress. Stress, as per research, is tension and anxiety brought on by bodily elements that are not in a steady range.

Prior risk-factor research has tended to concentrate on young and middle-aged persons, and findings from these studies are typically extended to older adults. In the same areas of rural central India thirty years earlier, researchers had conducted CVD risk factor prevalence studies in young adults, but the prevalence of either hypertension or evident coronary artery disease was minimal. It is probable that as time goes on and rural residents' lifestyles change, more villagers may have developed CVD risk factors. Furthermore, nothing is known about how common risk factors are among older people living in rural areas.

## 2. LITERATURE REVIEW

Rajnish Joshi et al. studied cardiovascular risk factors that are prevalent in the elderly rural population. The majority of risk factor surveys have mostly focused on persons in their 20s and 30s. In rural India, they looked at the prevalence of CVD risk factors among senior persons (60 years of age or more). They examined how risk variables were distributed between men and women. The prevalence of smoking was 10.6% (95% CI 9.4–11.7), the use of smokeless tobacco was 50.7% (95.00% CI 48.1–52.7), or hypertension was 46.3% (95% CI 44.3–48.4) among the 2424 senior participants in the study (51.0% women, mean age 66). Only 10.2% of the patients had high blood pressure before the study; the rest 36.2% had high blood pressure that was discovered. Reduced cigarette use, early hypertension identification, and appropriate hypertension management should be the main goals of strategies to lower the risk of cardiovascular diseases in the elderly [12].

Prabhdeep Kaur et al. studied cardiovascular disease hazard factors in rural South India. An estimated one-third of all fatalities in India were attributable to cardiovascular diseases (CVD). To ascertain the prevalence of CVD or the relationship between recognized risk factors as well as incident CVD in the rural population of South India, cohort research was carried out. Self-reported diabetes, alcohol consump-

tion, hypertension, and central obesity were examined as risk factors. Speaking about the high prevalence of lethal cardiovascular disease (CVD), they stressed the significance of characteristics like central obesity, smoking, hypertension, or self-reported diabetes as risk factors for the condition. It is important to deploy low-cost treatments in primary care settings, such as stopping smoking and controlling diabetes or hypertension [13].

Sudha Ramachandra Rao et al. studied about treatment or management of hypertension in a rural Tamil Nadu cohort in Thiruvallur. Low rates of diagnosis and treatment for hypertension in India are a public health concern. In the Thiruvallur district of Tamil Nadu, India, they resurveyed 1284 hypertensives who had been recognized in the cohort's baseline survey. Calculating the proportion of patients using the medication, managing their hypertension, and changing their lifestyle at follow-up was the objective. Only 19.9% of patients took any medication, whereas 45.3% of patients kept their blood pressure under control. There were 256 patients, 179 (69.9%) of whom were taking only one medicine, 71 (27.6%), two, and six (2.4%), three. 49.7% of the patients said they cut back on their salt use. The healthcare systems need to be improved to successfully treat hypertension or encourage patient participation in long-term care [14].

Animesh Gupta studied cardiovascular risk factors that are common among persons in rural areas. Cardiovascular disease (CVD) has grown to be a significant people health issue and one of the main causes of death in both emerging and industrialized nations. Several CVD risk factors have been found, and they may typically be split into groups of modifiable and non-modifiable risk factors. This study sought to determine the proportion of rural residents who were at risk for CVD. Adults in Mangalore participated in a cross-sectional study that was conducted in the community. An anthropometric assessment, general physical examination, and comparison with standards of measurement were done. For lab analysis, a sample of fasting blood was collected. Adults were more likely to be obese, have hypertension, eat meat rather than a vegetarian diet, but have high levels of low-density lipoproteins, all of which are important CVD risk factors. A sedentary lifestyle, obesity, hypertension, or diabetes are the most prevalent modifiable cardiovascular risk factors among adults in rural areas [15].

#### Research Question:

- What level of understanding does the rural population have about the risk factors for cardiovascular disease that may be changed?
- What are the rural community's preventative measures for cardiovascular disease risk factors that can be changed?

### 3. METHODOLOGY

#### 3.1. Design

This research was conducted in Delhi city, which is the capital of India, and the research was descriptive and cross-sectional. To understand the distribution of CVD risk factors among adult people in rural India, the author designed this study. In the current study, quantitative research techniques were employed to evaluate the effects of obesity on the cardiovascular system along with highlighting the contributing components and their interrelationships. Numerous basic techniques of data collecting were used during the duration of this investigation. Figure 1 Model provides a logical framework for examining the needs for self-managing CVD and its modifiable risk factors.

