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## STUDY OF OBESITY AND ITS RISK FACTORS AMONG WOMEN OF REPRODUCTIVE AGE GROUP

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### ABSTRACT

**Objectives:** 1. To find out the proportion of overweight or obesity among women of reproductive age group. 2. To find the association between various socio-demographic factors and overweight or obesity.

**Material and Methods:** A cross-sectional study conducted among ever married women of reproductive age group who have attended the Urban health training centre during the study period of six month. Data was collected by direct interview through prestructured questionnaire and anthropometric measurement. **Results:** Among the 244 women studied 11.9% were having overweight, 9.9% were obese, 20.1% were underweight and only 58.2% of the women were having normal BMI. Overweight or obesity was significantly more among those women who were eating junk foods regularly, watch television while eating and those with mild to moderate physical activity. There was significant association between family history and overweight. There was no significant association between religion, type of family and type of diet with overweight. Overweight was more common in literates compared to illiterates and proportion of being overweight increases with higher socioeconomic status. **Conclusion:** Overweight or obesity is one of the major problems even in those areas with high prevalence of undernourishment. Physical inactivity and the dietary factors are the major risk factors for such high proportion of overweight or obesity.

**Keywords:** obesity, overweight, reproductive age, BMI

### INTRODUCTION

Obesity may be defined as an abnormal growth of the adipose tissue due to an enlargement of fat cell size or an increase in fat cell number. Obesity is expressed in term of body mass index (BMI).<sup>1</sup> The latest WHO projections indicate that at least one in three of the world's adult population is overweight and almost one in ten is obese.<sup>2</sup> According to National Family Health Survey-3 in India 14.8% (28.9% for urban and 8.6% for rural) of married women in the age group of 15-49 years were overweight or obese.<sup>3</sup> Overweight or obesity can have a serious impact on health. Carrying extra fat leads to serious health effects such as cardiovascular diseases<sup>4,5</sup>, type 2 diabetes mellitus<sup>6</sup>, musculoskeletal disorders like

osteoarthritis, gall bladder disease and some cancers (endometrial, breast and colon). These conditions cause premature death and substantial disability.<sup>4</sup>

Because of difference in the proportion of fat content, in Asians, the health risks caused due to overweight or obesity occur at lower levels of BMI compared to other regions of the world.<sup>7, 8</sup> The earlier BMI cut off values were developed by western researchers based on studies in Caucasian populations, Therefore new classification with lower cut off values of BMI was developed to classify overweight and obesity among Asian people.<sup>9</sup> India being one among the Asian countries the new classification is applicable to Indians and it is also obvious that Indians are more

at risk of complications due to overweight or obesity.

Raichur is one of the underdeveloped districts of Karnataka. Most of the studies previously done in this area have shown about the under nutrition but as it is the phase of transition everywhere, it was essential to have data regarding overweight and obesity in this area also. Hence a study was conducted with the objective of assessing the proportion of women having overweight or obesity among women of reproductive age group and also to know the factors influencing the occurrence of overweight or obesity.

### **MATERIAL AND METHODS**

A cross sectional study was carried out at the Urban Health Training Centre (UHTC), Amtalab, Raichur, which is part of the department of Community medicine, Raichur Institute of medical sciences. Study was conducted among the ever married women in the reproductive age group (15-45 years) who have attended the UHTC during the study period of 6 months (January 2012 to June 2012). Women who were pregnant during study and those women who did not give consent for the study were excluded from the study. Oral consent for participation in the study was obtained from all the participants after informing about the study and its purpose. Data was collected about socio-demographic profile and some risk factors for obesity through prestructured questionnaire by interview method. Anthropometric measurement like weight and height are also recorded. BMI classification for Asians was utilized for assessing the overweight or obesity. Data was analyzed using SPSS 16 software. Data is expressed as proportion or percentage, association between various factors and obesity was assessed using chi-square test and p value of <0.05 was considered as significant.

