

# Statistical Analysis of Socio-economic Causes of Cardiovascular Disease

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## Abstract:

The main objective of the study is to find out the social and economic determinants of cardiovascular disease. A cross sectional survey was conducted at the public cardiology wards and private cardiologist clinics. Saturation sampling technique was utilized to gather information. SPSS version 21 was used for statistical analysis. Results showed that high blood pressure and low fruits consumption are the major causes of cardiovascular disease for all age groups. Stress, smoking, education and physical inactivity are also causes of cardiovascular disease.

**Keywords:** Heart disease, Social factors, Health determinants.

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## Introduction

Cardiovascular disease includes all the blood vessels and heart diseases. Nowadays cardiovascular disease is most common disease among people all around the world. The basic purpose of this study is to focus on the social and economic causes of cardiovascular diseases. The annual death toll taken by cardiovascular diseases all over the world is more than 15 million. People suffering from heart disease mostly have premature deaths, under age of 65 (WHO 1999). The health condition is the sign of the social welfare and economic power of the people, which is lighted by a variety of factors, such as, living standard, income level, housing conditions, education level, employment, medical facilities etc.

Health status of people living in Southern Punjab is mostly poor. People have insufficient food to eat, literacy rate is too low, and they don't even have enough

money to provide basic health necessities to their families. The socio-economic status varies from person to person. In this part of the country mostly people are less educated, unemployed and have lower social status in comparison to other areas of country, because of inadequate resources (Qasim, 2014). Abeyta et al (2012) analyzed cardiovascular risk factors and socio economic variables on the data of Colorado Behavioral Risk Factor Surveillance System (BRFSS) for 2007 and 2008 through multiple regression models. They concluded that low incomes, growing age associated with diabetes, low consumption of fruits and vegetables, and no exercise are the major factors contributing to cardiovascular diseases.

Yu et al (2000) investigated the relationship between cardiovascular risk factors and socioeconomic status in urban population of China. They inferred that people with low socioeconomic status have more chances of

cardiovascular diseases. Janati et al (2011) investigated the impact of socioeconomic variables on cardiovascular disease. The results of their study showed that less educated people, housewives and retired men have higher risk of coronary heart disease as compared to others. Lang et al (2012) concluded that working conditions, geographical and social environment and stress are the major factors that have strong relationship with cardiovascular diseases. Thurston et al (2005) observed gender wise association between socioeconomic status and heart disease. The results from Cox's proportional hazards models showed that women with lower income and education had greater chances to have heart disease as compared to men.

Sousa (2013) concluded that most empowering determinants of heart disease are education, occupation, culture, income, social involvement and locality. In both developing and developed countries

cardiovascular disease is the major cause of death and unhealthy life. Hussain et al (2013) studied the influence of risk factors on heart disease. The study was done at private cardiologist clinics of Bahawalpur. High blood pressure, hypertension, diabetes, smoking and obesity were the major risk factors for heart disease. Jeemon and Reddy (2010) examined the social determinants of cardiovascular disease. Poor and middle class people living in urban areas of India were mostly likely to be affected by cardiovascular risk factors.

## Material and Method

A cross sectional survey was conducted at the public cardiology ward and private cardiologist clinics. Saturation sampling technique was applied to gather information about gender, age, locality, education level, occupation, marital status, family size, availability of medical facility, blood pressure, fruits consumption, income,

weight, physical inactivity, smoking, socialization, and stress.

was performed through SPSS version 21 with 5% and 10% level of significance.

