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A DESCRIPTIVE STUDY TO EVALUATE RISK FACTORS AND COMORBIDITIES AMONG ISCHEMIC HEART DISEASE PATIENTS IN MULTAN

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Abstract:
Objective: To evaluate comorbidities and risk factors among ischemic heart disease patients.
Methods: The descriptive study was conducted at the cardiology ward of Nishtar Hospital, Multan and comprised and comprised data related to patients from July, 2018 to June, 2019. Data was analyzed using SPSS 20.
Results: Out of 377 individuals, 238(63.1%) were males and 139(36.9%) were females. Depression outnumbered all other comorbids 137(58%) in males and 103(74%) in females. It was followed by anxiety in 129(54%) males and 90(65%) females. In risk factors, high-cholesterol diet outnumbered all other risk factors 137(58%) followed by stressful life 123(52%)in males, while in females physical inactivity 91(65%)and stressful life 91(65%) both were leading risk factors.
Conclusion: A variety of risk factors existed in ischemic heart disease patients. Special attention should be paid to stressful lifestyle and high cholesterol, two of the most common risk factors in both genders.
Keywords: Coronary Artery Disease, Coronary Heart Disease, Risk factor, Ischemic Heart Disease.

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INTRODUCTION:

Ischemic heart disease (IHD), the leading cause of death in most Western countries, is a "cardiovascular" disease literally meaning a disorder affecting the heart and/or blood vessels. In IHD, the blood vessels that supply the heart become increasingly narrow. Eventually, the flow of blood to the heart slows or stops, causing chest pain (angina), breathlessness and heart attack [1], it has been considered the leading cause of mortality and morbidity across the world.

IHD has been associated with many comorbidities like obesity, which is an increasingly prevalent metabolic disorder affecting not only the US population, but also that of the developing world. IHD usually occurs among the obese as the body mass index (BMI) increases along with variation in distribution of body fat, leading to dyslipidemias, atherosclerosis, hypertension and then finally IHD [2]. Diabetes mellitus (DM) is also considered an IHD comorbid as it usually leads to kidney damage (kidney failure) leading to hypertension and further narrowing of the vessels and ultimately to IHD [3,4].

Psychic conditions like anxiety and depression may also lead to IHD as mood and anxiety disorders have been linked to heart disease, with researches showing that those displaying symptoms of anxiety or depression are at higher risk for cardiovascular-related morbidity and mortality [5,6]. Those with the highest levels of anxiety have as much as a three-fold increase in risk for fatal IHD [7], and those with clinical depression have been shown to be at double the risk for cardiac incidents even as much as 10 years following the onset of depression [8]. While there is a link between these disorders, the connection itself is not well understood.

Chronic anemia increases preload, reduce after load, and leads to increased cardiac output [9]. Anemia is also linked with IHD as it usually exacerbates the condition and leads to heart failure. Anemia in heart failure is believed to develop due to a complex interaction of iron deficiency, kidney disease and cytokine production, although micronutrient insufficiency and blood loss may contribute [10]. There are pathophysiological reasons why the presence of anemia may lead to adverse cardiovascular consequences. In the long term, this may result in maladaptive left ventricular hypertrophy (LVH), which, in turn, is a well-recognized risk factor for cardiovascular disease (CVD) outcomes and mortality. In theory, the presence of anemia may also exacerbate cardiac ischemia as a result of decreased supply or increased demand for oxygen, such as in patients with underlying coronary disease or those with LVH [11].

IHD has great association with sleep disorders as they play a role in CVD. The exact role that they play is still not quite clear. CVD was a leading cause of death in a cross-sectional study of 5419 Finnish adult men. A higher prevalence of diagnosed myocardial infarction (MI) was found among those who slept more than 9 hours, whilst those sleeping less than 6 hours per night had more symptomatic coronary heart disease (CHD), showing the relationship of sleeping disorders with IHD [12].

