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PREVALENCE AND DISTRIBUTION OF METABOLIC SYNDROME WITH RESPECT TO SEX AND AGE IN KASHMIRI POPULATION

Physiology

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ABSTRACT

BACKGROUND: Metabolic syndrome (MS) is a vast array of physical conditions and metabolic abnormalities that are found to be linked with increased progression of type 2 diabetes mellitus, cardiovascular disorders and other medical conditions. Metabolic syndrome is considered to be one of the most common issues that is related to public health. These health disorders lead to premature death and disabilities and raise a major burden on economy in both developed and developing countries.

AIMS AND OBJECTIVES: The present study was designed to see the prevalence and distribution of metabolic syndrome in different age and sex groups.

MATERIALS AND METHODS: A total of 230 participants were selected for the study. These included 130 females and 100 male patients with different age groups. The classification of patients as MS was done according to NCEP ATP IIICriteria.

RESULTS: Out of 230 study participants, 82 were MS cases and the prevalence was 35.6 %(82/230). Among 82 cases of MS 48 were females (48/82 = 58.3 %) versus 34 males (34/82 = 41.1 %). On the other hand the prevalence of male patients with MS was 34 % (34/100) while as in females it was observed to be 36.9 % (48/130). During the study it was found that the prevalence of MS was common in females than males. Further as 82 cases of MS were found, maximum number of which were reported in the age groups of 40-49 years (35/82 = 42.6 %) followed by 50-59 years (19/82 = 23.1 %), while as in other age groups the prevalence was 18.2 % (30-39 years) and 8.53 % in cases above 60 years of age. Least number of MS cases were reported in age group below < 30 years with prevalence rate of 7.31 % respectively.

CONCLUSION: This study has tried to create awareness and generate enough data to find out associated risk factors and prevalence rate of MS in adult population. It is also important to improve the current health intervention programs.

KEYWORDS

metabolic syndrome, complications, prevalence

INTRODUCTION:

Metabolic syndrome(MS) is a conditions characterized by increased blood pressure, high blood sugar, excess body fat around the waist, and abnormal cholesterol or triglyceride levels that occur simultaneously thereby increasing the risk of heart disease, stroke and diabetes. Most of the disorders that are associated with metabolic syndrome have no symptoms, although a large waist circumference is a visible sign. It has been studied that metabolic syndrome is closely linked to overweight or obesity, inactivity, ageing and hormonal imbalance [1-4]. Metabolic syndrome is also associated with insulin resistance. Insulin is a peptide hormone that is produced by the beta cells of the pancreas that helps to control the level of glucose in the body. In insulin resistance cells usually do not respond normally to insulin levels and as a result glucose can't enter the cells easily. As a result of this the levels of glucose rise in the body leading to diabetes. It has been found that in developed and developing countries the prevalence of metabolic syndrome has been increasing past several decades along with obesity[5,6]. According to the study carried out by NHANES 2009–2010 in US, the prevalence of metabolic syndrome decreased from 25.5 to 22.9% in adult men and women [7]. This decrease was particularly seen in Caucasians and may be due to drug therapy used for hypertension and dyslipidemia. According to reports of Beltrán *et al* the highest age-standardized prevalence in USA in 2009–2010 that was encountered was of Hispanic men (34.8%) compared to Caucasian (22.9%) and Black (19.0%) men and in Hispanic women (28.5%) compared to Black (24.5%) and Caucasian (20.3%) women [7]. Another population based study that was carried out by IDF in Australia reported the prevalence of metabolic syndrome to be 29.1% and 19.3 %[8]. The prevalence of metabolic syndrome in Brazil was found to be 30%.[9]. Similar studies have been reported from European and Asian cohorts [10]. The prevalence of metabolic syndrome in Europe ranges from 10 to 30% and for the obese it is from 24 to 78%[11,12,13].

MATERIALS AND METHODS:

A total of 230 Participants were selected for the study. This study included 130 females and 100 male patients with different age groups. Out of 230 study participants, 82 were MS cases. The classification of patients as MS was done according to NCEP ATP IIICriteria. During the study the diagnosis of MS was done only when following three or more factors were present in the patients. The factors that were taken into consideration were as

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

Study participants: - This study included a total of 230 study participants, out of which 100 were males and 130 were females.

		Age Group				
S. NO	**Sex**	< 29 years	30-39 years	40-49 years	50-59 years	> 60 years
01	Male	11	14	33	28	14
02	Female	13	27	54	23	13

Table I: Showing No. Of Study Participants With Different Age Groups

As shown in table I the total number of participants that were selected for the study was 230. Out of this, number of participants in the age group of <29 were (N= 20, M= 7, F =13), whereas in the age group 30-39 the no. of participants observed were ((N= 39 M= 12, F =27). Similarly, the number of cases observed in age group of 40-49 were (N=91, M= 37, F=54) and in age group 50-59 the number studied were (N= 47, M=24, F= 23) . Also in the age group of > 60 years (N= 23, M = 10, F= 13) respectively.

Out of 220 patients, the number of MS cases was found to be higher in the age group of 40-49 years followed by 50-59 while as least number of MS cases were found in the age group of < 29 years. The total number of MS cases that were found in respective gender are given in the table below.

