

A Study on Metabolic Syndrome Prevalence among Master Health Checkup Subjects

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ABSTRACT

Background and Objectives: The prevalence of metabolic syndrome is increasing among Indians. Early screening is the only way to recognize metabolic syndrome. There are only few evidences available about the magnitude of metabolic syndrome among master health checkup patients. With this background the present study assess the prevalence of metabolic syndrome in master health subjects.

Methods: 105 patients was undergone master health checkup at Chennai Medical College Hospital and Research Centre during the month of June 2014 and they were enrolled for this present study. Blood pressure, fasting blood glucose level, high density lipoprotein, triglycerides were measured after overnight fasting. Anthropometric measurements such as height, weight, waist circumference and hip circumference also measured. The results were analyzed statistically.

Results: The prevalence of metabolic syndrome among master health checkup subjects was found 28.5%. Among 20% males (21) and 8.5% (9) were females. The most common feature of the metabolic syndrome among master health checkup subjects was abdominal obesity (30), high blood pressure (21), increased fasting blood sugar (24), low levels of high density lipoproteins (24), and high level of triglycerides (19). The prevalence among the age groups was 6.6% among 30-40years, 13.3% among 41-50years, 6.6% among 51-60 and 1.9% among 61-75years.

Interpretations and Conclusions: The presentation of metabolic syndrome is asymptomatic and incidental, screening is the only way to identify the individual and address the issues. Measuring the prevalence of metabolic syndrome in general population in the form of master health checkup is one of the key to assess the early identification and also to plan for early prevention in the form of lifestyle modification, dietary intervention.

Key Words: Metabolic Syndrome, Fasting blood glucose, Lipoprotein, Triglycerides, Prevalence

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INTRODUCTION

Metabolic syndrome is a constellation of metabolic abnormalities that confer increased risk of cardiovascular disease. Criteria's defined under the definition of metabolic syndrome are central obesity (waist: hip ratio ≥ 0.90 (male), ≥ 0.85 (female) and any two of the following:

1. Serum Triglycerides: ≥ 150 mg/dl
2. Serum HDL: ≤ 40 mg/dl (in males), ≤ 50 mg/dl (in females)
3. Raised blood pressure: systolic BP ≥ 130 or diastolic BP ≥ 85 mm Hg s
4. Fasting plasma glucose: ≥ 100 mg /dl¹

There could be various reasons for the occurrence of metabolic syndrome such as obesity, sedentary life style, stress, aging, endocrine disorders such as polycystic ovarian syndrome^{2,3}. Early detection and prevention by

lifestyle modification and dietary intervention will retard or postpone the occurrence of metabolic syndrome and its related complications⁴.

Master health checkup is form of preventive medicine practice which involves visits of an individual by a health care provider, physical examination, baseline biochemical, hematological, and radiological assessment and consultation regarding the general health condition⁵. This otherwise recognized as periodic health evaluation, annual physical, comprehensive medical exam, general health check, or preventive health examination⁶.

The master health checkup is able to screen the individual for non-communicable diseases like high blood pressure, diabetes mellitus, cancer and also the occurrence of metabolic syndrome. The outcome of undergoing master health checkup will diagnose the non-communicable diseases and enables to intervene by lifestyle modification, dietary changes and if necessary therapeutic intervention. The endemicity of diabetes mellitus, hypertension, cardiovascular disorders, and cancer are increasing in alarming rate globally⁷. Primary prevention by screening of the disease, early diagnosis and treatment is the effective way of intervening with those disorders. Early diagnosis and management will have its positive outcome in the management of chronic non communicable disease⁸.

There are only few studies done in the prevalence of metabolic syndrome among master health checkup subjects. With this present background the present study aims at to determine the prevalence of metabolic syndrome among Master Health Checkup subjects [MHC].

MATERIALS AND METHODS

The present study is a cross sectional observational study done at Chennai Medical College Hospital and Research Centre, Trichirappalli, Tamil Nadu, India, from 01/06/2014 to 30/06/2014. A sample size of 105 subjects was enrolled for MHC examination was taken as study group. Among the subjects 55 were male and 50 were females, patients of age group from 20 to 80 years were enrolled for this present study. Patients who are known diabetic, hypothyroid and hypertensive were excluded from the present study. 5 ml of fasting venous blood was collected for estimation of fasting blood glucose, serum total cholesterol, LDL Cholesterol, HDL Cholesterol, Triglycerides (TGL). The blood glucose level was estimated by glucose oxidase - peroxidase method, serum LDL cholesterol, HDL, triglycerides by Glycero pre Phospho Oxidase (GPO) method. Physical parameters like blood pressure, height by height scale measured in cms, weight by weighing machine in kilograms, waist

circumference, hip circumference were measured by inch tape in centimeters. The diagnosis of metabolic syndrome was made by National Cholesterol Education Programme (NCEP).

RESULTS

The prevalence of metabolic syndrome among the 105 patients was found that 28.5%. Among 21 males (20%) and 9 females (8.5%). The mean age was found to 45, minimum age was 32 and maximum age was 75. The prevalence among the age groups were 6.6% among 30-40 years, 13.3% among 41-50 years, 6.6% among 51-60 years, 1.9% among 61-75 years as shown in the table 1. The most common morbidity distribution of the metabolic syndrome among the 105 master health checkup subjects was abdominal obesity (30), high blood pressure (21), increased fasting blood glucose (24), low levels of high density lipoproteins (24), high level of triglycerides (19). The mean value of height circumference was found to be 105 ± 11.8, waist circumference 97.7 + 8.7 unit, BMI, Systolic Blood pressure 138.6, diastolic blood pressure 91.3, fasting blood glucose 153 ± 63.3, Triglycerides 179 ± 78.1, high density lipoprotein 41.6 ± 8.5, low density lipoprotein 126 as shown in fig. 1.

