



## Prevalence of overweight, obesity and body weight perception among women above 30 years in Tirumazhisai, Chennai

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### ABSTRACT

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A WHO study was done in 2016 states that around 21.6% of Indian female population was overweight. This study aims to estimate the prevalence of overweight and obesity among women above 30 years of age in Tirumazhisai. A cross-sectional study was done among women above and equal to 30 years of age residing in Tirumazhisai from January 2020 to March 2020. A total of 172 subjects were included. Data entered in MS Excel and analyzed using proportion and Pearson's chi-square test. The prevalence of overweight and obesity among women equal and above 30 years of age in Tirumazhisai is found to be 36.7%. Majority of the subjects belonged to the age group more than 45 (61.3%). Also, 60.3% of people with unhealthy weight status were illiterate. Only 4.8% of the subjects with unhealthy weight status were in the obese class 2 category. About 55.5% of the subjects with unhealthy weight status were overweight, and 39.7% of them were obese class 1. Around 60.3% of the subjects with unhealthy weight status were not working or being a housewife. Overall satisfactory level of physical activity among the unhealthy subjects was 62%. There was a significant association between age more than 45 years and the prevalence of overweight and obesity (at  $p < 0.05$ ). As the age increase, the chances of becoming obese or overweight becomes high. 40% of the unhealthy subjects didn't acknowledge their unhealthy weight status and 37% of them ignored the fact of obesity as a comorbid condition. Hence efforts should be made to bring awareness among women about unhealthy weight status and its consequences.

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### INTRODUCTION

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. Body Mass Index is an approximate measure weight status of an individual is calculated using the formula weight in kilograms (kg) divided by height in square meters. A person with a BMI, more than or equal to 25, is considered as overweight and BMI more than or equal to 30 is considered as obese regardless of gender and age. A WHO study was done in 2016 states that around 21.6% of Indian female population were overweight ([World Health Organization, 2016](#)). As we are advancing to lead a futuristic life with lots of advantages but

at the same time in the course of this modernization people are being misled to have a sedentary lifestyle (Tp Gill PhD and James, 1999). Obesity is not a disease by itself, but it is the risk factor of many diseases like cardiovascular disease (CVD) and diabetes, but also from cancer and chronic diseases, including osteoarthritis, liver and kidney disease, sleep apnea, and depression (Pi-Sunyer, 2009). Obesity not only causes physical problems; over the years, we have acknowledged that it also affects people mentally (Mohan et al., 2016). Obesity is now common in a developing country, and India also suffers from it, affecting 5% of its population (The Hindu, 2007). In India, the prevalence of obesity is high in females (21.6%) than in males (17.8%) according to WHO in 2016 (World Health Organization, 2016). Three out of four overweight women were not happy with their body image, compared to four out of five obese women, and almost all morbidly obese women (Sunitha and Gururaj, 2014). In developing countries like India, people ignore the fact of being overweight and obese, and most of them are not aware of its consequences. The awareness of this risk factor is not known to most people. Also, people underestimate their weight and don't consider their health risks.

On the other hand, young females tend to overestimate their weight. The prevalence of obesity is more in housewife, especially those who employ maid-servants. It is essential to know how people perceive their body weight, not estimating their weight may be a huge problem. Many of them are affected mentally, mostly lower age groups due to unhealthy weight status. This study aims to estimate the prevalence of obesity and body weight perception among women above and equal to 30 years of age and to assess how they perceive their body weight in Tirumazhisai, Chennai.

## METHODOLOGY

### Study Design

Cross-sectional study.

### Study Area and Population

The study was conducted in an urban field practise area of Private Medical College, Tirumazhisai, Tamilnadu.

### Sample Size

By purposive sampling technique, the sample size was calculated using the formula  $1.96 \times 1.96pq/d^2$ , here the prevalence of obesity, critical morbidity - was taken as 30.9% (Raj and Ploriya, 2018) and with an alpha error of 0.05, the limit of accuracy of 10 %, the minimum sample size required for the study was

172.

### Inclusion criteria

Women aged equal and above than 30 years residing in Tirumazhisai, Tamil Nadu who were willing to participate in the study by giving informed oral consent were included in this study.

### Exclusion criteria

People below 30 years and people not willing to participate in the study were excluded.

### Study duration

The study was carried out from January 2020 to March 2020.

### Study Tool and Data Collection

A Pre-tested, validated, structured and self-administered questionnaire based on a study done by (Ranjan et al., 2019) consisting of socio-demographic details like name, age, income, education status and perception of them towards their body weight and eating habits contributing towards obesity.

