



# STRATEGIC ANALYSIS OF LINKS BETWEEN INCOME AND CARDIOVASCULAR MORTALITY IN BIST DOAB PART OF PUNJAB, INDIA

**Anandvir Kaur Saini**

Department of Geography, Panjab University, Chandigarh, India.

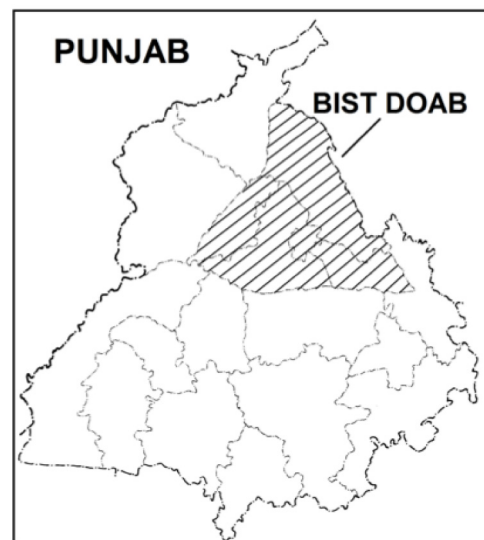
## ABSTRACT

The aim of this paper is to examine the role of income in determining cardiovascular mortality in rural areas of Bist Doab region of Punjab state. For collecting data, a sample size of 1.5% was selected out of the total 6796 cardiovascular deaths recorded in 2009. A detailed interview schedule was prepared and administered on the family members of the selected 100 deceased persons. The questions pertained to the socio-economic and behavioral aspects of the persons who died from cardiovascular diseases. It has been found that the income has a close association with the cardiovascular health of population under study. The people falling in lower income categories have recorded maximum cardiovascular mortality. Thus it can be concluded that the socio-economic attributes of a region have a direct bearing on the cardiovascular well-being of the concerned population.

**Key Words:** Cardiovascular mortality, Income, Poverty, Socio-economic status, Bist Doab

## INTRODUCTION

Out of all diseases, cardiovascular diseases are world's largest killers that claim 17.1 million lives every year, representing 29% of all global deaths. There are wide differences in cardiovascular mortality in different parts of India and the highest proportion of cardiovascular deaths out of total deaths (49.2%) is found in the economically prosperous state of Punjab. The aim of this paper is to examine the role of income in determining cardiovascular mortality in rural areas of Bist Doab region of Punjab state (Map 1). The Bist Doab region shares 17.6% (8844 sq. km.) of state's total geographical area and is one of the three traditional cultural regions of the state, the other two being Majha and Malwa. According to 2001 census, the population of Bist Doab is 4,770,477 which accounts for 19.64% of Punjab's total population. Out of this 68% people live in rural areas. The literacy rate of the region is nearly 70% and 67.5% of the population is engaged in non-agricultural activities. Administratively, the region consists of four districts namely, Jalandhar, Hoshiarpur, Kapurthala and S.B.S. Nagar (Nawanshahar), which encompass 30 Community Development Blocks. There are 3,528 villages, 35 towns and 2 cities (Jalandhar and Hoshiarpur) in the region. The present study pertains to the rural areas of the region.



**Map 1:** Punjab: Location of Bist Dobab

## DATA AND METHODS

This paper has been based on primary data. For collecting data, a sample size of 1.5% was selected out of the total 6796 cardiovascular deaths recorded in 2009. A detailed

Corresponding Author:

Anandvir Kaur Saini, Department of Geography, Panjab University, Chandigarh, India.