### **RESULTS**

A total of 244 women were studied during the period. Among them 65.6% were belonging to

Hindu religion, 33.2% were Muslims and rest 1.2% were belonging to other religion. Majority of the women (62.7%) were of the age-group 26-35 years, where as 33.2% were of the age group 15-25 years and 4.1% were belonging to the age group of 36-45 year. Mean age of the study group was 27.85 years. (Refer table 1)

Among the studied women 66.8% were illiterates, 5.3% were studied up to primary school, 12.3% middle school, 11.9% high school and only 3.7% were studied PUC or above. Majorities (65.6%) of the women were belonging to the nuclear family and 34.4% were belonging to the joint family. 66.4% of the women were house wives and 33.6% were working women. Among the working women 18% of the women were involved in the work which require moderate level of physical activity (tailor, cook, house maid, shop keeper etc) and 15.6% of the women were involved in the work which require heavy work (manual labourer). Majority (75.8%) of the women were belonging to the upper lower class (IV) of socioeconomic status according to modified Kuppaswamy classification (modified for the year 2012).<sup>10</sup> 20.9% were belonging to lower middle class (III), 2.9% belonging to the upper middle class, 0.4% to lower (V) class and none of them were belonging to upper class(I). (Refer table 1)

Among the women studied 11.9% were having overweight at risk, 9.9% were obese, 20.1% were underweight and only 58.2% of the women were having normal BMI. (Refer table 2). Women in the age group of 36-45 years were more overweight or obese (30%) compared to other groups but the difference was statistically not significant. There was no statistically significant difference in occurrence of overweight or obesity with type of family and religion. Overweight or obesity was more common in literates (27.2%) compared to illiterates (19%) but the difference was not significant. There was inverse relation between family size and overweight or obesity although statistically not significant.

There was increasing trend of overweight or obesity with increase of socio economical class although the difference was statistically not significant. Highest proportion of overweight or obesity was found in upper middle class i.e. 28.6%, where as 25.5% in lower middle class, 20.5% in upper lower class and none among the lower class. (Refer table 3)

Non-vegetarian were having more overweight or obesity compared to vegetarians and those eating nonveg more frequently were having higher overweight or obesity compared to those eating less frequently. Only 5.3% of the heavy workers were overweight or obese compared to mild or moderate worker in whom it was 24.8% and difference was highly significant. (House wives were considered as moderate workers). Only 2 (0.81%) women were doing any energy consuming physical activity (ex- jogging, walking etc) apart from their routine domestic or occupational work.

There was statistically significant higher occurrence of overweight or obesity among women who have the habit of eating junk foods or snacks in between the meals regularly (more than thrice a week) compared to the women who never eats or eats occasionally. There was statistically significant higher occurrence of overweight or obesity among women who eat food while watching television compared those do not have the habit of eating while watching. There was significantly more occurrence of overweight or obesity among the women with the family history compared to those not having the family history. (Refer table 4)

## DISCUSSION

Present study included the women attending the UHTC; it covers population predominantly belonging to urban slum area. In our study 21.8% of the women were overweight or obese; this value was lower compared to the study conducted by Anuradha R et al<sup>11</sup> in Chennai in which it was 27.7%. In our study proportion of underweight

was little higher compared to the Chennai study. In our study there was increasing trend of obesity with increasing age group but it was not statistically significant whereas in a study conducted by Misra et al<sup>12</sup> there was significant increasing trend of obesity with increasing age.

Our study showed there was no significant association between type of family and religion it was similar to the study conducted by Anuradha R et al.<sup>11</sup> In our study obesity was more among the literates compared to the illiterates it was similar to the study conducted by Anuradha R et al<sup>11</sup> but in the latter study the findings were statistically significant.

In the present study there was no significant association between socioeconomic status and overweight but the proportion increased with increasing socioeconomic class where as in study conducted by Anuradha R et al there was highly significant association between SES and obesity. In the present study there was inverse relation between family size and overweight. It may be because the larger the family more the physical activity.

In our study no significant association between type of diet and overweight but there was more proportion of overweight among those consuming mixed diet compared to the vegetarians, it was similar to the study conducted by Anuradha R et al.<sup>11</sup> In the present study there was significant association between overweight and consuming junk foods or snacks between the meals. As consuming junk foods adds to extra calories consumption which leads to accumulation in the form of fat leading to overweight or obesity.

Present study showed there was significant association between family history and overweight. It reconfirms that genetic factors are also major risk factors for overweight or obesity.