IHD has been associated with a large numbers of risk factors, like smoking as the smoke contains those irritants which on one side increases carb oxy-hemoglobin to an unacceptable level while on the other hand it also contains irritants causing pulmonary oedema [13]. Increased uptake of cholesterol in diet usually is a cause of atherogenesis, leading to narrowing of the vessels then to hypoxia of cardiac muscles, and finally to IHD [14].

Obesity means increase in amount of body fat, which on the one hand leads to increase in vasculogenesis, increase in cardiac output and stroke volume output leading to LVH and IHD, while on the other hand the adipose tissue is not simply a passive storehouse for fat but an endocrine organ that is capable of synthesizing and releasing into the bloodstream an important variety of peptides and non-peptide compounds that may play a role in cardiovascular homeostasis. Since homeostasis is disturbed in obesity, hence, the chance of IHD keeps rising [15]. Physical inactivity has great association with increase in bodyweight leading to obesity which ultimately leads to IHD [16,17]. Stress usually has an adverse effect on heart as brain and heart work closely and continuous stress leads to hypertension, ultimately leading to CVD [18].

High salt intake is mostly not always considered to be the cause of IHD as high-salt diet leads to hypertension, ultimately leading to IHD and it is also considered to be a cause of mortality in CVD. On the basis of the results of a meta-analysis of randomized controlled trials of salt reduction, it was estimated that a reduction in habitual dietary salt intake of 6g a day would be associated with reductions in systolic/diastolic blood pressure of 7/4mmHg in people with hypertension and 4/2mmHg in those without hypertension [19].

Dyslipidemia means deranged lipid profile, i.e. bad cholesterol, low-density lipoprotein (LDL) very low-density lipoprotein (VLDL) and triglycerides (TG), increase from the normal level, while good cholesterol, the high-density lipoprotein (HDL), decreases to below acceptable range. This derangement usually leads to atherogenesis and to IHD [20-22]. The current study was planned to evaluate the frequency of comorbidities and risk factors among males and females, and to find out the most common risk factors and comorbidities associated with IHD in patients of both genders.

METHODOLOGY:

The descriptive questionnaire-based study was conducted at Cardiology Wards of the Nishtar hospital, Multan and comprised and comprised data related to patients from July, 2018 to June, 2019. A preform was designed to have two sections; first section covered demographic details, while the second section was further divided into two compartments. The first included comorbidities, i.e. hypertension,

DM, dilated cardiomyopathy (DCMP), neuropsychiatric disorders like anxiety, depression, Alzheimer's disease, and cognitive disorders, as well as anemia and sleeping disorders. The second sub-section included risk factors i.e. smoking, high-cholesterol diet, obesity, physical inactivity, stressful life, high salt intake and dyslipidemia.

After approval by the institutional review boards, a sample size was calculated by using Arosoftware formula by using 5% as margin of error, 95% as confidence interval (CI), 20,000 as a population size and response distribution as 50%. The division of sample was done randomly based on the burden of heart patients. Subjects for this study were selected using convenience sampling.

Those who refused to sign consent and those who were not suffering from IHD were excluded. The proforma was filled up during one-on-one sessions with all the subjects individually. Data was analyzed using SPSS 20.

RESULTS:

There were 377 patients in the study. Overall, there were 238(63.1%) males and 139(36.9%) females.

Table No 01: Gender Distribution

Gender	Quantity	%age
Male	238	63.13%
Female	139	36.87%
Total	377	100%
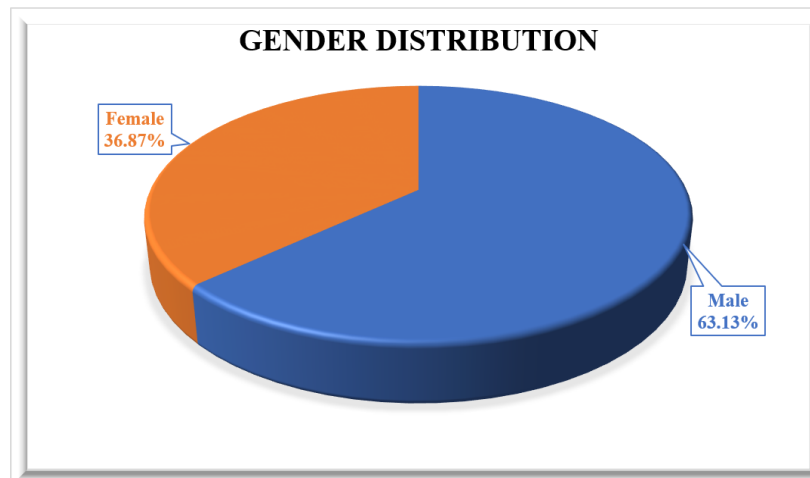
Among the males, depression 137(58%) outnumbered all other comorbidities, followed by anxiety 129(54%). Among the females, depression was the leading comorbid 103(74%) followed by anxiety 90(65%) (Table).

