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THE FREQUENCY OF METABOLIC SYNDROME IN JUDICIAL OFFICERS.

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ABSTRACT… Objectives: To determine the frequency of metabolic syndrome in judicial officers. **Study Design:** Cross sectional study. **Setting:** Faisalabad Institute of Cardiology, Faisalabad. **Period:** January 2015 to December 2016. **Materials and Methods:** Total 81 judicial officers were enrolled after obtaining informed consent. Officers from age of 29 years to 56 years and of either sex were enrolled in study. FLP, FBS, BP and waist circumference were measured at FIC. Frequency of metabolic syndrome was noted considering diagnostic criteria. **Results:** Mean age was 40.35 ± 7.40, 88.9% (n=72) were male, 11.1% (n=9) were females, 12.3% (n=10) were diabetic, 87.7% (n=71) were non-diabetic, 2 were known case of ischemic heart disease with one having CABG. Most common parameter out of Metabolic syndrome factors was hypertriglyceridemia 53.1% (n=43). Least common was diabetes (12.3%). Metabolic syndrome was found in 21% (n=17). Only 11.1% female officer (n=1) were found to have Metabolic syndrome whereas 22.2% male (n=16) were having metabolic syndrome. **Conclusion:** Metabolic syndrome was quiet common in young healthy judicial officers who were not patient of any significant disease mostly having sedentary lifestyle.

Key words: Fasting Blood Sugar, Hypertriglyceridemia, Metabolic Syndrome, Waist Circumference.

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INTRODUCTION

Despite of increasing awareness, new research and scientific basis of all recommendations regarding prevention of disease, many parts of the world are still lacking behind to follow the principles of healthy life. Healthy life is the result of healthy life style. But due to lack of physical activity and unhealthy diet, many population groups develop certain diseases to whom they already have genetic susceptibility. Metabolic syndrome is one such entity which results mostly from lack of physical activity and unhealthy diet.[1] Westernized diets are associated with a increased risk of developing metabolic syndrome.[2] Metabolic syndrome also called syndrome X or insulin resistance syndrome is a risk factor for coronary artery disease, as well as diabetes and several cancers.[3] Mechanism behind metabolic syndrome is adipose tissue dysfunction and insulin resistance. Insulin resistance seems to be the main mediator of metabolic syndrome.[4] In United States, 2001-2002 were peak years of metabolic syndrome but later on it decreased due to decrease in hypertriglyceridemia and decrease in hypertension.[5] National Health and Nutrition Examination Survey (NHANES) data showed that the age-adjusted prevalence of metabolic syndrome had fallen to approximately 24% in men and 22% in women.[6] Recent studies have showed the possibility of an association between testosterone deficiency and metabolic syndrome because of its increased prevalence in male gender.[7] Inflammatory mediators also cause neuropathy in patients of metabolic syndrome.[8] Studies have linked metabolic syndrome with cancers of gallbladder, colon and prostate gland.[9] This study is done to find out the burden of this significant and potentially dangerous condition and risk factor for multiple diseases in specific population which are supposed to have sedentary

lifestyle.

MATERIALS AND METHODS

In this Cross sectional study, total 81 judicial officers from civil and session courts were enrolled at Faisalabad institute of cardiology over a period of 2 years from January 2015 to December 2016. Informed consent was taken. The study was approved by ethical review committee of FIC, Faisalabad.

Inclusion criteria was set to include any male or female judicial officer of age 25 to 60 years of age having ongoing service. Any officer having any other systemic disease other than diabetes or hypertension was not included in study along with those having acute MI.

Data was collected for waist circumference at narrowest point between umbilicus and lower costal margin. Systolic and diastolic blood pressure was noted at FIC after 15 mints of rest from both arms and taken two times 10 minutes apart. Fasting blood sugar levels and fasting lipid profile including Triglycerides, High density lipoprotein was checked from pathology lab of FIC.

