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Research article

# A PROFILE OF CARDIOVASCULAR DISEASES IN A TEACHING HOSPITAL IN KERALA

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## ABSTRACT

**Background and objective:** cardiovascular diseases are increased in each year in India. Cardiovascular diseases more are occurred in the economically productive age group. This will affect their family and also the nation. Aim of the study is to find out the different types of heart diseases and the case fatality rate of cardiovascular disease from 1st April 2005 to 31st March 2010 in a teaching hospital. **Materials and Methods:** The retrospective study conducted on hospitalized patients admitted with cardiovascular diseases from 1st April 2005 to 31st March 2010. Medical records department follows the guide lines of International Classification of Diseases (ICD)-10 coding for entering the data, from that data were collected. **Results:** Of 10427 cases, 6324 (60.65%) were males and 4103(39.35%) females. Cardiovascular disease was more among males than females. It was more occurred in ≥60 years. Most of them were occurred due to cerebrovascular disease (33.7%). Ischemic heart disease was more among males than females. Total number of deaths due to cardiovascular disease was 797. Of them 525(65.87%) were males and 272(34.13%) females. Case fatality due to cardiovascular diseases was 7.64%. Case fatality among males (8.3%) were more than females (6.63%) (P=0.00). **Conclusion:** This study mentioned that most of the cases and deaths were occurred in 60 and above years. Second leading age group is 25-59 years. Accident in economically productive people was high. It will affect their family and also the nation. Hence it can be reduced by conducting health awareness programme.

**Key words:** Case fatality, cardiovascular diseases, ischemic heart disease.

## INTRODUCTION

Heart and blood vessel disease is called cardiovascular disease (CVD) or heart disease. It is the number one killer of women in worldwide, accounting for one-third of all deaths. Atherosclerosis is a term which describes any hardening of large arteries; it happened due to plaque. It causes the arteries narrow and this leads to the flow of blood through the arteries is difficult. Blood clots in anywhere in the narrow arteries then blood cannot flow it will lead to heart attack or stroke. An ischemic stroke occurred due to obstruction within the blood vessel supplying blood to brain. When the blood supply of that part of the brain is cutoff; it will cause the brain cell die. It will affect the smooth functioning of the body. A hemorrhagic stroke mostly happened due to the unrestrained hypertension; it leads to explosion of blood vessel in the brain. Heart failure, it occurs when the heart cannot supply sufficient blood for the functioning of the body. If it is not treated in time it becomes most terrible.

A cross sectional study reported that the prevalence of coronary heart disease (CHD) in rural and urban areas of India was 3-4% and 8-10% respectively.[1] The main objective of the study is to find out the different types of heart diseases and the case fatality rate of

cardiovascular disease during the period from 1st April 2005 to 31st March 2010 in a teaching hospital.

## METHOD

**Study design:** The study was a retrospective study conducted on patients admitted with cardiovascular diseases in M.O.S.C Medical College, Kolenchery, Ernakulam, Kerala, India from 1st April 2005 to 31st March 2010.

**Selection of Description of patients:**

The study population consists of all patients admitted in the hospital due to cardiovascular diseases during the period from 1st April 2005 to 31st March 2010. The data were collected with the permission of Institutional Ethical Committee from the Medical Records department, follows the guide lines of International Classification of Diseases (ICD)-10 coding. [2]

**Statistics:** Z test is applied for the comparison between proportions. Z test is used for comparing the sex wise difference between proportions of age, type of diseases. Critical ratio (Z) = sex wise difference between proportions age / standard error of difference between sex wise proportions. Formula for calculating Standard error of difference between sex wise proportions is $\sqrt{(p_1q_1 / n_1) + (p_2q_2 / n_2)}$. P value is taken from the unit normal distribution table with the corresponding value of Z (critical ratio), its cut off value is 0.05. If it is less than or equal to 0.05 then there is significant difference between proportions otherwise there is no significant difference between proportions. Analyzing the data by using Microsoft excel.

