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DOI: 10.46903/gjms/22.02.1453

ORIGINAL ARTICLE

ISCHEMIC HEART DISEASE AND ITS ASSOCIATED RISK FACTORS IN PATIENTS AT TERTIARY CARE PEOPLES MEDICAL COLLEGE HOSPITAL NAWABSHAH

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ABSTRACT

Background: Ischemic heart disease (IHD) is also the main cause of mortality in Pakistan, so it is necessary to identify the risk factors among the general population at earlier stages of diseases.so that precious lives can be saved. Objectives of the study were to determine the frequency of ischemic heart disease at the age of 30 years andabove at tertiary Care Peoples Medical College hospital Nawabshah and identify the associated risk factors of ischemic heart disease at tertiary care Peoples Medical College, Nawabshah.

Materials & Methods: This descriptive Cross-Sectional study was conducted at PMC Hospital Nawabshah from Nov 2022to Dec 2022. About 245 known ischemic heart disease patients were interviewed through structured questionnaire, who visited in CCU (OPD) & ward. The information about associated risk factors like age, gender, education, Smoking, BMI, and nutrition was collected bynon-probability convenience sampling and data was analyzed by using SPSS version 25.

Result: The prevalence of ischemic heart disease in district Nawabshah was 22%. The main associated factors were the age with risk 32% in age group of 51-60 year, males are 52.65% and 47.35% female, and illiterate 69.80%, 14.69% are primary literate, 42.45% house wife female, 22.86% labours and overweight 35.10%.

Conclusion: It was concluded in our study that IHD is a major public health problem and there is need to improve education systems, increase awareness about health and healthrelated risk factors related to IHD in the communities.

KEY WORDS: Ischemic heart disease; associated risk factors; PMCH; Nawabshah.

Cite as: Mangi RA, Ali KZ, Siyal Y, Murk A, Khoso R, Bhellar S, et al. Ischemic heart disease and its associated risk factors in patients at tertiary care Peoples Medical College Hospital Nawabshah. Gomal J Med Sci 2024 Apr-Jun;22(2):92-6. https://doi.org/1046903/gjms/22.02.1453

INTRODUCTION

Ischemic heart disease (IHD) is the impairment of heart function due to inadequate blood flow to the heart compared to its needs, caused by obstructive changes in the coronary circulation.[1] According to World Health Organization (WHO), cardiovascular diseases (CVD) including IHD were the most common cause of deaths among people in 2019; & an estimated 17.9 million people died from CVD; representing 32% of all deaths globally including 80% of deaths in developing world.[2] IHD affect 126 million people (1.7%) of the world's population.[3] In Pakistan almost 1/3rd of population living under poverty line with burden of IHD mainly in 20% middle age population[4,5] Risk factors mostly identified are hypertension, obesity, diabetes, genetics, smoking and the sedentary life style & high level of cholesterol.[6] In Pakistan; 11.6% males and 18.93% females live with preventable risk factors like obesity, overweight and smoking predominately in males. The other independent risk factors that may initiate IHD includes physical inactivity, inadequate nutrition and irregular sleep.[7,8] It was estimated that 150 minutes per week exercise reduces 17% to 23% CVD risk and mortality risk of IHD.[9] There is about 1 out of 3 persons who

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Date Submitted: 04-08-2023
Date Revised: 18-01-2024
Date Accepted: 14-02-2024

have hypertension and more than 31% of the world population is suffering from hypertension which has linear relation to heart failure and IHD.[10,11] Globally diabetes mellitus has a significant influence; more than 350 million people worldwide have diabetes, including 52 million peoples in Europe.[12] Women with type 2 diabetes are three times more likely to develop fatal coronary artery disease than non-diabetic women. The metabolic inflammatory response caused by activating the TLR 2 and 4 signaling pathways, mediates the synergistic relationship between diabetes and ischemic heart disease in females.[13] The international diabetes federation predicts a 60 percent rise in new cases of diabetes mellitus in Latin America during the following 15 years.[14] It was also understood that work related psychological factors such decision making ability[15] job insecurity[16] job strain[17] may increase a person's risk of IHD. Family history of IHD is linked to an increased risk of acquiring the condition, according to several cohort studies.[15,18] Around 75% of cardiovascular diseases including ischemic heart disease is attributable to low fruit and vegetable consumption in diet and high cholesterol level. Nearby annually 2.7 million deaths are because of low intake of vegetables and fruits which leads to the 31% development of IHD. Age wise assessment was done in this research conducted by WHO in 2017-18 shows that approximately (12.1%) population who were diagnosed with ischemic heart disease were less than 40 years of age and, (49.2%) patients who are diagnosed with ischemic heart disease were of more than 40 years of age.[2] It was predicted that the prevalence of this disease will rise up to 43.9% by 2030.

Therefore, it is very important to increase adequate information regarding the risk factors in general public all over the country. It has been found that diet and lifestyle modification are the priority factors in order to reduce the burden of ischemic heart disease in general public population.

