

Prevalence of Coronary Artery Disease & Socio Demographic Determinants in Low Socioeconomic Status Population

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ABSTRACT

Objectives:

- * To determine the prevalence of coronary artery disease in low socioeconomic population.
- * To determine socio-demographic determinants of coronary artery disease in low socioeconomic population

Methods: This cross-sectional study was conducted in the department of cardiology Peoples Medical College Hospital (PMCH) Nawabshah, from April 2016 to September 2016. A total 1200 patient of coronary artery disease were enrolled. After information was gathered, from 298 cases with low socioeconomic status were questioned about age, gender, education.

Result: Study result shows that the prevalence of coronary artery disease in low socioeconomic status population is 24.8%. The main variable found in the study is age and higher prevalence 52% found in the age group of 46-65 years group. This study result reveals that males (58%) and (42%) female, illiterate (68%) and 53% were those whose earning was between 10000-20000 showed prevalent groups.

Conclusion: The study has highlighted high prevalence of coronary artery disease in low socioeconomic status population at Shaheed Benazir Abad. There is need to improve awareness regarding coronary artery disease and its socio demographic determinants with emphasis on life style modification and socioeconomic stability with development.

Keyword: Prevalence, Coronary artery disease, Low socioeconomic status.

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INTRODUCTION:

Coronary artery disease has been defined as impairment of heart function due to inadequate blood flow to the heart compared to its needs caused by obstructive changes in the coronary circulation to the heart.¹

Coronary artery disease (CAD) is the number one cause of mortality and most widely distributed non-communicable disease (NCD) in the world, presents in different forms such as chronic stable angina, unstable angina, myocardial infarction (MI). Coronary artery disease is one

of the most common form of cardiovascular group of diseases while cardiovascular disease (CVD) is the main cause of mortality in the world; resulting 17.3 million deaths every year And 2/3rd of this mortality burden is shared by developing countries among which coronary artery disease contributes 7.3 million deaths annually. This mortality burden is expected to increase about 23.6 million by the year 2030 and 80% of this mortality will occur in developing countries of the world.^{2,3}

The Statistical analysis from World Health Organization (WHO) determined that heart diseases itself contributes 31% mortality burden when compared to other diseases, while age wise the risk percentage measured in developing heart disease between 20 to 39 years was 11.8%, 40 to 59 years 38.55%, 60 to 79 years remained 73.3% and the average risk percentage risk for heart disease was 81.75% in the age above 80 years.⁴

The Coronary artery disease prevalence around the world is increasing since mid of last

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century because of rising frequency of its traditional and socio demographic risk factors commonly observed in developing countries with higher frequency in comparison to developed countries where prevalence of CAD declined because of economic stability, improved and advanced medical treatment and surgical intervention.⁵ Multiple recognized risk factors like increasing age, male gender, hypertension, diabetes mellitus, smoking, obesity, high blood cholesterol, family history of coronary artery disease, more dietary salt, industrial Tran's fats, lower intake of fruits, vegetables and mental stress are commonly associated to coronary artery disease.⁶

Coronary artery disease also increased in the Asia-Pacific region, because several states in the region are reaching economic development with shift to a Western lifestyle pattern, living more sedentary life and consuming foods with higher energy and fats leading to increase of coronary artery disease.⁷ Coronary artery disease prevalence in Indian subcontinent remained twofold higher in urban areas compared to rural areas (1012% vs. 45%). Generally, after age adjustment, the education level appeared to be one of important indicator from other socioeconomic risk factors like low income, occupation and marital status and all have inverse relation to coronary artery disease.⁸

Pakistan being developing country have almost one third of its population living under poverty line.⁹ In Pakistan, coronary artery disease accounts for 15% of over-all mortality annually. Alarming, Pakistan is graded 16th country on the basis of coronary artery disease related death rate¹⁰ while prevalence of coronary artery disease in Pakistan 20% and 29.8%.^{11,12}

Coronary artery disease in urban areas of Pakistan is increasing because of urbanization and sedentary life style pattern with stress. More people living in poverty or having low socioeconomic states (LSES) are unable to meet the basic needs of living because of larger socioeconomic differences in income, education, occupational status, unhealthy lifestyle behavior promoting increases mental stress leading to CAD risk.^{13,14}

It is then important to enhance the awareness on gender aspects of coronary artery disease among healthcare workers and the general public. In comparison other coronary

artery disease risk factors, psychosocial variables are more difficult to explain and to measure quantitatively, for example stress at work and at home, adverse life events, poorly working social networks, low socioeconomic status, and depression are some of main factors in developing coronary heart disease.¹⁵

The present study is intended through cross-sectional assessment to estimate coronary artery disease prevalence and to find out socio-demographic determinants in lower socioeconomic status population having coronary artery disease.