In our study there was highly significant association between overweight and eating food while watching television. In a study conducted by Agarawal P et al<sup>13</sup> it was shown that women who watch television regularly have higher chances of

being overweight or obese. Those watch television while eating tend to overeat and also addicted to television are having lesser physical activity so increasing the chances of overweight or obesity.

### CONCLUSION

Overweight or obesity is one of the major health problems even in those areas with high prevalence of undernourishment. We conclude that women of reproductive age group are having dual problem of overweight and underweight. Lesser physical activity, dietary factors like consuming junk foods regularly, consuming food while watching television and family history are the major risk factors for high proportion of overweight or obesity. Socioeconomic status, age group and literacy status plays a minor role for overweight or obesity.

### RECOMMENDATION

Women of reproductive age group need to be educated periodically about the importance of regular physical activity, not to consume junk foods and not to eat while watching television.

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**Table 1: Table showing the Socio-demographic profile of the study Women**

Socio –demographic characters of women		Frequency	Percentage
Religion	Hindu	160	65.6
	Muslim	81	33.2
	Others	3	1.2
Age group	15-25	81	33.2
	26-35	153	62.7
	36-45	10	4.1
Education	Illiterate	163	66.8
	Primary school	13	5.3
	Middle school	30	12.3
	High school	29	11.9
	PUC and above	9	3.7
Type of family	Nuclear	160	65.6
	Joint	84	34.4
Occupation	House wife	162	66.4
	Working women with moderate physical work	44	18.0
	Working women with heavy physical work	38	15.6
Socioeconomic status (Modified Kuppuswamy 2012)	Upper middle(II)	7	2.9
	Lower middle (III)	51	20.9
	Upper lower (IV)	185	75.8
	Lower (V)	1	0.4

**Table 2: Table showing the classification of women based on the Body mass index**

BMI	Frequency	Percentage
Underweight (<18.5)	49	20.1
Normal (18.5-22.99)	142	58.2
Over weight ( $\geq 23$ )		
At risk (23-24.99)	29	11.9
Obese I (25-29.99)	17	7.0
Obese II ( $\geq 30$ )	7	2.9
Total	244	100.0

**Table 3: Table showing the association between socio-demographic factors and overweight**

Socio demographic factors		BMI <23	Overweight (BMI ≥23)	P value
Age group	15-25	63(77.8%)	18(22.2%)	0.789
	26-35	121(79.1%)	32(20.9%)	
	36-45	7(70.0%)	3 (30.0%)	
Type of family	Nuclear	124(77.5%)	36(22.5%)	0.746
	Joint	67(79.8%)	17(20.2%)	
Religion	Hindu	128(80.0%)	32(20.0%)	0.29
	Muslim	60(74.1%)	21(25.9%)	
Literacy	Illiterate	132(81.0%)	31(19.0%)	0.146
	Literate	59(72.8%)	22(27.2%)	
Family size	1-4	55(75.3%)	18(24.7%)	0.457
	5-8	120(78.4%)	33(21.6%)	
	> 8	16(88.9%)	2(11.1%)	
Socioeconomic status	Upper-middle (II)	5(71.4%)	2(28.6%)	NS
	Lower middle (III)	38(74.5%)	13(25.5%)	
	Upper lower (IV)	147(79.5%)	38(20.5%)	
	Lower (V)	1(100%)	0(0%)	

NS- not significant

**Table 4: Table showing the association between other factors and obesity**

Other factors		BMI <23	Overweight(BMI ≥23)	P value
Type of diet	Vegetarian	15(83.3%)	3(16.7%)	0.77*
	Mixed diet	176(77.9%)	50(22.1%)	
Type of work	Moderate worker	155(75.2%)	51(24.8%)	0.007(HS)
	Heavy worker	36(94.7%)	2(5.3%)	
Consuming Junk foods /snacks in between meals	No/ occasionally	162(82.2%)	35(17.8%)	0.002(HS)
	Yes regularly	29(61.7%)	18(38.3%)	
Watching tv while eating	No/ occasionally	166(83.8%)	32(16.2%)	0.000(HS)
	Yes regularly	25(56.8%)	19(43.2%)	
Family history	Yes	24(63.2%)	14(36.8%)	0.014(S)
	No	167(81.1%)	39(18.9%)	

\* Fisher exact test

S- significant HS – Highly significant