

Research Article**Risk factors and clinical profile of ischemic heart disease in north India****Ashish Akshay Bedi¹, Ankit Gaur^{2*}, Sourabh Kosey³, Deepanshu Kumar Chitra¹, Kuldeep Singh³, Vishal Gupta³**¹Medical Service Associate, Accenture, Bangalore, India.²Department of Pharmacy Practice, ISF College of Pharmacy, Moga, Punjab, India.³Department of Pharmacy, ISF College of Pharmacy, Ghal Kalan, Ferozpur GT Road, Moga, 142001, Punjab, India.

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Abstract

Objective: The main aim of this study was to assess the clinical status and risk factors of Ischemic Heart Disease among patients. **Material and Methods:** This prospective observational study was conducted over a duration of six months at the Department of Medicine at Guru Gobind Singh Medical College, Hospital and Research Centre, Faridkot, Punjab, India. Study participants were enrolled in the study after taking their written consent. Data was analyzed using IBM SPSS ver. 20. **Results:** Among total 83 study population 63% were male and 37% were female. The majority of the study participants 73% belonged to the age group of 61-80 and most of them 83% had the past history of Hypertension, and 33% had Diabetes Mellitus, and 54% had IHD as past medical history. All of the patients had sedentary life style. A majority of study participants experienced symptoms during ischemic episodes of IHD such as 88% chest pain, 80% perspired, 55% syncope, 22% abdominal pain. On analyzing the complications arised from IHD in the study population it was observed that majority had Heart failure 46% followed by Mitral regurgitation 20%, Arrhythmias 14%, Dilated cardiomyopathy 12%, Shock 8% respectively. **Conclusion:** In this study male gender, age group of 60-80 years, mixed diet were found to be more prevalent. Among Clinical Profile first most prevalent symptom was retrosternal pain in the chest without radiation followed by Perspiration and Dyspnea. Heart Failure, Mitral Regurgitation and Arrhythmias were found to be most prevalent Complications of IHD.

Keywords: Ischemic heart disease, clinical profile, coronary artery disease, coronary heart disease, risk factors

Introduction

India is a large and socioeconomically diverse country, and there could be evidence of all the stages of epidemiological transition in the country (Gupta and Gupta, 2009). Ischemic heart disease (IHD) has emerged as an epidemic in India and it is one of the most important causes of mortality and morbidity in the country. It also leads to massive economic burden. Within the Indian subcontinent, a dramatic increase in the prevalence of IHD has been predicted in the next 20 years due to rapid changes in demography and lifestyle consequent to economic development (Dhawan, 1996; Reddy and Yusuf, 1998) (Gupta et al., 2016). The pattern can be seen in the prevalence over a brief period of time varying from 1%-2% in 1960s to 8%-10% in late

1990s (Gupta and Gupta, 1996). IHD epidemiology studies from 1960s to 1990s and reported that IHD prevalence in the country has increased 6 to 9 fold over this period, more in urban than in rural populations (Gupta et al., 2008; Gupta and Gupta, 1996). The main reasons for the increasing rate of IHD are a rising population and the high prevalence of IHD risk factors, with one of the main risk factors being urbanization (Goyal and Yusuf, 2006). Urbanization can be characterized by intake of energy dense foods, decreased physical activity, and increased psychological stress which ultimately leads to hypertension and dyslipidemia (Yusuf et al., 2001). The evidence also shows that some ethnic groups may be at particular risk when exposed to an urban environment and also suggests that genetic factors may also be involved. This situation is especially relevant to the experience of Chinese, Malays and Indians residing in Singapore, where Indians have a three times higher rate of myocardial infarction when compared to the Chinese - despite their exposure to a similar environment (Lee et al.,

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2001). However, genetic factors alone do not seem to explain the differences in the prevalence of IHD between ethnic groups either. Rather, it could be identified as a complex interplay of both environment and genetic factors that give rise to these ethnic differences (Tai and Chee, 2004). Evidence also suggests that South Asians (from India, Pakistan, Sri Lanka, Burma and Bangladesh) have poor outcomes from IHD (Mather et al., 1998; Mathews et al., 2008; Wilkinson et al., 1996). A cross-sectional survey showed that urban residents had an increased prevalence of IHD due to increased cigarette smoking, increased alcohol consumption and increased fatty food intake (Kumar et al., 2006). It is also evident that urbanization leads to increased cigarette smoking, increased alcohol consumption and increased fatty food intake. World Health Statistics has reported the prevalence of major CVD risk factors in India (who 2015). However there is little data available on status of IHD in Punjab region. Objectives of present study was:

- To find out the clinical profile (Symptomology) of IHD patients.
- To assess the prevalence of modifiable and non modifiable risk factors among study population.
- To find out the complications of IHD.

