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Knowledge of modifiable risk factors of ischemic heart disease among patients presenting with acute myocardial infarction in peshawar

Abstract

Background: Ischemic Heart Disease is the leading cause of death around the world. Smoking, sedentary life, hypertension, diabetes, abdominal obesity, low consumption of fruits and vegetable are few of the modifiable risk factors optimizing which greatly reduces the morbidity and mortality associated with this disease.

Materials and methods: This Cross-Sectional Analytical Study was conducted in the departments of Cardiology of three Medical Teaching Institutes (HMC, KTH, LRH) of Peshawar from March to August 2017. Both male and female patients aged 30-65 years were included in the study using simple random sampling. Data was collected by using close ended questionnaire having demographic data, disease data and patients opinion regarding different risk factors.

Results: Among 100 patients, 56 were male and 44 were female. Highest numbers of patients (45) belong to>60 years age group. 68% of both diabetic and hypertensive patients were aged>60 years. Patients having high level of education had better knowledge regarding safe diet (87% as compared to 26%). Level of awareness regarding smoking, physical exercise and obesity was very low as majority of patients didn't get routine health education. 80% of current and 85% of ex-smokers considered smoking as risky while 70% of non-smokers didn't know whether smoking makes any difference or not.

Conclusion: Knowledge of modifiable risk factors of Ischemic Heart Disease and their significance in reducing the disease morbidity is lacking in Peshawar and patient education is direly needed.

Keywords: ischemic heart disease (IHD), IHD risk factors, diabetes, hypertension and IHD, smoking, physical activity and IHD, Fatty foods and IHD, Fruits, vegetables and IHD, MTI Peshawar

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Introduction

Ischemic Heart Disease is the leading cause of death around the world taking a toll of around 17 million lives in 2013. It is a pandemic that is prevalent in every continent, affecting both developing and developed nations alike.[1] The mortality spectrum attributed to it spreads from as low as 43 per 100,000 per annum in South Korea to more than 250 per 100,000 per annum in certain European countries.[2] IHD is a major cause of death among men and women in most European countries despite vast advancement in treatment and improvement in diagnosing modalities.[3] About 60% of patients who survive a myocardial infarction still have a high risk of having another acute cardiac event in coming years.[4] However, this risk can be lowered by adequate evidence based management including certain lifestyle changes, like smoking cessation and doing regular physical exercise.[5] INTERHEART study showed that nine modifiable risk factors for IHD explain a large (>90%) proportion of the threat of developing an initial acute MI and consequences. Among others, the presence or absence of diabetes, hypertension, smoking, regular physical activity, abdominal obesity, daily consumption of fruits and vegetable are those with great significance in determining the overall mortality and morbidity of IHD.[6] The progression of atherosclerosis and IHD is enhanced markedly by diabetes and hypertension. These

ailments not only add to morbidity and worsen the prognosis but also affect the treatment and its success markedly.[7] WHO states the global prevalence of diabetes among 422 million with a rise from 4.7% to 8.5% in past 30 years.[8] Similarly hypertension is responsible for 18% of cardiovascular disease deaths in Western countries.[9] Diabetes and hypertension are managed not only by achieving optimum glycaemic control but also the combination of anti-hypertensive and other medications. Drugs such as statins, antiplatelet agents and angiotensin-converting enzymes inhibitors are also recommended to these patients as they are at much higher risk for IHD.[10] Smoking can lead to at least two-fold increase in the risk of coronary artery disease.[11] The INTERHEART study showed that quitting reduces the risk of developing a myocardial infarction by about 65%.[6] Sedentary life style with minimum regular physical exercise leads to both obesity and IHD. This trend is more significant in South Asians as they are more susceptible to grave consequences of sedentary lifestyle.[12] This is mainly due to lack of understanding the benefits of the recommended amounts of physical activity by South Asians.[13] A diet rich in fruits and vegetables with low amount of animal and trans fatty acids is ideal for general and specially for cardiovascular health because these fresh foods undergo minimal processing and are rich in fiber, antioxidant polyphenols and essential micro and macronutrients.[14] PREDIMED primary prevention trial showed that a