Metabolic syndrome was considered to be present according to guidelines from the National Heart, Lung, and Blood Institute (NHLBI) and the American Heart Association (AHA).[10] Metabolic syndrome is diagnosed when a patient has at least 3 of the following 5 conditions:

- Fasting glucose ≥110 mg/dl (or receiving drug therapy for hyperglycemia)
- Blood pressure ≥130/85 mm Hg (or receiving drug therapy for hypertension)
- Triglycerides ≥150 mg/dl (or receiving drug therapy for hypertriglyceridemia)
- HDL-C <40 mg/dl in men or <50 mg/dl in women (or receiving drug therapy for reduced HDL-C)
- Waist circumference ≥102 cm (40 in) in men or ≥88 cm (35 in) in women; if Asian American, ≥90 cm (35 in) in men or ≥80 cm (32 in) in women (The international diabetes federation [IDF] criteria allow the use of a body mass index [BMI] >30 kg/m2 in lieu of the waist circumference criterion.)

All information regarding age, gender, Fasting blood sugar levels, TGs, HDL and waist circumference were noted on a prescribed Performa.

STATISTICAL ANALYSIS

The data analysis was computer-based using SPSS ver.25. Descriptive statistics were calculated. The age was presented as Mean+SD. The categorical variables which include gender, diabetes, Hypertension, triglycerides level, HDL level and waist circumference were presented as frequencies and percentages. Effect modifiers like age, gender were controlled by stratification. Post stratification chi-square test was applied. P value ≤0.05 taken as significant

RESULTS

A total of 81 judicial officers were enrolled fulfilling the inclusion and exclusion criteria. Mean age of these participants was 40.35 ± 7.40 with maximum age 0f 57 and minimum age of 29 years (Table No.1) 88.9% (n=72) were male, 11.1% (n=9) were female. Metabolic syndrome was found in 21% (n=17) participants (p value= 0.44). Most common risk factor for metabolic syndrome was hypertriglyceridemia 53.1% (n=43, p-value= .001) which was more common in male (all patients were male). Least common was diabetes mellitus 12.3% (n=10, p-value= .90). Increased waist circumference was found in 35.8% (n=29, p-value= 0.48) officers. Eight out of nine female were having increased waist circumference. Hypertension was present in 22.2% (n=18, p-value= .395) with male predominance 23.6% (n=17). HDL-c was low than optimal levels in 28.4% (n=23,p-value=.223) with only one case in female 11.1% (n=1). (Table-I)

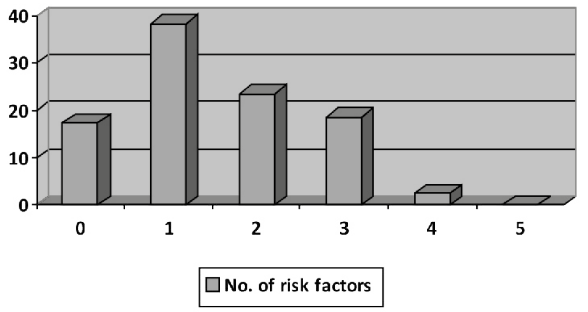
Data was stratified according to age in various age groups and frequency of metabolic syndrome was found in each age group. Most of our participants were in age group 36-40 years of age 29.6% (n=24). Metabolic syndrome was most common in age group 46-50 years of age 9.9% (n=8). It was not found in any participant less than 30 years of age. (Table-II)

Characteristics	n=81	Gender		P-Value
Age	40.35± 7.40	Male 88.9%(72)	Female 11.1%(9)	
Diabetes	12.3%(10)	12.5%(9)	11.1%(1)	0.90
HTN	22.2%(18)	23.6%(17)	11.1%(1)	0.395
High Triglyceride levels	53.1%(43)	59.7%(43)	0 %	0.001
Low HDL-C levels	28.4%(23)	30.5%(22)	11.1%(1)	0.223
Increased Waist circumference	35.8%(29)	29.1%(21)	88.8%(8)	0.48

