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Original Research Article

A cross-sectional population-based study looked at the prevalence of neck discomfort in people with metabolic syndrome

Priyanka Nayak¹, Vijendra Gahnolia², Jitendra Aloria^{1b,3,*}¹Dept. of PMR, SMS Medical College, Jaipur, Rajasthan, India²Dept. of Orthopaedics, JLN Medical College, Ajmer, Rajasthan, India³Dept. of Orthopaedics, Government Medical College, Kota, Rajasthan, India

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ABSTRACT

Background: Metabolic syndrome (MetS) is becoming more prevalent. Obesity has been linked to neck pain, but the prevalence of neck discomfort in MetS patients has not been explored. The goal of this study was to look at the link between MetS and neck discomfort.

Materials and Methods: A total of 1,000 middle-aged Indian individuals were included in the study. A total of 450 men and 550 women took part in the competition. Males and females were both 47 years old on average. Clinical and biochemical tests were performed. A standard questionnaire was completed by the participants. The 12-item General Health Questionnaire was used to measure psychological discomfort (GHQ-12). Neck discomfort was described as neck pain that was experienced on a daily basis. The National Cholesterol Education Program (NCEP) criteria were used to define MetS. A bootstrap-type t-test or the Chi-Square test were used to make statistical comparisons between the groups. Generalized linear models using age, smoking, alcohol consumption, exercise, and GHQ-12 score as factors were used to construct risk ratios for neck discomfort.

Result: MetS was found in 455 men and 550 women in the study. Neck discomfort was linked to BMI and waist circumference in males but not in females. Antihypertensive medicine was used more frequently by neck pain patients than by non-neck pain patients. There were no significant changes in smoking, physical activity, blood pressure, lipids, glucose, or CRP levels. Neck pain was reported by 8.7% (95 percent CI, 4.8 percent to 13%) of male patients without MetS and 17%.

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1. Introduction

Metabolic syndrome (MetS), which includes abnormal glucose tolerance and insulin metabolism, obesity and abdominal fat loss, mild dyslipidaemia, or high blood pressure, is thought to be a risk factor for serious diseases such as heart disease (CHD), which includes myocardial infarction and stroke 1, and dementia 2. In the United States, about 35% of people suffer from metabolic syndrome.¹ In East Finland, a similar rate of 37% was observed.²

Forty to fifty-year-olds often complain of neck pain. Neck stiffness was reported in 24 percent of men and 37% of women aged 30 and over in a large population-based study conducted in Finland.³ When white adipose tissue releases production of cytokines into the circulation, which including tumour necrosis factor as well as interleukin-6, overweight has become thought to become a moderate, chronic disorder due to inflammation. Insulin resistance increases the severity of chronic inflammation. Individuals suffering from MetS have an increased chance of developing OA as well as neck pain.^{4,5} Amongst the most prevalent symptoms of MetS is visceral adiposity, which may be

* Corresponding author.

E-mail address: jitendra.170@gmail.com (J. Aloria).

connected to neck dysfunction. MetS and chronic pain disorders were hypothesized to be connected to depression's hypothalamus-pituitary-adrenal axis^{6,7} Metabolic Disorders Diabetes patients may have increased neck discomfort. MetS. As a result, we assumed that if these illnesses had any common symptoms, neck discomfort would be one of them. The purpose of this research was to investigate cases of neck discomfort in persons with MetS.

2. Materials and Methods

Between July 2018 and November 2020, a cross-sectional study was conducted at the department of orthopaedics and PMR at SMS Medical College in Jaipur, Rajasthan. An observational research method is OPD based. When they came in for a consultation for neck stiffness, every one of the patients were between the ages of 20 and 60. For participate in this research, all the participants provided their informed permission. The Research Ethics Board in the area gave its authorization.

2.1. Inclusion criteria

Males and females between the ages of 20 and 70, regardless of profession, are eligible to participate.

2.2. Exclusion criteria

Patients under the age of 20 who have had surgery for a spinal or pelvic injury. Ankylosing spondylitis, congenital/developmental kyphosis, scoliosis, poliomyelitis, Pott's spine Pregnancy and post-partum injuries to the cervical spine result in reduced mobility in the neck.

