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Social class changes and its impact on Body Mass Index amongst women of Chandigarh

Manju Dewan

Post Graduate Department of Zoology, DAV College, Sector 10, Chandigarh

ABSTRACT

Socioeconomic status shows a stronger relationship with obesity. Prevalence of raised body mass index increases with income level of countries up to upper middle income levels. On the basis of education levels of the women, working status and monthly income status. Scores were calculated using Kuppuswamy's socioeconomic status. In the second stage, anthropometric measurements of weight and height were recorded utilizing the standard equipments and methodology.14% of women belonged to Upper class and 26%,39%,11.3% and 9.3% were in upper middle ,middle, upper lower and lower classes respectively. Overweight women were more in upper middle and middle class. Obese I women were more in middle class and obese-II were more in upper class. Trend of increase in obesity is from middle class towards upper class. Rising national incomes in developing countries and increased `Westernization' will most likely lead to increased levels of obesity in the future. Trend of increase in obesity is from middle class towards upper class. Income levels are related with different dietary habits and behavior that can lead to obesity. Future research should also try to better understand shift in the burden of obesity in different socioeconomic status among women.

KEY WORDS: SOCIOECONOMIC STATUS, OBESITY,UPPER CLASS, MIDDLE CLASS

INTRODUCTION

Socioeconomic status (SES) is often measured as a combination of education, income and occupation. SES affects the physical and mental health. The opening of the Indian economy has resulted in rapid economic boom and urbanization in this country. Prevalence of raised body mass index increases with income level of countries up to upper middle income levels. Income levels are related with different dietary habits and behavior that can lead to obesity. Between 1988–1994 and 2007–2008 the prevalence of obesity increased in adults at all income and education levels.There is also a growing body of evidence that suggests that socio-economic position (SEP) is a risk factor for obesity. The association between socioeconomic status (SES) and obesity has not

been assessed in developing countries, (Cynthia et al, 2010, Shunquan et al 2015 and Leilei et al 2015).

Different socioeconomic status and its relationship with obesity and type 2 diabetes in women men in developing countries such as India influence people's lifestyle such as diet, food consumption patterns and public services such as health care and physical activity. There is tremendous difference in the economic development in different regions of India with lower SES levels. Thus, a deep understanding of the SES-obesity relationship can provide significant approach for developing effective obesity-prevention programs. This study aims to explore the effect of SES on overweight/obesity on gender in Chandigarh.

METHODOLOGY

First of all population data of Chandigarh was taken from Directorate of census operations, Chandigarh as per census 2011.The sector wise population and other parameters have been discussed with the statistician and sample size from each sector was decided. Standardization of apparatuses was done. Women aged >20 and <60 years were randomly selected by multistage cluster sampling. At the time of the initiating the study, in first stage, 350 women participated in the study. But 300 women competed the all stages of study i.e. Questionnaire & dietary survey and anthropometric measurements. All were informedabout the study protocol and written consent was obtained. Kuppuswamy's socioeconomic status scale was used to draw the information regarding socioeconomic status (Kuppuswamy 1981, Mishra and Singh., 2003)

On the basis of education levels of the women, working status and monthly income status , Scores were calculated using Kuppuswamy's socioeconomic status. In the second stage, anthropometric measurements of weight and height were recorded utilizing the standard equipments and methodology. Weight was recorded using electronic weighing scale to nearest 100 kg. Height was recorded using the anthropometric rods. Three reading of height and weight were taken and the mean of the last two readings was considered as final.

RESULTS AND DISCUSSION

14% of women belonged to Upper class and 26%,39%,11.3% and 9.3% were in upper middle ,middle, upper lower and lower classes respectively. Education levels of the women, working status and monthly income status were given in Tables 1,2 &3. Overweight women were more in upper middle and middle class. Obese I women were more in middle class and obese-II were more in upper class Table 4. But there is no significant difference in obese-I categories Table 5. It was analyzed by social, economic and environmental factors those may operate through complex pathways to influence obesity.

Overweight and obesity in early life are associated with increased risk of hypertension, heart disease, diabetes mellitus, and sleep disturbances in adulthood (Ng., 2014) Socioeconomic status shows a stronger bond with obesity and lack of recreational physical activity in women than in any other subgroup. Low income, ethnic minority women have the highest inactivity rates in the USA (Albright et al. 2005; Ball et al. 2006).