Cross tabulation and chi square test was used to identify the socioeconomic factors that affect heart disease. Statistical analysis

## Results

**Table 1.Characteristics of Respondents**

Characteristics	Percentage
<b>Gender</b>	
Men	52
Women	48
<b>Age Groups</b>	
<30 years	24.3
30-50 years	47.4
>50 years	28.3
<b>Locality</b>	
Urban	53.3
Rural	46.7
<b>Educational Level</b>	

Illiterate	48
Literate	52
<b>Marital Status</b>	
Married	80.9
Unmarried	19.1
<b>Employment Status</b>	
Employed	29.6
Unemployed	70.4
<b>Income Level</b>	
< 20,000	48.0
20,000-40,000	32.2
>40,000	19.8

**Table 2. Cross Tabulation and Chi Squares**

Causes	Age Groups	Percentage			P-value
		Men	Women	Total	
High Blood Pressure	<30 year	50	94.1	70.3	0.003
	30-50 year	91.4	91.9	91.7	0.043
	> 50 year	91.7	84.2	88.4	0.049
Low Fruit Consumption	<30 year	90	58.8	75.7	0.028
	30-50 year	74.3	81.1	77.8	0.048
	> 50 year	83.3	73.7	79.1	0.040
Physical Inactivity	<30 year	60	52.9	56.8	0.266
	30-50 year	60	32.4	48.5	0.019
	> 50 year	58.3	36.8	48.8	0.137
Smoking	<30 year	35	11.8	24.3	0.101
	30-50 year	60	32.4	45.8	0.017
	> 50 year	62.5	42.1	53.5	0.033
Illiteracy	<30 year	30	14.6	21.6	0.179
	30-50 year	34.3	64.9	50	0.009
	> 50 year	50	89.5	67.4	0.006
Stress	<30 year	60	58.8	59.5	0.942
	30-50 year	68.6	64.9	66.7	0.039
	> 50 year	50	63.2	55.8	0.018

## Discussion

Table 1 show that there were 52% male and 48% female in house in the population of study. Majority of patients fall in age group 30-50 year, while 53.3% patients belong to urban areas and 46.7% patients belong to rural areas. So for the education level is concerned, 48% patients were illiterate while 52% patients were literate having different educational levels. The married respondents were 80.9% while 19.1% patients were unmarried. It is also evident from the table that only 29.6% patients were employed whereas the remaining 70.4% patients were unemployed. Most of the respondents had income less than 20,000.

Analysis of causes of cardiovascular disease on age groups in table 2 has shown that in age group <30 year, 50% male and 94.1% female patients are suffering from high blood pressure. While in age group 30-50 year, 91.4% male and 91.9% female patients

are having high blood pressure. In age group >50 year, 91.7% male and 84.2% female patients also have high blood pressure. While in age group <30 year, 58.8% female and 90% male patients take fruits off and on. 81.1% female and 74.3% male patients who Those do not take fruits regularly falling in age group 30-50 year the percentage of male and female patients is 81.1% female and 74.3% respectively. In the category of the low consumption of fruits in age group >50 year, the percentage of female and male patients is 79.1%. The percentage of physically inactive male and female patients falling in age group <30 year is 60 and 52.9 respectively. Whereas 60% male and 32.4% female patients physically inactive fall in age group 30-50 year. In age group >50 year, 53.5% of both male and female patients have smoking habits. Half percentage of both male and female patients falling in age group 30-50 year is illiterate. The male and female patients falling in age

group < 30 year suffering from stress are 60% and 58.8% respectively. Both male and female patients with 68.6% and 64.9% respectively lying in age group 30-50 year are suffering from stress. Whereas there are 50% male and 63.2% female patients they suffer from stress in age 50 year or above.

For all the age groups high blood pressure and low fruits consumption has a significant effect on cardiovascular disease. Physical inactivity affects cardiovascular disease in age group 30-50 year. Whereas for the other two age groups <30 year and >50 year, physical inactivity do not affect cardiovascular disease. For age groups 30-50 year and >50 year smoking, illiteracy and stress are the major causes of cardiovascular diseases.

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## Conclusions

From the above results it is concluded that major causes of cardiovascular diseases are high blood pressure and low fruits consumption for all age groups whereas stress, illiteracy, smoking and physical inactivity affects cardiovascular diseases. As age increases the risk of cardiovascular diseases also increases. Patients falling in 30-50 year age group are mostly affected by all the social factors. Getting physically active may reduce the risk of cardiovascular disease. Smoking directly affects the heart as it increases the heart beat rate. Stress is also concluded as the major cause contributing to cardiovascular disease.

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