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Obesity and Menopause: A New Nutritional Concern

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Abstract: *Obesity in India has reached epidemic proportions in the 21st century and is following a trend of other developing countries that are steadily becoming more obese. It is a complex multifactorial disorder affecting 20 per cent to 40 per cent of adults in India. The prevalence of obesity is more among women. The prevalence of being overweight and obesity is higher among postmenopausal women. Menopause is associated with several alterations in fat deposits, leading to changes in the distribution of body fat from gynoid to android pattern. Menopause affects the quality of life of a woman and besides causing commonly reported symptoms including hot flushes, night sweats, sleep disturbances, urinary frequency, vaginal dryness, poor memory, anxiety and depression. A balanced diet rich in calcium, iron, fiber, soybeans, vitamin B, vitamin E, potassium, omega 3 fatty acids and phytoestrogens can relief menopausal symptoms including obesity.*

Keywords: *Obesity, Menopause, Balanced diet, Calcium, Phytoestrogens.*

1. INTRODUCTION

Obesity is the most prevalent nutritional disorder in which there is excessive storage of energy in the form of fat as per height, weight, race and gender (WHO, 2006). Just over 10,000 years ago, obesity was nonexistent in human population. In the span of time it has become pandemic of 21st century (Chowbey, 2009). Now, this pandemic is so great that the new word is coined to cover this i.e. "Globesity" or World Wide Obesity. WHO (2000) describes obesity as one of the major yet most neglected public health problems that threatens to overwhelm both developed and under developed countries. Globally, obesity has reached epidemic proportions with more than 1 billion adults being overweight and at least 3000 million are clinically obese (WHO, 2003).

The prevalence data from individual national studies collected by the International Obesity Taskforce (2005) suggest that obesity ranges from 10 to 20 per cent for men and 10 to 25 per cent for women. There had been a worldwide increase in obesity among people of all ages. In more affluent countries, obesity is common not only in the middle-aged, but is also becoming increasingly prevalent among younger adults and children (Bindah and Othman, 2011). Pi-Sunyer (2002) states that obesity can occur at any age, older individuals are more likely to become obese. It has been found that obesity reaches its peak at around 55-64 years of age and decreases afterwards. Mohsen and Warsy (2002) also found significant increase in prevalence of obesity and overweight with age in both males and females of Saudi population. In all age groups, obesity was significantly more in females compared to males. Overweight was more prevalent in females 20-29 years of age as compared to males but the 30-49 years old males had a higher prevalence of overweight. Males and females aged more than 50 years had almost an equal prevalence of overweight.

Ironically, developing countries, which have been saddled with communicable diseases and under-nutrition for generations, are now facing an upsurge of obesity and its adverse health consequences. Afridi and Khan (2004) reported that the traditional societies undergoing the process of economic modernization demonstrate rapid increases in prevalence of obesity. It has been noted that one consequence of nutrition transition in developing countries is decline in under nutrition in association with increase in obesity (Popkin *et al.*, 2001). El Rhazi *et al.*, (2011) and Guerrero *et al.*, (2008) found that in low and middle-income countries, malnutrition has become a double-headed monster. It is not uncommon to find under nutrition co-existing with obesity, especially in urban settings. It is estimated

that at the beginning of this century, more people will die from complications of over nutrition than of starvation.

WHO now accepts a body mass index (BMI) of 25.0 kg/m^2 or higher as abnormal and overweight category is now classified as obese. With the new Asian BMI criteria of overweight at a lower cut off of 23.0 kg/m^2, the number is even higher reaching 1.7 billion people (Haslam and James, 2005 and James *et al.,* 2004). So, the obesity is not restricted to industrialized societies rather this increase is often faster in developing countries than in developed world.

2. Obesity and its Association with Menopause

Menopause is defined as final menstruation. It is the final stoppage of menses in a middle aged woman. Normally with age, the ovaries start to slow the production of hormone like estrogen, progesterone and testosterone. Menopause occurs due to decline in female hormone levels during their late 40's or early 50's, signaling the end of the fertile phase of a woman's life. Menopause occurs naturally, or it can be caused by surgery, chemotherapy or radiation. The average age of the natural menopause is 47.8 yrs in India and 51.4 yrs in western countries (Pathak and Prashar, 2010). The transition from regular menstrual cycle to cessation of menstrual period is sudden phenomenon. Natural menopause is recognized to have occurred after 12 consecutive months of amenorrhea without any pathological and physiological causes. Induced menopause is the cessation of menstruation through either surgical removal of both ovaries with or without hysterectomy or by the use of medicine. Premature menopause is the menopause occurring before the age of 40. The menopause is such a striking event in the life of a woman that tends to overshadow all other aspects of life associated with reproductive decline because it marks the termination of woman's reproductive cycle. In other words, fertility in woman ends with onset of menopause which involves a process of complex changes that occur in body with aging. Menopause affects the quality of life of a woman and besides causing commonly reported symptoms including hot flushes, night sweats, sleep disturbances, urinary frequency, vaginal dryness, poor memory, anxiety, depression (Aaron *et al.,* 2002) and psychological and rheumatic complaints (Bairy*et al.,* 2009), it proves as major cause of obesity in post-menopausal women (Sharma *et al.,* 2008).

