

Situational Analysis of Cardio Vascular Diseases in India

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Abstract: Cardio vascular diseases have become the leading cause of mortality in India. A methodical review is made to collect the prevalence of cardio vascular diseases in India and analyze the leading factors to plan corrective measures. Cardiac problems - strokes, Rheumatic Heart diseases and cardio vascular diseases were more in Andhra Pradesh than Telangana while ischemic heart diseases are same in both the Telugu States. Among Males CVDs above 40 percent were recorded in three states - Andaman, Goa and Kerala while in females six states have recorded above 40 percent - Chandigarh, Haryana, Punjab, Goa, and Kerala, Jammu and Kashmir. Considering all states in India, 25 states have incidence among females more than males, in the remaining 10 states percent of males more than in females. Prevalence of CVDs is more among Senior citizens (<60 years) ranged between 16 percent (Nagaland) to 60.3 (Goa) percent while in the 45-59 year group, it ranged between 13.7 (Chhattisgarh) to 34.4 percent (Haryana). Conclusion is that the incidence among females being more than males needs further research.

Keywords: Coronary heart diseases, cardio vascular diseases, Incidence, senior citizens

1. Introduction

Coronary heart diseases (CHD) are the leading cause of mortality all over the world; its incidence is rising in developing countries especially in India. Cardiovascular diseases contributed to 28.1 percent of the total deaths in India (1). The Registrar General of India reported that the CHD led to 17 percent total deaths in 2001-2003 increased to 23 percent of total 32 percent of adult deaths in 2010 - 2013. Studies in India reported an increasing CHD prevalence over the last 60 years from 1 percent to 9 percent to 10 percent in urban population, and less than 1 percent to 4 percent to 6 percent in rural population. Adults born after 1970 are seen to be more vulnerable (2, 3, 4 5,6, 7, 8). The objective of the study is to categorize and analyze the reported data for India so as to plan further research in this area.

2. Methodology

A systematic review was done to assess the prevalence of CVD in India. Data base searches of Pub Med and other areas was done and made meta-analysis to determine the causative factors and its distribution as it is not available (2, 3, 6). The objective of the present study is to analyze, classify and categorize the occurrence of CVDs in various states, region wise, age and sex wise, so that further research can be under taken.

3. Results and Discussion

Cardiac Problems recorded in the two Telugu states were first analyzed. The data indicated that heart related diseases are almost same in both the states with Andhra Pradesh having slightly higher incidence than Telangana. With respect to incidence of ischemic heart disease it is same in both states. (Table 1)

Table 1: Cardio Vascular Diseases in Telugu States

Particulars	Andhra Pradesh	Telangana
Cases per one lakh population		
Strokes	550-624	475-549
Rheumatic Heart diseases	>625	550-624
Cardiovascular diseases	4500-4999	4000-4499
Ischemic heart disease	1750-1999	1750-1999

Source: Global burden of disease study 1990-2016

States with more than 40 percent incidence in Males are in 3 states - Goa, Kerala, Andaman, in females incidence is in six states - Goa, Chandigarh, Haryana, Punjab, Kerala, Jammu Kashmir. (Table 2)

Table 2: States with Incidence above 40 Percent

	States	Percent
Males		
1	Andaman's	41.2
2	Goa	43.5
3	Kerala	45.1
Females		
1	Chandigarh	46.6
2	Haryana	42.1
3	Punjab	42.1
4	Goa	41.3
5	Kerala	42.2
6	Jammu & Kashmir	45.9

On the other hand less than twenty percent incidence in Males in six States - Chhattisgarh, Nagaland, Madhya Pradesh, Meghalaya, Uttar Pradesh and Dadar N Haveli. Among females three states have less than 20 percent - Chhattisgarh, Nagaland and Dadar N Haveli. (Table 3).

Table 3: States with below 20 Percent Incidence

	States	Percent
Males		
1	Chhattisgarh	14.6
2	Nagaland	16.7
3	Madhya Pradesh	16.7
4	Meghalaya	16.4
5	Uttar Pradesh	17.7
6	Dadar N Haveli	19.6

	Females	
1	Chhattisgarh	17.9
2	Nagaland	15.0
3	Dadar N Haveli	18.0

States with the incidence of CVDs being more in Males than in Females showed that North and Central Region are not in this category (Table 4) Lowest percentage among males ranged between 16.7 (Nagaland) and Kerala with 45.1. Percent incidence among females ranged between 15.0 and 42.2

Table 4: Percent Incidence of CVD More in Males than Females

States	Males	Females	Region
Kerala	45.1	42.2	South
Tamil Nadu	28.7	28.2	South
Jharkhand	22.0	21.8	East
Dadur N Haveli	19.4	18.0	West
Goa	43.5	41.3	West
Arunachal Pradesh	25.6	16.4	North East
Manipur	28.1	26.5	NE
Mizoram	25.7	24.3	NE
Nagaland	16.7	15.0	NE
Andaman	41.2	38.5	UT

Twenty five states in India showed percent incidence of CVD cases more among females than males, ranging from 17.9 (Chhattisgarh) to 45.9 percent in Jammu and Kashmir. Percent incidence among males ranged between 14.6 Chhattisgarh to 38.6 Lakshadweep (Table 5).

