RISK FACTORS ASSOCIATED WITH ISCHEMIC HEART DISEASES IN DIFFERENT AGE GROUPS PATIENTS OF TERTIARY CARE HOSPITALS OF PESHAWAR

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ABSTRACT

Objectives:
To determine different risk factors associated with ischemic heart diseases in different age group patients of tertiary care hospitals of Peshawar.

Methodology:
A cross sectional study conducted on 350 patients of different age groups presented with ischemic heart diseases in tertiary care hospitals of Peshawar. Study was conducted for duration of 3 months from December 2013 to February 2014. Non probability convenient sampling technique was used. Sample size was calculated using standard sample size calculator. Semi structured questionnaire was used as data collection tool. Patient's record and investigations were used as adding tools. Standard definition was made for ischemic heart disease. Different modifiable and non-modifiable factors were assessed and were analyzed using SPSS version 16.

Results:
This study contains 350 patients in which female patients were 133(38%) and male were 217(62%).The mean age was 57.23±11.36 years. The age of the patients ranges from 22 to 80 years. The frequencies of risk factors were stress (73.1%) followed by hypertension (65.7%), sedentary life style (59.4%), family history (57.1%), smoking (50.6%), over weight and obese (39.1%), below normal HDL (30.3%), high LDL (29.1%), hypertriglyceridemia (28%), hypercholesterolemia (23.7%). 64.3% patients were presenting with acute IHD and 35.7% were with chronic IHD. Stress, HTN, DM and sedentary life style were found to be significantly associated with male gender (p- value <0.05). Age was divided into two groups, <45 years and >45 years. Stress, HTN, DM and hypercholesterolemia had a significant association with >45 years of age group. (P-value <0.05).

Conclusion:
Stress, HTN, DM, sedentary life styles were the major risk factors. And they were found to be more in male gender and in equal to more than 45 years of age group.

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***Key words**:*
Ischemic Heart disease, Hypertension, Diabetes Mellitus, Low density lipoprotein.

INTRODUCTION

Ischemic heart disease (IHD) is among the top ten causes of mortality in Pakistan [1]. Ischemic heart disease (IHD) also known as coronary heart disease (CHD) is the commonest cause of cardiovascular disability and death. Myocardial ischemia developed when there is imbalance between supply of oxygen and myocardial demand due to atherosclerotic coronary arterial obstruction.[2] Atherosclerosis is a progressive inflammatory disorder of arterial wall that is characterized by focal lipid rich deposits of atheroma that remain clinically silent until they become large enough to impair tissue perfusion, or until ulceration and disruption of lesion result in thrombotic occlusion or the distal embolization of vessels.

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The clinical manifestation of atherosclerosis depends upon the site of lesion and the vulnerability of organ supplied. Atherosclerosis can affect any artery in the body. When it occurs in the heart, it may cause stable Angina, UN-stable Angina, Myocardial Infarction, Heart Failure, Arrhythmia and Sudden Death. [2]

Worldwide 57 million deaths occurred in 2008, out of these 36 million deaths (63%) were due to non-communicable diseases (NCDs) and 17.3 million deaths (30%) were due to cardiovascular (CVDs). 80% of these deaths occurred in low and middle income countries. Of the 17.3 million CVDs deaths 7.3 million deaths were due to ischemic heart diseases. Global CVDs mortality rates due to IHD in male and female is 46% and 38% respectively[3]. Cardiovascular diseases have become a major public problem in South Asia (India, Pakistan, Bangladesh, and Nepal [4]. These countries comprise of 25% of global population and contributes nearly 60% of global CVDs burden.[5]The greatest concern of Pakistan is that cardiovascular diseases (CVDs) emerges at an earlier age than that in the west and due to this mortality ratios as compared to other ethnic groups is highest in the younger South Asians[6,7,8]. In Pakistan 16.1% of the overall population with IHD are less than 45 years of age and 19% of the patients diagnosed with IHD were less than 40 years. In another study researchers found that mean age of IHD patients in their study to be 52.5±10.8 years, however only 22.5% reported being 60 years or older. Also evidence from a population-based cross sectional survey carried out in Pakistan has identified equal prevalence of IHD across gender within the local population. The overall prevalence of CADs was 26.9% in men and 30.0% in women.[9] In the epidemiology of IHD the concept of risk factor is most important. Risk factors are related to premature atherosclerosis and increased IHD events. Hypercholesterolemia, hypertension, diabetes mellitus and smoking are consider as major risk factors because of their strong and consistent correlation with IHD[3]. The prevalence of CVDs risk factors is significantly high in Pakistani adults, where 29% of men are smokers, 18% suffer from hypertension and 13% have elevated cholesterol levels and also over 10% of people in the age group 25 years and above have type 2 diabetes[10].The adoption of modern life style appears to be the major determinant of coronary artery disease (CADs) morbidity and mortality in Pakistan.[11] Since 1950, the incidence of coronary heart disease is rising among women while it is declining among men. The life time risk for developing CADs at the age of forty is 2 in 3 for men and 1 in 3 for women, and also it is same at the age of seventy 1 in 3 in men and 1 in 4 of women. Because of protective effect of estrogen and variable impact of other risk factors formation of CAD in females differ remarkably from men.[12]