		No. of MS patients				
S. NO	**Sex**	< 29 years	30-39 years	40-49 years	50-59 years	> 60 years
01	Male	3	5	12	10	4
02	Female	3	10	23	9	3

Table II : Showing No. of MS patients in different age groups

RESULTS

As the total no. of study participants were 230, out of which 84 were MS cases, thereby (82/230 = 35.6%) were identified to be having MS. Among 82 cases of MS 48 were females (48/82 = 58.3 %) versus 34 males (34/82 = 41.1 %) as shown in figure 2. On the other hand the

prevalence of male patients with MS was 34 % (34/100) while as in females it was observed to be 36.9 % (48/130) as shown in figure 3. During the study it was found that the prevalence of MS was common in females than males.

Further as 82 cases of MS were found, maximum number of which were reported in the age groups of 40-49 years

(35/82 = 42.6 %) followed by 50-59 years (19/82 = 23.1 %), while as in other age groups the prevalence was 18.2 % (30-39 years) and 8.53 % in cases above 60 years of age. Least number of MS cases were reported in age group below < 30 years with prevalence rate of 7.31 % respectively (figure 4)

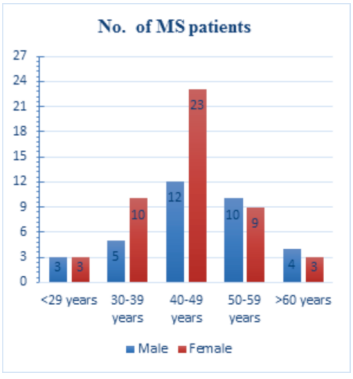

Figure 1: Age And Sex Distribution Of 82 Metabolic Syndrome Cases.

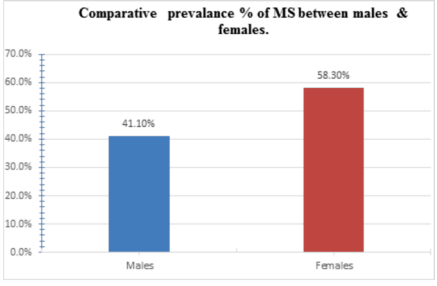

Figure 2: Comparative prevalence% of metabolic syndrome (MS) between males and females.

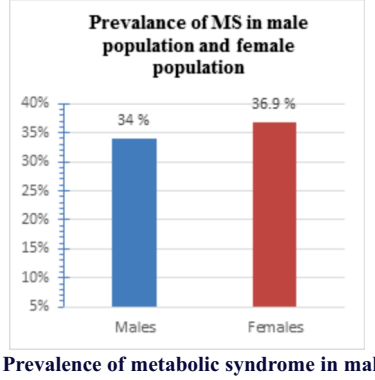

Figure 3: Prevalence of metabolic syndrome in male and female groups.

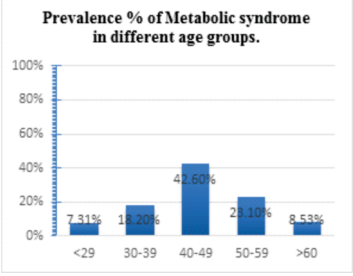

Figure 4: Prevalence % of metabolic syndrome in different age groups.

DISCUSSION

Metabolic syndrome is a disorder that is associated with a vast range of conditions which include high blood pressure, high levels of glucose, fat, cholesterol etc. Due to the change in lifestyle, high intake of calories, migration from rural to urban areas, less physical acivity and as a result of which the prevalence of MS is increasing day by day. According to a first nationwide survey carried out in malaysian adults the prevalence of MS was found to be 32.1, 34.3 and 37.1% respectively.as compared to other Asian like India [14], Hong Kong [15] and China [16], whose prevalence rate ranges between 6.1 to 18.3%,the prevalence of MS seems to be much higher in Malaysian population. In India the studies that have been carried across south Indian population, it was found that the prevalence rate was ranging between 22.1 % to 41 % [17,18,19]. In other parts of India like northern India and coastal India the prevalence rate of MS was found to be 22.37% and 43.2% respectively[20,21]. Previous studies have also reported higher rate of prevalence in females as compared to males. In our study the prevalence rate of MS in females was 58.3 % as compared to males (41.1 %). This is in accordance to the studies carried out by Ravikiran *et al*[22]. The higher prevalence ratio of MS in females may be due to difference in waist circumference, obesity, hypertension and different metabolic and hormonal parameters.

In our study 82 cases of MS were found, maximum number of which were reported in the age groups of 40-49 years (35/82 = 42.6 %) followed by 50-59 years (19/82 = 23.1 %), while as in other age groups the prevalence was 18.2 % (30-39 years) and 8.53 % in cases above 60 years of age. Least number of MS cases were reported in age group below < 30 years with prevalence rate of 7.31 % respectively. The variation in the prevalence rate of MS may be associated with different environmental and genetic factors, a study as reported by Poulsen and Reilly *et al* [23,24].

This study has tried to create awareness and generate enough data to find out associated risk factors and prevalence rate of MS in adult population. It is also important to improve the current health intervention programs. In this regard further studies need to be carried out.

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