MATERIALS AND METHODS

This Cross-sectional study was conducted on diagnosed IHD patients of 30 years and more in cardiology department PMCH Nawabshah from Nov 2022 to Dec 2022. Sample size was calculated according to the various studies on prevalence of IHD in Pakistan, which was (15.3%-26%) averagely 20%, using 95% confidence interval, 5% margin of error with the help of sample calculation formula that is:

$N = z^2 x\ p\ x\ (1\text{-}p)/E^2$

In this n is the required sample size, Z is the Z score corresponding to the desired confidence level (95%), p is the expected prevalence of (IHD) in Pakistan (0.20 0r 20%) and E is the desired margin of error (0.05 or 5%). Using the given values

$N = 1.962 \times 0.20 \times (1 - 0.20)/0.05^2$

N= 3.8416x0.20x0.80/0.0025

N= 0.6147/0.0025

N= 245.88 patients

So calculated sample was 245 patients.

The Patients were included with written consent and by following the inclusion and exclusion criteria, so adult males and females were added having age 30 years old or above and diagnosed patients of ischemic heart disease, diagnosed by cardiologists through ECG and clinical examination. Other patients were excluded who were below the age of 30 years and having other heart diseases.

This study data was gathered on predesigned questionnaire from already diagnosed cases of IHD patients in cardiology department after verbal consent. The data was collected about variables like; age, gender, education, occupations, sleeping patterns, hypertension, body weight, and physical activity.

All data was analyzed by SPSS version 25.0. The variables like education, occupation, income and others were analyzed. For categorical variables, frequency and percentage were calculated. The data was represented through Graphs and Charts.

RESULTS

The study was conducted on 245 diagnosed cases of IHD patients out of 1100 patients who visited cardiology department of PMCH, Nawabshah.

Most of study subjects (32%) were of 51-60 years, 31% of 61-above years and (28.2%) of age group 41-50 years. Male were more affected 52.65% than females 47.35% and of them 74.7% were married, with 40.8% has family history of IHD. The educational status was as illiterate 69.80% (47.8%) and 52.2% were have irregular sleep. The BMI was measured showing overweight 35.10%, 26.46% obese &5.71% underweight. 14.69% primary literate, Secondary education 7.76% & higher education 7.76%. Most of IHD patients 42.45% female were house wife, labourer 22.86% and farmer 22.86%, consuming meat 74.45% showing 27.35% were smoker. Around 9.4 % were doing mild exercise, than 90.6% with no exercise.

The study population has comorbidities like HT-N+DM combined13.1%, DM (12.7%), HTN (39.2%), have regular sleep. See Figure 1 and Table 1.

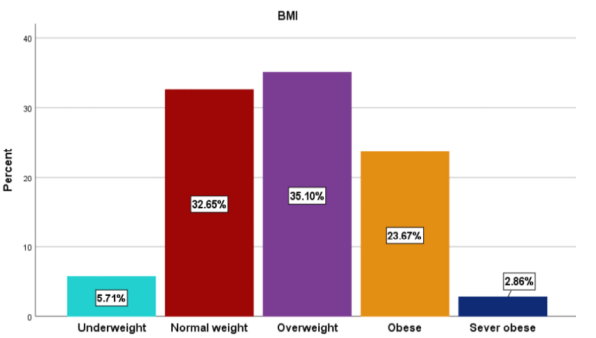

Figure 1: Show BMI of patients (n=245)

Table No 01: Shows Associated risk factors, data of the 245 subjects. (n=245)

Variables		No.of Cases	Frequency%
1. Age of the Subjects (In years)			
	30-40	21	8.6%
	41-50	69	28.2%
	51-60	78	32%
	61-above	77	31%
2. Gender of the Subjects			
	Male	129	52.65%
	Female	116	47.35%
3. Marital Status of the Subjects			
	Single	1	0.4%
	Married	183	74.7%
	Widow	52	21.2%
	Widower	9	3.7%
4.Family History			
	Yes	100	40.8%
	No	145	59.2%
5. Educational status			
	Illiterate	171	69.80%
	Primary	36	14.69%
	Secondary	19	7.76%
	Higher Secondary	19	7.76%
6.Occupational Status			
	House wife	104	42.45%
	Farmers	56	22.86%
	Laborer	56	22.86%
	Businessmen	26	1.63%
	Govt: job	27	11.02%
7.Consumption of Meat			
	Yes	183	74.69%
	No	62	25.31%
8.Smoking			
	Yes	67	27.35%
	No	178	72.65%
9.Physical Exercise			
15-30 mints	19	19	7.8%
60 mints	4	4	1.6%
>60 mints	0	0	0%
No exercise	222	222	90.6%
10.Other Comorbidities			
	HTN+ DM	32	13.1%
	Diabetics	31	12.7%
	Hypertension	96	39.2%
	Other disease	15	6.1%
	No Co-Morbidity	71	29%
11.Sleeping			
	Regular	117	47.8%
	Irregular	128	52.2%

