FREQUENCY OF ISCHEMIC HEART DISEASE AND RISK FACTORS IN DIFFERENT PROFESSION

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All the authors contributed significantly to the research that resulted in the submitted manuscript.

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ABSTRACT

Objective: To determine the frequency of ischemic heart disease (IHD) and its risk factors in different profession in Southern Punjab.

Methodology: This retrospective cross sectional study was conducted at private clinic of consultant cardiologist from June 2009 to December 2011 at Bahawalpur. A total of 3285 patients were registered during this study period, out of these 605 patients were diagnosed as IHD. Among these patients different professional groups were separated and their risk factors were studied. Data was analyzed on SPSS version 16.0.

Results: This study contains 605 patients in which female patients were 283 (46.85%) and males were 322(53.2%). The mean ages of female and male patients are 58.54 ± 1.08 and 57.25 ± 1.25 respectively. The age of the patients ranges from 25 to 95 years. Housewife having highest percentage which was 264(93.28%) for ischemic heart disease. There were 81(25.15%) male farmer. Related to business profession there were 46 (7.60%) patients. Out of 605 IHD patients 44(7.27%) were retired government servants, shopkeeper were 43(7.10%), present government servants were 33(5.45%), laborer were 29(4.79%), teacher were 19(3.14%) and landlord were 18(2.97%). Only 12(1.98%) were doctors and retired teachers were 11(1.81). Advocates and army officers were 4(0.66) and 2(0.33), respectively. In all profession, among risk factors hypertension, was more prevalent (n=451),followed by DM (n=223), obesity (n=96) and smoking (n=91).

Conclusion: IHD is most common in housewives, farmers, businessmen and retired government servants in the same order. The prevalent risk factors in these profession were hypertension, diabetes mellitus and smoking.

Key Words: Ischemic Heart Disease, Profession, Risk Factors

INTRODUCTION

Cardiovascular diseases are leading causes of death worldwide and account for about 30% of all deaths.[1] Occupational factors may be responsible for up to about 20% of all ischaemic heart disease (IHD) incidents.[2] In IHD, Oxygen supply is inadequate to meet the demands of myocardium because of lesion in the coronary arteries, and as a result, myocardium becomes hypoxic (ischemic), and myocardial function is compromised. The term, Coronary Artery Disease (CAD) is a bit different and is used when there are lesions in the coronary arteries but symptoms due to myocardial ischemia are not always necessary to make the diagnosis.[3]

Diseases like hypertension and diabetes mellitus are well-known major risk factors for CAD and IHD. Other risk factors and behaviors associated with CAD have been identified e.g. cigarette smoking, sedentary habits, stress, dyslipidemia, male gender, age, positive family history, obesity, elevated blood homocysteine and hypoestrogenemia.[4] Control of these risk factors has resulted in a substantial reduction in morbidity and mortality of coronary heart disease.[5] According to the National Health Survey of Pakistan (NHSP), the prevalence of hypertension is 17.9% and that of diabetes is 10%.[6] The prevalence rates for obesity in an urban Pakistani population are 22% and 37% in males and females respectively, while high blood cholesterol is prevalent in 13% of Pakistani adults.[6] Tobacco use has been documented in 29% of adult Pakistani men.[6]

Diet and lifestyle can also affect the incidence of coronary heart disease. Typically, behavioral risk factors are studied individually, but these types of behavior are often correlated, because people do not follow common lifestyle patterns. Facing fierce competition, complicated interpersonal relationship, and intense social environment in modern society, we are living in a world of tension.[7] Especially for the occupational population, confronting frequent innovation on technology and knowledge and higher requirement on vocational skills, they are under growing occupational stress, which is not only the leading cause of occupational mental diseases but also the stimulus or risk factor for raising the chance of getting cardiovascular and cerebrovascular diseases (like CAD) among workers to deteriorate the health.[8]

Physical fitness is a well-known predictor of cardiovascular disease and mortality. People in different occupations have different physical demand which shows its effect in different IHD incidence. In professions, where there is high physical work demand does not necessarily mean that the person is also have a high physical fitness as well. Physical fitness depends upon various other factors like leisure-time physical activity (LTPA), lifestyle, diet and nutrition etc. Physical fitness has inverse relationship with cardiovascular disease.[4] The theoretical implication is that those exposed to high physical demands and cardiovascular strain at work might be particularly vulnerable when exposed to other established risk factors for IHD mortality like smoking, high blood pressure and low LTPA.[4] Therefore, these risk factors for IHD and all-cause mortality may impose a divergent impact on people with different physical activity levels at work.