Materials and methods

This prospective observational study was conducted over a duration of six months, from October 2016 to March 2017 with the main aim to study the clinical status and risk factors of Ischemic Heart Disease among patients. This study was carried out at the Department of Medicine at Guru Gobind Singh Medical College, Hospital and Research Centre, Faridkot, Punjab, India. The study was approved by the Institutional Ethics Committee (Approval number: ISFCP/IEC/2016/121) of ISF College of Pharmacy, Moga, Punjab, India. A total 83 patients were enrolled in the study based on the Inclusion and exclusion criteria shown below, after taking their written informed consent to participate in the study.

Inclusion criteria

- Patients with new onset/previously diagnosed of Chronic Stable Angina.
- Patients with new onset/previously diagnosed of Acute Coronary Syndrome (Unstable Angina, NSTEMI or STEMI).

Exclusion criteria

- Patients with Chest Pain unrelated to Ischemic Heart Disease.
- Patients with Prinzmetal Angina.
- Patients less than 18 years.

Data was collected in specially designed data collection form

and it was analyzed using IBM SPSS software version 20.

Results

The study enrolled total 83 patients. Among the study population, 52 (63%) were male and 31 (37%) were female. The majority of the study participants belong to the age group of 61-80 years (Total Patients 61 out of 83 i.e. 73%).

Among 83 patients, 69 (83%) had the past history of Hypertension, and 27 (33%) of patients had Diabetes Mellitus, and 45 (54%) had Ischemic heart disease as past medical history. No patient was found to be at routine of exercising and no physical activity as such in maintaining health was found. Most of the Patients were found to be at stress related to familial situations 45 (54%) and some were found to be stressed in their own personal situations 5 (6%) and the rest was non stressed 33 (40%). Details of risk factors among the study population are shown in table 1 below.

On studying the distribution of diagnosis among study population, it was observed that among 83 patients the cases of STEMI were found to be more (29%) followed by Stable Angina (27%), NSTEMI (27%), Unstable Angina (17%). Details are shown in figure 1 below.

Among Chest pain symptoms of IHD patients 73 (88%) were having Chest pain and 10 (12%) were not having

Table 1. Risk factors among study population

Variable	Frequency (n=83)	Percentage (%)
Gender		
Male	52	63
Female	31	37
Age (In Years)		
41-60	22	27
61-80	61	73
Smoking		
Yes	35	42.2
No	48	57.8
Alcohol Intake		
Yes	31	37.3
No	52	62.7
Addiction		
Opioids	20	24.1
No	63	75.9
Diet		
Mix Diet	52	63
Vegetarian	31	37

experienced chest pain at all, among the chest pain, retrosternal pain only without radiation was found more and that was 40 (55%) followed by chest pain radiating to left arm 26 (35%), chest pain radiating to back 5 (7%), chest pain radiating to right

