

**ASSOCIATION BETWEEN EDUCATIONAL LEVEL AND  
CARDIOVASCULAR MORTALITY IN BIST DOAB  
REGION (PUNJAB, INDIA)**

**Anandvir KaurSaini\***

**Abstract**

Higher level of education has been proposed to be the strongest and most consistent predictor of good health. The aim of this chapter is to examine the association between education level and cardiovascular mortality in Bist Doab region of Punjab. For collecting primary 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. The results show that education has direct bearing on the economic and behavioural characteristics of the persons dying from cardiovascular ailments in rural Bist Doab. Only 58% of the deceased persons in the sample had received some sort of formal education, while the rest of them (42%) had not attended school at all. The prevalence of cardiovascular risk factors is lower among the male persons with higher educational status and the risk increases with decrease in education. The educational status of women who died from cardiovascular diseases is very low than the men in the selected sample.

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\* Ph.D. Research Scholar, Department of Geography, Panjab University, Chandigarh

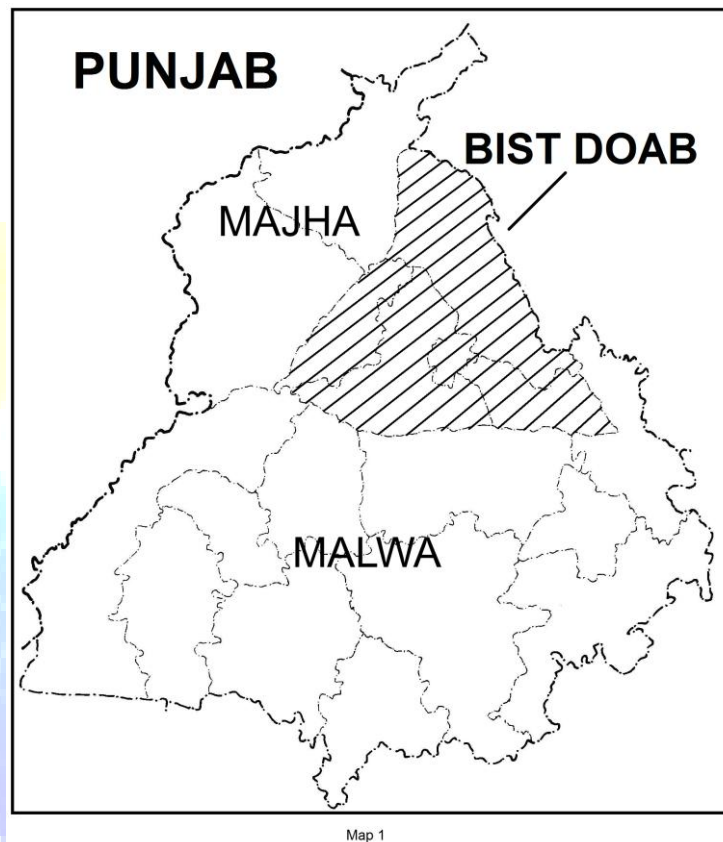
## Introduction

The socio-economic environment of a region has an important role to play in determining health status of the population. The socio-economic status is generally defined as the social standing or class of an individual. Social and economic factors such as literacy, education, occupation and income have been suggested to be significant contributors to mortality from cardiovascular diseases. In India cardiovascular ailments are the biggest cause of mortality and nearly half of the deaths in the state of Punjab occur from this group of diseases. The aim of this chapter is to examine the association between education level and cardiovascular mortality in Bist Doab region of Punjab.