### Measurement

After obtaining informed oral consent from the subject, the height, weight of the subjects was measured. The weight of the subject was measured using HEALTH SENSE [Digital weighing scale]. The weight was measured in kg. The subject was asked to remove their footwear and step onto the scale with one foot on each side of the scale. The subject was asked to stand still, place arms on the side and face forward (Fryar et al., 2012).

The height of the subject was measured using a measuring tape. The subject was asked to remove the footwear, headgear and then the subject was made to stand against a wall with feet together and knees straight, and the subject was asked to look straight. The height of the subject was measured in meter (Fryar et al., 2012).

### Ethical Clearance

Ethical approval was obtained from the Institutional Review Board (IRB) and the Institutional Ethics committee. Written informed consent was obtained from the study participants, and information sheet regarding the study was given to all the participants.

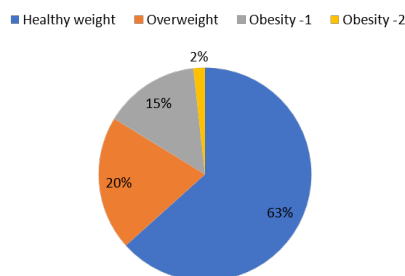
## RESULT

### Background characteristics

This study included only females above and equal to the age of 30, and the majority of the subjects were below and equal to 45 (57.6%). About 48.2% of the study population was illiterate, and 44.2% of the

study population was unemployed. 82% of the population was having a nuclear type of family. About 50% of them were getting a per capita income of the range between 5000-10000 INR. The various background characteristics of the study participants are given in Table 1.

**Weight status of the study participants**



**Figure 1: Weight status of subjects**

### Prevalence of obesity

In this study, 62 people out of 172 (36.7%) were found to be having unhealthy weight (overweight, obesity). Out of the 62 subjects with unhealthy weight 35 persons (55.5%) were found to be overweight and 25 persons (39.7%) were found to be Obese Class 1, and 3 people (4.8%) were found to be obese class 2. This data is interpreted in Table 2 and Figure 1.

### Association between various factors and Weight Status

#### Association with age

In this study, it was found that out of 109 healthy subjects 74 were less than or equal to 45 years of age and 35 subjects were more than 45 years of age, and out of 63 unhealthy subjects, 25 subjects were less than or equal 45 years of age and 38 people were more than 45 years of age.

A chi-square test of independence was performed to examine the relationship between age and prevalence of unhealthy weight status. The relation between these variables was significant (at  $p < 0.05$ ), and it was found that as the age increases the chances of becoming obese increases. The chi-square value and p-value are given in Table 3.

#### Association with educational status

It was found that out of the 109 healthy subjects 64(58.7%) were literates(including primary, secondary, high school, UG, PG) and 45(42.3%)were illiterates, and among the 63 unhealthy subjects 38 (60.3%) were found to be illiterates, and 25 subjects were found to be literates. These statistics are shown in Table 3. A chi-square test of independence was performed to know the relation between

literacy and unhealthy weight, and it was found that illiterates are significantly (at  $p < 0.05$ ) related to unhealthy weights.

### Association with employment

Out of the 109 healthy subjects 71 were found to be employed, and 38 were found to be unemployed, and among the 63 unhealthy subjects it was found that 25 people were employed and 38 were unemployed. A chi-square test of independence was performed to examine the relationship between employment status and the prevalence of unhealthy weight status.

### Association with physical activity

Out of 109 healthy subjects, 69 subjects were satisfied with their physical activity and 40 were not, and out of 63 unhealthy subjects, 41 were satisfied, and 22 were not satisfied. A chi-square test of independence was done, and there was no significant relationship between these variables (at  $p < 0.05$ ).

### Body-weight perception

#### Self-estimation

When the subjects were asked about whether they consider themselves as obese with reply options as Yes or No, out of 63 subjects with unhealthy weight 60% of them said yes and 40% of them said no.

#### Acknowledgement of consequences

When the unhealthy subjects were asked whether they consider their current weight to be a burden to their health with reply options as yes or no, out of 63 subjects 40 (63%) of them replied positively and 23(37%) didn't accept the fact.

#### Perception to lose weight

When the unhealthy subjects were asked whether they are motivated to lose weight 42 (67%) of them replied Yes and 21 (33%) of them said no.

### Perception of the relation between eating habits and weight status

We all know that weight gain is due to the consistent intake of excess calories than required. When subjects were asked whether they agree that their dietary intake is the cause of this unhealthy weight, 39 (62%) of them agreed with the fact, and 24 (38%) of them didn't agree. Also, when subjects were asked about whether they are confident about modifying their diet (reduce sugar, salt, fried foods), people were confident for one but not the other.

