Effect of Socio-Economic and Nutritional Status on Overweight and Obesity

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Abstract

Overweight and obesity are becoming the world's leading nutritional disorders. Hence, a study was undertaken to assess the relationship between socio economic and nutritional status of women in order to develop proper intervention measures. Most of the women studied were middle aged (85%) and only 30 per cent were graduates. 85 per cent women lived in nuclear family and had a varied distribution of family income. Mean values of height, weight, body mass index (BMI), skin fold thickness, waist circumference (WC), hip circumference (HC) and waist to hip (W/H) ratio were 154.68 cm, 68.89 kg, 28.82 kg / m², 22.92 mm, 97.25 cm, 108.92 cm and 0.89, respectively. 57.5 per cent of women were obese and 38.75 per cent of women were overweight. All the women studied belonged to sedentary lifestyle. Thus it can be concluded that modification of the lifestyle can help in the management of the healthy body weight.

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg / m²). Obesity is the most prevalent nutritional disorder in prosperous economic groups in developing and developed countries. It is the result of an incorrect energy balance leading to an increased storage of energy, mainly as fat. Obesity is becoming most prevalent health problem world wide in most of the populations, affecting children, adolescents, adults and specially housewives (Saboo *et al.,* 2013). The excess of fat in men tends to accumulate in the upper abdomen. In women, the favoured sites for the accumulation of fat are the hips, thighs and buttocks. Accumulation of the fat at site is to be considered a predominant factor for metabolic disorders of obesity. However, the overall incidence of obesity was found to be higher among women than men (Bose, 1995). In India, the increased levels of obesity are primarily associated with the transformation from rural to urban life style. Modern lifestyle associated with easy access to food, lack of exercise, sedentary lifestyles, calorie dense foods and excessive television viewing contribute to development of non communicable diseases. Women generally have lower levels of physical activity compared to men. They also are more likely to have a change (either an increase or a decrease) in calorie intake in their lifetime (Saboo *et al.,* 2013). Hence, effect of socio economic and nutritional status on overweight and obesity was undertaken to understand the relation between them.

Women subjects (n=120) from Bangalore city were selected randomly and were interviewed using pre-tested questionnaire for their socio economic information like age, education, type of family, number of children, family income and physical activity level was calculated using factorial method (Warwick, 2006). Subjects were also measured for the nutritional status such as height, weight, waist, hip, skin fold thickness, mid upper arm circumference and abdominal circumference and classification of subjects according to their body mass index was done.

Table I depicts the socio economic status of the women included in this study. Maximum respondents of 85% were between the age of 31-50 years. Since age specific evaluation of prevalence of overweight and obesity was found to be higher in age group of 30–45 years followed by other age groups (<30 years and 46–60 years) (Saboo *et al.,* 2013). Only 30 per cent of women had the opportunity to complete the degree and more than half of the women had education up to pre-university. Education plays an important role

TABLE I

Socio economic status of women

(n=120)

Characteristics	Number	Per cent
Age (yrs)		
≤30	2	2.5
31-50	102	85
≥51	15	12.5
Education		
Illiterate	3	2.5
Primary School	5	4.16
SSLC	32	26.66
Pre-University	40	33.33
Diploma	3	2.2
Graduate	33	27.5
Post-graduate	4	3.33
Type of family		
Nuclear	102	85
Joint	18	15
Number of children		
0-2	105	87.5
>3	15	12.5
Family income (Rs)		
10,000	18	15
10,000-20,000	28	23.33
20,000-30,000	42	35
30,000-40,000	20	16.66
>40,000	12	10

in the choice of food and influences the lifestyle, which in turn affects the body weight and health. Prevalence of obesity declines with income and education (Mokdad *et al.*, 2001). Majority of the women (85%) were living in a nuclear familyand 87.5 per cent had 0-2 number of children. Sedentary work and pregnancy leads to the weight gain and thus overweight or obesity. Variation was observed with respect to the family income with only 35 per cent belonged to income level of Rs. 20,000-30,000 per month. There was a decreasing inverse relationship between obesity and income among women and a stable positive association among men was observed by Flegal *et al.*, 1998. Although, obesity is frequently associated with poverty but presently increased trend at all levels of income is reported.

