

Prevalence and Trends in obesity among Punjabi women

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ABSTRACT

Obesity can have an adverse impact on woman's health at each phase of her life. Women are at greater risk for obesity in an obesogenic environment. Epidemiological study has been undertaken and 1000 subjects were studied in district Sangrur (Punjab). The degree of obesity has been observed as Preobese, Obese-I, Obese-II and Obese-III and levels of obesity of these subjects are 19.7%, 5.2%, 0.9% and 0.4% respectively. The BMI exceeded 25 kg/m^2 (i.e. $>25 \text{ kg/m}^2$) is in 26.2% of the total population Obesity is more pronounced in females as compared to males. Value for BMI $>25 \text{ kg/m}^2$ is 30.8% in females and 22.5% in males. Behavioral and environmental factors are key determinants of obesity and lifestyle modification can be extremely effective for preventing type 2 diabetes and its related disorders.

Key Words: Epidemiological, Obesity, Overweight, Male, Female, BMI.

INTRODUCTION

The World Health Organization estimates that more than 1 billion people are overweight, with 300 million meeting the criteria for obesity (WHO, 2010). Nearly 300 million women are now thought to be clinically obese. Being too fat (adiposity) causes significant health problems not only for individuals but also for families and communities who have to bear the cost of managing the associated medical conditions, often utilising a major portion of the total health budget (WHO, 2014). Many diseases are associated with overweight and obesity. Overweight and obesity raise the risk for Type-2 diabetes, high blood pressure, high cholesterol levels, coronary heart disease, congestive heart failure, angina pectoris, stroke, asthma, osteoarthritis, musculoskeletal disorders, gallbladder disease, sleep apnea, respiratory problems, gout, bladder control problems, poor female reproductive health, complications of pregnancy, menstrual irregularities, infertility, irregular ovulation and cancers of the uterus, breast, prostate, kidney, liver, pancreas, esophagus, colon and rectum. The health outcomes related to these diseases, however, often can be improved through weight loss or, at a minimum, no further weight gain. According to WHO (1997) the problem of obesity had been largely ignored as a public health issue, but the numbers affected were now as vast that sufferers from obesity problem already threatened to overwhelm countries' medical services. Twenty-six percent of nonpregnant women ages 20 to 39 are overweight and 29% are obese (National Heart, Lung, and Blood

Institute,2010)In India most of the women are less educated or housewives and are generally ignorant about this disease which reflect the cause of developing obesity in them. A new approach to the assessment of overweight and obesity in women establish principles of safe and effective weight loss to prevent non-communicable diseases.

METHODOLOGY

The present epidemiological was undertaken in the district Sangrur, Punjab, India. The random sample survey was undertaken and 1000 subjects were selected randomly for questioning regarding different aspects of epidemiology. Out of these 1000 samples, 500 were from urban and 500 from rural population. They were questioned personally, using a questionnaire, which is designed for collection of data and general information regarding various epidemiological factors. Body mass index was measured by the method Quetelet's Index, which is body weight (in kg), divided by stature (in m^2). WHO (1997) criteria was used to define the various categories of obesity and malnutrition: (a) Normal: 19-24.9 kg/m^2 (b) Overweight : $>25 kg/m^2$, (c) Pre-Obese: 25-29.9 kg/m^2 (d) Class-I Obese: 30-34.9 kg/m^2 (e) Class-II Obese: 35-39.9 kg/m^2 (f) Class-III Obese: $>40 kg/m^2$

RESULTS

The degree of obesity has been observed, as Pre-obese, Obese-I, Obese-II and Obese-III and levels of obesity of these subjects are 19.7%, 5.2%, 0.9% and 0.4% respectively. The $BMI > 25$ is in 26.2% of the total population The data given in Table-1 clearly reflect that obesity is more pronounced in females as compared to males. Value for $BMI > 25 kg/m^2$ is 30.8% in females and 22.5% in males. Chi-square test is applied and its values are given in (Table-2).

DISCUSSION

The present research work reveals the level of obesity in women to the tune of 30.8% in the Punjabi subjects (India). It is further pointed out that most of the women are less educated or housewives and are generally ignorant about this disease which reflect the cause of developing obesity in them. The screening is also done with respect to physical activities and it becomes evident that 40.7% males are involved in physical activities but in females only 29.8% are involved in such activities and 70.1% are involved in sitting type of work. Hence, women, because of their less physical activities are at greater risk of developing obesity.

Physiologically, estrogen increases the metabolic rate slightly but only about one third as much as male sex hormone testosterone can do. It also causes deposition of increased quantity of fat in the subcutaneous tissues. The possible impact of estrogen and other factors that can affect carbohydrate metabolism may have also been important in mediating this sex difference (Harris *et al.*, 1997).

The other reasons are unawareness, illiteracy, ignorance about intake of calories and regarding quantity and quality of food and domestic helps. Both rapid urbanization and industrialization in countries together with the adoption of modern life styles that adversely affect wealth have brought new problems in the form of non-communicable diseases in many developing countries. Similar trend is happening in the area of study but more pronounced is the rural to urban shift.