### Perception of the relation between physical activity and weight status

When the unhealthy subjects were asked whether they were satisfied with their current physical activity 39 of them told that they were satisfied and 24

**Table 1: Background characteristics of the study participants**

Background characteristics		Frequency (n=172)	Percentage
Age	≤45	99	57.6
	>45	73	42.4
Education	Literate	89	51.8
	Illiterate	83	48.2
Employment Status	Employed	96	55.8
	Unemployed	76	44.2
Type of Family	Nuclear	141	81.9
	Joint	25	14.5
	Other	6	3.6
Per-Capita Income	<5000	37	21.5
	5000-10000	87	50.6
	10000-15000	29	16.8
	>15000	19	11.1

**Table 2: Weight status of the study participants**

Category	No. of subjects (n=172)	%
Healthy weight	109	63.4
Overweight	35	20.3
Obesity -1	25	14.6
Obesity -2	3	1.7

**Table 3: Association between various factors and Weight Status**

Various factors		Healthy (109)	Unhealthy (63)	Chi - Square	p-value
Age	≤45	74	25	13.0036	0.00031
	>45	35	38		
Education	Literate	64	25	5.7922	0.0161
	Illiterate	45	38		
Employment	Employed	71	25	10.4896	0.0012
	Unemployed	38	38		
Physical Activity	Satisfied	69	41	0.0547	0.81514
	Not Satisfied	40	22		

of them were not. When the subjects were asked whether they can certain physical activities (household work, walk to nearby places, usage of the stair), they came with a mixed response. 17.5% of them were not confident about doing household activities, and 25.4% weren't confident about walking to nearby places, 15.9% weren't confident about using stairs.

### Impact in social life

The subjects were asked if they were anyway affected in social and mental health due to unhealthy weight status, 25.4% felt their social life had been impacted, and 31.8 % felt sad, and others trolled

65.1% of them.

### DISCUSSION

As per WHO the prevalence of obesity among Indian women was 26.1% (World Health Organization, 2016). This study showed that the prevalence of obesity in Tirumazhisai amongst women above 30 age is 37% which is similar to the study done by Raj and Ploriya (2018). This may be due to similar geographical location and mostly similar ethnic groups. Still, it completely contraindicates with the study done by Yashneel Singh Rautella et al., which is because he concentrated in a geographical area with

more food outlets and 94% of his study population were consuming junk foods and high-calorie diet (Gupta *et al.*, 2018). In this study among the unhealthy subjects, 61.3% of them were above 45 years of age, and this indicates that the incidence of obesity is quite common in increasing age especially in women above 30 years. This is similar to the study done by Deepa *et al.* (2009).

This study showed that among the unhealthy weight subjects 60.3% of them were illiterates which shows that educational attainment might be a cause of obesity which is similar to study done by Cohen *et al.* (2013). Also among the unhealthy subjects, 60.3% of them were unemployed or housewife which indicates that homemakers have more chances to become obese than unskilled or semiskilled female workers who are similar to study done by Saboo *et al.* (2014).

In this study, women's perception of their body-weight and health status was evaluated, and its association with actual fatness was examined, using BMI indices. Among the unhealthy subjects, 60% of the subjects accepted the fact that they were obese or overweight and also realized that their current weight might be a problem for their health. Among the remaining 40% of the unhealthy subjects, 62.5% of them were between the age categories 40-50, which refers that the women between these ages are very much underestimating their weight status. 62% of the subjects perceived that their eating habits are the leading cause of overweight and obesity and which is the truth and this is similar to the study done by Barry *et al.* (2009). In this study 67% of the subjects were motivated to lose weight which is similar to study done by Lemon *et al.* (2009) and among that 40% of them were between the age category 30-40, which indicates that lesser the age higher the motivation to lose weight. 31-33% of the unhealthy people were ready to modify their diet by reducing sugar, sweet and salt, but 73% of them were ready to reduce fried food levels. This indicates that people think that fried foods are the primary cause of becoming obese, which is not the truth. The fact is a consistent intake of excess calories than burning leads to weight gain (Mozaffarian *et al.*, 2011). In this study, 38% of the subjects were not happy with their current physical activities, and 16% were not able to use stairs, this was similar to study done by Eves (2020). Also regarding the personal life, 25.4% of them were affected socially due to unhealthy weight status and 65.1% were trolled by others, this was similar to study done by Scott *et al.* (2008). This indicates that obese people are significantly affected mentally by others.

The strength of this study is it targets only women above 30 years age and married. It covers most of the domain regarding the perception of an overweight individual, especially in regards to mental and social health. As 40% of the unhealthy subjects were not accepting that they were overweight or obese, this indicates that they don't assess their weight regularly. Proper awareness of obesity, its consequences and regular health checkup, proper diet and healthy lifestyle may help in preventing obesity. Obesity has become a non-communicable epidemic in the world, and India is also one of the badly affected countries. Initiation of the awareness program, especially among illiterates and housewife may reduce the prevalence of obesity among females above 45 years as there is a significant association between age and prevalence of obesity.