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dietary intervention in selected individuals who stick to a kind of diet mainly containing fruits and vegetables significantly reduces the risk of developing hypertension and CVD outcomes.[15]

Materials and methods

This Cross-Sectional Analytical Study was conducted in the departments of Cardiology of three Medical Teaching Institutes (HMC, KTH, LRH), Peshawar from 1st March 2017 to 31st August 2017. A sample of 100 admitted patients of age 30 to 65years were selected from indoor patients admitted in Coronary Care Units using non probability, simple random sampling. Both male and female patients of the above age group having classical clinical presentation, positive electrocardiographic features of acute myocardial infarction (ST elevation) and raised cardiac enzymes were included in our study. Patients having chest pain with other electrocardiographic features (ST depression, T wave Inversion), negative cardiac enzymes and other alternative diagnoses were excluded. The data was collected by interviewing the patient using close ended questionnaire having demographic data, clinical presentation and information on the patients knowledge regarding modifiable risk factors of myocardial infarction. The patients were interviewed by the study team and both verbal and written informed consent was taken prior to obtaining the data. The data was analyzed using various statistical tools for demographic characteristics and other variables. Variables included gender (male and female), age group (30–45, >45-60years and >60years), co-morbidity (diabetes and hypertension) and patient's opinion **regarding** lifestyle (smoking, physical exercise and obesity)

and diet (fruit, vegetables, fatty foods, oil and ghee). Computer program SPSS (version 21) was used for data analysis.

Results

A total of 100 patients participated in our study of whom, 56 were male and 44 were female. Majority of male patients (46%) were more than 60 years of age while majority of female (50%) were aged 45 to 60 years (Figure 1). Majority of patients (17 out of 25) with both diabetes and hypertension were in the highest age group (>60 years) (Figure 2). Level of awareness regarding smoking, physical exercise and obesity was very low as majority of patients didn't know the difference these risk factors make. For instance; of sedentary people (87 out of 100), 51% didn't know whether smoking affects heart attack or not, 50% had no idea regarding benefits of exercise and 34% didn't know how obesity affects risk of heart disease. 80% of current and 85% of ex-smokers considered smoking as risky while 70% of non-smokers didn't know whether smoking makes any difference or not (Table 1). Patient's opinion regarding fruit, vegetables, fatty food and oil or ghee was assessed in coherence with their level of education. It turned out that patient having high level of education had better knowledge regarding safe diet as compared to those having little or no education. For example, 35% people with no education considered no difference between oil and ghee as compared to 15% people with secondary education. Also only 26% of illiterate people considered oil better than ghee while 87% of people with secondary education considered oil better than ghee (Table 2).

Table 1 level of awareness regarding lifestyle factors (smoking, exercise and obesity)

Patients opinion regarding life style	Risk of heart attack	Patients physical exercise		Patients use of tobacco		
		Yes	No	Never used	Current user	Ex user
		13	87	60	20	20
How does smoking affect the heart attack?	Increase	10	40	17	16	17
	Decrease	-	1	1	-	-
	No effect	2	1	-	2	1
	Don't know	1	45	42	2	2
How does exercise affect heart attack?	Increase	1	3	2	1	1
	Decrease	11	40	19	16	16
	No effect	-	-	-	-	-
	Don't know	1	44	39	3	3
How does obesity affect heart attack?	Increase	11	55	37	15	14
	Decrease	1	2	1	1	1
	Don't know	1	30	22	4	5

Table 2 Level of awarness regarding different diets and level of education of the study subjects

Patients opinion regarding diet	Risk of heart Attack	Patients level of education				
		None	Read and write	Elementary	Secondary	Higher Secondary
		65	17	9	8	1
How does diet rich in fruits affect heart attack?	Increase	2	1	2	-	-
	Decrease	28	11	4	6	1
	Don't know	35	5	3	2	-

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Table Continued.....