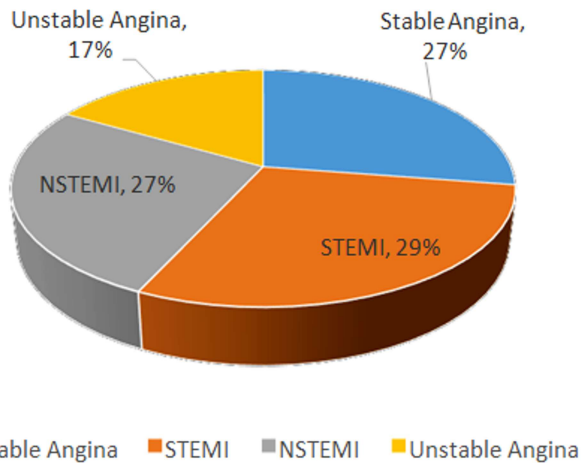


Figure 1. Distribution of diagnosis among study population

Table 2. Clinical profile of study participants

Clinical Profile	Frequency (n=83)	Percentage (%)
Chest Pain		
Radiating to Left arm	26	31.3
Radiating to Right arm	2	2.4
Radiating to Back	5	6
Retrosternal Pain only	40	48.2
No Pain	10	12
Perspiration		
Yes	66	79.5
No	17	20.5
Syncope		
Yes	46	55.4
No	37	44.6
Nausea and Vomiting		
Nausea	1	1.2
Nausea and Vomiting Both	40	48.2
No	42	50.6
Dyspnea		
Yes	68	81.9
No	15	18.1
Abdominal Pain		
Yes	18	21.7
No	65	78.3

arm 2 (3%). Among 83 patients, 66 (80%) were found to be perspired during the onset of discomfort in ischemic episodes of IHD and 17 (20%) were not perspired during ischemic episodes of IHD. Among 83 patients, 46 (55%) had experienced syncope during ischemic episodes of IHD and 37 (45%) had not experienced any syncope during ischemic episodes of IHD. Among 83 patients, only 1 (1%) had experienced only nausea and 40 (48%) had experienced nausea and vomiting both and 42 (51%) had not experienced nausea and vomiting both as well as individual. Among 83 patients, 18 (22%) had experienced Abdominal Pain and 65 (78%) had not experienced any symptom of abdominal pain during ischemic episodes of IHD. Details are shown in table 2 below.

On studying the complications of IHD among the study population. It was found that majority of the study population suffered from Heart failure (46%) followed by Mitral regurgitation (20%), Arrhythmias (14%), Dilated cardiomyopathy (12%), Shock (8%). Details of complication of IHD among study participants are shown in figure 2 below.

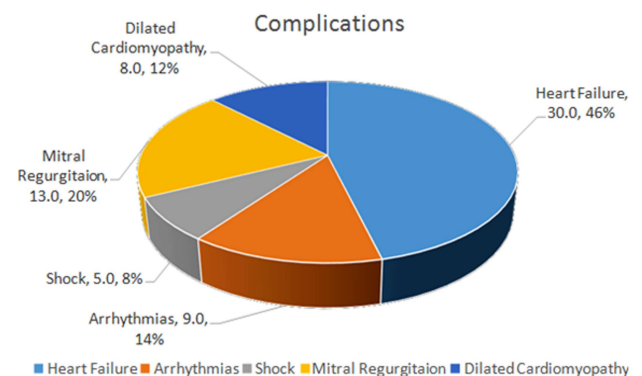


Figure 2. Complications of IHD among study participants

Discussion

In this study the IHD was found to be more prevalent in males 63% than their female counterparts which is similar to the findings reported in other studies that males are more prone to IHD than females (Beltrame et al., 2009; Bhopal et al., 1999; Chiha et al., 2015; Kinra et al., 2010; Ngian et al., 2012; Yahagi et al., 2015). Test of proportion showed that most of the patients 73% were significantly higher in the age group 61-80 years. The literature from various studies also suggests that IHD is more frequent in population of 51-60 years age group (Khot et al., 2003; Mohan et al., 2001; Zachariah et al., 2013). Alcohol consumption and smoking all are well known risk factors in developing IHD as reported in various studies conducted in various parts of country and all around the world (Doll, 2004; Gupta, 2012;

