

# Coronary Heart Disease in Rural Population of Himachal - A Population Based Study

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## Abstract

**Background:** Cardiovascular disease has emerged as a major health burden worldwide. There is no study in Himachal about the prevalence of coronary heart disease (CHD), hence the purpose of the study.

**Material and Methods:** Population based study was done in three different villages of different districts of Himachal Pradesh. The people were well notified about the survey in advance. We tried to cover all persons above the age of 30 years. We could cover around 70% of population. Total 812 persons were examined. History regarding presence and nature of chest pain was taken. Detailed physical examination was done. The detailed history about risk factors was taken. ECG of all patients was taken. Patients known to have suffered myocardial infarction, having typical angina on exertion or having undergone coronary angioplasty or coronary artery bypass surgery were labeled to have CHD.

**Results:** Eight hundred twelve patients were examined. Mean age was  $47.44 \pm 12.2$  yrs. Three hundred ninety-nine were males and 413 were females. Thirty three patients were found to have coronary heart disease, giving the prevalence of 4.06%. Twenty six of 399 males had CHD (6.9%) and 26 of 413 females had CHD (1.69%). Seventeen of these CHD patients were hypertensive, two were diabetic and 10 patients had family history of CHD.

**Conclusion:** The prevalence of CHD was low in rural population of Himachal Pradesh, being around 4%, more in males than in females.

## Introduction

Coronary heart disease (CHD) contributed to 15.9 million deaths in 1996, of which 5.9 millions were from developing countries.<sup>1</sup> A rise in prevalence of CHD in early half of 20<sup>th</sup> century and a subsequent decline in latter half have been well documented in industrialized countries. However the scenario is reversed in developing countries, especially in India, with a steady rise in prevalence of CHD.<sup>2</sup> With explosive rise in incidence of CHD, it is now estimated that this will be leading cause of mortality and morbidity, even in developing countries by the year 2015.<sup>3</sup> While there have been many studies about prevalence of CHD from different parts of country, there is no study from Himachal Pradesh, and we still do not know the prevalence of CHD in the community. Hence the aim of the study was to find out the prevalence of CHD in rural population of Himachal Pradesh.

## Material and Methods

This was a community based study carried out in three villages of Himachal Pradesh- Kunihar in Solan District, Sahu in remote Chamba District and Haripur Dhar in Sirmaur District. The institutional clearance was taken. A team of six doctors from Indira Gandhi Medical College, Shimla, included two consultants in Cardiology, two senior residents of Cardiology and two junior residents of Internal Medicine. Team also included three ECG technicians. The study was done on three consecutive holidays in Kunihar, one day in Sahu and one day in Haripur Dhar. The

study was done on holidays, so that maximum people could be contacted. The people were informed well in advance through local leaders and through advertisement in posters about the study. All persons above the age of 30 yrs were part of the study. The detailed history about chest pain, old myocardial infarction (MI), history of having undergone coronary angioplasty (PTCA)/bypass surgery (CABG) was taken. The questions to determine CHD included the presence of chest pain, site, its duration, its relation to exertion, and how quickly it is relieved on rest. Any history of claudication or history suggestive of previous cerebrovascular accidents was also noted. History of smoking, diabetes and hypertension and family history of CHD was also taken. A current smoker was defined as someone who currently smokes tobacco products; the definition includes daily and non-daily smokers.

All persons were subjected to general physical examination and cardiovascular examination. BP was recorded in all patients, and if found high, the reading was repeated after 10 minutes. Patients found to have systolic BP  $\geq 140$  mmHg, and/or diastolic BP  $\geq 90$  mm Hg were labeled to have hypertension. Presence of clinical cardiomegaly or heart murmurs was noted. ECG was done in all cases, irrespective of history. ECG was read by cardiologists for presence of pathological q waves, any ST segment depression or any T wave inversion. Patients having typical angina were advised treadmill test (TMT). Patient with positive TMT were subjected to coronary angiography, provided they gave consent for the same and were then advised PTCA or CABG if indicated. Patients having ECG changes suggestive of old myocardial infarction but having no history suggestive of coronary event were subjected to echocardiography to see the regional wall motion abnormality.

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Table 1 : Patient characteristics and pattern of coronary heart disease

Persons screened	812
Mean age (yrs)	47.47±12.20
Males	399
Females	413
CHD (number)	33 (4.06%)
Mean age (yrs)	54.83±10.4
Males	26 (6.5%)
Mean age (yrs)	53.96±11.05
Females	07 (1.69%)
Mean age (yrs)	58.42±42
Hypertensive	17
Diabetic	02
Old MI	14
Family history of CHD	10
Coronary angiography done	13
Single vessel disease	06
Two vessel disease	04
Three vessel disease	03
Post PTCA	05
Post CABG	04

#### Diagnostic criteria for CHD:

1. Patients known to have suffered MI (Hospital records checked)
2. Patients having undergone PTCA or CABG.
3. Patients having typical angina with positive TMT.
4. Coronary angiography showing  $\geq 50\%$  stenosis in any of the coronary vessels.
5. Patients without history of coronary event but having ECG changes of old myocardial infarction and showing regional wall motion abnormality on echocardiography.