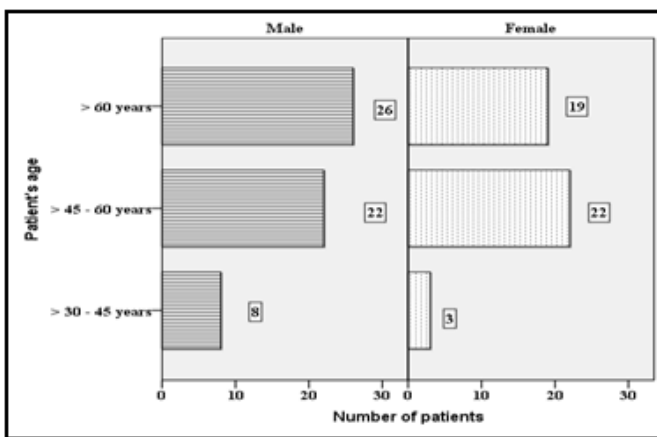| Patients opinion regarding diet	Risk of heart	Patients level of education				
	Attack	None	Read and write	Elementary	Secondary	Higher Secondary
How does diet rich in vegetables affect heart attack?	Increase	1	-	-	-	-
	Decrease	30	13	6	7	1
	Don't know	34	4	3	1	-
How does consumption of fatty food affect the heart attack?	Increase	28	11	3	7	-
	Decrease	3	1	3	-	-
	Don't know	34	5	3	1	1
In your opinion which product ghee or oil is better?	No difference	23	2	2	1	-
	Oil	17	9	5	7	-
	Ghee	7	3	2	-	-
	Don't know	18	3	-	-	1

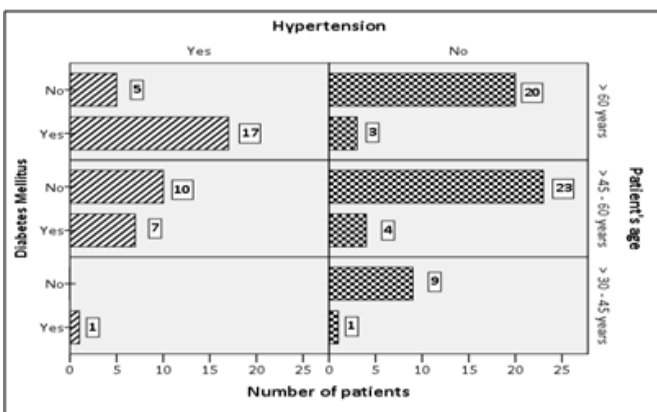**Figure 1** Demographic distribution of study subjects.

Figure 2 Disease distribution in different age groups.