Gupta et al., 2016; J.J.F. et al., 2003; Kinra et al., 2010; Krishnan, 2012; Mack and Gopal, 2016; Narins, 2004; Naveen and Venkat, 2017; Ngian et al., 2012; Reddy et al., 2002; Zachariah et al., 2013). However cigarette smoking and alcohol consumption was found to be less prevalent in our study 42.2% and 37.3% respectively. Diet is considered to be one of the earlier risk factors, as when one's diet changes in terms of quantity or quality it can increase the occurrence of main CAD risk factors like obesity, diabetes, hyperlipidemia and hypertension (Bedi et al., 2006; Rajeswari et al., 2011). In this study mostly patients were at Mix Diet 52 (63%) and others were Veg at Diet 31 (37%). A typical Punjabi diet contains high calorie diet which is mainly composed of lots of clarified butter (Indian ghee) and dairy products. A cross-sectional survey conducted in Moradabad, India; reported that subjects who consume trans fatty acids (vegetable ghee) plus clarified butter (Indian ghee and a milk product) or those consuming clarified butter as a whole had a significantly higher prevalence of coronary artery disease compared to those consuming clarified butter plus vegetable oils (Singh et al., 1997). Ghee (clarified butter) consumption leads to increased levels of transfatty acids and lower levels of linoleic and linolenic acids in adipose tissue, both of which are considered to increase the risk of CAD (Chaturvedi, 2003). In this study it was found that STEMI patients were more prevalent (29%), this is because most of patient came when the symptoms of IHD become unbearable and before they were unaware of worsening of their condition. Secondly it was found that NSTEMI patients (27%) were there which was inpatient, and followed by Stable angina of OPD (27%) and least was unstable angina patients (17%). Similar observation was made in a study conducted at Andhra Pradesh (Naveen and Venkat, 2017) and Punjab region as well (Gupta et al., 2012).

The assessment of clinical profile of study participants during ischemic episodes of IHD showed that the chest pain symptoms of IHD patients 83, 73 (88%) had Chest pain and 10 (12%) didn't experienced chest pain at all, among the chest pain, retrosternal pain only without radiation was found more and that was 40 (55%) followed by chest pain radiating to left arm 26 (35%), chest pain radiating to back 5 (7%), chest pain radiating to right arm 2 (3%). In this study retrosternal pain only without radiation was found prominent and secondly chest pain radiating to the left arm, it was observed that some atypical symptoms of chest pain also as the chest pain radiating to back as well as chest pain radiating to right arm. No chest pain can be due to diabetes or the patient who is opium addict, as it mask chest pain symptom. Similar findings were also reported in a study conducted in Pakistan (Hafeez et al., 2010). Majority of the study participants 66 (80%) were found to be perspired during the onset of discomfort in ischemic episodes of IHD and 17 (20%) were not perspired during ischemic episodes of IHD. In this

study perspiration was the third most prevalent symptom similar findings were reported in a study conducted in Pune, India (Dhadwad, 2015). At least 68 (82%) patients experienced dyspnea and 15 (18%) had not experienced any symptom of dyspnea during ischemic episodes of IHD. In this study dyspnea was the second most prevalent symptom and its result were found similar to other studies (Dhadwad, 2015; Singh et al., 2013). In case of syncope experienced during ischemic episode it was observed that 46 (55%) of patients experienced had syncope similar finding were reported in various studies (Dhadwad, 2015; Hafeez et al., 2010; Singh et al., 2013). In case of Nausea and Vomiting only 1 (1%) had experienced only nausea and 40 (48%) had experienced nausea and vomiting both and 42 (51%) had not experienced nausea and vomiting both as well as individual similar observations were reported in literature (Dhadwad, 2015; Gupta et al., 2012; Hafeez et al., 2010; Singh et al., 2013; Sancheti and Mangulikar, 2017). In case of Abdominal Pain 18 (22%) had experienced Abdominal Pain and 65 (78%) had not experienced any symptom of abdominal pain during ischemic episodes of IHD which is similar to the findings reported in other studies (Dhadwad, 2015; Hafeez et al., 2010; Singh et al., 2013).

Limitations of the study

- The major limitation of this study was small sample size and there might be presence of some confounding factors because of this the results cannot be generalized to whole population.
- The study was vulnerable to social acceptability bias, therefore steps was taken to minimize it but still there is a possibility that results might be affected by it.
- This study was limited to one study center.

Conclusion

In this study male gender, age group of 60-80 years, mixed diet were found to be more prevalent. Among Clinical Profile 1st most prevalent symptom was retrosternal pain in the chest without radiation, 2nd Perspiration and 3rd Dyspnea. STEMI was found most prevalent, as much of the patients came after unbearable occurring of symptoms, mostly patients were found unaware of their disease like IHD and even past medical history like hypertension, Diabetes etc. Heart Failure, Mitral Regurgitation and Arrhythmias were found to be most prevalent Complications of IHD, therefore early detection of IHD is must as well as strictly medical adherence should be there from patient level. In patients we found that there is Lightness in taking their disease, Awareness program for

IHD and its risk factors should increase in North India to decrease the national burden of disease.

Conflicts of interest: Not declared.

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