Table No 02: Comorbidities and risk factors

Statistics		Gender of the patient		P-value
		Male n(%)	Female n(%)	
Co-Morbidities				
Hypertension	Present	120(51%)	71(51%)	0.902
	Absent	118(49%)	68(49%)	
Diabetes	Present	84(35%)	44(32%)	0.472
	Absent	154(65%)	95(68%)	
Dilated cardiomyopathy	Present	27(11%)	6(4%)	0.020
	Absent	211(89%)	133(96%)	
Anxiety**	Present	129(54%)	90(65%)	0.109
	Absent	108(46%)	49(35%)	
Sleeping Disorders	Present	109(46%)	83(60%)	0.009
	Absent	129(64%)	56(40%)	
Depression*	Present	137(58%)	103(74%)	0.001
	Absent	101(42%)	36(26%)	
Anemia	Present	36(15%)	38(27%)	0.004
	Absent	202(85%)	101(73%)	
Risk Factors				
Smoking	Present	98(42%)	3(2%)	0.000
	Absent	140(58%)	136(98%)	
High cholesterol diet*	Present	137(58%)	63(45%)	0.022
	Absent	101(42%)	76(55%)	
Obesity(BMI>30)	Present	62(26%)	51(37%)	0.030
	Absent	176(74%)	88(63%)	
Physical inactivity*	Present	114(48%)	91(65%)	0.001
	Absent	124(52%)	48(35%)	
Stressful life**	Present	123(52%)	91(65%)	0.009
	Absent	115(48%)	48(35%)	
Dyslipidemia	Present	28(12%)	9(6%)	0.096
	Absent	210(88%)	130(94%)	
High salt intake	Present	93(39%)	74(53%)	0.008
	Absent	145(61%)	65(47%)	
BMI: Body mass index				
***most common co-morbidity in both genders**				
****second most common co-morbidity in both genders.**				

High-cholesterol diet 137(58%) outnumbered all other risk factors among the males followed by a stressful life 123(52%). Among the females, physical inactivity and stressful life both had the same frequency of 91(65%).

DISCUSSION:

The study showed interesting results. An earlier study showed that 2.55% of IHD patients had diabetes as a comorbid associated with it while in our study 34.2% patients had diabetes as a comorbidity, highlighting the fact that diabetes is one of the commonest comorbidities associated with IHD [23]. Literature has also quoted that 26% IHD patients had anxiety as a comorbid, while in our study 58.1% had anxiety [24].

According to another study which was conducted in France in 2010, 4.99% IHD patients had depression as a comorbid, while in our study 63.6% had depression; a huge and alarming difference [25]. Another study

which was conducted in Canada showed that 5.4% IHD patients had smoking as a risk factor, while in our study it was 26.8% [26]. A study conducted in Gujarat, India, showed that 56% IHD patients had dyslipidemia, while in our study there were 9.8% [27]. The current study was planned to evaluate the frequency of comorbidities and risk factors among males and females, and to find out the most common risk factors and comorbidities associated with IHD in patients of both genders.

CONCLUSION:
A variety of modifiable risk factors exist in patients with coronary heart disease. Special attention should be paid to stressful lifestyle, high cholesterol and physical inactivity; three of the most common IHD risk factors in both genders.

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