A Study of Metabolic Syndrome Parameters in Post Graduate Students in Dr. B. R. Ambedkar Medical College Hospital

Mohamed Omar Shariff[1], B. B. Supriyaa[2*], N. Bhakthavatchalam[3]

[1]Student, Department of General Medicine, DR. B. R. Ambedkar Medical College and Hospital, Bangalore, India

[2]Assistant Professor, Department of General Medicine, Bowring and Lady Curzon Medical College and Hospital, Bangalore, India

[3]Professor, Department of General Medicine, DR. B. R. Ambedkar Medical College and Hospital, Bangalore, India

Abstract: Metabolic syndrome is a clustering of risk factors that increase an individual's probability of developing atherosclerotic cardiovascular disease, Type 2 diabetes mellitus and all-cause mortality. It is considered as a major public health concern since the prevalence has reached epidemic proportions in the past decade and ever increasing. Concern were raised regarding increasing prevalence among students community. The study was conducted on 60 patients in the Department of General medicine at DR. B. R. Ambedkar Medical College Hospital, Bengaluru. It was a hospital based prospective study from October 2018 to October 2019. Informed consent was obtained from all participants who were included to be for the study. Detailed history was obtained from patients and subjected for clinical examination, biochemical test. The aim was to estimate the prevalence of the metabolic syndrome in postgraduate students in Dr. B R Ambedkar Medical College Hospital, Bangalore. Metabolic syndrome is a clustering of risk factors that increase an individual's probability of developing atherosclerotic cardiovascular disease, Type 2 diabetes mellitus and all-cause mortality. It is considered as a major public health concern since the prevalence has reached epidemic proportions in the past decade and ever increasing. Occurrence of metabolic syndrome in a given individual confers a 5-fold increase in the risk of Type 2 Diabetes Mellitus (DM) (1).

Keywords: Metabolic syndrome, Diabetes mellitus, Hypertension.

1. Introduction

Though different diagnostic criteria are used for diagnosis of metabolic syndrome such as International Diabetic Federation (IDF) and World Health Organization (WHO) criteria, the central obesity, dyslipidemia, pre-hypertension/hypertension, and glucose intolerance form the main components of metabolic syndrome. Various studies have established the association between metabolic syndrome and risk of development of Coronary vascular disease (CVD) and type-2 DM (2). However the clinical utility of using "metabolic syndrome" as a diagnosis has been questioned in the past due to multiple sets of conflicting and incomplete diagnostic criteria. The important debate was that when confounding factors like that of obesity are taken in to account, the diagnosis of metabolic syndrome was believed to have negligible correlation with the risk of coronary artery disease. However, subsequent research have shown that obesity in absence of metabolic syndrome does not confer a major cardiovascular risk, whereas metabolic syndrome without obesity is associated with significant risk of coronary artery disease emphasizing the importance of metabolic syndrome as a diagnostic entity. The prevalence of metabolic syndrome seems to have progressively increased with time in the past decade as noted from National Health and Nutrition Examination survey data. The current dietary practices such as increased consumption of simple sugars mainly fructose , processed food and sedentary life style are to be blamed for increasing incidence of metabolic syndrome. The pathogenesis of metabolic syndrome is multi factorial. However insulin resistance is considered as a cornerstone in the pathogenesis. Metabolic syndrome has been in current news as its seen to prevalent among professional college students. As the risk factors of metabolic syndrome and life styles of medical residents coincide, it's worth investigating the prevalence of metabolic syndrome among post graduate residents.

2. Materials and Methods

The study will be conducted on 60 patients in the Department of General medicine at Dr. B. R. Ambedkar Medical College, Bengaluru. All post graduate residents Dr. B. R. Ambedkar Medical College, Bengaluru with criteria of metabolic syndrome was included in the study.

A. Study design
A hospital based prospective study.

*Corresponding author: supriya.soup123@gmail.com

B. Study period

October 2018 to October 2019.

3. Calculation of Sample Size

A. Variables Values

Estimated true proportion (p) 0.1 Desired precision 0.05 Confidence level (CI) 0.95 Population size (for finite populations) 60

Formula: (77)

$n = (z^2 \times p (1 − p))/e^2$ where:

- Z = value from standard normal distribution corresponding to desired confidence level (Z=1.96 for 95% CI)
- P is expected true proportion (of total admissions)
- e is desired precision (half desired CI width).

After substituting the values, sample size of 64 was obtained.

4. Methods of Collecting Data

Informed consent was obtained from all participants who are included to be for the study. Detailed history was obtained from patients and subjected for clinical examination, biochemical test. Post graduate residents Dr.B.R.Ambedkar Medical College, Bengaluru with criteria of metabolic syndrome. In the statistical analysis of our study, Continuous variables was presented as mean for parametric data and median if the data is non-parametric or skewed. Student t test was applied for calculation of statistical significance whenever the data followed normative distribution. Mann whitney test was applied whenever data followed non-normative distribution. Categorical variables was expressed as frequencies and percentages. Nominal categorical data between the groups was compared using Chi-square test or Fisher's exact test as appropriate. P <0.05 was taken to indicate a statistically significant difference. Minitab version 17 was used for computation of statistics.

5. Conclusion

There were 9 subjects within 25 years, 41 subjects between 25-30 years, 7 subjects between 30-35 years, 3 subjects between 35-40 years. Highest number of participants were in age group of 25 – 30 years. As the study was planned among post graduate students, skewed distribution of samples in the particular age group is expected. Further, there were 34 male subjects and 26 female subjects in the study. There were 34 subjects (56.67%) within BMI range of 18.5 – 24.9,22 subjects (36.67%) within BMI range of 25 – 29.9, 3 subjects (5.00%) within BMI range of 30 – 34.9 and 1 subject (1.67%) within BMI range of 35 – 39.9. Mean BMI of the total subject was the mean BMI was Mean BMI was 27.8 ±2.2 kg/m^2 .This is an expected result from the study as obesity forms a diagnostic component of metabolic syndrome. It can be noted from the study that the mean BMI of the group too falls in overweight category emphasizing the epidemic proportions achieved by obesity. The typical Indian body phenotype is thought to have higher body fat percentage at lower BMI and high waist hip ratio at low waist circumference. A study conducted by Misra et al among Asian Indians in India showed that for mean BMI of 23.3 kg/m^2, the mean body fat was estimated at 35%. These observations in the past have resulted in revising the various anthropometric criteria employed in diagnosis of metS particularly waist circumference for Asian population. Strengths of the present study include a large optimum sample size based on statistical method, representative sampling methodology and the use of standardized data collection protocols. The use of population-based sample would provide greater support for generalizability. Our study limitations are probability of a recall bias of the self-reported measures for behavioral risk factors, and possible biases from incomplete data due to non-respondents and missing item response data. Further, the study is an observational study, and therefore, no causal inferences can be made. Longitudinal follow-up studies are important to identify unmeasured/unknown and known risk factors and mediators on the causal pathway of cardio metabolic risk in this population for a comprehensive control and prevention of CVD and T2DM among a wider medical student community sharing similar lifestyle and culture.

A. Conflicts of Interest: None

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