## Results

Total 812 persons were examined, 599 in Kuniyar, 157 in Sahu and 56 in Haripur Dhar. This covered around 70% population of these villages. Three hundred ninety-nine were males and 413 were females. Mean age was 47.44±12.20 yrs. Thirty-three persons were suffering from CHD (4.06%), out of which 26 were males and seven were females. Table 1 shows the characteristics of the patients who were found to have CHD. Thus out of 399 males, 26 had CHD (6.5%) and out of 413 females only seven had CHD (1.69%). Fourteen out of 33 patients of CHD had old MI, 13 had undergone coronary angiography, five had undergone PTCA and four had undergone CABG.

Maximum number of patients of CHD were in the age group of 50-59 years, both males and females (Table 2). None of the female patients with CHD was below 50 years of age (Table 2). Seventeen patients were known to have CHD and 16 patients were newly diagnosed

## Discussion

CHD has assumed epidemic proportion in India. Disease is more prevalent in urban population and there is clear gradient in prevalence from rural to semi-urban and urban population. The disease occurs at a younger age in Indian subjects compared to Western nations.

Table 2 : Age group of CHD patients in males and females

	Male (Total 26)	Female (Total 7)
30-39 years	02 (7.69%)	0 (0%)
40-49 years	06 (23.07%)	0 (0%)
50-59 years	09 (34.61%)	04 (57.14%)
60-69 years	06 (23.07%)	02 (28.57%)
$\geq 70$ years	03 (11.53%)	01 (14.28%)

A study from Rajasthan reported that CHD contributes to 8% of patients attending a specialist physician's clinic.<sup>4</sup>

In urban population, the prevalence increased from 1.05% (Agra, 1962),<sup>5</sup> and 1.04% (Delhi, 1962)<sup>6</sup> to 6.6% (Chandigarh, 1968).<sup>7</sup> In recent years, high prevalence of CHD has been reported from Delhi (9.67%),<sup>8</sup> Jaipur (7.8%, 1995),<sup>9</sup> and Chennai (9.0%, 2001).<sup>10</sup> In rural areas, the prevalence increased from 2.06% (Haryana, 1974)<sup>11</sup> and 1.69% (Vidharbha, 1988)<sup>12</sup> to 2.71% (Haryana, 1989),<sup>13</sup> 3.09% (Punjab, 1994),<sup>14</sup> 3.46% (Rajasthan, 1994).<sup>15</sup>

There is only one study in Himachal about the prevalence of CHD in which only multipurpose workers were involved. It found the prevalence of CHD to be 5%-6.4% in males and 4% in females.

The present study is the first proper study, conducted by trained doctors under the supervision of cardiologists. The prevalence was found quite low in females, whereas in males it was almost as in other parts of the country. The striking feature of the study is that more than 50% patients of CHD found in the community were already known to have CHD and around 40% of the patients of CHD underwent coronary angiography either prior to study or after the advice. This is due the fact that village Kuniyar, which was the largest village of study, is situated around 40 Km from the state medical college with facilities of coronary angiography, PTCA and CABG and these people can reach the medical college within one and half hour and in case of emergency, they directly come to the medical college.

## References

1. Murray CJL, Lopez AD. Alternative projection of mortality and morbidity by cause 1990-2020; Globan Burden of Disease Study. *Lancet* 1997;349:1498-1504.
2. Reddy KS, Yusuf S. Emerging epidemic of cardiovascular disease in developing countries. *Circulation* 1988;97:596-601.
3. Reddy KS. Cardiovascular disease in India. *World Health Stat Q* 1993;46:101-107.
4. Gupta R, Gupta LP. An eight year review of medical diseases in rural Rajasthan. *J Assoc Physician Ind* 1993;41:711-712.
5. Mathur KS. Environmental factors in coronary heart disease prevalence in India. *Indian Heart J* 1996;48:241-245.
6. Padmavati S. Epidemiology of cardiovascular disease in India II. Ischaemic heart disease. *Circulation* 1962;25:711-717.
7. Sarvathan SG, Berry SN. Prevalence of coronary artery disease in northern India. *Circulation* 1968;37:939-952.
8. Chadha SL, Radhakrishnan S, Ramachandran K, Kaul U, Gopinath N. Epidemiological study of coronary heart disease in an urban population of Delhi. *Indian J Med Res* 1990;92:424-430.
9. Gupta R, Prakash H, Majumdar S, Sharma SC, Gupta VP. Prevalence of coronary heart disease and coronary risk factors in an urban population of Rajasthan. *Indian Heart J* 1995;47:331-338.

