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Risk Factors Associated with Ischemic Heart Diseases in Different Age Groups Patients Admitted to Tertiary Care Hospitals of Peshawar

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Abstract:
Ischemic heart disease is the most common cause of death in human beings. It is well established cause of mortality and morbidity. Objectives: The main purpose of the study was to analyze different risk factors associated with ischemic heart diseases in different age group patients of both genders of a tertiary care hospital of Peshawar.
Methods: It was a cross-sectional study conducted on 350 patients of different age groups presented with ischemic heart disease in tertiary care hospitals in Peshawar
Results: study contains 350 patients in which female patients are 133 (38%) and male are 217(62%). The mean age was 57.23±11.36 years. The age of the patients ranges from 22 to 80 years. About 64.3% patients were presenting with acute IHD and 35.7% were with chronic IHD. Stress, HTN, DM and sedentary lifestyle 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 & hypertension are more common in males while sedentary lifestyle and diabetes mellitus are in females and in age group equal to and more than 45 years.

Keywords: *Ischemic heart disease, risk factors*

1. Introduction

Ischemic heart disease (IHD) is among the top ten causes of mortality in Pakistan (WHO, 2006) 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 (Kumar et al, 2007). 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 are 46% and 38% respectively(WHO, 2004). Cardiovascular diseases have become a major public problem in South Asia (India, Pakistan, Bangladesh, and Nepal. (Jan et al, 2012). 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 (Anand et al, 2008). 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 the 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 an 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 (Jafar, Jafary, Jessani & Chaturvedi, 2005). In the epidemiology of IHD the concept of a 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(WHO,2004). 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 lifestyle appears to be the major determinant of coronary artery disease (CADs) morbidity and mortality in Pakistan (yousaf et al., 2004). A study was conducted in Karachi to determine gender based differences in risk factors and distribution of coronary artery disease (CADs), result showed that there was a significant gender based differences in risk factor profile, presentation, number, distribution and complexity of coronary artery disease(Qureshi et al., 2011). A study done in Lady Reading Hospital Peshawar in 2006, to determine the frequency of coronary heart diseases in women, study result showed increases in Total admissions in Cardiology unit between 1995 to2004. Coronary artery disease patients in 1995 were 2053, which were 35% of the total admission that increased to 3025 making 37% of the total admission in 2004. Women were 27 % of the total CAD burden in 1995 that increased to 39 % in 2004. There is a 50% increase of CAD in the female population. The proportion of female in AMI was 25% in 1995 that increased to 34% in 2004. In 1995 patients with unstable angina were 479(8.16%) compared to 883(10.46%) in 2004. So study showed an increase in CAD in district Peshawar (khan, Hassan &Hafizullah, 2006). 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 (Hassan, Awan, Gul, Sahibzada & Hafizullah, 2005).

2. Purpose

The purpose of the study is to analyze 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 factors responsible for ischemic heart disease but will also help us to recommend preventing measures for different age group and gender

3. Methodology

Approval from a research ethical committee of Gandhara University was taken. Written consent from patient was also taken. Cross sectional study design was used. All the male and females patients of different age groups admitted with IHD were subjects of the study. Data was collected in three tertiary care hospitals of Peshawar i.e. Lady Reading Hospital, Khyber Teaching Hospital, Hayatabad Medical complex. n=350 patients with IHD were selected for study (calculated by using a WHO calculator for sample size calculation) Non-probability convenient sampling method was used. Semi-structured questionnaire having both open ended and closed ended questions were used to collect the data. Data was analyzed by using computer software SPSS version16. Descriptive statistics were used to describe data. Chi square test was applied to check the significance between groups. P-value less than 0.05 was considered significant.

4. Results

Gender	Frequency	Percentage
Female	133	38%
Male	207	62%
Age groups		
<45	54	15.4%
>=45	296	84.6%

Table 1: Demographics of subjects

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.

Risk factors		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	No	25	69	94	12.283[a]	.000	**Significant**

Assessment	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			
Body Mass Index	Normal	27	186	213	3.160[a]	.075	Insignificant
	Above Normal	27	110	137			

Table 2: D.ifferent risk factors of IHD between different Age groups

Analysis of risk factors with different age groups which were less than 45 years of age and more than and equal to 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. While HTN, DM , stress and cholesterol were found to be significantly associated with >= age years group (P-value <0.05).

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			
Body Mass Index	Normal	85	128	213	.839[a]	.360	Insignificant
	Above Normal	48	89	137			

Table 3: Association of risk factors with both gender

Comparison of gender with frequency of risk factors did not show any significant difference with a family history of IHD,cholesterol level, triglycerides level, BMI (p-value >0.05). HTN, stress & HDL showed highly significant differences with male gender (P-value <0.05). While DM & sedentary life style showed a significant difference with female gender (P- value 0.05).

5. Discussion

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 Nadeem et al. in 2013 at Wah cantt Pakistan. Our study shows that 15% of IHD patients are in the <45 years of age in 2013 group and 85% patients are in the >= 45 years of age group. In 2013 study done by Hussain et al. 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 habits, sedentary lifestyle and stress level.

In our study results, 57% patients have the family history of IHD.While Nadeem et al's (2013)study showed that 46% patients have the family history which is less than our study. 30.3% Diabetics are found in our study. In Hussain et al's (2013) study diabetic were 36.8% which is higher than our study.

Our study results show 62% patients with a sedentary lifestyle. In 2004 study done by Dodani et al. in Karachi at Aga Khan university hospital found that 72% of ambulatory Pakistani had sedentary life style. Our results show 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 (Gupta,1987).In Nadeem et al's(2013) study smoking was found to be in the 46% of male.

Increased total cholesterol (23.7%), triglycerides(28%), low density lipoproteins(29%) and below normal High density lipoprotein(30.%) have been noted in our study. The same results were shown by the other studies (Nadeem et al., 2013: Bhalli, Kayani, Samore, 2011). 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(Abbas, Riaz, Malik, 2003; Yusuf et al,2004)

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 do not find any study which indicates the difference in frequencies of acute and chronic IHD.

In the comparison of gender with risk factors HTN, diabetes, stress, lifestyle and Hihg density lipoprotein shows the significant difference (p-value <0.05) and these risk factors are more common in male. While other risk factors does not show any significant differences (p-value >0.05). Hussain et al's (2013) study showed the same significant differences p-value>0.05 with HTN and stress, but they were more common in female this difference in gender is because in our study, we have more male (62%) patients as compared to female (38%) patients

When frequencies of various risk factors were analyzed between two age groups, significant differences (p <0.05) were found for diabetes, hypertension, stress and cholesterol. These risk factors are more common in >45 years of age group. Whlie the rest of variables showed no significant differences (p-value >0.05). A study done by Hussain et al. in 2013 showed a significant association of HTN and diabetes and stress in >40 years of age group.

6. Conclusion

This study showed the increased frequency of stress followed by hypertension, sedentary life style, family history, smoking, diabetes, obesity and dyslipidemia. Frequency of acute IHD cases is more than chronic IHD cases. Stress & hypertension are more common in males while sedentary lifestyle and diabetes mellitus are in females and in age group equal to and more than 45 years.

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