

BMI and Lipid Profile: A Serious Health Threat for Middle aged Women

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ABSTRACT

Background: Study tried to find out factors that associated with the weight gain or increased BMI in middle aged women and lipid profile that may become a cause of different disease in women in middle/late ages.

Objective: Study tried to find out factors that associated with the weight gain in middle aged women and lipid profile that may become a cause of different disease in women in middle and also in later ages.

Study Design: Cross sectional Study.

Place and Duration of Study: This study was conducted at the department of Biochemistry, Fatima Jinnah Medical College, Lahore from August 2010 to October 2010.

Materials and Methods: 50 females with age range 40-50 years were included in the study. The proforma of questionnaire recorded the age, socioeconomic status, BMI, blood pressure, dietary pattern, Physical activity and family history of female subjects. Lipid profile included total lipid, serum cholesterol, triglyceride, HDL-chol and LDL-chol were also estimated.

Results: It was observed that mean age at which females gained the weight is 45.23 years. Most females belong to class B and Class C. Females were over weight when compared with the standard criteria of weight to height ratio. No change in blood pressure was seen. A positive family history of obesity was also seen in many females. It was observed that the level of total lipids, cholesterol, triglyceride and LDL-cholesterol was significantly increased in female subjects as compared to these parameters of normal subjects. However, the level of HDL-chol was significantly decreased in female subjects as compared to normal subjects.

Conclusion: In view of this study, it is suggested that a diet is not simply a list of permitted food but it may include the total count of calorie a person consume in the form of food in addition to cut down some percent of sugar, salt and oil. A regular exercise may help to maintain the circulation of blood and maintain the level of lipid profile.

Key Words: Body weight, women, lipid profile.

INTRODUCTION

Obesity, or too much body fat, has become a serious health threat for women at every stage of life. It is linked as a serious factor in more than 30 conditions that effect women. Overweight and obesity can lead to risk factors for heart disease, but the extra pounds also take their toll on the heart directly. When a body becomes larger, the heart has to work much harder to move the blood around the body. Like an overworked pump, the hearts of overweight and obese people can simply wear out more quickly.^{1,2}

Obesity, especially abdominal obesity, is central to the metabolic syndrome and is strongly related to polycystic ovary syndrome in women. Obese women are particularly susceptible to diabetes and cardiovascular disease and have an increased risk of several major cancers in women, especially postmenopausal breast cancer and endometrial cancer.⁴ Pregnancy and menopause are significant factors in the development of obesity in women, suggesting that fluctuations in reproductive hormone concentrations uniquely predispose women to excess weight gain⁵.

Obesity risk is greater among men and women with fewer years of education and poorer economic circumstances and among women, but not men, of

lower occupational status⁶. Women generally have a higher percentage of body fat than men, and there are indications that basal fat oxidation is lower in females as compared to men, thereby contributing to a higher fat storage in women.⁷

Lack of nutritional knowledge i.e. the caloric value of food and role of vitamin, leads to unwise selection of food especially during the middle age when caloric need are less is a major factor in middle age obesity⁸. Modern facilities that pertaining to transport, household goods (washing machine, electronic kitchen etc) result in less physical exertion and therefore has less caloric out put⁹.

MATERIALS AND METHODS

50 females with no disease other than obesity were included in the study. Their age range was 40-50 years. These were taken from Out Door Department of Sir Ganga Ram and Services Hospital Lahore. Study duration was 3 months. 20 non obese females with no history of any disease were taken as controls. The proforma of questionnaire recorded the age, socioeconomic status, BMI, blood pressure, dietary pattern, Physical activity and family history of female subjects. Letter of consent was taken from each individual. Lipid profile included total lipid, serum

cholesterol, triglyceride, HDL-chol and LDL-chol were estimated by using the standard kits.

RESULTS

A survey report on female obese subjects showed mean age at which females gained the weight is 45.23 years. According to socioeconomic status, obesity is more common in females belonging to class B and Class C. As far as the BMI is concern, females have higher BMI when compared with the standard criteria of BMI (<25). No change in blood pressure was seen. It was observed that most of the females were house wives and they have sedentary life style. A positive family history of obesity was also seen in many females. It is observed that if both parents are obese then most of the children i.e. 3 out of 4 are obese. On the other, if only one parent is obese than 01 out of 4 is obese (data not shown).

