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ASSESSMENT OF RISK FACTORS IN PATIENTS VISITING CARDIOLOGY OPD FOR PREVENTIVE HEALTH CHECK-UPS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Cardiovascular diseases are the major cause for morbidities and mortality in developing and developed nations. The major risk factors of CVDs were mainly age, sex, family history, smoking, alcohol consumption, Hypertension, Diabetes Mellitus, Dyslipidemia and obesity. Age, sex and Family history are non-modifiable risk factors while smoking, alcohol consumption, Hypertension, Diabetes Mellitus, Dyslipidemia and obesity are modifiable risk factors. Hypertension and Dyslipidemia are major risk factors which are leading to cardiovascular diseases. Adopting healthy life style changes and proper management of hypertension and diabetes mellitus can prevent cardiovascular diseases.

KEYWORDS: Cardiovascular Diseases, Risk Factors, Hypertension, Dyslipidemia, Diabetes Mellitus.

1. INTRODUCTION

Cardiovascular diseases are conditions that affect the essential components of human circulatory system such as heart, blood vessels and blood. Cardiovascular diseases are the major cause for morbidities and mortality in developing and developed nations.[1] The major risk factors of CVDs were mainly age, sex, family history, smoking, alcohol consumption, Hypertension, Diabetes Mellitus, Dyslipidemia and obesity. Age, sex and Family history are

non-modifiable risk factors while smoking, alcohol consumption, Hypertension, Diabetes Mellitus, Dyslipidemia and obesity are modifiable risk factors.[2,3]

Non -modifiable risk factors

Age: Age is the major risk factor for CVD. With increasing age, the vasculature of heart shows increased arterial stiffness and thickening as well as dysfunctional endothelium. These changes may be responsible for increased systolic pressure, which is major risk factor for development of hypertension, atherosclerosis, atrial fibrillation and stroke.[5]

Sex: Men are greater risk of cardiovascular disease than pre-menopausal Women. After menopause, female's risk is similar to a male.[6] Risk factors of CVDs are similar for men and women.[1]

Family history: Family history is the health and medical information of family members. Also, there are strong evidences for the familial CVD.[7]

Modifiable risk factors

Smoking: Smoking is a major cause for nearly 10% of CVD.[1] Smoking can directly cause arteriosclerosis and also hemodynamic changes due to chemical components like nicotine, free radicals and carbon monoxide.[8] These substances can cause increase in cardiovascular vessel walls, inflammation, vasomotor dysfunction, prothrombotic and Antithrombotic factors and alteration in lipoproteins profile. smoking cessation can cause reduction in risk for CVD.[9]

Alcohol: Alcohol is one of the major risk factors for many adverse health and social outcomes such as Hypertension, cardiomyopathy, acute myocardial infarction, cardiac arrhythmia. Higher levels of alcohol consumption have direct relation in increasing the risk for CVD.[1] Low-to-moderate alcohol usage can initiate mechanisms such as haemostatic factors affecting atherosclerosis, inflammation and pathophysiological processes which may cause most Cardiovascular diseases.[11]

Diet: There are considerable evidences regarding nutritional background of atherosclerosis in general and coronary heart disease. High dietary intakes of trans-fat cholesterol, saturated fat and salt, and vegetables, low intake of fruits and fish are related to cardiovascular risk.[1] Dietary interventions like the whole grain's consumption, along with fruits and vegetables can reduce cardiovascular risk.[12]

Diabetes mellitus: Diabetes is most common risk factor for CVD. Diabetes is defined as possessing a fast plasma glucose value exceeding or equal to 7.0mmol/l(126mg/dl). Impaired fasting glycemia and impaired glucose tolerance are risk factors which can further develops Diabetes and CVD.[1] CVDs are responsible for 60% of all mortality in people who are suffering with diabetes. In people with type 1 or type 2 Diabetes, there is two to three times higher risk for cardiovascular disease. The risk is disproportionately higher in females compared to males.[4,14] With proper management of type 2 DM cardiovascular events can be prevented. First-line therapy with Metformin is preferable if tolerable and contraindicated in patients with impaired renal function. The usage of sodium-glucose co-transporter-2 (SGCT2) inhibitors can reduce CVD and also total mortality, without causing any adverse effects in diabetic and CVD patients.[10]

Hypertension: Increased blood pressure (BP) is one of the major leading modifiable risk factors for cardiovascular disease.[10] The prevalence of hypertension is increasing globally especially in the developing nations.[19] There will be a double risk for cardiovascular disease for each incremental increase of 20/30mmHg of blood pressure, starting as low as 115/75mmHg in certain age groups.[1] Increased work stress, high expectations, strict deadlines and soaring competitions are the major contributors for hypertension.[16] An initial management of hypertension which is one of the major contributors for Cardiovascular diseases can prevent 3,00,000 of the 1.5 million annual deaths.[1] Lower levels of blood pressure can be generally achieved by lifestyle modifications and also drug therapies.[10] Lifestyle measures are mainly benefitable in management of hypertension. Dietary Approaches to Stop Hypertension (DASH) study shown that a diet low in sodium (65 to 100 mmol/day), and high in fruits and vegetables and calcium is beneficial in treating hypertension. Regular exercise, weight loss, Stress management, reducing alcohol intake and smoking cessation can minimise the risk. Intake of higher amounts of potassium can reduce blood pressure.[17]