In the concerned existing literature, higher level of education has been proposed to be the strongest and most consistent predictor of good health (Stelmach et al., 2004). Several scholars have confirmed the positive effect of higher educational attainment on cardiovascular health of people. Kim et al. (2005) found that lower educational status as an indicator of socio-economic status, is associated with greater cardiovascular mortality risk. Gupta et al. (1994) reported greater prevalence of multiple cardiovascular risk factors (smoking, sedentary lifestyle and hypertension) among illiterates in rural population of India. Uneducated and less educated people in rural areas have a higher prevalence of cardiovascular diseases and the associated risk factors like smoking and hypertension. In yet another study (Gupta et al., 2010), the authors found that low and middle educational status urban subjects in India have greater cardiovascular risk. Panagiotakos et al. (2004) found an inverse association between education status and several clinical and biochemical markers as well related with cardiovascular diseases. However, these associations were again explained by the adoption of an unhealthy lifestyle, including increased smoking habits, physical inactivity and non-compliance to medication by individuals of low education.

The study area chosen for the present research work is Bist Doab region of Punjab, which is one of the three cultural regions of Punjab, the other two being Majha and Malwa (Map 1). In 2001, the population of Bist Doab was 4,770,477 which accounted for 19.64% of Punjab's total population. Out of this 71.58% people lived in rural areas. The literacy rate of the region was 77.33% and 67.5% of the population is engaged in non-agricultural activities. The region

consists of four districts namely, Jalandhar, Hoshiarpur, Kapurthala and S.B.S. Nagar, which encompass 30 community development blocks.



### Data and Methods

The present paper has been based on both primary as well secondary data. For collecting primary 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. 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 (Saini, 2013). Bigger the hot spot, higher was the number of villages in sample. At the second stage snowball 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 and appropriate bar diagram was used for data representation.

## Results and Discussion

The primary data collected through field work reveals the educational status of the sampled population that died from cardiovascular diseases. The data shows that only 58% of the deceased persons had received some sort of formal education, while the rest of them (42%) had not attended school at all (Table 1). Around 18% of the sampled persons had completed 5<sup>th</sup> grade as their highest level of education, 8% had studied only upto 8<sup>th</sup> grade and 20% had passed 10<sup>th</sup> grade as their highest level of educational accomplishment. Only 4% of the sample had done formal study or training course equivalent to 12<sup>th</sup> grade, 2% had obtained Bachelors degree and a meagre 1% had completed Masters degree as their highest level of education. These figures reveal that the persons dying from cardiovascular diseases had low level of education in general.