DISCUSSION

The study result shows the rising prevalence of IHD associated with risk factors like age, gender, illiteracy, occupation, marital status, family history, overweight, obesity, hypertension, diabetes, physical inactivity and sedentary life styles, in comparison it is same as study by T Kazmi which showed 17.0% had ischaemic heart disease in Pakistani peoples.[19] The middle and low income South Asian countries like Pakistan, India, Afghanistan, Bangladesh, and Sri Lanka because of health transition from communicable to non-communicable diseases the burden of IHD has increased.[7,8] In Pakistan almost 1/3rd of population live under poverty line and prevalence of IHD was estimated 20%.[9,10] In our study most patients of IHD were in higher age bracket because of atherosclerosis risk, these risk factors are same as described by Fabris et al, which contribute the progress of IHD.[20] Age wise assessment was done in a research study conducted by WHO in 2017-18 showed 49.2% patients diagnosed of IHD were more than 40 years of age.[2] In current study male 52.65% were more affected than female 47.35%.as males are exposed to environmental factors more than females like smoking and stressful life style. Current study showed 74.7% were married & 21.2% were widows, because of increased responsibilities of children and family to fulfill the basic needs of life for their families like food, education, and better living; people make efforts beyond their limits, this concept of marital status associated with development of IHD also described by Bihter Senturk et al in their study at Turky.[21] Also 40.8% has family history of IHD and 59.8% has no family history of IHD. According many studies family history of IHD is also important risk linked to an increasing the risk for IHD.[22,23] Education is an important component for the prevention of diseases. The current study determines that the illiterate 69.80%, 14.69% primary literate. Various epidemiological studies showed conflicting results about the link between education level and outcomes of disease. This study found that most of the people are illiterate because they belong to rural communities and follow their ancestor's which include labourers and farmer. The occupation of study population showed 42.45% female are house wives, labourer 22.86% and farmer 22.86%; the work related psychological factors such decision making ability, job security, job strain increases person risk of IHD, it also has been recognized that risk increased by physical work environment, tobacco smoke as well as by work schedule such as shift Work.[23] In 1960-1980 showed consumption of meat increased risk for IHD. Meat consumption has strong association with IHD. This association between meat consumption and fatal ischemic heart disease is strong in men than female [24], the current study also reflects same about 74.69% were consuming meat in their diet.

Overall results shows that 27.35% peoples are smokers and 72.65% are non-smokers from overall

population of this study. The reason is that diagnosed patients quited smoking recommended by doctors. Previously peoples were unaware about the harmful effects of smoking but those who were habitual to smoking showed pre symptoms of developing heart diseases which also include ischemic heart disease. The literature search shows that prevalence of smoking was 80.8% in males and 59.5% in females. The risk of ischemic heart disease in smokers begins in early stages of life and subsequently increases in adult and older age.[25] The current study determine overweight 35.10%, and 26.73% obese. It was estimated that 1.9 billion people were overweight in 2016, with 650 million of them being obese. The obese people over the age of 18 were 18.9%. Type 2 diabetes mellitus, ischemic heart disease and cardiovascular disease all increased by obesity. Several cohort studies confirms obesity as independent risk factor for IHD. According to world health organization obesity and overweight account for 44% of the developing diabetes.[26] About 1 in 3 patients, or 31% of the world population including Asian countries suffer from hypertension.[27] The significant risk factor for developing IHD is hypertension. The current study determines 39.2% of the population is suffering from hypertension because of high consumption of salt in their diet. Data from international study showed 52 million individuals in Europe and more than 350 million people worldwide have diabetes[28], current study determine that 12.7% of the population is suffering from diabetes. Among individuals who reported some sleep disturbance, the effect of short sleep and irregular sleep of 5 to 6 hours is linked raising IHD. Around 20% of adult population in western countries are estimated to have sleeping problem.[29] The current study result illustrate 52.2% patients were irregular sleeping habits use sleeping pills and mobile phones watching media programs at late night hours.

CONCLUSION

The study reveals that age, gender, education, hypertension, diabetes, occupation, physical inactivity, meat consumption, and sleeping habits significantly increase the risk of ischemic heart disease (IHD). The majority of patients, particularly those aged 51-60 years, are unaware of health issues due to low education, illiteracy and risk increases when they become overweighed, and sleep pattern is irregular.

Recommendations: By improving awareness about the modifiable risk factors reduces the risk of ischemic heart disease. Health education is one of the best way in reducing the risk of IHD. Organizing health education sessions about BMI will prevent not only the IHD but also other comorbidities like diabetes, hypertension and other non-communicable diseases. Mobilizing mass media to build awareness in the general population Improve, free, adequate health care services at health care centers. Increases surveillance and research for non-communicable associated factors as risk of burden increasing can be reduced.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
GRANT SUPPORT AND FINANCIAL DISCLOSURE
None declared.

AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	RAM, KZA, YS
Acquisition, Analysis or Interpretation of Data:	RAM, KZA, YS, AM, RK, SB, MAU
Manuscript Writing & Approval:	RAM, KZA, YS, AM, RK, SB, NSS, MAU

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.