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Weight Management and Metabolism in Postmenopausal Women: A Review

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Abstract:- Post-menopause is a critical period in a woman's life marked by significant hormonal changes that affect metabolism and weight management. This review paper examines the physiological changes impacting weight and metabolism in postmenopausal women, the associated health risks, and effective strategies for managing weight during this stage of life. Google Scholar, PubMed, Medline and Cochrane electronic databases related to weight management in postmenopausal women were searched. Adopting a holistic approach that includes lifestyle modifications; dietary adjustments like a phytoestrogen-rich diet, physical activity, behavioural changes, and potentially hormone replacement therapy can help manage weight effectively.

Keywords: *Weight Management, Postmenopausal, Physical Activity and Phytoestrogen, Hormone Replacement Therapy*.

I. INTRODUCTION

Postmenopause, defined as the time after a woman has not had a menstrual period for twelve consecutive months, typically occurs between the ages of 45 and 55. Women who have gone through menopause are more susceptible to obesity and have greater incidences of severe obesity[1]. The decline in estrogen levels during this period leads to various metabolic changes, contributing to weight gain and increased risk of metabolic syndrome, cardiovascular diseases, and type 2 diabetes [2]. During the transition of menopause, women tend to accumulate more body weight and obesity is a significant predictor for negative health-related quality of life and poor psychological well-being [3].

Postmenopause brings various physiological changes that can impact multiple aspects of health and well-being. Women with abdominal obesity, in comparison to other women, have higher vasomotor scores, personal life dissatisfaction, anxiousness, memory loss, sadness, flatulence, muscle and joint problems, sleeping disorders, and weakness [4,2]. Pathophysiology of obesity is a major risk factor for cardiovascular disease, sleep problems, musculoskeletal disorders, metabolic syndrome and cancers [5].

Nowadays, the strategies used for the management of obesity in postmenopausal women mainly centers around diet and lifestyle modifications. However, the long-term efficacy of these methods remains an issue, and the integration of medication and bariatric surgery is on the rise [2]. Furthermore, drugs intended to address the hormonal and physical changes of menopause in women, such as antidepressants and hormone therapies, have been reported to cause significant weight gain [6,7]. The objective of this review is to describe the relevant literature on the pathophysiology, health risk factors associated with weight management and strategies for weight management in postmenopausal women.

II. METHODS

The PubMed, Google Scholar, Medline and Cochrane databases were searched for articles using the terms weight management, pathophysiology, risk factors, management and treatment in postmenopausal women. Published articles included in this review were based on the relevance of research on weight management and metabolism in postmenopausal women.

III. RESULT AND DISCUSSION

A. Physiological Changes in Postmenopause

The hormonal changes during postmenopause significantly affect body composition and fat distribution. The most significant change is the dramatic decrease in estrogen and progesterone production by the ovaries. The reduction in estrogen levels is associated with an increase in visceral fat, which is metabolically active and contributes to insulin resistance and inflammation [8]. Reduced estrogen levels cause thinning and drying of the vaginal walls and a decrease in the size of the uterus. This can lead to symptoms like vaginal dryness, discomfort during intercourse, and increased susceptibility to vaginal infection [9].

Research has demonstrated a bidirectional link between estrogens and central adiposity in postmenopausal women, indicating that elevated central adiposity may potentially contribute to elevated estrogen levels. This happens as a result of adipose tissue's peripheral conversion of androgens to estrogens (aromatization). It hasn't been demonstrated, though, that these peripheral aromatized estrogens are linked to advantageous cardiometabolic outcomes like decreased insulin resistance and a lower chance of diabetes and cardiovascular disease [10,11]. Additionally, Menopause is associated with a decrease in resting metabolic rate, which can lead to weight gain if caloric intake is not adjusted. resting metabolic rate decreases with age, partly due to loss of muscle mass, further complicating weight management [12].

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B. Risks Factors Associated With Weight Gain

Weight gain in postmenopausal women is linked to several health risks, including:

➢ *Cardiovascular Disease*

In India, Cardiovascular disease is the leading cause of mortality and is also responsible for reducing the duration and quality of life [13]. Increased visceral fat and lipid abnormalities heighten the risk of heart disease, heart failure and stroke [14]. A longitudinal study observed that Postmenopausal weight gain often leads to unfavourable changes in lipid profiles, including increased levels of LDL cholesterol and triglycerides, and decreased levels of HDL cholesterol. These changes increase the risk of atherosclerosis and coronary artery disease [15]. Maintaining a healthy weight through diet, exercise, and lifestyle modifications is crucial for reducing cardiovascular risk in postmenopausal women.