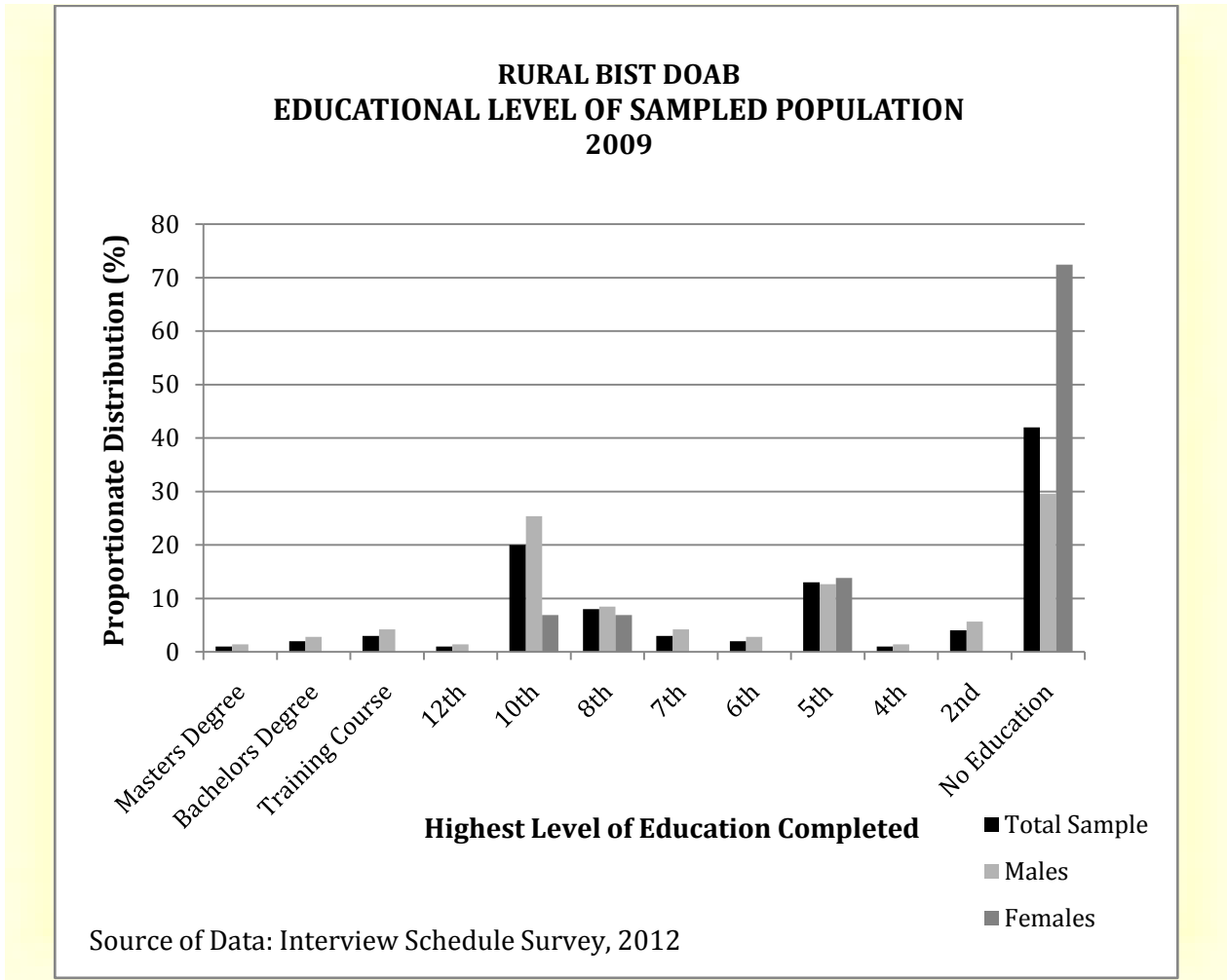
**Table 1**  
**Rural Bist Doab: Educational Level of the Sampled Population**

Highest Level of Education Completed	No. of Males	Proportion out of Total Males (%)	No. of Females	Proportion out of Total Females (%)	Total	Proportion out of Total Deceased (%)
Masters Degree	1	1.41	0	0.00	1	1.00
Bachelors Degree	2	2.82	0	0.00	2	2.00
Training Course	3	4.23	0	0.00	3	3.00
12 <sup>th</sup>	1	1.41	0	0.00	1	1.00
10 <sup>th</sup>	18	25.35	2	6.90	20	20.00
8 <sup>th</sup>	6	8.45	2	6.90	8	8.00
7 <sup>th</sup>	3	4.23	0	0.00	3	3.00
6 <sup>th</sup>	2	2.82	0	0.00	2	2.00
5 <sup>th</sup>	9	12.68	4	13.79	13	13.00
4 <sup>th</sup>	1	1.41	0	0.00	1	1.00
2 <sup>nd</sup>	4	5.63	0	0.00	4	4.00
No Education	21	29.58	21	72.41	42	42.00
<b>Total</b>	<b>71</b>	<b>100.00</b>	<b>29</b>	<b>100.00</b>	<b>100</b>	<b>100.00</b>

Source: Interview Schedule Survey, 2012

Further, there are striking male-female differentials in the educational status of the sampled population (Fig 1). More than 72% of the females had received no formal education at all as against only 30% males in this category. Just 14% of the females had completed primary school (5<sup>th</sup> grade) as their highest educational qualification, whereas 20% of males in the sample fell in this segment. However 7% of males dropped out before completing primary school,

whereas the proportion of female drop-outs at this stage was nil. Only 8% of males and 7% of females were able to complete 8 years of formal education (middle school). The proportion of males who had attended high school and received 10 years of formal education was as high as 25%, while only 7% of the sampled females could reach this mark. Not even a single female in the sampled population had studied above 10<sup>th</sup> grade. However 10% of the males had received education above high school.