## RESULT

**Table 1: Demographic distribution**

| Age (Yr) | Male (%) | Female (%) | Total (%) | P Value |
|---|---|---|---|---|
| 0-4 | 143(2.3) | 97 (2.4) | 240(2.3) | 0.74 |
| 5-24 | 352 (5.6) | 242(5.9) | 594(5.7) | 0.52 |
| 25-49 | 1096 (17.3) | 534(13) | 1630(15.6) | 0.00 |
| 50-59 | 1309 (20.7) | 610 (14.9) | 1919(18.4) | 0.00 |
| 60 & above | 3424(54.1) | 2620(63.9) | 6044(58.0) | 0.00 |
| Total | 6324 | 4103 | 10427 | |

Out of 10427 cardiovascular cases 6324 (60.65%) were males and 4103(39.35%) were females.

Cardiovascular disease was more in the age group of 60 and above years. In this age group, it was more in females than males. But it was more among males than females in the age group of 25-59, Shown in Table No.1.

**Table 2: Sex wise cardiovascular diseases of patients admitted with cardiovascular diseases**

| Diagnosis | M | F | Total | P Value |
|---|---|---|---|---|
| Acute Rheumatic fever(I00) | 18 | 14 | 32 | 1 |
| | 0.3% | 0.3% | 0.3% | |
| Chronic rheumatic heart diseases(I05-I09) | 65 | 99 | 164 | 0.00 |
| | 1.0% | 2.4% | 1.6% | |
| Hypertension(I10-I15) | 1072 | 936 | 2008 | 0.00 |
| | 17.0% | 22.8% | 19.3% | |
| Ischemic heart disease(I20-I25) | 2070 | 862 | 2932 | 0.00 |
| | 32.7% | 21.0% | 28.1% | |
| Pulmonary heart disease and diseases of pulmonary circulation(I26-I28) | 63 | 40 | 103 | 1 |
| | 1.0% | 1.0% | 1.0% | |
| Other forms of heart disease(I30-I52) | 840 | 691 | 1531 | 0.00 |
| | 13.3% | 16.8% | 14.7% | |
| Cerebrovascular diseases (I60-I69) | 2093 | 1417 | 3510 | 0.14 |
| | 33.1% | 34.5% | 33.7% | |
| Diseases of arteries, arterioles and capilliaries(I70-I79) | 103 | 44 | 147 | 0.63 |
| | 1.6% | 1.1% | 1.4% | |
| Total | 6324 | 4103 | 10427 | |
| | 100.0% | 100.0% | 100% | |

Of the cardiovascular cases, most of them due to cerebrovascular disease and it occurred in both sex was same. Chronic rheumatic heart disease, hypertension and other forms of heart disease were more among females than males. But ischemic heart disease was more among males than females, shown in Table No.2.

Of the ischemic heart disease, most of them were due to Chronic ischemic heart disease 1859(63.4%), 273 (9.3%) were due to Acute Myocardial infarction, 410(14.0%) were due to subsequent myocardial infarction and 390(13.3%) were due to other reasons. Of the cerebrovascular diseases, most of them were due to cerebral infarction1394(39.72%), 924(26.32%) were due to stroke, not specified as hemorrhage or infarction, 414(11.79%)were due to intracerebral hemorrhage, 193(5.5%) were due to subarachnoid hemorrhage and 585(16.67%) were due other reasons.

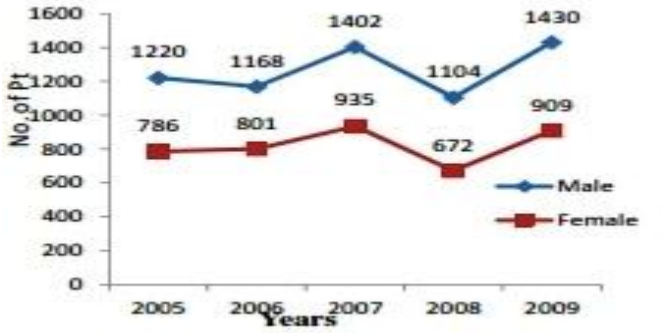


**Fig 1: Sex wise Trend of Cardiovascular cases reported in a Teaching Hospital from 1st April 2005 to 31st March 2010**

Highest number of cases reported during the year 1st April 2009 to 31st March 2010. Cardiovascular disease was more among males than females in each year, shown in Figure 1.