As one of the risk factors of the potential coronary artery and IHD disease, occupational stress has attracted increasing attention from scholars to explore the relation between them and thus lower the chance of getting such cardiovascular and cerebrovascular diseases by changing people's lifestyle and working habits to improve the quality of our lives.[9] To determine the frequency of ischemic heart disease (IHD) and its risk factors in different profession in Southern Punjab.

METHODOLOGY

This retrospective cross sectional study was conducted at private clinic of consultant cardiologist from June 2009 to December 2011 at Bahawalpur. Software on MS Access was made for clinic in mid-2009 and all patients coming to private clinic entered in this software. All patient's basic profile like age, sex, profession, height and weight, cardio vascular risk factor, others ailment and clinical examination was routinely entered. ECG findings, any other abnormal investigation findings and medicines were entered routinely for all patients. Diagnosis of IHD was made on typical history of chest pain, risk factors, ECG changes, cardiac enzyme or confirmation on angiographic report. At the end of the 2011 total 3285 patients were registered. Amongst the 3285 patients only 605 patients were diagnosed case of ischemic heart disease. So we separated 605 CAD patients and analyzed their professions.

Clinical characteristics were summarized in terms of frequencies and percentages for categorical variables. For numerical variables, mean±1SD were used. Statistical analysis was done by using statistical software SPSS version16.

RESULTS

This study included 605 patients in which female patients were 283 (46.85%) and males were 322(53.2%). The mean ages of female and male patients are 58.54±1.08 and 57.25±1.25 respectively. The age of the patients ranges from 25 to 95 years.

Percentage of different people in different occupations with ischemic heart disease is presented in Table 1. Occupation is defined as one's usual life time work. Table 2 shows various risk factors in different professions. For the matter of understanding, we grouped different occupations and are

Table 1: Frequency of Profession in Gender

Profession	Female n(%)	Male n(%)	Total
Age in years	58.54±10.77	57.25±12.49	57.84±11.72
Housewife	264 (100)		264(43.64)
Farmer	0	81(100)	81(13.39)
Businessman	0	46 (100)	46 (7.60)
Retd.Govt.Servant	8(17.39)	38(82.61)	46(7.60)
Shopkeeper	0	41(100)	41(6.78)
Govt. Servant	3(9.09)	30(90.90)	33(5.45)
Laborer	3(10.34)	26(89.65)	29(4.79)
Teacher	2(10.52)	17(89.47)	19(3.14)
Landlord	0	18(100)	18(2.98)
Doctor	3(25)	9(75)	12(1.98)
Employee	0	6(100)	6(0.99)
Banker	0	4 (100)	4 (0.66)
Advocate	0	4(100)	4(0.66)
Army Officer	0	2 (100)	2(0.33)
Total	283(46.77)	322(53.23)	605(100)

presented in Table 3.[10] Theoretically, housewife in our part of the world (Pakistan and India) can be considered as a profession. Professionals are defined as those people who at least have a graduate degree and are working in selected professions.

Housewife having highest percentage which is 264(93.28%) for ischemic heart disease. There were 81(25.15%) male farmer. Related to business profession there were 46 (7.60%) patients which were all males. Out of 605 ischemic heart patients 44(7.27%) were retired Government Servants in which 6(13.63%) were females and 38(86.36%) were males. Shopkeeper were 43(7.10%) which were all males. Present Government Servants were 33(5.45%) of which 3(9.09%) females and 30(90.90%) males. Laborers were 29(4.79%) in which 3(10.34%) females and 26(89.65%) were male patients. Teacher were 19(3.14%) in which 2(10.52%) females and 17(89.47%) were males. Landlord were 18(2.97%) which were all males. Only 12(1.98%) were doctors 3(25%) female doctor and 9(75%) were male doctors. Retired teacher were 11(1.81) in which 2(18.18) females and 9(81.81) were males teachers. In employee category there were 6(0.99%) patients which were all males and 4 (0.66%) were bankers. Advocates and Army officers were 4(0.66)and 2(0.33) respectively, which were all males.