A study done in Pakistan in 2009, regarding Burden of ischemic heart disease and their risk factors showed that Pakistan have high burden of ischemic heart disease (5.09375 million people with IHD) and identified risk factors were smoking, high cholesterol level, hypertension, obesity and type 2 diabetes.[13] In 2008 another study was conducted in Pakistan to determine prevalence and awareness of CVD in urban community of Karachi, result showed that prevalence of CVD in urban community of Karachi was 6.2% , which was 3.7% in 1970.similarly hypertension rate also increased from 10% to 26.7%.this increased prevalence of CVD in developing countries has been established due to changing in life style, such as Sedentary life style, changes in dietary patterns and also due to stress[14]. In 2005 another study was conducted in Peshawar to determine prevalence of coronary artery disease in rural areas, result showed that most prevalent risk factors of CADs were physical inactivity, obesity, hypertension and diabetes mellitus and CAD was more prevalent in the females than males[15]. The purpose of this study is to determent frequency of different risk factors leading to IHD in both gender of different age group among patients admitted in tertiary care hospitals. This study will not only help us to rectify the key factors responsible for ischemic heart disease but will also help us to recommend preventing measures for different age group and gender.

METHODOLOGY

It was a cross sectional study conducted on 350 patients of different age groups presented with ischemic heart diseases in tertiary care hospitals of Peshawar. Study was conducted for duration of 3 months from December 2013 to February 2014. Non probability convenient sampling technique was used. Patients of different age groups of both genders were included in study. Those patients who were critically ill admitted in ICU and CCU and those who were without documented proof were excluded from the study. A written and verbal consent was taken from the patient after explaining purpose of the study. Sample size was calculated using standard sample size calculator. Semi structured questionnaire was used as data collection tool. Patient's record and investigations were used as adding tools. Standard definition was made for ischemic heart disease. Results of the study were presented in form of graphs and tables. Different modifiable and non-modifiable factors were assessed and were analyzed using SPSS version 16.

RESULTS

Out of 350 patients 225(64.3%) were patients of acute IHD and 125 (35.7%) were the patients of chronic IHD.(Table- 01). Out of 350 patients of IHD included in study , 133(38%) were females and 217(62%) were males. Among those 54(15.4%) were below 45 years of age and 296(84.6%) were equal to and above 45 years of age.150(42.9%) paients had no family history of IHD and 200(57.1%) had positive family history of IHD. 120(34.3%) patients had negative history of HTN and 230(65.7%) patients had positive history of HTN. Out of 350 patients 244(69.7%) were found to diabietic and 106(30.3%) were non-diabetic. 208(59.4%) patients had sedentary life style and 142(40.6%) had active life style. Among all the patients 173(49.4%) were non-smoker and 177(50.6%) were smokers. 94(26.9%) patients had no stress and 256(73.9%) had some degree of stress. 267(76.3%) patients were found to be with normal cholesterol level and 83(23.7%) were with high cholesterol. 252(72%) patients had normal triglycerides level and 98(28%) had high level of triglycerides. Out of 350 patients 248(70.9%) had normal LDL level and 102(29.1%) had high level of LDL. 106(30.3%) patients had below normal HDL level and 244(68.6%) had normal HDL level. 213(60.9%) patients had normal BMI and 137(39.9%) had above normal BMI.

