

The Metabolic Syndrome and Menopause

Recently, a national English daily newspaper published a report stating that by the year 2050, India's population will hit 1.7 billion, but its child population (those below 15 years of age) is projected to come down by 20%. Furthermore, the population of Indians above 65 will increase by almost three times.

This will probably lead to a boost in diseases associated with aging. Unhealthy lifestyle practices which are becoming more prevalent in the current generation will further compromise the quality of life. Metabolic syndrome and its consequences will contribute significantly to this disease profile.

Metabolic syndrome is basically a lifestyle disease. It is a constellation of metabolic abnormalities that confer an increased risk of cardiovascular disease and diabetes mellitus.

The WHO defines metabolic syndrome as insulin resistance (IR) along with any two of the following criteria:

- Abdominal/central obesity: Waist-to-hip ratio: >0.90 (men), >0.85 (women), or body mass index >30
- Hypertriglyceridemia: ≥ 150 mg/dL
- Low high-density lipoprotein (HDL) cholesterol: <35 mg/dl for men and <39 mg/dL for women
- High blood pressure: $\geq 140/90$ mmHg or documented use of antihypertensive therapy
- High fasting glucose: Impaired glucose tolerance, impaired fasting glucose, IR, or diabetes
- Microalbuminuria: Urinary albumin-to-creatinine ratio: 30 $\mu\text{g/g}$, or albumin excretion rate: 20 $\mu\text{g/min}$.

Epidemiologically, it has been seen that the prevalence of metabolic syndrome increases with age. Sedentary lifestyle with increasing industrialization and urbanization is leading to an increase in obesity and metabolic syndrome. Increased waist circumference is most strongly related to IR and cardiovascular diseases. Increase in waist circumference is found more commonly in women.

Risk factors for metabolic syndrome include obesity, body fat distribution, physical inactivity, excess caloric intake, unhealthy dietary habits, exposure to certain medications such as antipsychotics, family history, socioeconomic factors, and low Vitamin D levels.

Apart from cardiovascular disease and type 2 diabetes mellitus, metabolic syndrome is also said to increase the risk of nonalcoholic fatty liver disease, hyperuricemia, polycystic ovarian syndrome, obstructive sleep apnea, etc.



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It is estimated that almost 20%–30% of the middle-aged population are affected by this syndrome.^[1] Incidence varies from 8% to 24% in males^[2] and from 7% to 46% in females.^[3] Many cross-sectional studies have shown an increased risk of metabolic syndrome in postmenopausal women, which varies from 32.6% to 41.5%.^[4]

Menopause, which is a sex steroid hormone-depleted state, increases the vulnerability to disease in hormone-responsive tissues such as bone, brain, and the cardiovascular system.^[5] This leads to a compromised quality of life. Menopause is associated with redistribution of body weight and weight gain in a majority of women. Weight gain and obesity largely drive the increased prevalence of metabolic syndrome in postmenopausal women.^[6] Menopause is considered a predictor of metabolic syndrome independent of women's age.^[7] The simultaneous occurrence of IR and obesity (especially visceral adiposity) is the most detrimental for metabolic health. This is also associated with oxidative stress, inflammatory and prothrombotic processes, as well as postmenopausal alterations in adipocytokine production.^[8] Chedraui *et al.* showed that in women with metabolic syndrome, lower adiponectin levels were significantly related to low HDL-C and high triglyceride levels and higher insulin and Homeostasis Model Assessment-Estimated Insulin Resistance values were related to high triglyceride and glucose levels.^[9] Otuntemur *et al.* in their study used the Female Sexual Function Index to assess women's sexual function. They clearly showed that sexual dysfunction is more prevalent in pre- and post-menopausal women with metabolic syndrome.^[10]

The management of metabolic syndrome in menopausal women should focus mainly on preventive measures along with pharmaceutical treatment wherever necessary. The therapeutic objectives should aim at reducing the underlying causes of metabolic syndrome such as obesity and physical inactivity while treating disease processes such as dyslipidemia, hypertension, and cardiovascular problems.

The following lifestyle modifications should be recommended:^[11]

- Moderate physical activity
- Healthy diet with less fats, carbohydrates, and salt
- Giving up smoking and excess alcohol intake
- Intellectual activity.

According to the current data, hormone therapy (HT) is not recommended as a preventive strategy for metabolic disorders in menopause. However, individualization of treatment may often ensure best outcomes. Menopausal HT, particularly estrogen therapy, may be considered to prevent chronic disease after menopause.^[12] The use of HT is beneficial overall for reducing many parameters of metabolic syndrome. According to Lobo, in metabolic syndrome, transdermal therapy may be preferable to oral therapy when given in standard doses.^[6]

Looking at the altering demographics of India with a trend toward increasing the aging population and changing lifestyle practices, metabolic syndrome will definitely become a significant problem in times to come, affecting not only the postmenopausal women but also the masses in general. Hence, this needs to be addressed seriously and meticulously.

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