According to recent report (Unni, 2010) which is based on third consensus meeting of Indian Menopausal society, in India where population figures has already crossed over 1 billion with 71 million people over the age of 60, the number of menopausal women is 43 million and it is further predicted that by year 2026, where the total population will be 1.4 billion people over 60 yrs will be 172 million, the menopausal population will be 103 million.

3. Menopause and Leptin Level

Leptin, a protein hormone produced mainly by the adipose tissue, is involved in body weight regulation and energy balance. Leptin is believed to be an anti-obesity hormone. The primary physiological role of leptin is to communicate to the CNS about the abundance of available energy stores and to check food intake, induce energy expenditure and decrease weight (Yang and Barouch, 2007). The absence of leptin therefore results in increased appetite and food intake that causes morbid obesity. Leptin also influences follicle stimulating hormone (FSH), Luteinizing hormone (LH), Adreno Cortico Trophic Hormone (ACTH), cortisol and Growth Hormone (GH) secretion (Licinio *et al.,* 1998).

Significant differences have been reported in leptin levels between premenopausal and post-menopausal women. Konukoglu (2000) reported significantly higher plasma leptin levels in premenopausal women as compared to postmenopausal women. Obese premenopausal women had significantly higher plasma leptin levels in comparison with the levels of the non-obese premenopausal women although no significant difference was observed in the plasma leptin levels between obese and non-obese post-menopausal women. Barrios *et al.,* (2010) and Jaleel *et al.,* (2006) have also observed higher plasma leptin levels among obese post-menopausal women as compared to non-obese postmenopausal and premenopausal women. Ayub *et al.,* (2006) suggested that the menopausal status was a more significant determinant of leptin levels. In postmenopausal women, decrease in estrogen level leads to increase in body fat and BMI.

4. MENOPAUSE AND ESTROGEN

Menopause is associated with decrease in estrogen levels which is responsible for heart disease, osteoporosis, diabetes, hypertension and obesity in menopausal women are important public health concerns. It causes an increase in tendency to gain weight. There are several changes in the deposition and distribution of body fat from a gynoid to android pattern (Rosano *et al.,* 2007). Reduction in ovarian hormones at the menopause leads to diverse functional and endocrinological disturbances resulting in decrease in basal metabolism and greater weight gain (Mastorakos *et al.,* 2010)

The prevalence of obesity increases significantly in American women after they reach 40; the prevalence reaches 65 per cent between 40 and 59 years and 73.8 per cent in women over age 60 (Flegal*et al.,* 2007). According to WHO (2002) reports, the prevalence of obesity is growing most rapidly in post-menopausal women. The prevalence of obesity in post-menopausal women with a family history of breast cancer was observed as 37 per cent with 40 per cent being overweight (Begum *et al.,* 2009).

The endocrine changes associated with menopause such as low plasma levels of estrogen and marked increase in luteinizing and follicle stimulating hormone levels exert a significant effect on the metabolism of plasma lipids and lipoproteins (Usoro *et al.,* 2006). In menopausal women, hormonal imbalance in the body leads to elevated levels of triglycerides and total cholesterol due to significant reduction in circulating concentration of estradiol resulting in increase in heart diseases and atherosclerosis after menopause (Javoor *et al.,* 2008). Igweh *et al.,* (2005) had also reported that such changes in the lipid profile after menopause are not friendly for the cardiovascular health of the women.

5. NUTRITION DURING MENOPAUSE

Menopause is not a disease, its end of reproductive or fertile phase of life of a woman. So, there is no specific treatment of this phase. It's the condition to be managed by HRT (Hormone Replacement Therapy), multivitamin doses and dietary management. Nutrition of menopausal women is major concern to overcome various secondary diseases like osteoporosis increase cholesterol levels and obesity. The treatment of postmenopausal obesity is very simple logically but incredibly difficult- eat less and exercise more. Recent studies suggest that being active and fit is more important than losing weight, hence, a major recommendation is maintaining healthy balanced diet. A study on obese postmenopausal women shows that diet and exercise has positive effect on health rather that diet or exercise alone (Pathak and Prashar, 2010).