Comparision of gender with frequency of risk factor did not show any significant difference with family history of IHD,cholesterol level, triglycerides level, BMI (p-value >0.05). while HTN ,DM , life style , stress and HDL showed highly significantly differences with gender(p-value <0.05).(Table-02) In the comparision of frequencies of risk factors with different age groups which were less than 45 years of age and more than 45 years of age showed that gender, family history of IHD, lifestyle, trigylcerides level, LDL level, HDL level, BMI and smoking were not significantly associated with different age groups p-value >0.05.(Table-03) while HTN, DM , stress and cholesterol were found to be significantly associated with different age groups p-value <0.05.(Table-03).

Table- 01. To assess the frequency of acute anf chronic IHD patients.

Ischemic Heart disease

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	Acute Ischemic Heart Disease	225	64.3	64.3	64.3
	Chronic Ischemic heart disease	125	35.7	35.7	100.0
	Total	350	100.0	100.0	

Table-02.To compare frequencies of risk factors among both gender

Risk factors	*Gender of Patients*		*Total*	*Chi Square Value*	*P Value*	*Significance*
	Female	*Male*				

Family History of IHDs	No	54	96	150	.446[a]	.504	Insignificant
	Yes	79	121	200			
Having HTN	No	29	91	120	14.832[a]	.000	**Significant**
	Yes	104	126	230			
Having DM	No	73	171	244	22.336[a]	.000	**Significant**
	Yes	60	46	106			
Life Style according to activity level	Sedentary	110	98	208	48.211[a]	.000	**Significant**
	Active	23	119	142			
Stress Assessment	No	17	77	94	21.634[a]	.000	**Significant**
	Yes	116	140	256			
Cholesterol Level	Normal	104	163	267	.432[a]	.511	Insignificant
	High	29	54	83			
Triglyceride Level	Normal	101	151	252	1.652[a]	.199	Insignificant
	High	32	66	98			
Low Density Lipoprotein Level	Normal	97	151	248	.447[a]	.504	Insignificant
	High	36	66	102			
High Density Lipoprotein Level	Below Normal	27	79	106	10.130[a]	.001	**Significant**
	Normal	106	138	244			

Table- 03. To compare the frequencies of risk factors between different Age groups.

Count		**Age of Patient Groups**		**Total**	**Chi Square Value**	**P Value**	**Significance**
		<45	>=45				
Gender Of Patients	Female	17	116	133	1.152[a]	.283	Insignificant
	Male	37	180	217			
Family History of IHDs	No	19	131	150	1.535[a]	.215	Insignificant
	Yes	35	165	200			
Having HTN	No	25	95	120	4.088[a]	.043	**Significant**
	Yes	29	201	230			
Having DM	No	44	200	244	4.188[a]	.041	**Significant**
	Yes	10	96	106			
Life Style according to activity level	Sedentary	26	182	208	3.370[a]	.066	Insignificant
	Active	28	114	142			
Stress Assessment	No	25	69	94	12.283[a]	.000	**Significant**
	Yes	29	227	256			
Cholesterol Level	Normal	35	232	267	4.644[a]	.031	**Significant**
	High	19	64	83			
Triglyceride Level	Normal	36	216	252	.901[a]	.343	Insignificant
	High	18	80	98			
Low Density Lipoprotein Level	Normal	35	213	248	1.129[a]	.288	Insignificant
	High	19	83	102			
High Density Lipoprotein Level	Below Normal	11	95	106	2.973[a]	.085	Insignificant
	Normal	43	201	244			
Smoking	NO	25	148	173	0.251	.717	Insignificant
	YES	29	148	177			

DISCUSSION

The purpose of this study was to determine and analyze the frequencies of risk factors for acute and chronic IHD in different age groups patients of both gender in Peshawar, which is one of the most common cause of death in human beings. This is acknowledged that in the etiology of Coronary Heart Disease some factors are modifiable risk while others are non-modifiable. Among the non-modifiable risk factors are the age, gender and and the genetics. Among modifiable risk factors which can be modified by life style changes such as smoking, obesity, physical inactivity , anxiety and depression. Some modifiable risk factors can be modified by pharmacotherapy and these are hypertension, diabetes mellitus and lipid disorders. We found in our study that there is a predisposition of male gender among patients of IHD (Male 62% & female 38%).same proportion of gender was found in study conducted by M.nadeem etal in 2013 at Wah cantt POF hospital.[16]our study shows that 15% of IHD pateints are in the <45 years of age group and 86% patients are in the >= 45 years of age group. In 2013 study done by S.hussain etal in southern punjab showed 5% of patients of CHD were <40 years of age and 95% of patients of CHD were >= 40 years of age these results are different from our study because variation in our dietary habbits, sedentary life style and stress level. In our study results 57% pateints have the family history of IHD.While M nadeem,s study showed that 46% patients have the family history which is less than our study. Hypertension is an independent risk factor for CVDs and it increases the risk 2 to 3 folds.HTN is also called silent killer. And this silent killer is found to be major independable risk factor for IHD. In our study 66% patients are hypertensive.In S hussain, s study in 2013,hypertension was present in 74.55% cases.[17]Diabetes mellitus affects 180 millions peoples world wide and this will be double in 2020.of those with diabetes 90% have the tpye 2 diabetes and 80% of these lives in low and middle income countries. Diabetes is one among the major CVS risk factors. 30.3% Diabetics are found in our study. In S hussain,s study diabetic were 36.8% which is higher than our study.[17]