Table-I. Risk factors for metabolic syndrome with gender specification

Age Groups	n=81	Metabolic Syndrome
≤30	7.4%(6)	0%
31-35	22.2%(18)	4.94%(4)
36-40	29.6%(24)	3.7%(3)
41-45	9.9%(8)	0%
46-50	21%(17)	9.9%(8)
51-55	6.2%(5)	1.23%(1)
56-60	3.7%(3)	1.23%(1)

Table-II. Metabolic syndrome in different age groups



0 risk factor: 17.28% (14)
1 risk factor: 38.27% (31)
2 risk factor: 23.46% (19)
3 risk factor: 18.52% (15)
4 risk factor: 2.47% (2)
5 risk factor: 0%

Total number of risk factors were found in all patients. Most of patients had single risk factor for metabolic syndrome 38.27% (n=31). All 5 risk factors were not present in any one. Only 2 participants were having 4 risk factors combined. Rest of all participants having metabolic syndrome were with three risk factors 18.52% (n=15). 17.28% (n=14) were having no risk factor at all.

Two patients were known case of coronary artery disease with one having CABG and one with past h/o Myocardial Infarction. So it was found that mostly patients with metabolic syndrome were male and having three risk factors together with hypertriglyceridemia being the most common risk factor.

DISCUSSION

Multiple studies are done in different communities and various subgroups to estimate the risk and thus primary prevention of distinctive diseases. In a study by Alberte et al. the prevalence of metabolic syndrome was 24%.[11] This specific syndrome has multitude of factors affecting its development. The most important one is the sedentary life style.

Physical activity increases the metabolism especially in skeletal muscles.[12] Any person prone to develop insulin resistance gets benefit from physical activity due to their ability to take up and metabolize glucose without insulin. Population in our study is one specific community which is thought to have sedentary life style. We went in detail about their physical activity and found that only 25% of judicial officers were having non sedentary life style. Mostly play games. Others having morning or evening walk. There was one case having non sedentary lifestyle and found to have metabolic syndrome.

Dietary habits also play very important role in body response. Increase intake of fats and refined carbohydrates tend to increase the obesity and insulin resistance. Adipose tissue release different substances which increase insulin resistance in peripheral tissues. One study recently published

(Pure study) advised against the use of refined carbohydrates.[13] Out of our total case 50% were found to have increase dietary intake of refined carbohydrates. Most of our cases were still young and without family history of coronary artery disease. Neither was found as case of familial hypertriglyceridemia. All were having effect of nurture with major contribution of life style and dietary habits.

Individuals with metabolic syndrome are more prone to develop diabetes in future.[14] In our study 12.3% cases were having diabetes. Others who were having MS and non-diabetics have 30-52% increased risk to develop diabetes.[15]

Hypertension is also associated with worse outcomes. Hypertension is present in upto 85% of cases of Metabolic syndrome.[16] We found 22.2% cases of hypertension. This was because most of our population was relatively younger. Among these 22.2% participants 12.3% had metabolic syndrome.

Obesity is well known and the most important predictor of development of metabolic syndrome.[17] Central obesity is more predictive of Metabolic syndrome and diabetes and later development of CV Diseases.[18] Individuals with Metabolic syndrome are at increased risk of CV diseases.[19] Patients with central obesity but without metabolic syndrome are found to have 2 times increased risk of development of Diabetes.[17] Waist circumference was important predictor of triglycerides and HDL levels. 35.8% participants were having increased waist circumference. Eight out of nine female participants had increased waist circumference. They were young and had not developed metabolic syndrome yet but obesity has strong association with future development of metabolic syndrome. This study was conducted to find out the burden of risk factors for coronary artery disease and diabetes in community group supposed to be sedentary in routine but being educated and well aware of various diseases they were thought to have minimum burden of risk factors. But it was found that they had significant burden of risk factor and need to follow measures of primary prevention.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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3	Naeem Hameed	Data collection.	
4	Rehan Riaz	Analysis, Data collection.	
5	Ayesha Tariq	Interpretation, Review of manuscript.	
6	Shahid Iqbal	Data analysis.	