Email: anandvir.saini@gmail.com

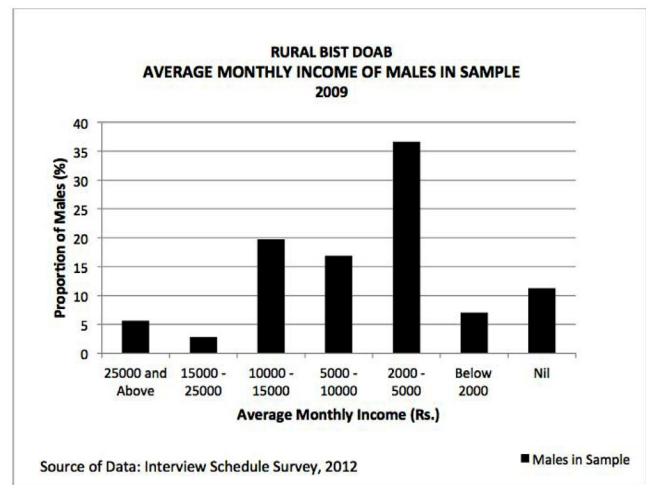
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interview schedule was prepared and administered on the family members of the selected 100 deceased persons. The questions pertained to the socio-economic and behavioral aspects of the persons who died from cardiovascular diseases. The sampling design was divided in two stages. At the first stage around 20 villages were sampled from all the major hot spot clusters of villages recording high cardiovascular mortality using proportionate sampling. Bigger the hot spot, higher was the number of villages in sample. At the second stage snow-ball sampling was used to choose five deaths from each selected village with the help of the concerned village officials. The collected data was processed and analyzed in MS Excel software appropriate statistical diagrams and tables were used for data representation.

## RESULTS AND DISCUSSION

The average monthly income profile of the sampled persons who died from cardiovascular diseases (Table 1) shows that as many as 34% of the deceased had no income from any economic source. Another 33% of the sampled population earned less than Rs. 5000 per month. The income category of Rs. 5000 to Rs. 10,000 encompassed 13% of the deceased and 14% belonged to the next higher category of Rs. 10,000 to Rs. 15,000. Only 2% of the sampled persons earned an average income between Rs. 15,000 and Rs. 25,000 per month and just 4% had an earning above Rs. 25,000. These figures clearly show that a major chunk of the sampled populations who died from cardiovascular diseases had very low levels of income and the incidence of cardiovascular deaths decreased with an increase in income, pointing towards the comparatively healthier lifestyles of the people having higher economic status.

The general pattern observed in the foregoing paragraph holds true for both males and females in the sample. Nearly 90% of the sampled females earned no income at all. On the other hand around 11% of the males fell in this category and nearly 44% of them had a monthly income of less than Rs. 5000 (Fig 1). Around 17% of the males belonged to the income group of Rs. 5000 to Rs. 10,000 per month and 20% were in the group of Rs. 10,000 to Rs. 15,000. The highest income categories of Rs. 15,000 to Rs. 25,000 and above Rs. 25,000 contained only 3% and 5% of the sampled males respectively. Thus most of the men belonged to the lower income groups and the men with higher income had lower incidence of cardiovascular mortality.



**Figure 1:** Rural Bist Doab: Average Monthly Income of Males in Sample.

As far as the contribution of the deceased persons to the family income is concerned, it has been observed that more than 35% of the sampled males contributed be-

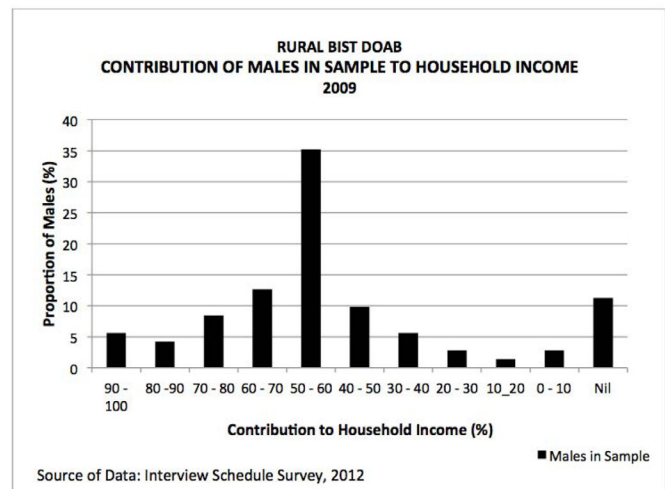
**Table 1: Rural Bist Doab: Average Monthly Income of Deceased in Sample, 2009.**