Our study results shows 62% patients with sedentary life style.Physical inactivity has been identified as the fourth major modifiable risk factor of CHD. It carries an increased risk of 1.2 to 2.89 times for Hypertension and Stroke, 1.05 to 2.63 for CHD, and 1.08 to 2.63 for Diabetes.[29]In 2004 study done by S dodani etal in karachi at aga khan university hospital found that 72% of ambulatory pakistani had sedentary life style[18]. Smoking is an important and modifiable risk factor known for CAD. Our results shows that the smoking was the dominant risk factor (51%). We never found female smoker. Several other studies have shown smoking as the most important risk factor among the younger patients with CHD.[32]In M nadeem et al study smoking was found to be in the 46% of male[19]. Increased total cholesterol (23.7%), triglycerides(28%), low density lipoproteins(29%) and below normal High density lipoprotein(30.%) has been noted in our study. the same results was shown by the other studies[19.]. Sedentary life style and physical inactivity are indications to obesity. In this study about 61% patients had normal BMI while 39% were overweight and obese. The values are higher in comparison to other local studies by Hussain et al. and Abbas et al. showing BMI >25kg/m^2 as 44% and 64% respectively.[11,20]

Stress has gained recognition as a risk factor,approximately doubling the risk of MI and stroke. In 2004 INTERHEART study conducted in canada by A rosengren etal found that psychosocial stress was very similar to other major risk factors.[21] Although mostly subjective and difficult to measure, stress was also evaluated in our risk assessment study and found in 73% of patints. In 2014 study done by M shaoib etal in karachi found that 60% patients had high level of stress[22].In our study 64.3% patients are presenting with acute IHD, having first onset of severe chest pain, ECG shows ischaemic changings.while chronic IHD founds in 35.7% of patients.we does not find any study which indicates difference in frequencies of acute and chronic IHD. In the comparision of gender with risk factors (Table#02) HTN, diabetes, stress, life style and Hihg density lipoprotein shows the significant difference(p-value <0.05) and these risk factors are more common in male.whlie other risk factors does not show any significance differences (p-value >0.05). S hussain,s study showed the same significant differences p-value>0.05 with HTN and stress but they were more common in

female.[23]this difference in gender is because in our study we have more male (62%) patients as compare to female (38%) patients[23]. When frequencies of various risk factors were compared between two age groups (Table# 03), significant differences (p <0.05) were found for diabetes, hypertensiona, stress and cholesterol.These risk factors are more common in >45 years of age group.Whlie rest of variables showed no significant differencies (p-value >0.05). A study done by S hussain etal in 2014 showed significant association of HTN and diabetese and stress in >40 years of age group.[23]

CONCLUSIONS

Frequency of acute IHD cases is more than chronic IHD cases and that stress, hypertension, life style, diabetes mellitus and dyslipidemia are the common risk factors leading to ischemic heart diseases in both genders of age 45 and above.

RECOMMENDATIONS

On the basis of results of this study following recommendations are made

1. Emphasis should be made to create more awareness regarding the important of risk factors through all means so that health seeking behaviour of more conscious peoples making good health choices for themselves and for their families may be adopted. Regular health screening should be done for high blood pressure, diabetes and high cholesterol.
2. Health care professionals should encourage the peoples to do regular exercise of moderate-intensity in most days of week.
3. Smoking should strongly be discouraged through compaighn in mass media.
4. Local support group programmes should be encouraged to reduces psyhological stress which plays a significant role as a risk factor for IHD.

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