

To Assess Prevalence of Metabolic Syndrome Among Adults at a Tertiary Care Hospital

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ABSTRACT

Background: Metabolic syndrome is a constellation of interconnected physiological, biochemical, clinical and metabolic factors that directly increases the risk of cardiovascular diseases, type 2 diabetes mellitus (DM) and all-cause mortality. It is constituted by abdominal obesity, insulin resistance, hypertension, and hyperlipidemia. The present study was conducted to assess prevalence of metabolic syndrome among adults.

Materials and Methods: This is an observational type of cross-sectional study conducted to assess prevalence of metabolic disorders among adults. The sample size selected for the study was 610. Patients were diagnosed as MetS according to NCEP ATP III Criteria. According to the NCEP ATP III criteria, the diagnosis of MetS was made when three or more of the following were present: Waist circumference >102 cm in male and >88 cm in female, fasting blood glucose >110 mg/dl, Systolic blood pressure >130 mmHg or diastolic blood pressure >85 mmHg, Fasting triglyceride (TG) >150 mg/dl, High density lipoprotein cholesterol (HDL-C) <40 mg/dl in men and <50 mg/dl in women. The recorded data was compiled, and data analysis was done.

Results: In the present study a total of 610 participants were included out of which 390(63.93%) were males and 220 (36.06%) were females. Out of the total study participants

of 610 cases, 230 cases (38.33%) were identified to be having MetS. Among the 230 cases of MetS, 160 were females (69.56%) versus 70 males (30.43%). In both males and females Hyperglycemia was the most common accompanying disease followed by high TG.

Conclusion: The present study concluded that Metabolic syndrome was more common in females than males. In both males and females Hyperglycemia was the most common accompanying disease followed by high TG.


Keywords: Metabolic Syndrome, Hyperglycemia, Triglycerides, HDL.

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INTRODUCTION

The metabolic syndrome (MS) is defined by a cluster of factors, namely central obesity, glucose intolerance, hyperinsulinemia, low-high-density lipoprotein (HDL) cholesterol, high triglycerides(TG), and systemic hypertension.¹ Metabolic syndrome (MetS) is recognized as a major epidemic of the 21st century.²

In 2015, 39.5 million of the 56.4 million deaths globally were due to noncommunicable diseases (NCDs);³ among all these NCD, MetS has been the real scourge globally.⁴ Various diagnostic criteria have been proposed for quantifying MS. But the most widely used ones are from the International Diabetic Federation (IDF) and the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III).^{5,6} Approximately about one third of urban South Asians have evidence of the metabolic syndrome.⁷

Moreover, insulin resistance was observed to be there in nearly 30% of Asian Indian children and adolescents and many exhibit features of metabolic syndrome.⁸ Since metabolic syndrome and obesity track into adulthood, these clinical entities need to be recognized early in the life-course for effective prevention of T2DM and CVD.⁹ The present study was conducted to assess prevalence of metabolic syndrome among adults in an area.

MATERIALS AND METHODS

This is an observational type of cross-sectional study conducted to assess prevalence of metabolic disorders among adults. The sample size selected for the study was 610. Before the commencement of the study ethical approval was taken from the Ethical Committee of the institute and written consent was taken from the patient after explaining the study.

People who were mentally retarded, seriously ill, pregnant, and lactating mothers were excluded from the study.

Patients were diagnosed as MetS according to NCEP ATP III Criteria. According to the NCEP ATP III criteria, the diagnosis of MetS was made when three or more of the following parameters were present:

1. Waist circumference >102 cm in male and >88 cm in female
2. Fasting blood glucose >110 mg/dl
3. Systolic blood pressure >130 mmHg or diastolic blood pressure >85 mmHg
4. Fasting triglyceride (TG) >150 mg/dl
5. High density lipoprotein cholesterol (HDL-C) <40 mg/dl in men and <50 mg/dl in women.

The recorded data was compiled, and data analysis was done.

Table 1: Distribution of participants according to gender

Gender	N(%)
Male	390(63.93%)
Female	220(36.06%)
Total	610(100%)

Table 2: Prevalence of components of metabolic syndrome in the participants

Components of MetD	Male (N=70)	Female (N=160)
Abnormal BP	42	55
Hyperglycaemia	67	97
Obesity	39	60
TG>150mg/dl	55	69
Low HDL	39	42

RESULTS

In the present study a total of 610 participants were included out of which 390 (63.93%) were males and 220 (36.06%) were females. Out of the total study participants of 610 cases, 230 cases (38.33%) were identified to be having MetS. Among the 230 cases of MetS, 160 were females (69.56%) versus 70 males (30.43%). In both males and females Hyperglycemia was the most common accompanying disease followed by high TG.

DISCUSSION

Metabolic syndrome increases the risk of developing type 2 DM and cardiovascular diseases over the next 5 to 10 years by five and two-fold respectively.¹⁰ Furthermore the patients with MS have, an average four-fold increased risk of developing stroke & myocardial infarction and a two-fold risk of dying from a similar event compared with those without MS, regardless of previous history of cardiovascular events.¹¹

In the present study a total of 610 participants were included out of which 390(63.93%) were males and 220(36.06%) were females. Out of the total study participants of 610 cases, 230cases (38.33%) were identified to be having MetS. Among the 230 cases of MetS, 160 were females (69.56%) versus 70 males (30.43%). In both males and females Hyperglycemia was the most common accompanying disease followed by high TG.

A recent study from the United States reported the prevalence of MS to be around 22.9%.¹² Various population-based studies were conducted in India too, to quantify the same and the results ranged from 10 to 30 percentage.¹³ A study conducted in the eleven large urban cities of India during 2006–2010 reported the prevalence of MS as high as 35%.¹⁴

A northern Indian study reported a prevalence of MetS, as 22.37%.¹⁵

Prasad et al. in their study reported the prevalence of MetS as 43.2% in a community-based study from the eastern part of coastal India.¹⁶ Prasad et al. reported the prevalence of the components: high blood pressure 63.1%, obesity 48.9%, low HDL 46.9%, triglyceridemia 37.7%, and hyperglycemia 31.2%.¹⁶

In a study conducted by Khan et al.¹⁷ the prevalence of MetS was 40.9% according to the NCEP ATP III criteria and it was 26.3% in males and 59.0% in females.

Harikrishnan et al. in a community-based study¹⁸ in Kerala has found that the prevalence of MetS was 29% according to IDF criteria and it was 20.0% in males and 28.0% in females. Elevated FPG was found in 36.1% participants, elevated TG in 24.3%, obesity in 58.6%, elevated BP in 42.2%, and reduced HDL-C in 36.7% of study participants.

CONCLUSION

The present study concluded that Metabolic syndrome was more common in females than males. In both males and females Hyperglycemia was the most common accompanying disease followed by high TG.

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