## CONCLUSION

The prevalence of obesity in women above 30 years of age is 36.6% which is high and also confirms that the chances of becoming obese are more in older age group women, also their educational and employment status may impact the weight status and the unhealthy weighing subjects are mentally affected in some way or other. Proper awareness and regular health checkup with dietary modification and healthy lifestyle will prevent obesity.

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## Conflict of interest

The authors declare that they have no conflict of interest for this study.

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## REFERENCES

- Barry, D., Clarke, M., Petry, N. M. 2009. Obesity and Its Relationship to Addictions: Is Overeating a Form of Addictive Behavior? *American Journal on Addictions*, 18(6):439-451.
- Cohen, A. K., Rai, M., Rehkopf, D. H., Abrams, B. 2013. Educational attainment and obesity: a systematic review. *Obesity Reviews*, 14(12):989-1005.
- Deepa, M., Farooq, S., Deepa, R., Manjula, D., Mohan,

- V. 2009. Prevalence and significance of generalized and central body obesity in an urban Asian Indian population in Chennai, India (CURES: 47). *European Journal of Clinical Nutrition*, 63(2):259–267.
- Eves, F. F. 2020. When weight is an encumbrance; avoidance of stairs by different demographic groups. *PLOS ONE*, 15(1):e0228044.
- Fryar, C. D., Gu, Q., Ogden, C. L. 2012. Anthropometric reference data for children and adults: the United States, 2007-2010. *Vital and Health Statistics. Series 11, Data from the National Health Survey*, 252:1–48.
- Gupta, A., Rautela, Y. S., Reddy, B. V., Singh, A. K. 2018. The prevalence of obesity among adult population and its association with food outlet density in a hilly area of Uttarakhand. *Journal of Family Medicine and Primary Care*, 7(4):809.
- Lemon, S. C., Rosal, M. C., Zapka, J., Borg, A., Andersen, V. 2009. Contributions of weight perceptions to weight loss attempts: Differences by body mass index and gender. *Body Image*, 6(2):90–96.
- Mohan, V., Ranjani, H., Mehreen, T. S., Pradeepa, R., Anjana, R., Garg, R., Anand, K. 2016. Epidemiology of childhood overweight & obesity in India: A systematic review. *Indian Journal of Medical Research*, 143(2):160.
- Mozaffarian, D., Hao, T., Rimm, E. B., Willett, W. C., Hu, F. B. 2011. Changes in Diet and Lifestyle and Long-Term Weight Gain in Women and Men. *New England Journal of Medicine*, 364(25):2392–2404.
- Pi-Sunyer, X. 2009. The Medical Risks of Obesity. *Postgraduate Medicine*, 121(6):21–33.
- Raj, J. P., Ploriya, S. 2018. Prevalence of Obesity among Rehabilitated Urban Slum Dwellers and Altered Body Image Perception in India (PRE-SUME). *Indian Journal of Endocrinology and Metabolism*, 22(1):23.
- Ranjan, P., Reethesh, S. R., Arora, C., Kaloiya, G. S., Vikram, N. K., Dwivedi, S. N., Jyotsna, V. P., Soneja, M. 2019. Development and validation of a questionnaire assessing knowledge, attitude, and practices about obesity among obese individuals. *Indian Journal of Endocrinology and Metabolism*, 23(1):102.
- Saboo, B., Shah, S., Talaviya, P., Vyas, C., Chandarana, H., Nayak, H. 2014. Prevalence of obesity and overweight in housewives and its relation with household activities and socio-economical status. *Journal of Obesity and Metabolic Research*, 1(1):20.
- Scott, K. M., Bruffaerts, R., Simon, G. E., Alonso, J., Angermeyer, M., de Girolamo, G., Demyttenaere, K., Gasquet, I., Haro, J. M., Karam, E., Kessler, R. C., Levinson, D., Mora, M. E. M., Browne, M. A. O., Ormel, J., Villa, J. P., Uda, H., Korff, M. V. 2008. Obesity and mental disorders in the general population: results from the world mental health surveys. *International Journal of Obesity*, 32(1):192–200.
- Sunitha, S., Gururaj, G. 2014. Health behaviours & problems among young people in India: Cause for concern & call for action. *The Indian journal of medical research*, 140(2):185.
- The Hindu 2007. India is facing an obesity epidemic. Accessed on: 10 Aug 2020.
- Tr Gill PhD, Srd, V. A., James, W. 1999. The global epidemic of obesity. *Asia Pacific Journal of Clinical Nutrition*, 8(1):75–81.
- World Health Organization 2016. Obesity. Accessed on: 10 Aug 2020.