Obesity: Obesity is a growing problem in developed and developing countries. Overweight and obesity cause adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance.[1] Obese people have a higher prevalence of cardiovascular disease which is supposed due to autonomic dysfunction and metabolic disorder. The risk of disease appears to increase as a function of the percent fat content above an upper limit of normal in the

body.[18] Excess fat has often been associated with elevated LDL-C and triglyceride levels and reduced HDL-C values.[13]

Dyslipidemia: Dyslipidemia is recognised as a prominent risk factor for cardiovascular (CV) disease.[10] It is widely accepted that CVD is associated with hypertension and increased blood levels of low-density lipoproteins (LDL), Total cholesterol (TC) and triglycerides (TG). In contrast, a low level of high density lipo-protein (HDL) is a risk factor for mortality from CVD.[15]

OBJECTIVES: The main aim of this study was to assess the risk factors in patients visiting out-patient department of cardiology for preventive health check-ups in a tertiary health care hospital.

MATERIALS AND METHODS: This is a prospective and observational study. Interviews were conducted in patients who are visiting cardiology out-patient department for preventive health check-ups in a 1000-bedded teaching and Tertiary care hospital. In this study 150 patients were enrolled after obtaining the consent. The data collection form was prepared and used. This data collection form contains the sociodemographic details of the patient, lifestyle (alcohol, smoking and diet), Family history of CAD, Hypertension and DM, Past history of HTN and DM.

Inclusion criteria

1. Patients who visit cardiology OPD for preventive health check-ups.
2. Patients aged 18-90 years.
3. Either male or female.
4. Only out patients.

Exclusion criteria

1. Pediatrics
2. Pregnancy women
3. Patients with established heart disease

Statistical analysis

Data was analyzed using SPSS version 19. Microsoft word and Excel have been used to generate graphs, tables etc.

RESULTS

Of total 150 patients, 94(62.7%) males and females 56 (37.3%) were enrolled in the study. Subjects were aged 18-90 years.

It was found that the Dyslipidemia (68.7%), followed by alcohol (41.3%), overweight (36.6%), Family History Hypertension, DM and CVD (39.3%), Diabetes Mellitus (16.7%), obese (9.3%), Smoking (10.7%), Tobacco chewing (4%). (Table 1)

Table.1: Percentage (%) of risk factors in the study population(n=150).

Parameters	Total (n=150)	Men (n=94)	Women (n=56)
Family History Of Htn, Dm, Cad	54(36%)	37(39.3%)	17(30.35%)
Smoking	16(10.7%)	16(17.02%)	00(0%)
Alcohol	62(41.3%)	62(66%)	00(0%)
Tobacco Chewing	06(4%)	04(4.2%)	02(3.5%)
Hypertension	70(46.6%)	48(51.06%)	22(39.28%)
Diabetes Mellitus	25(16.7%)	16(17.02%)	09(16.07%)
Dyslipidemia	103(68.7%)	68(72.34%)	35(62.5%)
Overweight	55(36.6%)	34(36.17%)	20(35.71%)
Obese	14(9.3%)	10(10.63%)	04(7.14%)

Out of 150, only 129 patients were having a disease of hypertension, dyslipidemia or both. Hence, association of risk factors with HTN, dyslipidemia or both had been analyzed in 129 patients. (Table 2)

Table 2: Association of Risk Factors with Hypertension and Dyslipidemia.

Variables	Diseases			P Value
	HTN (N=26)	Dyslipidaemia (N=59)	Both HTN and dyslipidaemia (N=44)	
Age (years) <45 >45	 7 19	 44 15	 17 27	<0.0001*
Gender Male Female	 16 10	 36 23	 32 12	0.4263
Obesity Yes No	 0 26	 10 49	 6 38	0.0878
Diet Veg Mixed	 2 24	 5 54	 2 42	0.7315
Occupation				

Employed Unemployed	24 2	41 18	33 11	0.0750
Smoking history Yes No	 3 23	 8 51	 4 40	0.7827
Alcohol consumption Yes No	 10 16	 20 39	 21 23	0.3620
Tobacco chewing Yes No	 1 25	 1 58	 1 43	0.8317
Diabetes mellitus Yes No	 7 19	 4 55	 14 30	0.0035*
Family history of CAD & HTN Yes No	 4 22	 17 42	 18 26	0.0761

Age and diabetes mellitus showed significant association with HTN and dyslipidemia. (Table 3).

Table 3: Multinomial logistic model for predictors of HTN and dyslipidemia.