Discussion

There are multiple risk factors for Ischemic Heart Disease, some of which can be modified. These modifiable risk factors include Diabetes mellitus, hypertension, consumption of diet rich in saturated fats, sedentary lifestyle, smoking and others. These can make a huge difference in ones susceptibility to this deadly disease. European guidelines emphasize avoidance of smoking and being overweight, doing regular physical exercise (at least 30 minutes each day), eating healthy food (low fat high fiber diet), keeping blood pressure below 140/90 mmHg and total cholesterol below 5mmol/l. These actions can reduce the chances of having a cardiovascular accident significantly.[3] Only smoking cessation, regular exercise and intake of fruits and vegetables can together lower the relative risk of MI by up to 80% (INTERHEART).[6] Diabetes mellitus is responsible for up to 3 million cardiovascular deaths worldwide per annum.[16] With the increase in obesity, insulin resistance, and hypertension (metabolic syndrome), the worldwide prevalence of diabetes is expected to double by the year 2030.[17] This epidemic will increase the burden of cardiovascular disease, the worst and by far the most feared of which is ST Elevation Acute Coronary Syndrome. Diabetes is not only a risk factor for ACS but also a significant contributor of the morbidity and mortality associated with it, as outlined by GUSTO-1 trial.[18] This situation becomes worse when hypertension add to it. Hypertension alone can precipitate acute cardiac events regardless of other parameters due to the damage it cause to the coronary vasculature. This destructive process is markedly accelerated when aided by diabetes leading to early and more complicated acute events. The silent nature of hypertension is the main stigma associated with its low detection leading to no awareness regarding its debilitating course.[9] Out of all, 33% of our participants were diabetic, 40% were hypertensive and 25% had both diabetes and hypertension. These are significantly high figures in context of IHD as both these diseases add to the burden of IHD significantly in the form of morbidity and mortality. Persistent higher level of glycated haemoglobin (HbA1c) leads to higher incidence of micro and macrovascular complications associated with diabetes; whereas intensive control of blood glucose retards theses complications affectively. Therefore, achieving optimal glycemic control is necessary for reducing cardiovascular risk. Unfortunately, even in patients with high level of education and access to proper healthcare facilities, only a small number achieve proper metabolic control.[19] However, people with good understanding of their illness and better awareness of their disease state are more proactive in their health matters as compared to those who are totally unaware and bother less due to lack of knowledge. Our study also shows this trend and is in line with international studies in this context.[20] Regular physical exercise is very beneficial for health, carrying improved cardiovascular and all-cause mortality as compared to sedentary lifestyle. It improves quality of life, prevents obesity, helps achieving optimum glycemic control in diabetics and lowers BP in the long run by promoting vascular health. At least 30 minutes or longer

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daily exercise of moderate intensity is recommended for all adults irrespective of their CVD status.[21]

It is estimated that tobacco smoking will kill one billion people in the world in this century.[22] This is attributable mainly to its role in IHD and its consequences. WHO estimates that when smoking is used as intended, it kills one of every two users.[23] This is a very high figure as smoking is something with no healthy use at all, totally avoidable and susceptible to legislation remedies. The issue lies with lack of awareness in this regard. A very low Level of awareness regarding smoking, physical exercise and obesity was observed in our study cohort. This is attributable to the fact that majority of patients had no awareness as to what benefits and harm each of them carries. 51% sedentary people didn't know whether smoking affects heart attack or not, 50% were not aware regarding the benefits of exercise and 34% didn't know how obesity affects heart. 80% of current and 85% of ex-smokers considered smoking as risky while 70% of non-smokers didn't know whether smoking makes any difference or not. Intake of dietary fibers is beneficial. Soluble fiber in high fiber diet reduces LDL cholesterol in small amount. This diet also increases insulin sensitivity and decreases triglyceride level.[24] Dietary fiber is mostly in the form of fruits and vegetables, although refined fibers ready to use is also available over the counter in many countries. Fruits and vegetable intake and their effect on cardiovascular disease are sparsely studied but their effect on CVD risk has been estimated and it is recommended to consume at least 5 servings of them each day.[25] On the other hand, diet rich in saturated fats is harmful and leads to accelerated atherosclerosis, hypertension, obesity, insulin resistance and ultimately IHD. The current American Diabetes Association (ADA) recommendations include total fat intake of ≤30%, saturated fatty acids (SFAs)<7%, mono-unsaturated fatty acids (MUFAs) up to 20% and poly unsaturated fatty acids (PUFAs) up to 10% of total calorie requirements.[26] In our study, patients having high level of education had better knowledge regarding safe diet as compared to those having little or no education. For example, 35% people with no education considered no difference between oil (unsaturated fatty acids) and ghee (saturated fatty acids) as compared to 15% people with secondary education. Those with higher education (87%) were more aware of the difference mainly through media, although some were educated by health professionals in the past.

Conclusion

A low risk lifestyle is recommended as it is inversely related to risk of IHD. This include no smoking, regular physical exercise, diet rich in fibers and low in saturated fats, maintaining healthy weight, keeping blood pressure and glucose under check and regular follow up ones health in order to increase awareness regarding ones health.

Acknowledgements

Conflict of interest

The author declares no conflict of interest.

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