We cannot compare here males to females because of some social and cultural issues, especially in Southern Punjab, women have no inclination towards job and tend to indulge themselves in household chores and very few female adopt selective jobs. Mostly female work as housewife (managerial work). Table 4 shows risk factors in different professional groups.

Table 2: Frequency of Risk Factors in Different Professions

Profession N(%)	HTN	DM	Smoker	Obesity
Housewife	224(49.67)	117(52.47)	1(1.10)	52(54.17)
Farmer	45(9.98)	20(8.97)	29(31.87)	5(5.21)
Businessman	31(67.39)	12(26.07)	9(9.89)	10(10.42)
Retd. Govt. Servant	33(6.87)	18(5.38)	4(4.40)	6(6.25)
Shopkeeper	33(6.87)	19(8.52)	16(17.58)	4(4.17)
Govt. Servant	26(5.76)	9(11.66)	10(10.99)	6(6.25)
Laborer	16(3.55)	3(1.35)	11(12.09)	3(3.13)
Teacher	11(2.44)	6(2.69)	2(2.19)	1(1.04)
Landlord	11(2.44)	6(2.69)	7(7.69)	4(4.17)
Doctor	8(1.77)	5(2.24)	1(1.09)	2(2.08)
Employee	5(1.11)	2(0.90)	1(1.09)	0
Banker	3(0.67)	2(0.90)	0	2(2.08)
Advocate	4(0.89)	3(1.35)	0	1(1.04)
Army Officer	1(0.22)	1(0.45)	0	0
Total	451	223	91	96

Table 3: Categorization of Different Occupations

Professionals (n=41)	Proprietors & Managers (n=323)	Businessmen (n=46)	Clerks (n=85)	Manual Workers (n=110)
Doctors (n=12)	Housewife (n=264)	Businessmen (n=46)	G. Servants (n=33)	Farmers (n=81)
Teachers (n=19)	Landlords (n=18)		Ret. G. Servants (n=46)	Laborers (n=29)
Banker (n=4)	Shopkeepers (n=41)		Employees (n=6)	
Advocates (n=4)				
Army Officers (n=2)				

DISCUSSION

The purpose of this study was to see the effect of profession on ischemic heart disease. It is most established cause of death in the world. According to WHO millions of deaths every year in the world due to IHD.[1]

Housewives come under the umbrella of proprietors and managers category and have high percentage for ischemic heart disease as shown in our study which is 264(93.28%). Out of 283 female patients of ischemic heart disease; a study in Iran shows 34% housewives suffering from ischemic heart disease and another study from Baquba Teaching Hospital has 48% patients as housewives is also in line with our results.[11,12] Frequency of housewives with IHD in our study is higher as compared to the above mentioned two studies. This high percentage in this area could be due to social and cultural factors mentioned above. Moreover, literacy rate particularly of women in this area is low, which is a major hurdle for them in finding adequate jobs. Based on cultural and social setup, housewives, particularly in the region of Southeast Asia have a tedious job. They are the first ones to get up early in the morning and last one to go to bed. Their work includes but is not limited to upbringing of children, grocery, cooking food, looking after social ties- in short all household chores without any help. All this work requires high physical demand as well as presence of mind, therefore, adding anger, anxiety, tension to their life, hence, lowering their threshold for IHD. Landlords and shopkeepers come in the same category as housewives and the prevalence is 18(2.97%) and 43(7.10%) respectively and are all males.

HTN reflecting as 224(84.84) housewives suffering from IHD but in a study of Nigeria 33.5% housewives was hypertensive which is very low than our study.[13] In this study 44.31% housewives were diabetic which is comparable with study of Bangladesh which is showing 35% housewives as diabetic because social setup approximately same including diet.[12] In our study only 1 housewife was smoker and 6 were obese.