Table 1: Prevalence of Metabolic syndrome among the different age group

Age	Male	Female	Total number (%)
30-40years	5	2	7(6.6%)
41-50years	10	4	14(13.3%)
51-60years	4	3	7(6.6%)
61-75years	2	0	1(1.9%)
Total	21	9	30(28.5%)

Table 1: Shows the prevalence among the age groups were 6.6% among 30-40 years, 13.3% among 41-50 years, 6.6% among 51-60 years, 1.9% among 61-75 years.

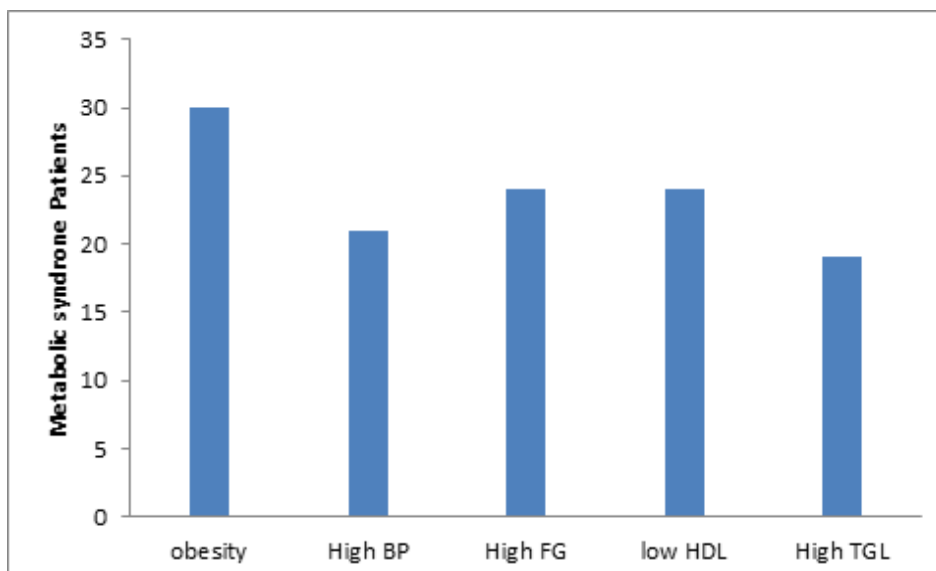


Fig. 1: Common Morbidity distribution among the Study Group

Fig. 1: 105 subjects attended MHC and included for this study. Out of these 30 subjects (28.5%) were diagnosed as metabolic syndrome. The most common feature of the metabolic syndrome among master health checkup subjects was abdominal obesity (30), high blood pressure (21), increased fasting blood sugar (24), low levels of high density lipoproteins (24), and high level of triglycerides (19).

DISCUSSION

The present study found that the prevalence of metabolic syndrome among the master health checkup subjects was found to be 28.5%. This goes along with the previous studies in India evidenced 30% prevalence of metabolic syndrome in urban areas and 11% in rural areas^{9,10}. The distribution of sex shows the prevalence is more among males than females. The age distribution shows the prevalence is more in 41-50 years. It was found that higher prevalence of metabolic syndrome among master health checkup was 41-50 years, it is imperative to undergo basic biochemical and anthropometric checkup should be done in vulnerable age group to rule out metabolic syndrome. Master health checkup serve as a tool to estimate the magnitude of the disease and address the issues in terms of management either in lifestyle changes, dietary habit and therapeutic intervention if needed. The concept of mass screening for metabolic syndrome should be considered and needs further work and evidence regarding ascertaining the minimum age group for doing screening for metabolic syndrome. Since the course and nature of metabolic syndrome is indolent, subtle and progressive, early identification through health checkups in otherwise normal individual, obese and high risk age groups are the some of the ways to check the issue.

This study has shown only the tip of the iceberg that there is an alarming event of metabolic syndrome. According to the present study the prevalence is more among the productive age group i.e. 40-50 years. This study shows the need for health awareness about the metabolic syndrome and sensitizes the public about the existence and imperative of screening. Measuring the prevalence and identifying the burden of the disease in general population, by utilizing master health checkup is one of the strategies of promising approach to limit its progression.

The practice of master health checkup is in assessment of prevalent of metabolic syndrome among general population is found to be a sensitive effective in enhancing the community health tool and further studies shall be done in general population in measuring prevalence of metabolic syndrome. Age, sex distribution, with able to identify the problem scenario and intervene accordingly.

CONCLUSION

The prevalence of the metabolic syndrome was significant among MHC subjects. Measuring the prevalence of Metabolic Syndrome in general population will help us to assess the severity of the disease and also aid us to plan for preventive measures. Early identification and addressing the issues in the form of life

style changes, stress management and dietary intervention will keep a check on the progression of chronic non communicable disease.

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AUTHORS CONTRIBUTIONS

Senthil Kumaran structured and organized the present study. Selvi has done the assessment among the patients. Sundhararajan was analyzed the results statistically. All authors read and approved the final manuscript.

CONFLICT OF INTEREST

Authors have declared that no competing interests exist for the present study.

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