Each patient's relevant clinical characteristics, such as age, gender, as well as body mass index (BMI), was assessed. The symptoms of the clients were recorded. Patients must also complete a pre-consultation questionnaire in addition to drug testing. A total of 1000 patients were enrolled in the research's final study group. Clinical data and comorbidity were provided for 100 individuals. A total of 1350 persons were screened for eligibility. These patients had a mean age of 56.2 years (SD = 15.7) and a BMI of 25, weighing 27.7 kg / m² (SD = 5.6). Half of the patients are men. The World Health Organization defines MetS as insulin resistance (type 2 diabetes, impaired fasting glucose, or impaired glucose tolerance) with any of the ten symptoms listed below: I blood pressure of at least 140/90 mm Hg; (ii) plasma triglyceride content of at least 150 mg/dL; (iii) HDL saturation of at least 35 mg/dL (male) or 40 mg/dL (female) MetS is described as having 3 or greater danger elements within the adult remedy Panel III (ATP III) based on the country wide ldl cholesterol training software: I a waist circumference with as a minimum 102 cm (male) or 88 cm (woman); (ii) blood triglyceride levels of at minimum one

hundred fifty mg/dL; (iii) HDL overall levels of cholesterol of at least 40 mg/dL (male) or 50 mg/dL (female); (iv) blood pressure of at minimal 130/85 mmHg; as well as (v) improved blood glucose uptake Blood pressure was taken twice each 5 mins, and the effects of a 2nd test have been blanketed inside the examiner. Body mass index (BMI) become estimated the usage of the system kg / m². people who smoke are presently defined as people who smoke at the least as soon as a week. Alcohol consumption at least once a year become classified as "current intake." exercise time was defined as physical pastime that takes at the least half-hour consistent with session and causes sweating. Bodily pastime turned into divided into three classes: low activity (1-2 instances a month or much less), mild interest (1-3 times every week), and high pastime (3-five instances every week) (over three times) in step with week) v The 12-object general fitness Questionnaire (GHQ-12)⁸ changed into used to evaluate psychological discomfort. The four-factor reaction scale yielded the following results: Symptom presence: none = 0, just like normal = zero, extra than ordinary = 1, a lot extra than ordinary = 1. in line with their scores, the studies members have been divided into three businesses: zero factors, 1-2 points, and 3–12 factors. The severity of neck soreness turned into determined through asking about neck ache inside the preceding month. Neck soreness became divided into two classes: (i) no neck ache or just occasional neck pain, and (ii) each day or almost each day neck pain. As a result, we defined neck soreness in this have a look at as pain that happens on a daily or almost daily foundation.

2.3. Statistical analysis

All continuous variables were represented by means and standard deviations, whereas categorical variables were represented by proportions. The t-test was used to compare continuous variables to the normal standard average, and the chi-square test was used to compare categorical data to the normal standard average; p values were generated for both tests. A p value of 0.05 is considered significant. SPSS and Prism 8 were used for all statistical analysis.

3. Results

The average age of male participants in the study was 46.5 years (SD 6.4 years), while female participants were 45.2 years (SD 5.7 years) (P = 0.68). MetS was discovered in 455 men and 550 women who participated in the study. Neck discomfort was reported by 20.6 percent of women (N = 114) and 12.5 percent of men (N = 57). (P 0.001). Patients who had neck pain were slightly older than those who did not have neck pain, but not significantly so Male patients without neck stiffness had an average age of 47.0 years (SD 6.4), while those with neck pain had an average age of 47.9 years (SD 6.1) (P = 0.30). Males were 47.0