**Fig 1-** Rural Bist Doab: Educational Level of the Sampled Population

It can be inferred from the above figures that the educational status of women who died from cardiovascular diseases is very low than the men in the selected sample. It appears that the low level of educational qualification is a major hindrance to the spread of health literacy about cardiovascular diseases among the rural people of Bist Doab. The level of educational attainment

has a direct bearing on the economic status of the rural population too. The coefficient of correlation between the years of formal education and per capita household income of the deceased persons in the sample is 0.43. It proves that the level of education of the sampled population directly affects their financial well-being, which in turn implies that the major chunk of people who are less educated or not educated at all, are on the lower side of economic status too.

The statistics given in Table 2 show the economic and behavioural characteristics of the sampled males according to their educational status, which are discussed below:

- (i.) **Males having High Educational Status (Above 10<sup>th</sup> grade):** Approximately 10% of the sampled male population possessed educational qualification higher than 10<sup>th</sup> grade. The males belonging to this category had highest mean per capita household income of Rs. 6095.24 per month. They were mostly employed in professional jobs in tertiary sector. The average BMI of this group was 23.89 kg/m<sup>2</sup>. Around 43% of the deceased persons in this category consumed alcohol and the average daily intake of alcohol was 175.71 ml/day. The proportion of males who smoked some form of tobacco product (like bidis and cigarettes) was 14.29% and the average number of bidis and cigarettes smoked were 40 per day. The mean age at the time of death for males in this category was 62.29 years. A comparison of these figures with lower categories of educational status clearly shows that the persons possessing higher level of education also enjoyed higher economic status, reflected in their high level of income. Moreover the men belonging to this category appeared to be more health conscious than the less educated ones. This is evident from the comparatively lower prevalence of drinking and smoking in this highest segment. The mean BMI of this group also fell in the category of normal weight. All these factors show that the higher socio-economic status of people had encouraged them to adopt healthier lifestyles, which is ultimately reflected in their higher mean age at death.
- (ii.) **Males having Medium Educational Status (6<sup>th</sup> to 10<sup>th</sup> grade):** Around 41% of males in the sample fall in this middle category of medium educational status. Their mean per head household income was Rs. 3160.07 per month, which is half than that of the above

category. The mean BMI of this group was 24.09 kg/m<sup>2</sup>, which is slightly higher than the more educated males. However, as many as 66% of the persons in this category consumed alcohol and their mean quantity of alcohol consumption was also higher in this category (221.65 ml/day) than the males with higher educational status (for whom the figure was 175.71 ml/day). The proportion of smokers was also higher in this category (17.24%), although the mean number of cigarettes and bidis smoked per day was lesser among the smokers (29.2 per day) than the previous category (40 per day). The overall average socio-economic conditions of this segment of sample appear to exert a negative influence on the cardiovascular well-being of the people. This is evident from the comparatively much younger mean age at death of this category (52.52), which is as much as 10 years lower than the males with higher socio-economic status.

**Table 2**  
**Rural Bist Doab: Educational Level and Other Characteristics of**  
**Sampled Population, 2009**

Highest Level of Education	Proportion of Males (%)	Per Capita Household Income (Rs./month)	BMI (kg/m <sup>2</sup> )	Alcohol Consumers (%)	Mean Alcohol Intake (ml/day, drinkers only)	Smokers (%)	Average No. of Cigarettes & Bidis (No./day, smokers only)	Mean age at Death
Above 10 <sup>th</sup>	9.9	6095.24	23.89	42.8	175.71	14.29	40.00	62.29
6 <sup>th</sup> to 10 <sup>th</sup>	40.9	3160.07	24.09	65.52	221.65	17.24	29.20	52.52
5 <sup>th</sup> & Below	19.7	1763.69	22.72	78.57	242.99	35.71	23.46	51.00
No schooling	29.6	1664.50	22.95	71.43	211.62	19.05	12.75	70.86

