



ASSOCIATION BETWEEN LIFE STYLE MEASURES AND METABOLIC SYNDROME IN MEDICAL COMMUNITY OF INDIA

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ABSTRACT **Objective-** Metabolic syndrome (MetS); has numerous risk factors like obesity, hyperglycemia, dyslipidemia and hypertension. Life style measures are also important predictors. We aimed to correlate them to prevalence of MetS.

Methods- It was a cross sectional study with 390 participants. Detailed physical and laboratory examination were done. The data were collected in a proforma having multiple questionnaires describing baseline demographic profile, personal habits and physical exercise, job stress, work load and sleep pattern.

Results- MetS was diagnosed in 47.95% cases that were significantly higher than general population. Cases with Low physical activity, higher job stress, more working hours, disturbed sleep pattern and higher alcohol consumption were significantly associated with higher MetS (p value <.005) while smokers had also higher MetS prevalence but the association was non significant.

Conclusion- Life style measures are important predictors of MetS and they have also to be emphasized along with the traditional risk factors of MetS.

KEYWORDS :

Introduction

Metabolic syndrome, a clustering of metabolic abnormalities, has been found to convey a significant risk for future atherothrombotic cardiovascular events. Metabolic syndrome includes high blood pressure, elevated triglycerides, low high-density lipoprotein (HDL), impaired fasting glucose, and excess abdominal fat. Metabolic syndrome is not a new condition and was first described in the 1920s by Kylin, a Swedish physician. The term "Metabolic Syndrome" was coined in 1977 by Haller¹.

Previously it was estimated that 20%-25% of south Asians have developed metabolic syndrome and many more may be prone to it^{2,3}. In South Asian countries, rapid increase in western fast food outlets, sale of aerated sweet drinks and increased consumption of fried snacks is being commonly seen. Further, migration from villages to cities is increasing. These intra-country migrants become urbanized, mechanised, resulting in nutritional imbalance, physical inactivity, stress and increased consumption of alcohol and tobacco⁴.

Little information exists on prevalence of metabolic syndrome in India and correlating it with effect of profession and life style. The employees spend most of the time of their life in their working place. The working authorities are directly affected by working efficiency and the individual nation's development is affected indirectly. Hospitals are an ideal environment to collect and disseminate information on quality of life and cardiovascular risk factors. Hospital workers are influenced by their work environment and also have a role as educator. In health care services the value of metabolic syndrome derives largely from its potential to reduce the risk of cardiovascular disease in the general population by treating the disease. So, we planned to study the prevalence of metabolic syndrome in medical professionals of Bikaner, Rajasthan and correlating it with the life style changes.

Material and methods

This was a cross-sectional epidemiological study, 390 participants were recruited, all were more than 30 years of age and exclusion criteria for the participants were- seriously ill patients, patient on long term corticosteroid therapy, hypothyroidism, spine deformity, ascites due to any cause, nephrotic syndrome, pregnant females and lactating mothers. The data were collected in a specially designed proforma having multiple questionnaires describing baseline demographic profile, personal habits and physical exercise (IPAQ protocol)⁵, job stress⁶, work load and sleep pattern. Participants underwent detailed physical and laboratory testing. Laboratory measurements were done after at least 8 hours of fasting. IDF Criteria in Indian Reference⁷ was used to reveal the prevalence of metabolic syndrome.

Statistical Analyses:

Analyses were completed using SUDANN (version 8.0) to take into account sample weights and design effects.

Observations

In our study, prevalence of metabolic syndrome was 47.95% according to IDF criteria. The prevalence was more in doctors than paramedical staff. Prevalence in females is 49.19 % while in males is 43.37%. Increased waist circumference, abnormal SBP, abnormal DBP, increased FBS, increased triglyceride and deranged HDL were in 51.28%, 36.97%, 21.79%, 26.15%, 51.28% and 46.92% cases respectively.