(SD 6.2) years old, while females were 45.6 (SD 6.2) years old ($P = 0.06$). MetS was found to be more common in men and women who reported neck pain than in those who did not. The antihypertensive medication was used more frequently in patients with neck pain than in patients without neck pain. Neck pain was linked to alcohol use in women and not in men. Neck pain was interconnected to BMI and waist circumference in men, though not in women. GHQ-12 levels were significantly higher in men and women with neck pain than in people who did not have neck pain. People who participated with neck and external pain had no significant changes in smoking, physical activity, blood pressure, lipids, glucose, or CRP levels. Patients with metabolic syndrome, both male and female, had more neck pain than those who did not. Neck dysfunction was reported by 8.7% of male patients without MetS (95 percent confidence interval [CI], 4.8 percent to 13 percent) and 17% (95 percent CI, 11 percent to 25%, $P = 0.016$) of male MetS patients. Men made up 26 percent of the population (95 percent CI, 19 percent to 31 percent, $P = 0.024$ percent), while women made up 17 percent (95 percent CI, 11–21 percent, $P = 0.024$ percent). In the same study, MetS was linked to neck instability in both men and women (RR = 1.6 (95 percent CI, 1.2 to 2.2). Men were at a 2.0 risk (95 percent confidence interval). Men's risk increased by 1.5 (CI, 1.1 to 3.6, $P = 0.024$), whereas women's risk increased by 1.5 (CI, 1.1 to 3.6, $P = 0.015$). My men with MetS had a higher risk of neck anxiety (RR 2.2, 95 percent CI, 1.3 to 3.9, $P = 0.010$) in multivariate analysis. Furthermore, boys with a high GHQ score had a higher rate of neck discomfort. A RR of 3.5 was associated with a GHQ score of 3 or higher (95 percent CI, 1.9 to 6.8). Neck pain was reported by female MetS patients (RR 1.6, 95 percent CI 1.0 to 2.8, $P = 0.040$).

4. Discussion

Kylin discovered a group of dangerous metabolic factors in the 1920s, including high blood pressure, hyperglycaemia, and gout. Obesity is frequently associated with chronic diseases, such as diabetes and heart disease, 20 years later, paving the way for our current understanding of MetS. Obesity, high blood pressure, low glucose fasting, and hypercholesterolemia have all been linked in different ways to cartilage collapse 3–9 and neck dislocation. According to one study, men as well as women with metabolic syndrome are much more susceptible to experiencing neck and back pain. Despite women experiencing a greater increase in neck discomfort, men were found to have a stronger link to neck pain than women. An earlier study discovered a link between mental distress and neck pain, especially in women. MetS was found to be statistically linked to neck pain even when depression was taken into account. In men, neck problems were linked to a higher BMI and a larger waist circumference. In a previous study,^{9,10} obesity was linked to a higher incidence of neck discomfort. Obesity

is a common symptom of MetS, and one of the diagnostic criteria is waist circumference. Whether they had neck pain or not, women had the same BMI and waist size. As a result, fat alone is unlikely to be the cause of the link between MetS and neck instability. Men with neck problems had higher levels of cholesterol and triglycerides, as well as a higher BMI than women. In both men and women, neck pain is linked to emotional distress. Neck pain was associated with low levels of stress in women, but only higher levels of stress in men. Women, on average, suffer from much more psychological distress than men. According to a large population-based study,¹¹ women are more likely than men to experience the psychological discomfort that occurs at that time. Another simple explanation for the link discovered in this study between neck pain and MetS is that the same component improves both neck pain and MetS. Two examples of such changes are depression and inactivity. Depression has been linked to the development of MetS.¹² According to a recent study,¹³ workers with neck, shoulder, or back pain have higher levels of stress-related biomarkers. Neck pain is sometimes a sign of depression. Physical inactivity was found to be a major risk factor for MetS in one group in a recent study, despite the absence of perceived stress. A recent study¹⁴ discovered a link between the onset of MetS and a lack of physical activity. Physical inactivity is linked to the progression of musculoskeletal symptoms, according to a large epidemiological follow-up study.¹⁵ A higher risk of heart disease has been linked to chronic musculoskeletal discomfort.¹⁶ As a result, physical inactivity could be a link between MetS and neck pain. Additional longitudinal studies should be conducted to investigate the possible link between neck discomfort and MetS, as well as any posterior features that are common to both.

5. Limitation of Study

The participants in this study came from a small location in India, and the number of people with neck discomfort was small. As a result, our findings should be viewed as preliminary, and they should be applied to other groups with caution. Neck pain was assessed based on self-reported symptoms, and we did not go into further detail on the diagnostic aspects of these symptoms, which is another possible weakness of our study.

6. Conclusion

MetS has been linked to neck discomfort. Males had a greater link to neck pain than females, although females had a larger prevalence of neck discomfort. Prospective research on the causal link between neck discomfort and metabolic syndrome is required.

7. Source of Funding

None.

8. Conflict of Interest

The authors declare no conflict of interest.

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Author biography

Priyanka Nayak, 3rd Year Resident

Vijendra Gahnolia, 3rd Year Resident

Jitendra Aloria, Senior Resident  <https://orcid.org/0000-0002-9560-6528>

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