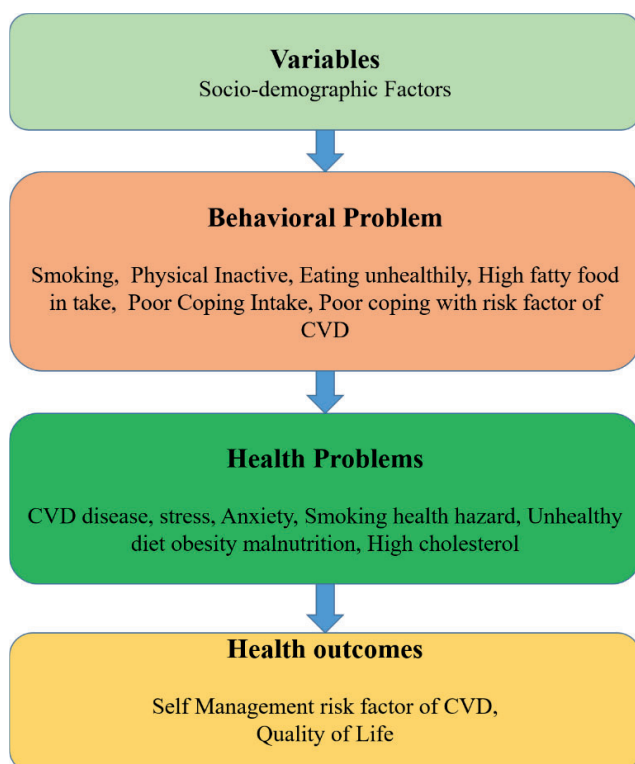


Figure 1: Model Serves as a Logical Framework for Analyzing the Demands for Self-Managing CVD as well as Its Modifiable Risk Factors.

#### 3.2. Sample and Instrument

The people of Delhi were the target population and the convenient sampling technique was used. The sample was 100. For this study, an appropriate questionnaire was utilized to collect information and provide answers to the research topics. The sample size for this study will be 100 people. The researchers spoke with the participants using several approaches to collect the essential data for this study. Each participant received a comprehensive survey that was arranged neatly. The data were evaluated using SPSS and a Likert scale after being input into an Excel spreadsheet.

The average, standard deviation, as well as other central tendency measurements for each variable, were calculated by the author using descriptive statistics. The author investigated the relationships between age, employment status, education level, and cardiovascular using bivariate analysis. The significance threshold was set at  $P < 0.05$ . The Likert scale, a form of psychometric scale, is a common questionnaire type used in research. Although there are other types of rating scales, Likert scales are the most widely used and, hence, the most accessible method for sizing responses in survey research. Most significantly, because they use a standardized method of data collecting, Likert Scale questions are simple to understand. It is straightforward to extrapolate results, generate reports, and construct charts and graphs while dealing with numbers.

#### 3.3. Data collection

It was necessary to get an official letter of approval before the research could start. Participants verbally agreed to participate. Before beginning the research at the home level, the respondents were verbally informed of the study's goal. The paper data includes people identifiers as well as pertinent study findings. Throughout this study, data on the population's screening rate, participants' age range, and several other demographic factors were gathered. An interviewer-administered a semi-structured questionnaire to participants to collect the necessary data on socio-demographic characteristics, dietary habits, physical activity, history of smoking, alcohol consumption, and other issues. The analysis of risk factors of cardiovascular disease is shown in Table 1.

Table 1

Illustrate the Demographics, Physical Activity, and Diseases Faced by Respondents.

		Percent	Frequency
<b>Age Range</b>	20 to 25	22	22
	25 to 30	40	40
	Above 30	38	38
<b>Running</b>	Yes	33	33
	No	67	67
<b>Swimming</b>	Yes	60	60
	No	40	40
<b>Walking</b>	Yes	62	62
	No	38	38
<b>Fitness Class (Gym)</b>	Yes	62	62
	No	38	38
<b>Smoking</b>	Yes	46	46
	No	54	54
<b>Tobacco Consumption</b>	Yes	30	30
	No	70	70
<b>Alcohol</b>	Yes	58	58
	No	42	42
<b>Fatty Food Consumption</b>	Yes	41	41
	No	59	59
<b>Stress</b>	Yes	59	59
	No	41	41
<b>Anxiety</b>	Yes	36	36
	No	64	64
<b>Cardiovascular Diseases</b>	Heart failure	62	62
	Stroke	38	38

### 3.4. Data Analysis

The SPSS program was used to analyze the data in this study. Table 2 displays the Pearson's Correlation Coefficient (r) for Stress in the Cardiovascular System. Walking is positively correlated with fitness, whereas the other factors were not statistically significantly associated, however, there was a strong positive association between age range, behavioral, or health-related difficulties, according to the research.