Obesity in menopausal women can be managed by modifying diet. Adjustments of diet will be required to reduce calorie intake. Initial goal of weight loss therapy for overweight patients is a reduction in body weight of about 10 per cent. Combined therapy with low calorie diet (LCD), increased physical activity and behavior therapy provide the most successful intervention for weight loss and water maintenance. A year long, 4 arm randomized trial among 439 overweight to obese postmenopausal sedentary women to determine the effect of calorie reduced, low fat diet (D), a moderate intensity, facility based aerobic exercise programme (E) or combination of both interventions (D+E) versus no lifestyle change control (C) On the change in body weight and composition. Group based dietary intervention had a weight reduction goal of less than 10 per cent and excessive intervention consisted of a gradual escalation to 45 min aerobic exercise 5 days a week. This study shows that among postmenopausal women, lifestyle changes combined diet and exercise over one year improves weight and adiposity (Karen *et al.,* 2012).

6. DIETARY GUIDELINES FOR OBESE MENOPAUSAL WOMEN

Many of the menopausal symptoms can be managed by using appropriate diet. During menopause, eating variety of foods rich in calcium, iron, fiber, water and containing fewer amounts of fats and salt can help in relieving the menopausal symptoms and also in reducing weight.

Foods that need to be encouraged in the menopause diet are:

- Soya products: soybean has natural female hormones.
- Nuts: Almonds are rich in calcium and omega 3 fatty acid.
- Sesame seeds: rich in calcium and omega 3 fatty acid.

- Whole grains: rich in vitamin B and dietary fiber.
- Legumes (soya beans, lentils, chickpeas): rich in vitamin B, Isoflavones
- Vegetables: dark leafy greens, bean sprouts
- Potassium rich fruits: pomegranate, lemon, lichi, melon, amla, bel, guava, tomato, sweet lime
- Coconut water: rich in potassium, have cooling effect
- Green coriander juice: for cooling effect and insomnia
- Ghia / lauki juice: insomnia
- Mulethi: rich in female hormone
- Plenty of water
- Use salt in moderation - avoid sauce, pickles, bakery products, papad etc.

7. PHYTOESTROGENS

Estrogen plays an important role not only in reproductive system but also in functioning of cardiovascular, central nervous, immune and skeletal system. Estrogen also appears to help control in weight gain. Fall in estrogens after menopause leads to detrimental effects. With lower estrogen levels, one tends to eat more and be less physically active leading to lower metabolic rate. To avoid these detrimental effects phytoestrogens can be included in diet. The phytoestrogen rich foods include soybeans, garlic, apples, pumpkin, wheat, cabbage, oats, black cohosh, flax seeds, peanut and walnuts. Phytoestrogens can control the symptoms of menopause such as headache, hot flushes, mood changes, sleep disorders, heart palpitation, night sweats and vaginal dryness (Poluzzi *et al.*, 2014 and Khajuria *et al.*, 2008).

8. CALCIUM

When a woman enters menopause, due to estrogen deficiency which subsequently increases the risk of osteoporosis, it leads to thinning and weakening of bones. Low daily calcium intake is associated with greater adiposity particularly in women. In both sexes a high calcium intake is associated with improved plasma lipoprotein lipid profile predictive of lower risk of cardiovascular disease compared with low calcium intake (Sigal *et al.*, 2007 and Melanie *et al.*, 2003).Foods rich in calcium include dairy products, almonds, sesame seeds, fish, egg, ragi, soya milk, soya paneer, Bengal gram dal, soy bean sprouts, horse gram dal, amaranth, cauliflower greens, colocasia leaves (dried), turnip greens, radish, lotus stem, groundnut and coconut.

9. CARBOHYDRATES

Carbohydrates provide us with energy and fuel. A healthy and balanced diet should include whole grain cereals, whole meal pasta and bread. Intake of refined cereals should be restricted. Complex carbohydrates from different vegetables, fruits, and whole grains are good sources of vitamins, minerals and fiber. A diet high in all types of fibers may also aid in weight management by promoting satiety at lower levels of calorie and fat intake (Swinburn, 2004).

10. FATS

Reducing intake of saturated fats can really help to protect against heart disease. Full fat milk should be swapped for semi skimmed or skimmed. Instead of using butter low fat spread should be used. Also limit saturated fat to less than 7% of total daily calories .Saturated fat raises cholesterol and increases risk for heart disease. Saturated fat is found in fatty meats, whole milk ice creams and cheese (Swinburn, 2004).

11. CONCLUSION

Obesity is most prevalent nutritional disorder in India and one of major problem associated with menopause. Menopausal women are at high risk for obesity due to decrease in estrogen levels. Obesity in menopausal women can be managed by modifying diet. Diet modification can prove to the best way to control all medical emergencies that rise due to menopause. A diet rich in calcium, iron, fiber, omega 3 fatty acids, water, vitamin B and phytoestrogens is highly recommended in managing

menopause related symptoms. Soya products, dark leafy greens, almonds, coconut water, sesame seeds, flax seeds, oats and potassium rich fruits should be included in diet to get maximum benefits.

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