Table No.1: Obesity related parameters in female obese subjects.

Parameters	Female subjects
Age (years)	45.23 $\pm$ 5.48
Socioeconomic status	Class B/ class C
BMI	35.8 $\pm$ 4.5
Blood Pressure (mmHg)	125/80
Dietary Pattern	Fatty diet
Physical activity	Sedentary life
Profession	House wives
Family history	30-40%

Table No.2: Lipid Profile of Female Subjects and their controls.

Values Expressed as mean $\pm$ s.e.m.

Parameters	Female subjects	Female control
Total Cholesterol (mg%)	248.68 $\pm$ 4.34**	186.60 $\pm$ 4.66
HDL Cholesterol (mg%)	29.76 $\pm$ 0.58**	80.28 $\pm$ 5.1
LDL Cholesterol (mg%)	199.60 $\pm$ 5.25**	42.55 $\pm$ 1.8
Triglyceride (mg%)	132.64 $\pm$ 7.5**	109.00 $\pm$ 10.56
Total Lipid (mg%)	663.68 $\pm$ 6.61*	423.50 $\pm$ 14.9

**P<0.001= Highly significant difference

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Table 2 showed the parameter of lipid profile like total cholesterol, HDL-cholesterol (HDL-C), LDL-cholesterol (LDL-C), triglyceride and total lipid in female subjects and normal control subjects. It was observed that the level of total lipids, cholesterol, triglyceride and LDL-cholesterol was significantly increased in female subjects as compared to these parameters of their controls. However, the level of

HDL-chol was significantly decreased in female subjects as compared to controls or normal subjects.

DISCUSSION

In recent years considerable epidemiological efforts have been directed to assess risk factors of obesity. Most notable among these are age, BMI and blood pressure⁸. Present study observed that most female subjects were obese between 40-45 years. It was observed by a group of workers⁹ that obesity develops with increasing age and is characterized by increased food intake and declining energy expenditure via activity and metabolism. Another study reported that Serotonin contributes to the regulation of food intake and appetite behavior. As body weight increases, the amount of serotonin synthesis decreases, presumably to indicate satiety at lower levels of food intake. However, women do not experience this drop in serotonin synthesis until reaching a BMI classifying them as "obese."¹⁰

Present studies observed that diet of most of the women was mixed vegetables and meat or vegetable alone in fried style. It is reported that there is a decreased digestion and absorption of fat with increased age. This decreased metabolism of fat is also related with sedentary life¹¹ (Hofstedt). A positive family history was also observed by the present study. A study stated that Tumor necrosis factor alpha (TNF-alpha) is expressed in fat cells and is possibly involved in the development of insulin resistance. One variant of the gene for TNF-alpha is associated with obesity in women, but not in men¹².

Lipid profile of women was also checked. It was observed that the level of total lipids, cholesterol, triglyceride and LDL-cholesterol was significantly increased in female subjects as compared to these parameters of normal subjects. However the level of HDL-chol was significantly decreased in female subjects as compared to normal subjects.

Study is in agreement^{13,14} with conclusions of a group of workers who reported that plasma lipoprotein metabolism, in women, is influenced by the circulating concentration of gonadal steroids. Changes in serum estrogens and androgen concentration, resulting, either from alteration in gonadal status or from administration of estrogens gonadal steroid, have been shown to be associated with changes in serum lipoprotein level. Another study^{15,16} found that the elevated triglyceride level in obese women may be due to their higher visceral fat mass and possibly reduced clearance by adipose tissue. Our findings contrast with study of a group of workers¹⁷ who observed no change in level of HDL cholesterol in women undergoing diet and exercise.

CONCLUSION

In view of this study, it is suggested that a diet is not simply a list of permitted food but it may include the total count of calorie a person consume in the form of food in addition to cut down some percent of sugar, salt and oil. A regular exercise may help to maintain the circulation of blood and maintain the level of lipid profile.

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