Average Monthly Income of Deceased (Rs.)	No. of Males	Proportion out of Total Males (%)	No. of Females	Proportion out of Total Females (%)	Total	Proportion out of Total Deceased (%)
25000 and Above	4	5.63	0	0	4	4
15000 - 25000	2	2.82	0	0	2	2
10000 - 15000	14	19.72	0	0	14	14
5000 - 10000	12	16.90	1	3.45	13	13
2000 - 5000	26	36.62	1	3.45	27	27
Below 2000	5	7.04	1	3.45	6	6
Nil	8	11.27	26	89.65	34	34
<b>Total</b>	<b>71</b>	<b>100</b>	<b>29</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Interview Schedule Survey, 2012

tween 50 to 60% of the total monthly household income (Table 2). Around 13% men earned between 60 to 70% and the income of approximately 18% of the sampled men composed more than 70% share of the total household income earned in a month (Fig 2).

On the other hand, only 22% of the males had income contribution of less than 50% and just 11% of the men made no financial contribution of the monthly household income. Since most of the females were non-working, therefore a major chunk of them (nearly 90%) had no contribution to the household income before their death. Thus it can be inferred that 2/3<sup>rd</sup> of the males in the sample were responsible for earning more than half of their respective household incomes before their death. It points towards the economic burden incurred by deaths caused due to cardiovascular diseases on the family of the deceased.



**Figure 2:** Rural Bist Doab: Contribution of males in sample to Household Income.

**Table 2: Rural Bist Doab: Contribution of Deceased to Household Income, 2009.**

Contribution of Deceased to Household Income (%)	No. of Males	Proportion out of Total Males (%)	No. of Females	Proportion out of Total Females (%)	Total	Proportion out of Total Deceased (%)
90 - 100	4	5.63	0	0	4	4
80 - 90	3	4.23	0	0	3	3
70 - 80	6	8.45	0	0	6	6
60 - 70	9	12.68	0	0	9	9
50 - 60	25	35.21	1	3.45	26	26
40 - 50	7	9.86	0	0	7	7
30 - 40	4	5.63	0	0	4	4
20 - 30	2	2.82	0	0	2	2
10 - 20	1	1.41	1	3.45	2	2
0 - 10	2	2.82	1	3.45	3	3
No contribution	8	11.27	26	89.65	34	34
<b>Total</b>	<b>71</b>	<b>100</b>	<b>29</b>	<b>100</b>	<b>100</b>	<b>100</b>

**Source:** Interview Schedule Survey, 2012

The association between income and cardiovascular diseases has been explored by various scholars. Stelmach et al. (2004) found that younger males with a lower level of education and income exhibited highest prevalence of major cardiovascular risk factors like hypertension and smoking. Moreover, the incidence of cardiovascular deaths in patients with no job was associated with the highest risk of living in poverty (Kwada, 2012). Sallis et al. (2009) confirmed that the adults living in high-income neighbourhood had a lower BMI and higher physical quality of life. Mobley et al. (2006) found that the financially disadvantaged women were associated with higher risk of cardiovascular diseases. Thus the existing literature also reflects a clear link between income and incidence of cardiovascular diseases.

### CONCLUSION

In this paper it has been found that income has a close association with the cardiovascular health of population under study. The people falling in lower income categories have recorded maximum cardiovascular mortality. The deaths of working males from cardiovascular mortality posed serious economic burden on the families of the deceased. Thus it can be concluded that the socio-economic attributes of a region have a direct bearing on the cardiovascular well-being of the concerned population.

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### REFERENCES

- Kawada, T. Income poverty and cardiovascular disease. *International journal of cardiology* 2012; 156(1):97-98.
- Mobley, L. R., Root, E. D., Finkelstein, E. A., Khavjou, O., Farris, R. P., & Will, J. C. Environment, obesity, and cardiovascular disease risk in low-income women. *American journal of preventive medicine* 2006; 30(4):327-332.
- Sallis, J. F., Saelens, B. E., Frank, L. D., Conway, T. L., Slymen, D. J., Cain, K. L., ... & Kerr, J. Neighborhood built environment and income: examining multiple health outcomes. *Social science & medicine* 2009; 68(7):1285-1293.
- Stelmach, W., Kaczmarczyk-Chałas, K., Bielecki, W., Stelmach, I., & Drygas, W. How income and education contribute to risk factors for cardiovascular disease in the elderly in a former Communist country. *Public health* 2004; 118(6):439-449.