Physiologically, static or dynamic occupational activity (physical work demand) several hours daily may induce a prolonged intravascular turbulence and increased shear wall stress, inducing inflammatory process in the arterial wall which slow and steadily leads to atherosclerosis which ultimately causes IHD.[14] Since it is difficult to change profession or modify the occupational factors, LTPA can be introduced in the routine which is known to promote cardiorespiratory physical fitness and reduce heart rate and blood pressure during work and daily activities.[15,16] In our study, hypertension is most prevalent in all occupations. LTPA if incorporated in the daily schedule could help a person regardless of profession and could help in prevention and improvement of IHD.

Females in other occupations are less as compared to housewives; professionals 5(1.77%), Clerks 11(3.88%), and manual workers 3(1.06%). The trend is self-explanatory after knowing the reason of becoming housewife.

Out of 322 male patients of IHD only 81(25.15%) patients are farmers (manual worker category), this percentage is

Table 4: Frequency of Risk Factors in Different Professional Group

Risk Factor (n)	Profession					
	Professionals (n)	Proprietors & Managers (n)	Business Man (n)	Clerks (n)	Manual Worker (n)	P-value
HTN (451)	27	268	31	64	61	0.01
DM (223)	17	142	12	29	23	0.01
Smoker (91)	3	24	9	15	40	<0.005
Obesity (8)	0	6	1	0	1	0.9

very high than study of Baquba Teaching Hospital teaching hospital, which is showing 4.5% as farmer.[12] In Pakistan 70% of population belongs to rural area and, Punjab is a plain land where most people tend to go for profession of farming. Therefore, in Southern Punjab among males, the most common profession is farming. Female usually help their husbands and brothers but their actual job is housekeeping. Among the male farmer 45(55.55%) were hypertensive, 20(24.69%) were diabetic, 29(35.805) were smoker (most commonly Huqqa) and only 1(1.23%) was obese. In one of study; HTN was found in 11% farmers which is lower than our study; only 3.5% farmers were Diabetic which is way much different than our study; only 18% smokers were found which is low than ours and obesity was found in 3% farmers which is higher than our study.[16]

A study in Sweden showed that people who belong to farming profession have more incidence of IHD as compared to people in other professions.[17] Since most of the male population in our Southern Punjab is associated with the occupation of farming, we should be more proactive in detecting and treating the signs and symptoms of IHD. There is a hypothesis that links inhalation of particles to occurrence of IHD through an inflammatory process, which increases plasma concentration of fibrinogen.[18] We being cardiologist should keep a high index of suspicion for IHD in any farmer who presents with shortness of breath and edema.

Prevention is always better than cure.[1] Prevention of IHD in workers should start from their work place. It is necessary to meticulously evaluate the occupation related factors, which cause stress and put a burden on cardiovascular system. They are work hour schedule, irregularity of work hours, work environment and mental strain factors originating from work environment. LTPA is of utmost importance and has an inverse relationship with IHD.[19] Early detection of risk factors for IHD by regular health checkups and treating them. In contrast to non-modifiable risk factors like age, sex and family history of IHD, modifiable risk factors like smoking, sedentary life style, hypercholesterolemia, over eating can be corrected by improving lifestyle or by treatment. This mode of prevention can be started instantaneously by quitting smoking, light exercise, eating healthy balanced diet and using more fruits and vegetables.

Receiving health checkups provide information about the presence of risk factors like, obesity, high blood pressure, hyperlipidemia, abnormal glucose tolerance, diabetes and severity of heart disease if present. If an abnormality is detected early, then it could be addressed early before it causes any sufficient damage. These risk factors when superimposed on work related factors can be detrimental for health and can drive the person towards IHD.[3]

LIMITATIONS

This study is conducted at private clinic of a consultant

cardiologist and only those patients were recruited in the study who had resources to seek the consultant opinion in a private clinic. The results cannot be generalized to the whole local population. There is indeed a need for a hospital, preferably tertiary hospital based study so that the results can be generalized to the population at large.

CONCLUSION

IHD is a highly prevelant disease of our society. Unfortunately its incidence is increasing day by day. The most common professions found in IHD patients are housewife, farmers, businessman and retd. Govt. servants respectively. The most common risk factors were in them are HTN, DM and smoking.

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