Prevalence of CVDs in the age groups of 45-59 (Group I) and above 60 years (Group II) are given in Table 6. In all states prevalence is less in Group I (45-59 years) than in Group II (> 60 years). North-Utarkhand has lowest percent in Group I (19.1%) and Group II (22.4%). Highest percent of 34.4 and 55.3 was in Chandigarh for Group I and II respectively. In South, lowest percent in Group I is Karnataka (21 %), highest is Kerala (28.5%). In Group II Karnataka recorded lowest (35 %), highest is Kerala (57.1%).

In the East, lowest percent in Group I is Odisha (13.8%), in Group II Jharkhand (27.7%), highest percent in Group I and II is West Bengal percentages being 25.4 and 42.2 respectively. In West, lowest percent of 15.3 and 24.4 is reported in Dadar N Haveli for Group I and Group II. Highest percent in Group I is Daman Diu (28.3), in Group II is Goa (60.3%) In the Central region, Chhattisgarh recorded lower(13.7%) than Madhya Pradesh (18.3%).In Group II Chhattisgarh has lowest (20.9 %) and highest Madhya Pradesh (23.1%). In North Eastern region, lowest percent in Group I and Group II is Nagaland (15.5% and 16.0% respectively).Highest percent in Group I and II is Assam (24.6% and 41.8%). In Union Territory - Meghalaya had 20 percent Andaman 32.3 and Lakshadweep 31.8 percent in Group I and in Group II, the percentages are 36.7, 50.5 and 47.4 respectively.

4. Conclusion

Incidence and prevalence of CVDs in different states of India indicates the need to study the various ecological

variables influencing CVDs in all age groups so that ameliorative steps can be planned.

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Table 5: Percent Incidence of CVD more in Females

S.No	States	Females	Males	Region
1	Delhi (NCT)	35.5	35.3	North
2	Punjab	42.1	35.9	North
3	Rajasthan	31.3	25.2	North
4	Haryana	42.1	31.7	North
5	Chandigarh	46.6	37.8	North
6	Himachal Pradesh	36.6	32.4	North
7	Uttar Pradesh	23.2	17.7	North
8	Uttara khand	28.6	27.0	North
9	Telangana	33.5	30.2	South
10	Andhra Pradesh	35.4	35.1	South
11	Puducherry	35.2	31.9	South
12	Karnataka	27.8	24.5	South
13	Odisha	21.1	19.0	East
14	West Bengal	34.0	30.7	East
15	Bihar	25.0	23.5	East
16	Maharashtra	30.4	29.9	West
17	Gujarat	29.1	22.7	West
18	Daman, Diu	35.7	34.8	West
19	Assam	35.5	28.3	North East
20	Meghalaya	33.2	16.4	North East
21	Tripura	31.5	28.8	North East
22	Madhya Pradesh	24.0	16.7	Central
23	Chhattisgarh	17.9	14.6	Central
24	Jammu & Kashmir	45.9	37.5	UT
25	Lakshadweep	39.6	38.6	UT

Table 6: Percent Prevalence CVDS in Adults

S.No	States	Group I 45-59 years	Group II >60years	Region
1	Chandigarh	34.4	55.3	North
2	Delhi (NCT)	28.1	47.4	North
3	Haryana	34.2	41.9	North
4	Himachal Pradesh	27.9	42.7	North
5	Punjab	32.6	46.8	North

6	Rajasthan	24.7	32.7	North
7	Uttarkhand	19.1	22.4	North
8	Utter Pradesh	25.8	30.2	North
9	Andhra Pradesh	27.2	46.5	South
10	Karnataka	21.0	35.0	South
11	Kerala	28.5	57.1	South
12	Puducherry	23.9	45.2	South
13	Tamil Nadu	21.2	36.8	South
14	Telangana	22.6	44.1	South
15	Bihar	20.0	28.1	East
16	Jharkhand	16.5	27.7	East
17	Odisha	13.8	28.2	East
18	West Bengal	25.4	42.2	East
19	Dadar N Haveli	15.3	24.4	West
20	Daman Diu	28.3	43.3	West
21	Goa	27.0	60.3	West
22	Gujarat	20.1	34.2	West
23	Maharashtra	19.7	41.1	West
24	Chhattisgarh	13.7	20.9	Central
25	Madhya Pradesh	18.3	23.1	Central
26	Arunachal Pradesh	18.7	26.6	North East
27	Assam	24.6	41.8	North East
28	Manipur	22.4	32.7	North East
29	Mizoram	18.1	33.2	North East
30	Nagaland	15.5	16.0	North East
31	Tripura	23.9	40.4	North East
32	Meghalaya	20.0	36.7	UT
33	Andaman	32.3	50.5	UT
34	Lakshadweep	31.8	47.4	UT