In 2007–2008 more than one-third of United States adults were obese (Flegal et al 2010). Obese individuals are at increased risk of diabetes mellitus, cardiovascular disease, hypertension, and certain cancers, among other conditions (National Institutes of Health,1998). Some studies have shown a relationship between obesity prevalence and socioeconomic status measured as educational level or income (Sobal and Stunkard,1989 and McLaren (2007)). These results are consistent with other reported studies in China (Xiao et al 2013 and Hou et al, 2013)

TABLE 1: PREVALENCE OF LITERACY AMONGST SUBJECTS.			
LITERACY	SCORES	NUMBER	PERCENTAGE
Illiterate	7	31	10.3%
Primary school certificate	6	38	12.6%
Middle	5	37	12.3%
High School	4	20	6.7%
Intermediate	3	38	12.7%
Graduate	2	91	30.3%
Post-Graduate	1	45	15%

TABLE 2: PREVALENCE OF WORKING STATUS AMONGST SUBJECTS.			
OCCUPATION	SCORES	NUMBER	PERCENTAGE
Profession	10	72	24%
Semi Profession	6	46	15.3%
Clerical, shop owner, Farmer	5	16	5.3%
Skilled Worker	4	18	6%
Semi-skilled Worker	3	22	7.3%
Unskilled Worker	2	20	6.7%
Unemployed	1	106	35.3%

TABLE 3: MONTHLY INCOME STATUS OF SUBJECTS.			
MONTHLY FAMILY INCOME IN RS.	SCORES	NUMBER	PERCENTAGE
>32,050	12	118	39.3%
16020-32049	10	51	17%
12020-16019	6	55	18.3%
8010-12019	4	24	8%
4810-8009	3	23	7.7%
1601-4809	2	16	5.3%
<1600	1	13	4.3%

TABLE 4: SOCIOECONOMIC STATUS OF THE SUBJECTS.			
TOTAL SCORES	SOCIOECONOMIC CLASS	NUMBER: 300	PERCENTAGE
26-29	UPPER I	42	14%
16-25	UPPER MIDDLE II	78	26%
11-15	MIDDLE/ LOWER MIDDLE	117	39%
5-10	LOWER /UPPER LOWER	34	11.3%
<5	LOWER	29	9.7%

TABLE 5: RELATIONSHIP OF OBESITY WITH SOCIO-ECONOMIC STATUS OF SUBJECTS.						
		UPPER–I	UPPER–II	MIDDLE	UPPER LOWER	LOWER
	TOTAL: 300	42	78	117	34	29
STATUS						
Underweight	65	5 (11.9%)	22 (28.2%)	9 (7.7%)	12 (35.3%)	17 (58.6%)
Normal	102	11 (26.2)	15 (19.2%)	59 (50.4%)	12 (35.3%)	5 (17.2%)
Overweight	78	13 (30.9%)	25 (32%)	32 (27.3%)	5 (14.7%)	3 (10.3%)
Obese-I	35	8 (19%)	8 (10.3%)	14 (11.9%)	3 (8.8%)	2 (6.9%)
Obese-II	20	5 (11.9%)	8 (10.3%)	3 (2.6%)	2 (5.9%)	2 (6.9%)

According to other studies like that of Wells et al (2012), Melnyk et al (2013) and Qin et al (2013) variables related to the participants' life styles were categorized into different levels, e.g. farming frequency (<3 times/week and ≥3 times/week), smoking frequency (no smoking and ≥1 cigarette/day), drinking alcohol frequency (no and ≥1/week) as well as amount of vegetable and fruit consumption (<500 g/week and ≥500 g/week).

Negative associations (lower SES associated with larger body size) for women in highly developed countries were most common with education and occupation, while positive associations for women in medium- and low-development countries were most common with income and material possessions (McLaren, 2007). In the present study most of the women belong to middle class and overweight women were more in middle class women. In a study published in Demography, workers have also looked at how SES is related to obesity in the transition to early adulthood in the United States (Melissa et al, 2011).

Overall, 29.0% of women who live in households with income at or above 350% of the poverty level are obese and 42.0% of those with income below 130% of the poverty level are obese. Trends are similar for non-Hispanic white, non-Hispanic black, and Mexican American women, but they are only significant for non-Hispanic white women. Among non Hispanic white women with income at or above 350% of the poverty level 27.5% are obese, less than the 39.2% of those with income below 130% of the poverty level. Among women, the prevalence increased from 15.3% to 23.4% in college graduates and from 31.7% to 42.1% in those with less than a high school diploma. As in men, similar increases were seen among women with a high school diploma and among those with some college (Cynthia et al, 2010).

One another study put light on the overall picture of the association between SES and obesity globally: obesity is a problem of the rich in low-income countries for both men and women, while there is a mixed picture in middle-income countries (Dinsa et al,2012). The relationship between educational attainment and obesity was modified by both gender and the country's economic development level: an inverse association was more common in studies of higher-income countries and a positive association was more common in lower-income countries, with stronger social patterning among women (Alison et al,2013)

Therefore, the wealth of a nation should affect the prevalence of obesity as well as the relationship between social class and obesity. There is an obesity epidemic in developing countries, which is increasingly approaching the all SES Levels. Rising national incomes in developing countries and increased `Westernization' will most likely lead to increased levels of obesity in the future. Trend of increase in obesity is from middle class towards upper class. Future research should also try to better understand shift in the burden of obesity in different socioeconomic status among women.

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