METHODS:

This study was carried out in cardiology department of People Medical College Hospital Nawabshah of Shaheed Benazirabad division from April 2016 to September 2016. It was a cross sectional study with enrolment of 1200 patients and out of total enrollment the information was gathered from 298 diagnosed coronary artery disease patients belonging to low socioeconomic class. Adult male & female of 25 years and above of coronary artery disease evident on electrocardiogram, echocardiography or angiograph, diagnosed by cardiologist were included while all patients with congenital heart disease, Pericarditis, Pericardial Effusion. Valvular heart disease and Endocarditis were excluded. The data was collected on pre-designed questionnaire and was analyzed using the Statistical Packages for social science (SPSS-20.0). All categorical data was analyzed for percentages, frequencies and quantitative data was analyzed for mean and standard deviation. Results are presented by tables, charts and graphs.

RESULTS:

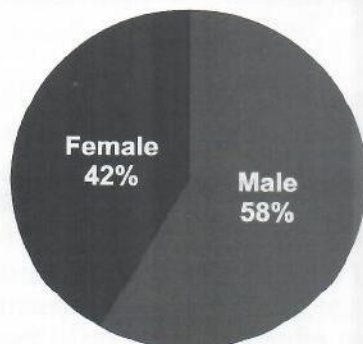
In this study 364 patients of CAD visited in outpatient department and 836 patients were admitted in cardiology ward, from which 298 patients of low socioeconomic status were interviewed and prevalence in low socioeconomic status study group calculated around 24.8%.

Table-I: Age Distribution & Frequency

Age in years	Frequency	Percent
24-45	81	27
46-65	155	52
66 and onward	62	21
Total	298	100

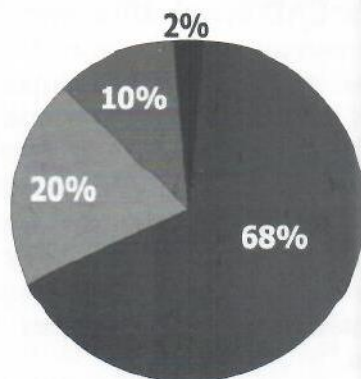
The study results shows higher prevalence 52% (155) in patients of age group of 46-65 years, 27% (81) are of 25-45 years and 21% (62) having age more than 66 years. The mean age of all patients is 55 years with $SD \pm 14.13$.

Graph No I: Sex distribution



In this study males are (58%) and 42% female answered the questionnaire.

Graph No II: Level of education



This study include 68% illiterate, 20% are only primary level, 10% secondary level and only 2% are highly literate.

Graph No III: Professional Status

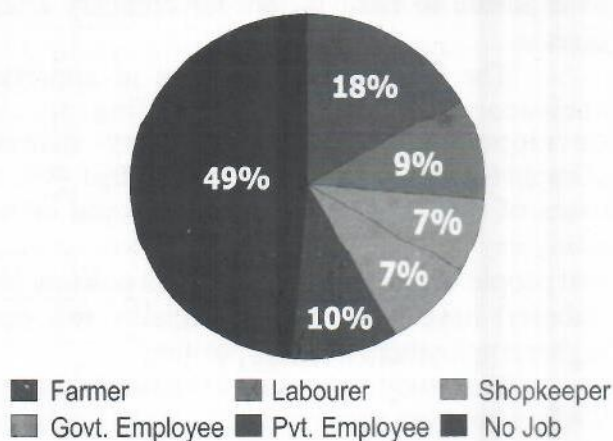
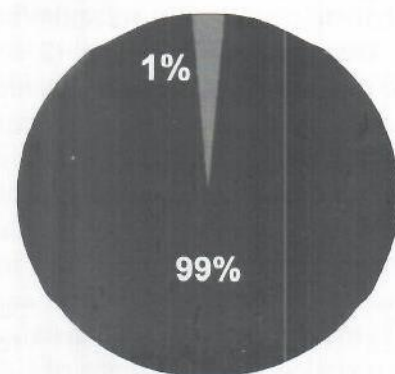


Table-II: Income per month in low socioeconomic group

Age in years	Frequency	Percent
Less than 10000	79	26
10000-20000	157	53
21000-29900	62	21
Total	298	100

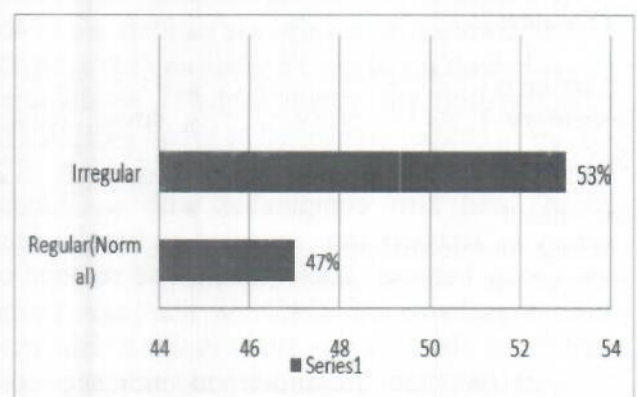
53 % are earning in between 10000-20000, 26% have less than 10000 rupees monthly income and 21% of having 21000-299000 per month income. The mean was 14348 Rs and with $SD \pm 7261$.