Of the 10427 cases, 797 deaths were reported during the period from 1st April 2005 to 31st March 2010.Case fatality due to cardiovascular diseases was 7.64%. Of 797 deaths, 525(65.87%) were males and 272(34.13%) were females. Case fatality among male was 8.30% and among females 6.63%. Case fatality among males was more than females. (P=0.00)

**Table 3: Age wise case fatality of patients admitted with cardiovascular diseases from 1st April 2005 to 31st March 2010**

| Age | No. of deaths | Total cases | P value |
|---|---|---|---|
| 0-4 | 14 (5.8) | 240 | 0.52 |
| 5-24 | 23(3.9) | 594 | 0.4 |
| 25-49 | 78(4.8) | 1630 | Reference group |
| 50-59 | 133(6.9) | 1919 | 0.00 |
| 60 & above | 549(9.1) | 6044 | 0.00 |
| Total | 797(7.6) | 10427 | |

Within the column 2, represent the number of deaths and case fatality of each age group. Case fatality was more in the age group of 50 and above years compared to the age group 25-49 years. Case fatality was more in the age group of 60 and above years compared to the age group 50-59 years (P=0.00), shown in Table No. 3. Deaths due to cardiovascular diseases were more during 1st April 2007 to 31st March 2008. Male deaths were more than females in each year, shown in Fig 2.

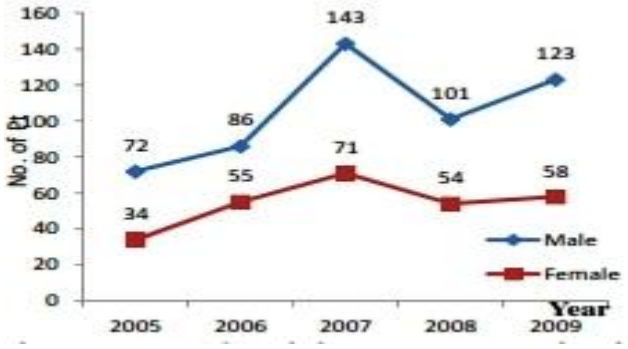


**Fig 2: Sex wise trend of deaths due to cardiovascular diseases from 1st April 2005 to 31st March 2010**

## DISCUSSION

In the developing countries most of the people have stimulated from their agrarian diets with physical activities to fast food with inactive habits. These types of changes lead to increase the possibility of developing cardiovascular diseases among people. It is a burden of disease over several decades in the developed countries. It is the leading cause of death in India.[2]

Several studies in India mentioned that prevalence of coronary heart disease in urban and rural areas was between 7-13 % and 2-7 % respectively.[3,4] Dinesh C Sharma reported that the proportion of deaths due to heart disease is more in south India ,it was 25% and least in central region, it was 12 %.[5] A study reported that 25% of total mortality was due to cardiovascular diseases.[6] Another study reported that cardiovascular disease in South India showed 10-15% increase occurred among young women.[7] A study mentioned that 50% of all deaths occurred in Kerala was due to cardiovascular diseases.[(8)] In the present study cardiovascular diseases was more among males (60.65%) than females (39.35%). It was more occurred in the age group of 60 and above years. It was more among females than males in the age group of 60 and above years. But it was more among males than females in the age group of 25-59.

Hypertension was an important factor in the beginning of both cerebrovascular and ischemic heart disease. Thus 22 per cent of the cases of ischemic heart disease and 31.7 per cent of cases of myocardial infarction were hypertensive; 42.0 per cent of the cases of cerebral thrombosis were also hypertensive. The overall ratio of ischemic heart disease to cerebrovascular disease was 1.4:1; this ratio was same

for both sexes. A study mentioned that 8.72 million individuals go through hypertension and 3.48 million individuals go through diabetics in Kerala..[8] Hypertension was the most powerful cause of vascular diseases among females than males. In the present study 19.3.3% hypertensive cases were reported. Hypertension was more among females than males.