Obesity in women had been found 3% in Haiti, 8-10% in eight Latin American Countries, 29% in Mexican Americans (Martorell *et al.*, 1998)

Ahuja (1976) expressed that mean BMI for Indian males and females were 23.8 and 23.9 kg/m² respectively. These values were very much similar to those found in the Fiji Indians males (22.5 kg/m²) and Fiji Indian females (23.9 kg/m²). Yet the Fiji Indians have much higher diabetes prevalence than people in India. According to Rao and Al-Ageli (1993) in Libyan diabetic subjects, 5.8% of them were obese and obesity was more prevalent in female patients that are 6.6% as compared with the male patients that is 3.1%. Ducorpset *al.* (1996) observed that obesity in Mauritania was a cultural determinant of female beauty, particularly for the Moorish ethnic group. Obesity was traditionally obtained by force-feeding girls with camel milk and dates and 47.3% of adult Moorish women were clinically obese. Beckles *et al.* (1985), Papozet *al.* (1996) and White *et al.* (1997) also found the higher prevalence of obesity in females as compared to males. Hence the earlier studies are one in line with the present study conducted on Punjabi population.

Ahren and Corrigan (1984) observed the 4% obesity in males and 16% in females. Gopalan *et al.* (1991) in Pondicherry (India) found that in diabetics BMI is >25.0 kg/m² in 9.5% in males and 18.1% in females. But in the present study, BMI >25 kg/m² is 30.8% in females and 22.5% in males indicating thereby that the various epidemiological factors are at work in different populations even in the same country. Females have a higher prevalence of obesity and also a higher risk of developing it. Women have a higher percentage of body fat than men as there are indications that their basal fat oxidation is lower than men resulting in higher fat storage in them. Obesity in women is associated with alterations in the reproductive cycle with a reduction in fertility, as well as an increased risk of polycystic ovarian syndrome (PCOS) and infrequent or no ovulation. Overweight women with PCOS have a tendency towards insulin resistance and are prone to developing diabetes, particularly in later life (Sam, 2007). In fact it is now clear the incidence of all gynaecological cancer increases with increasing BMI (Bhaskaran *et al.*, 2014).

Pregnancy and menopause are significant factors in the development of obesity in women. Fluctuations in reproductive hormones concentrations make them prone to weight gain. Serotonin contributes to the regulation of food intake and appetite behavior. As body mass index (BMI)

increases, the amount of serotonin synthesis decreases to indicate satiety at lower levels of food intake. In men, this decrease occurs when men reach a BMI classifying them as “overweight,” whereas women do not experience this drop until reaching a BMI classifying them as “obese.”

A recent report from the International Diabetes Institute recommends that people who are shorter (for example Asian populations), the cut-offs for overweight and obesity may need to be lower.

This is because there is an increased risk of diabetes and cardiovascular disease, which begins at a BMI as low as 23 kg/m^2 in Asian populations. In taller Caucasian populations, this risk occurs around a BMI of 27 kg/m^2 .

This data is required before definitive cut offs can be set for shorter stature populations (Cockram, 2000). Use of BMI on a national and regional basis would be valuable in almost every country both for making an initial assessment and as a continuing monitoring system in the context of implementing this declaration to identify and estimate the wide spread of under-nutrition and over-nutrition that affect at least some adult population in the great majority of countries. Millions of lives are threatened by the dual epidemics of diabetes and obesity that are bound to explode in this century (David, 2003)

EBCOG (2014) therefore supports any public health intervention that addresses this emerging public health issue and particularly those measures aimed at education and prevention. The importance of these issues for the health of the next generation needs particular emphasis. An escalating epidemic of overweight and obesity is affecting many countries in the world and if the action is not taken now to stem the pandemic, millions of people will develop this non-communicable disease and other health disorders like high cholesterol, hypertension, coronary heart disease, insulin resistance, type-2 diabetes kidney disorder etc. Hence more systematic preventive programs are needed to address this problem at the earliest possible opportunity. Primary prevention proves to be more effective public health initiative. Causes of weight gain include reduced physical activity and increased food intake. Awareness of the disease needs to be promoted. Preventing obesity is the most important public health issue facing our nation. Immediate intervention is critical as the rate of obesity is increasing nationally at an alarming rate. Recent data suggest that both conditions may be prevented or reduced through lifestyle changes.

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TABLE 1

Distribution of number of subjects in males and females according to Body Mass Index

S.No.	Status of Subjects	Male		Female		Total
		No.	Percentage	No.	Percentage	
I	Malnourished	112	50.00%	112	50.00%	224
II	Normal	318	61.87%	196	38.13%	514
III	Preobese	97	49.24%	100	50.76%	197
IV	Obese - I	25	48.08%	27	51.92%	52
V	Obese - II	2	22.22%	7	77.78%	9
VI	Obese - III	1	25.00%	3	75.00%	4
	Total	555		445	1000	

Table 2-STATISTICAL ANALYSIS

Status of subjects	X^2	DF	p	Sig
Malnourished	0.315	1	>0.05	NS
Normal	17.650	1	<0.0001	HS
Pre-obese	3.682	1	>0.05	NS
Obese-I	0.907	1	>0.05	NS
Obese -II & III	5.623	1	<0.05	S
X^2 : Chi Square test, p: Probability, HS: Highly Significant, NS: Non significant, S: Significant DF: Degree of Freedom,				