➢ *Type 2 Diabetes*

Postmenopausal weight gain, particularly in the form of abdominal fat, contributes to insulin resistance. Insulin resistance is a condition where the body's cells do not respond properly to insulin, leading to higher blood glucose levels, which is a key factor in the development of type 2 diabetes [16]. Weight gain in postmenopausal women often leads to an increase in visceral fat (fat around internal organs). Many cross-sectional and longitudinal studies showed that visceral fat is metabolically active and releases free fatty acids and inflammatory markers that impair insulin action, thus increasing the risk of type 2 diabetes [17]

➢ *Osteoarthritis*

Extra weight puts additional stress on the joints, which can exacerbate or lead to the development of osteoarthritis, particularly in the knees and hips [18]. Excess body fat, particularly visceral fat, is metabolically active and produces inflammatory cytokines, such as interleukin-6 (IL-6) and tumor necrosis factor-alpha (TNF-alpha). These inflammatory markers can contribute to joint inflammation and degradation of cartilage, exacerbating osteoarthritis. Some studies suggest that genetic factors may predispose certain individuals to both weight gain and osteoarthritis. These genetic factors can influence body weight, fat distribution, and joint health [19]. Postmenopausal women experience a decline in estrogen levels, which is thought to have a protective effect on cartilage. Lower estrogen levels may contribute to the development of osteoarthritis, especially when combined with weight gain [20].

➢ *Cancer*

Postmenopausal weight gain increases the risk of several types of cancer, including breast, endometrial, colorectal, ovarian and other cancers. The mechanisms behind this increased risk involve hormonal changes, insulin resistance, elevated levels of IGFs, chronic inflammation, and alterations in adipokines. Postmenopausal weight gain is associated with a higher risk of breast cancer, particularly estrogen-receptor-positive (ER-positive) breast cancer. Increased body fat leads to higher levels of estrogen production from adipose tissue, which can promote the growth of hormone-sensitive breast cancer cells [21]. Weight gain increases the risk of endometrial cancer (cancer of the lining of the uterus) in postmenopausal women. Excess body fat elevates estrogen levels without a corresponding increase in progesterone, which can stimulate the endometrial lining and increase the risk of cancer [22].

C. Strategies For Weight Management

Effective weight management strategies for postmenopausal women include:

➢ *Dietary Interventions*

Reducing caloric intake to match the decreased metabolic rate is essential. Emphasis should be on nutrient-dense foods that provide essential vitamins and minerals without excess calories. Higher protein intake can help preserve lean muscle mass, while fibre-rich diets promote satiety and aid in weight management [23]. The phytoestrogen-rich diet helps to reduce postmenopausal problems like menopausal symptoms, obesity, cardiovascular disease, osteoporosis and cancer [24]. Nutrition is a key component of weight management. Reducing the intake of processed foods high in sugars, unhealthy fats, and refined carbohydrates can prevent weight gain. Increase fibre intake to promote satiety and support digestive health. Drinking plenty of water throughout the day is essential [25,26]. These are some dietary modifications that help to maintain weight as well as quality of life.

➢ *Physical Activity*

Regular aerobic exercise helps burn calories and improve cardiovascular health. To maintain a healthy lifestyle, at least 30 minutes for at least 5 days of a week with a balanced diet [27]. Resistance exercises are crucial for maintaining and increasing muscle mass, which can help boost metabolic rate. A systematic review and meta-analysis revealed that activities like yoga and tai chi can improve flexibility and balance, reducing weight gain and also the risk of falls and injuries [28].

➢ *Behavioural and Lifestyle Modifications:*

Techniques such as cognitive-behavioural therapy (CBT) can address emotional eating and other behavioural aspects of weight management. A systematic review was done on postmenopausal women suggested that aim for 7-8 hours of sleep per night. Poor sleep can disrupt hormones that regulate hunger and appetite, leading to weight gain [29]. Maintain good sleep hygiene by having a consistent bedtime routine, keeping the sleep environment comfortable, and avoiding screens before bedtime [30]. Managing stress through relaxation techniques such as deep breathing, meditation, or hobbies. Chronic stress can lead to weight gain [31]

➢ *Medical and Pharmacological Interventions*

In some cases, HRT may help manage menopausal symptoms and could potentially aid in weight management. However, it’s important to discuss the risks and benefits with a healthcare provider [32]. In some cases, medications such as metformin or weight loss drugs may be prescribed to

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assist in weight management. Regular medical check-ups can help monitor health conditions that may affect weight, such as thyroid function, and ensure that any weight management plan is safe and effective [33].

IV. CONCLUSION

Weight management in postmenopausal women is a multifaceted challenge influenced by hormonal changes, reduced metabolism, and increased health risks. A combination of dietary modifications, regular physical activity, behavioural changes, and medical interventions can effectively address weight gain and improve overall health. Further research is needed to refine these strategies and develop personalized interventions that consider individual differences in postmenopausal women.

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