10. Mohan U, Deepa R, Rani SS, Premalatha G. Prevalence of coronary artery disease and its relation to lipids in a selected population in South India. *JACC* 2001;38:682-687.
11. Dewan BD, Malhotra KC, Gupta SP. Epidemiological study of coronary heart disease in rural community of Haryana. *Indian Heart J* 1974;26:68-78.
12. Jajoo UN, Kalaintri SP, Gupta OP, Jain AP, Gupta K. The prevalence of coronary heart disease in the rural population from central India. *J Assoc Phys Ind* 1988;36:689-693.
13. Chadha SL, Gopinath N, Radhakrishan S, Ramachandran K, Kaul U, Tandon R. Prevalence of coronary heart disease and its risk factors in a rural community in Haryana. *Indian J Comm Med* 1989;14:141-147.
14. Wander GS, Khurana SB, Gulati R et al. Epidemiology of coronary heart disease in a rural Punjab population; Prevalence and connection with various risk factors. *Indian Heart J* 1994;46:319-323.
15. Gupta R, Gupta VP, Ahluwalia NS. Educational status, coronary heart disease and risk factor prevalence in a rural population of India. *BMJ* 1994;309:1332-1336.

## ANNOUNCEMENT



### API Orations / Lectureships

Recommendations are invited from members for the following assignments so as to reach, Hon. General Secretary – API, Dr. Sandhya Kamath by 31<sup>st</sup> July 2009.

#### Category No. (i) (General Medicine)

- Netaji Oration – 2010 & 2011
- Dr. G.S. Sainani Oration – 2010 & 2011
- Dr. P.J Mehta Oration.- 2010 & 2011

The selected candidate has to deliver his/her lecture at the Annual Conference of API 2010 / 2011.

The above orators will get the Award money of Rs. 10,000/- and TA for Orator by economy class airfare from API, complimentary registration and complimentary one night stay in the designated Conference hotel by the APICON Organising Committee.

#### Category No. (ii)

- Searle Oration - 2010 & 2011 (General Medicine)
- Prof. Rathinavelu Subramania Endowment Oration -2010 & 2011 (General Medicine)
- Ranbaxy Oration -2010 & 2011 (for Infectious diseases)

The selected candidate has to deliver his/her lecture at the Annual Conference of API 2010 / 2011.

The above orators will get the award money of Rs. 5,000/- and TA by economy class airfare from API, complimentary Registration and complimentary stay in the designated conference hotel by the APICON Organizing Committee.

For the above all lectureships and awards are open to eminent persons from the discipline of medicine and allied subjects such as Pharmacology, Biochemistry, Pathology and Physiology.

The selected candidate has to deliver his/her lecture at the Institution of his/her choice in the year 2009. The candidate has to get a notification in writing from the Institution that he/she has delivered the lecture.

Persons are selected from the recommendations received from members of the API. The orator in the discipline of medicine should preferably be a member of API. The recommendations for the above assignments must be accompanied with reasons for recommending a particular person showing the value of his/her research and eight copies each of three of his/her best publications. All relevant papers in connection with the suggestions, such as the bio-data, list of publications etc., should be submitted in 8 sets by the proposer. The recipient of the above oration should deliver a lecture pertaining to his/her work at the Annual Conference in January, 2010.

Those who have received Oration / Lectureship in a given category are eligible for application for the other two categories.

The members of the Governing Body of API and the Members of the Faculty Council of ICP are not eligible to receive any Oration, Lectureship or Award.

The prescribed nomination form for the above orations / Lectureship. are on the API website "apiindia.org"

The completed application forms for the above Lectureship should reach to Dr. Sandhya Kamath, Hon. General Secretary of API, Unit No. 6 & 7, Turf Estate, Opp. Shakti Mill Compound, Off. Dr. E. Moses Road, Near Mahalaxmi Station West, Mumbai – 400 011 not later than 31<sup>st</sup> July 2009.

**Dr. Sandhya Kamath**, Hon. General Secretary

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Mumbai – 400 011. Tel. No.: 022-6666 3224; 2491 2218 • Fax: 2492 0263 • e-mail: api\_ho@vsnl.com • website: www.apiindia.org

#### Category No. (iii) : All lectureships viz

1. Dr. Coelho Memorial Lectureship in Experimental Medicine – 2010 & 2011,
2. Sinofi Aventis Lectureship in Diabetes – 2010 & 2011

The selected candidate has to deliver his/her lecture at the Annual Conference of API 2010 / 2011.

The above lectureship will get the award money of Rs.5,000/- and TA by economy class airfare from API, complimentary registration and complimentary stay in the designated conference hotel by the APICON Organizing Committee

#### Visiting Lectureships for 2009 / 2010 are

1. Dr. Yodh Memorial and Gwalior Conference Training Fellowship - 2009 / 2010;
2. Boehringer-Knoll Junior Lectureship in Diabetes – 2009 / 2010;
3. Dr. Shurvir Singh Trust Visiting Professorship 2009 / 2010.