Variable	Parameter estimated (B)	Standard error	P Value	OR/Exp. (B)	95% CI of OR
Hypertension					
Occupation	1.635	0.877	0.032	5.130	0.919-28.632
Family history	-1.568	0.688	0.023	0.208	0.054-0.804
Dyslipidemia					
Age	-1.945	0.511	0.001	0.143	0.052-0.390
Diabetes mellitus	-2.265	0.690	0.001	0.104	0.027-0.402

DISCUSSION

Cardiovascular diseases are the major cause for morbidities and mortality in developing and developed nations. The major risk factors of CVDs were mainly age, sex, family history, smoking, alcohol consumption, Hypertension, Diabetes Mellitus, Dyslipidemia and obesity. Hypertension and Dyslipidemia are major risk factors which are leading to cardiovascular diseases.

In this study total 150 patients were interviewed using questionnaire to assess the risk factors (modifiable and non-modifiable) for cardiovascular diseases and to find correlation between body mass index and serum cholesterol in patients visiting cardiology out-patient for regular

health check-ups in a tertiary health care hospital. There were total of 94(62.7%) males and females 56 (37.3%) were enrolled in the study. Subjects were both sexes and aged 18-90 years.

The major risk factor found in this study was Dyslipidemia (68.7%), followed by alcohol (41.3%), overweight (36.6%), Family History of Hypertension, DM and CVD (39.3%), Diabetes Mellitus (16.7%), obese (9.3%), Smoking (10.7%), Tobacco chewing (4%).

Out of 150, only 129 patients were having a disease of hypertension, dyslipidemia or both. Hence, association of risk factors with HTN, dyslipidemia or both had been analyzed in 129 patients. Age and diabetes mellitus showed significant association with HTN and dyslipidemia.

A study conducted by Ravi Dhingra et. Al shown that, increasing age is a predominant risk factor for CVD, however. The risk of CVD is mainly associated with increasing age. In our study, the highest percentage of subjects were from age group 36-44, accounting 28.7% of the whole. As, Age is most predominant factor in causing cardiovascular disease.

A study conducted by A.H.E.M. Maas et.al. shown that women are not aware about cardiovascular diseases and are under treated.

Some studies states that pre – menopausal the risk will be women are lower risk compared to men. But the risk of CVD is similar to men at post-menopausal stage.

Among total subjects, males' subjects were 62.7% and females were 37.3%.

A study conducted by Christopher C. Imes et.al. shown that, there was a positive relation between family history with cardiovascular disease. Positive family history may have chance premature cardiovascular disease. There was also a strong evidence of family history related cardiovascular disease.

In our study, of total subjects 39.3% have positive family history Alcohol consumption is one of the major risk factors for development of cardiovascular disease.

In our study, of total subjects, 41.3% were alcoholic and 58.7% were non-alcoholic.

A study conducted by Doyle JT et. Al. The Framingham study showed that, smokers are at higher risk for development of myocardial infarction and also sudden deaths.

Among total subjects 10.7% were smokers and 85.3% were non-smokers.

Tobacco chewing can also cause the cardiovascular disease. Of total subjects 4% were tobacco chewers and 96% were non-tobacco chewers.

Hypertension is one of the leading risk factors for development of CVD. Proper management of hypertension is necessary for prevention of cardiovascular disease.

In our study, Total 46.7% were hypertensive and 53.3% were non-hypertensive. In males 51.1% were hypertensives and 48.9% were non- hypertensives. In females 17% were hypertensives and 83% were non-hypertensives.

Diabetes is generally treatable. But when there were uncontrolled levels of glucose it may leads to cardiovascular disease.

In our study, Total 16.7% were diabetic and 53.3% were non-diabetic. In males 17% were diabetic and 83% were non- diabetic. In females 16.1% were diabetic and 83.9% were non-diabetic.

A study conducted by O'Donnell CJ et.al showed that, there was a positive relation between cholesterol levels and CVDs. This was noted in various populations.

In our study, among total subjects 68.7% were present with dyslipidaemia**.**

A healthy diet is required to maintain healthy life style. It also can prevent the cardiovascular diseases.

In our study**,** among total subjects 6.7% were vegetarians and 93.3% were non-vegetarians**.**

CONCLUSION

The major risk factor found was Dyslipidemia, alcohol, overweight, Family History of Hypertension, DM and CVD, Diabetes Mellitus, obese, Smoking, Tobacco chewing. Mostly patients visiting for health check-ups are with the cardiac complications' hypertension and dyslipidaemia. Age and Diabetes mellitus shown significant association with hypertension and diabetes mellitus.

Healthy lifestyle changes must be adopted to prevent the cardiovascular diseases. However, age, gender and positive family history were non-modifiable risk factors, better to adopt some life style changes in such people. Moderation of alcohol, smoking cessation, tobacco chewing can reduce the risk. Proper management of Hypertension, Dyslipidemia, Diabetes mellitus and high serum levels would be more beneficial for prevention of disease.

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