**Source:** Interview Schedule Survey, 2012

- (iii.) **Males having Low Educational Status (5<sup>th</sup> grade and below):** Approximately 1/5<sup>th</sup> of the males in the sample fall in this category of low educational status. These persons had studied only upto 5<sup>th</sup> grade or even less than that. The per head household income was lowest for this category (Rs. 1763.69 per month) than other two higher categories of educated males. This figure was around three times lower than the males with high educational status. The mean BMI of this group was lowest at 22.72 kg/m<sup>2</sup>. This low value could be the result of physically demanding low-profile manual jobs in which these men were engaged due to their low educational qualifications. The prevalence of alcohol consumption was highest in this category. As many as 79% persons in this segment

consumed liquor and the mean quantity of intake among consumers was highest (242.99 ml/day) among all the categories. Smoking was also more popular in this segment, with around 35.71% males using cigarettes and bidis. However, the average number of cigarettes and bidis consumed by smokers was lower (23.46 per day) than those in higher educational category. The mean age at death was lowest for this group, which stood at 51 years.

- (iv.) **Males having No Education:** About 30% males fall in the category of uneducated persons. This category had lowest per head household income (Rs. 1664.50 per month). The mean BMI was also low at 22.95 kg/m<sup>2</sup>. The consumption of alcohol was high at 71.43%, with mean intake among consumers at 211.62 ml/day. The proportion of smokers was comparatively lower (19.05%) than the preceding category and the average number of cigarettes and bidis consumed among smokers was lowest at 12.75 per day. However, the mean age at death was highest for this category (70.86 years). This could be due to the greater number of old men falling in the category of uneducated persons.

Thus, it is evident from the above figures that level of education has direct influence on the economic and behavioural characteristics of the deceased persons. The prevalence of cardiovascular risk factors is lower among the male persons with higher educational status and the risk increases with decrease in education. The people with higher level of education have reduced risk of dying from a cardiovascular ailment and they have a comparatively longer life-span than the less educated ones.

Chang et al. (2002) suggested that the observed differences in cardiovascular risk associated with different levels of education may result from differential exposure to established risk factors within societies. Identification of the reasons for differences in personal behaviour associated with educational strata and on what can be done to encourage good healthy behaviours in the high risk groups appears to be an important part of addressing differences in cardiovascular disease rates associated with educational strata. Toepperwein et al. (2008) further argues that since cardiovascular diseases begin early in life, a clear strong case for early education focused on primary prevention of these diseases exists. There is a need to improve health literacy of the children through school-based programs. Scientists are not traditionally involved in



disseminating health knowledge into the public education system. Similarly, public school teachers typically do not have access to biomedical research that may increase the health literacy of the students. One way suggested to bridge this gap between researchers and school teachers is form science-education partnerships, whereby teams of scientists and teachers must translate biomedical research into plain language appropriate for school children.

Nutrition education on healthy diets and emphasis on increased physical activity can help people to reduce their risks for developing cardiovascular diseases through lifestyle changes (Qian et al., 2007). In primary prevention it is important to focus attention on people with low education, since they are rather unprotected against the prevalence of several cardiovascular risk factors.

### **Conclusion**

In the end, it can be concluded that education has direct bearing on the economic and behavioural characteristics of the persons dying from cardiovascular ailments in rural Bist Doab. Only 58% of the deceased persons in the sample had received some sort of formal education, while the rest of them (42%) had not attended school at all. The prevalence of cardiovascular risk factors is lower among the male persons with higher educational status and the risk increases with decrease in education. The educational status of women who died from cardiovascular diseases is very low than the men in the selected sample. It appears that the low level of educational qualification is a major hindrance to the spread of health literacy about cardiovascular diseases among the rural people of Bist Doab. Thus it is recommended that government should strengthen its education policies, particularly in rural areas, in order to improve the socio-economic status of the masses and spread awareness about the risk factors of cardiovascular diseases.

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