Mean anthropometric measurements of women (Table II) shows 154.68cm of height, 68.89 kg of weight, $28.8/m^2$ kg of body mass index (BMI), 22.92mm of skin fold thickness, 97.25 cm of waist circumference (WC), 108.92 cm of hip circumference

TABLE II

Mean anthropometric measurements of subjects

Anthropometric measurements	Mean±Sd	Normal range
Height (cm)	154.68±7.60	161
Weight (kg)	68.89±9.52	55
Body Mass Index (kg/m^2)	28.82±3.78	<23
Skin fold thickness(mm)	22.92±4.08	-
Waist circumference (cm)	97.25±11.03	<88
Hip circumference (cm)	108.92±10.50	-
Waist to hip ratio	0.89±0.07	<0.86

(WHO, 2004)

(HC) and 0.89 of waist to hip (W/H) ratio. Mean values for BMI and waist to hip ratio was higher than the normal values. Higher BMI was directly associated with the increased intake of energy and inadequate physical activity leading to the storage of fat in the body. According to WHO (2004), BMI should be used to classify overweight and obesity compared to weight only. Obesity, classified in terms of the body mass index and the waist–hip ratio, has several associated co-morbidities such as diabetes mellitus, hypertension, degenerative osteoarthritis and infertility (Ogunbode *et al.,* 2011).

Physical activity level (PAL) of the women (Table III) shows that, all the respondents belonged

TABLE III

Classification of lifestyle in relation to physical activity level

Category	No. of subjects	Percent
PAL value		
Sedentary lifestyle (1.40-1.69)	120	100
Active lifestyle (1.70-1.99)	0	0
Vigorous lifestyle (2.00-2.40)	0	0

(Warwick, 2006)

to sedentary lifestyle with mean PAL of 1.52. Regular physical activity like vigorous exercise for 45-60 min per day prevents unhealthy weight gain and obesity, whereas sedentary behaviours such as watching television, sleeping in day time, munching between the meals promote weight gain. Regular exercise can markedly reduce body weight and fat mass without dietary caloric restriction in overweight individuals. An increase in total energy expenditure appears to be the most important determinant of successful exercise-induced weight loss (Lakka and Bouchard, 2005).

Anthropometric measurements measure the human body size and proportion. It helps in assessing the nutritional status, identifying individual at risk, and provide information about the body's store of fat and muscle. Anthropometric indices (Fig. 1) shows that 57.5 per cent of women belonged to obese
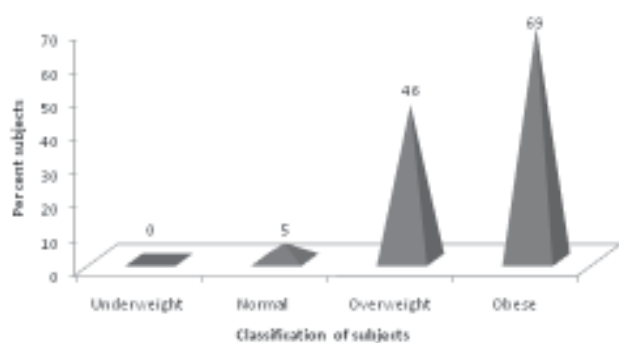

Fig.1: Distribution of subjects according to anthropometric indices

category, 38.75 per cent of women belonged to overweight and 3.75 per cent of women belonged to normal weight. Most of the women in this study belonged to a nuclear family leading a sedentary lifestyle might have contributed for overweight and obesity. Also due to middle aged changes contributed weight gain.BMI gives an estimate of relative weight for height. Classification of BMI gives the accurate measure of increase in body fatness even small changes within short duration and helps in analyzing the prevalence of obesity in a population.

The study revealed that women are highly prone to weight gain due to their sedentary activity level and body changes. The results found in this study shows that age, education, family type and family income have a positive effect on the prevalence of overweight and obesity. Thus, it can be concluded that modification of the lifestyle practices can help in the management of the healthy body weight.

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