## 4. RESULT AND DISCUSSION

In India, cardiovascular diseases (CVD) account for the majority of adult fatalities, and prominent risk factors include cigarette use, high blood pressure, diabetes, inactivity, and alcohol intake. Most risk factor surveys have centered their attention on persons in their 20s or 30s. The occurrence of CVD risk factor among persons in rural India was studied by the author. Table 13 illustrates "Pearson's Correlation Coefficient" (r), which is used to determine how closely the variables are correlated. There was a strong, positively statistically significant correlation between Stress and Cardiovascular disease ( $r = 0.00$ ,  $p < 0.005$ ), and a strong, positively statistically significant correlation between alcohol and CVD ( $r = 0.01$ ,  $p < 0.005$ ), whereas the other factors like Physical Activities such as walking, swimming, fitness class, Running and Behavioral problems such as Smoking, Tobacco consumption, fatty food consumption, and others was not significantly associated with age range.

## 5. CONCLUSION

In conclusion, younger people in rural India have a significant prevalence of cardiovascular risk factors, which is comparable to previous recent estimates and explainable by known risk-factor processes. To support these findings, comparable estimates from the senior populations of other areas are required. Even in rural India, it is essential to develop and put into practice measures to lower the risk of CVD among adults, with an emphasis on alcohol and tobacco consumption. Reduced smoking use, early high blood pressure identification, and appropriate hypertension management should be the main goals of strategies to lower the risk of cardiovascular diseases in adults. The findings show a favorable correlation between stress and alcohol use and cardiovascular disease. The primary goal of this study is to examine the risk factors for CVD in persons living in rural areas of India. This study will become aware of health variables that can lower their risk of heart disease as a result of reading this article in the future.

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Table 2

Illustrate the correlation analysis with the Risk Factor of Cardiovascular Disease.

Correlations													
		Age Range	Run-ning	Swim-ming	Walk-ing	Fitness Class (Gym)	Smok-ing	Tobacco Con-sump-tion	Alco-hol	Fatty Food Con-sump-tion	Stress	Anxi-ety	Cardio-vascular Diseases
Age Range	r	1											
	p												
Running	r	-0.02	1										
	p	0.842											
Swimming	r	0.043	0.052	1									
	p	0.67	0.607										
Walking	r	-0.057	.199*	-.219*	1								
	p	0.576	0.047	0.029									
Fitness Class (Gym)	r	-0.057	.199*	-.219*	1.000**	1							
	p	0.576	0.047	0.029	0								
Smoking	r	-.282**	0.078	.221*	.392**	.392**	1						
	p	0.005	0.442	0.027	0	0							
Tobacco Consumption	r	-0.092	0.051	-.223*	.243*	.243*	0.14	1					
	p	0.362	0.614	0.026	0.015	0.015	0.164						
Alcohol	r	-0.153	.511**	-0.033	0.002	0.002	-0.068	-0.018	1				
	p	0.129	0	0.744	0.987	0.987	0.5	0.861					
Fatty Food Consumption	r	-0.119	0.064	-0.108	0.066	0.066	0.047	.697**	0.05	1			
	p	0.238	0.53	0.285	0.513	0.513	0.646	0	0.619				
Stress	r	-0.069	.282**	-.266**	-0.066	-0.066	-.373**	0.146	.609**	.240*	1		
	p	0.497	0.004	0.008	0.513	0.513	0	0.146	0	0.016			
Anxiety	r	-0.089	-.305**	-.366**	0.072	0.072	0.06	.509**	-.248*	.476**	-0.053	1	
	p	0.378	0.002	0	0.476	0.476	0.552	0	0.013	0	0.604		
Cardiovascu-lar Diseases	r	-0.111	0.155	-.261**	0.109	0.109	-.228*	0.063	.336**	0.15	.520**	-0.1	1
	p	0.272	0.123	0.009	0.282	0.282	0.022	0.534	0.001	0.136	0	0.324	
**. Correlation is the significant at the 0.01 level (2-tailed).													
*. Correlation is the significant at the 0.05 level (2-tailed).													

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