A study reported that the prevalence of Coronary Artery Diseases in the urban and rural areas of India was 12% and 7.5% respectively. [1] Raghavan's study [9] mentioned that out of 4,335 autopsies, 13.1 per cent was due to cardiovascular diseases. Of the cardiovascular disease, 9.8% was due coronary artery disease. According to Wig's study, the incidence of coronary artery disease was more in Amritsar and Calcutta.[10, 11] Padmavati's study report mentioned that 0.2 % of the medical admissions above 40 years of age was due to coronary artery diseases.[12] In the present study mentioned that 1.4% of cardiovascular diseases were due to diseases of arteries, arterioles and capilliaries.

According to Schroeder [13] the incidence of cerebrovascular and ischemic heart disease is different in different parts of the world. The prevalence of coronary artery disease in India is found to be less than other countries. Cerebrovascular disease was more occurred than ischemic heart disease in males. Among females cerebrovascular disease was occurred twice as that of ischemic heart disease. Chambers's study pointed out that in India the consumption of less amount vitamin B-6 and folate content food and the increase fatty food consumption without physical exercise may increase the risk of ischemic heart disease.[14] A study mentioned that mortality due ischemic heart disease among Indians living abroad was 40% more than that of Europeans. [15] According to Dhar's study, 0.3% of all admission and 0.7% of all medical admission was due to ischemic heart disease. Myocardial infarction was 6.5 times more in males than females.[16] In the present study ischemic heart disease was 28.1% of all cases. Ischemic heart disease was more among males than females. In the present study, of the ischemic heart disease, most of them were occurred due to Chronic ischemic heart disease 1859(63.4%), 273 (9.3%) were due to Acute Myocardial infarction, 410(14.0%) were due to subsequent myocardial infarction and 390(13.3%) were due to other reasons.

Result of Dhar's study mentioned that 0.44% of all admission and 1.1% of medical admission was due to cerebrovascular diseases. The incidence of crebrovascular disease is 0.44 per cent and 1.1 per cent of total and medical admissions, respectively.[16] Muir's study[17] reported that incidence of cerebrovascular diseases was high in Indians and less among Chinese in Singapore. Another study also found the same result. [18] In the present study 33.7% of cardiovascular diseases was due to cerebrovascular disease. Of the cardiovascular cases most of the patients were admitted with Cerebrovascular disease. Proportion of Cerebrovascular disease in both sexes was same. In the present study, of the cerebrovascular cases, most of them were due to cerebral infarction 1394 (39.72%), 924(26.32%) were due to stroke, not specified as hemorrhage or infarction, 414(11.79%) were due to intracerebral hemorrhage, 193(5.5%) were due to subarachnoid hemorrhage and 585(16.67%) were due other reasons.

Report of a study mentioned that about 25% of mortality occurred in the age group of 25- 69 years was due to heart diseases. Mortality occurred due to heart disease in the urban and rural areas was 32.8% and 22.9% respectively [5] In the present study case fatality was more in the age group of 60 and above years (9.1%) compared to the age group 50-59 years(6.9%).Case fatality occurred in the age group of 25-59 years was 5.9%.

Padmavati's study mentioned that 7.7% of total medical causes of death and 3% of total deaths was due to heart disease.[12] A study report mentioned that in the western countries 50% of total deaths were due to heart disease.[19,20] Another study mentioned that 19% of total deaths was due to heart disease and also mentioned that it is a leading cause of in both sexes.[5] In the present study case fatality due to cardiovascular diseases was 7.64%. Case fatality among males (8.3%) was more than females (6.63%).

## CONCLUSION

Cardiovascular disease was more among males than females. It was a no.1 killer disease. It will affect the smooth running of the affected people's family. "Prevention is better than cure". For reducing this with the help of implementing simple but effective prevention strategies, strengthening the health system and conduct quality improvement programmes. And also identify the reason for the onset of cardiovascular

disease in the younger age group and conduct awareness programmes.

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