Graph No IV: Financial Stress



The current study sample having CAD has higher financial stress (99%) and only 1% answered not having any financial stress.

Graph No V: Sleeping Habits



53% Patients have irregular sleeping pattern and 47% CAD patients sleep normally.

DISCUSSION:

This study conducted on 298 diagnosed patient of low socioeconomic status from both urban and rural areas of Shaheed Benazirabad division, seeking medical advice in cardiology department (in patient/outpatient) of Peoples Medical College Hospital Nawabshah.

The study results show the rising prevalence with socio demographic determinants in diagnosed coronary artery disease patients of low socioeconomic status. Important determinants age, gender, low income, low education, low paid job or unemployment, sleeping irregularities and most important is mental stress which lead to coronary artery disease were included in study.

The current study reveals that prevalence of coronary artery disease in low socioeconomic patients belonging to both rural and urban areas of Shaheed Benazirabad is 24.8% (298) and this increased prevalence is because of sedentary life, low economic position in the community, poor health facilities at their native areas, illiteracy and lack of awareness about coronary artery disease. The literature search showed that, CAD prevalence varies region wise in general population of Asia and Middle East and it ranges from 3.7% to 22%¹¹ other than Pakistan while from Pakistan revealed the prevalence of CAD around 20%-29.8 % in the general population of Pakistan. This rise of CAD prevalence in Pakistan is related mainly to sedentary life, shifting towards urban areas, smoking, consumption of fats and unhealthy diet.^{11, 12, 16}

Age is most important independent factor in relation to CAD. The current study determines 52% of coronary artery disease patients are of 46-65 years with mean age 55 years and SD \pm 14.13, reflecting high risk group (Table#1), results were similar in studies conducted to urban localities of Karachi showing 35-64 years as high risk group^{12, 16} and also comparable with a Chinese survey in Tianjin China revealed high risk in the age group between 2569 years⁸. The reasons of high prevalence of CAD in the age group mentioned above in this study is due to life style changes (sedentary life) and dependency, as people in middle and higher age group live mainly dependent life. The demographic statistics shows that Pakistan's dependency ratio is around 65.7 %¹⁷

Favoring this study. Adding further illiteracy and lack of awareness about CAD are also contributory factors in developing coronary artery disease. The second age group more prevalent for CAD (27%) is between 25-45 years and the risk for CAD in this younger group is increasing because sedentary life style, house hold responsibilities to earn more by any means, further increases mental stress and CAD risk.

Considering higher age limit in the perspective of CAD, it is found in literature search that being higher the age, more will be the chance of developing CAD, but the present study results reveals 21% prevalence in the age group 66 years & higher (Table-1). The reasons of low prevalence in higher age group may be that people from rural areas, most often less likely bring their elders for treatment to the hospital or visit not more than one to two time for follow up treatment, also people in older age group do not afford the cost of treatment & give up medicine; so remain unnoticed.

The CAD mostly affect male than female gender as present study includes 58 % males as higher risk group than 42% female (Graph-2) because of increased frequency of risk factors like stressful life style more common in males while as female in our social setup and custom smokeless and mostly act as house wife (dependent). In similar comparison to present study the gender difference for CAD in southern Punjab showed 53.2% male & 46.85% females in general population.¹⁸

This study found 68% illiteracy among CAD patients enrolled in the study (Graph-3). Illiteracy may lead unawareness about CAD, in turn people remain ignorant about basic needs of life because of lack of information which may lead to exposure to risks factors for coronary artery disease.

The financial stress is one of important socioeconomic risk factor leading to the development of coronary artery disease (Graph#6). This current study shows that 49% of cases of CAD were either unemployed or not doing any sort of job. (Graph#4). It was revealed that people with a lower employment position like (laborer) have twice higher mortality risk than higher employment working position¹⁹.

This study shows that 53% patients having CAD who were earning 10000-20000 only per

Month (Table#5). The literature shows that per-capita income in Pakistan is 1428\$ (2016) which is on 147 ranking in the world even lower than India (1709.39 USD-2016) and Bangladesh (1466USD-2016).

The study results illustrate 53% patients have irregular sleeping habits and 47% CAD patients are sleeping normally (Graph-7). Studies reveal that irregular pattern of sleep or sleeping less than 6 hours develops twice higher risk for coronary artery disease²⁰.

CONCLUSION:

The coronary artery disease appears to be one of the most important health issues of the world spreading as epidemic across the globe. This study reveals more prevalence of CAD in low socioeconomic population in Shaheed Benazir-abad division. Socio-demographic factors including income, education, occupation and living standard play very significant role in developing coronary artery disease. This study found LSES have low earning per month, shows more prevalence. The unemployed, illiterate person, low paid job, low standard of life have mental stress because of financial position and all the factors mentioned play significant role in increasing the burden of CAD in LSES population.

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