The results regarding MetS and physical activity showed that in cases with low physical activity prevalence of metabolic syndrome was 63.75% while in moderate and high physical activity the prevalence was 47.56% and 18.65% respectively. The results for job stress association showed that in cases with mild job stress prevalence of metabolic syndrome was only 23%. In moderate and high job stress the prevalence was 52.22% and 59.50% respectively. MetS correlating to working hours; in cases who used to work for >84 hours/week prevalence of metabolic syndrome was 58.33%. In cases working for 56-84 hours /week, the prevalence was 50.53% and 27.38% respectively. For MetS in relation with sleep habit; in cases who sleep for >8 hours/day prevalence of metabolic syndrome was 29.03%. In cases sleeping for 6-8 hours/day, the prevalence was 53.19% and 55.04% respectively. For alcohol habits, alcohol consumption was associated with significantly higher prevalence of MetS; while for smoking association, MetS was more in smokers but there was no strong correlation. Degree of association of these different predictors have been depicted in terms of X², p- value and coefficient of contingency in table 1 which states that physical activity was strongest predictor in our study while smoking was least among assessed risk factors.

Table 1. Correlation of various risk factors with prevalence of metabolic syndrome

Risk factor	X ²	p-value	Coefficient of contingency
Job stress	28.93	p<0.001	0.26278
Physical activity	39.32	p<0.001	0.30263
Sleeping habit	17.6	p<0.001	0.20779
Working habit	19.92	p<0.001	0.22044
Smoking	0.17	p>0.5	0.02087
Alcoholism	15	p<0.001	0.19245

Discussion

The overall prevalence of Metabolic Syndrome in this cohort was high in comparison to general population (47.95%). The prevalence of metabolic syndrome was more common in doctors versus paramedical staff; females versus males and increases with age. Metabolic syndrome in urban eastern India has been found to be 33.5%⁸. Effect of differences in life and behavior such as physical inactivity, job stress, work load, altered sleep pattern, shift working, more alcoholic consumption etc. in the general population are the major determining factors.

Effect of shift working on metabolic syndrome in our study is supported by a research carried out in Kashan, a city of Iran. The investigators found 35.9% prevalence of metabolic syndrome in bus & truck drivers⁹ who are regularly shift workers. Evelin et al.¹⁰ also saw the high prevalence of metabolic syndrome in shift workers of United States.

That is supported by a study done by Boullu-Ciocca S et al.¹¹ on the topic of corticotropic axis and chronic stress in abdominal obesity and metabolic syndrome. They found that corticotropic axis hyperactivity may be involved in the development and metabolic and cardiovascular complications of abdominal obesity. Several mechanisms may be responsible for this hormonal dysregulation: genetic, lifestyle, and nutritional factors, and chronic stress. The studies done by Vanhala M, Jokelainen et al.¹², Takeuchi T et al.¹³ and La Rosa E et al.¹⁴ to evaluate the psychological effects on metabolic syndrome are also comparable to our studies. Effect of physical activity on metabolic syndrome can be correlated with a study of Esteghamati A et al.¹⁵ that was done to see association between physical activity and metabolic syndrome in Iranian adults. In results, the prevalence of metabolic syndrome among individuals with high-, moderate-, and low-category activity was 18.7% +/- 1.5%, 25.8% +/- 2.0%, and 27.9% +/- 2.0%, respectively (P < .001). In our study the P value for physical activity is also <0.001. Takeuchi T et al.¹⁶ found that smoking is an independent risk factor for metabolic syndrome not alcohol intake that is some contrary to our study.

All these studied risk factors are more common in doctors in comparison to paramedical staff, which was the reason behind more prevalence of MetS in doctors. The sample size in our study was small that was very big limitation.

Conclusion

Besides the traditional risk factors like waist circumference, blood glucose level, lipid profile and blood pressure levels, the life style measures are also significantly associated with MetS. In the coming future, a large prospective study is further required to describe the medical occupational benefits versus hazards on individuals' personal and social life. There is emerging need to modify the life style, behavior and personal habits to save the health of medical professionals. Medical professionals are in sustained exposure to stress or other daily life hampering things; due to this, indirectly, whole of the humanity suffers. The present decreased manpower in medical profession to general population ratio; long term stressful study pattern without any more fruitful or bright future in comparison to other sectors; irrelevant responsibilities offered to a doctor other than to treat the patients etc. may be responsible for this coming epidemic in our medical community.

We, therefore, recommend to detect risk factors for metabolic syndrome and other cardiovascular diseases among medical professionals in India and it should be included as part of a routine medical review.

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