

Original research article**A study on risk factors for overweight and obesity among urban women aged 30 to 40 yrs****¹Dr. Amit Vasant Deshpande, ²Dr. Levi Anand, ³Dr. Baer Philip Ravikumar**¹Associate Professor, Department of Community Medicine, Mamata Medical College, Khammam, Telangana, India²Assistant Professor, Department of Community Medicine, Mamata Medical College, Khammam, Telangana, India³Professor and HOD, Department of Community Medicine, Mamata Medical College, Khammam, Telangana, India**Corresponding Author:**

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Abstract

Background: The prevalence of overweight and obesity is rising worldwide, but it is more common among women in India. To put a stop to this epidemic, we need to pinpoint the causes of obesity in young women.

Methods: A case-control study of this magnitude has been conducted at Tertiary Care Centre, from period of October 2021 to September 2022. Cases and controls were selected at random from the pool of people who participated in a cross-sectional study on cardiovascular disease risk factors.

Results: There were 110 cases and 50 controls in the research. Women from the elite and upper middle classes had an odds ratio of 2.74 times greater of being obese or overweight than women from other lower socioeconomic classes, when comparing the two groups on an unadjusted basis. Several risk factors for being overweight were identified after controlling for age and socioeconomic status: having a history of hyperlipidemia; having a parity of ≥ 2 and consuming more protein than is recommended.

Conclusions: Obesity is a public health crisis that can lead to a variety of avoidable metabolic complications, as highlighted by this study. Housewives are a vital part of many families and communities; as such, they need to be included in efforts to detect, educate about and treat obesity.

Keywords: Risk factors, urban women, overweight and obesity

Introduction

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Introduction

The World Health Organization describes obesity and overweight as a worldwide problem (WHO). According to WHO, obesity is the most underappreciated global public health issue. Obesity and being overweight carry a heavy illness load and are the fifth largest cause of mortality worldwide ^[1, 2].

Body Mass Index ≥ 25 is used by WHO to classify overweight and obesity, while BMI ≥ 30 designates obesity. Therefore, it is advised to use a lower cut-off of BMI 23.0 to 24.9 for Asian Indians as overweight and ≥ 25 as obese. They are based on BMI-related morbidity. According to the WHO, 300 million people globally fulfil the criterion for obesity, making up around 1.9 billion overweight persons. Women are slightly more likely than males to be overweight or obese worldwide ^[3, 4]. Nonetheless, the prevalence of obesity among women in South-East Asia is nearly twice that of men. In India, the prevalence of obesity is higher among urban residents and is increasing in urban slums, in contrast to many developed nations ^[5].

The way people eat has evolved with modern life. Better tasting but high calorie food has become more common as food prices have increased. Even though modern technology has made living easier, people are becoming less active. Adipocytes in obese people may grow in number or size, according to the biological basis for obesity. When energy output exceeds energy intake, obesity results. Many factors, including metabolic, genetic, exercise, sex, age, socioeconomic status, endocrine, smoking, food, pregnancy and physiological changes, might have an impact on the energy homeostasis ^[6, 7].

Obesity and overweight are serious public health issues that are linked to a number of chronic illnesses and a higher rate of premature death. According to WHO 2014 estimates, this group includes individuals who are 39% overweight and an additional 13% obese. Women are more likely than men to be obese in the South Asian region, which makes this research crucial for gender and health. In contrast to wealthy

nations, developing nations like India have a higher urban population prevalence of overweight and obesity^[8]. The growing urbanisation in India is a serious worry. Urbanization, which is growing in India's slums as well, is being driven by a changing economy and changing possibilities for livelihood. By moving from a rural to an urban area, the lifestyle as a whole shifts to one that is significantly less active and sedentary. This is most likely the cause of the increased obesity prevalence in urban slum dwellers^[9, 10].

High morbidity is also linked to obesity. Disorders include ischemic heart disease, hypertension, diabetes, infertility, dyslipidemia, and depression are a few examples. According to certain research, an obese woman's risk of dyslipidemia is 3.8 times higher than that of women of healthy weight. The future social well-being of people is a major public health concern, and obesity must be combated. The high incidence of obesity and its negative effects have made it profitable to deceive the public with marketing for weight-loss drugs, devices, belts, and other special workouts^[11, 12]. Individuals are unaware of the best diet, exercises, and treatments for the associated medical disorders. Also, they need to be aware of the risk factors and defences against obesity. The greatest method for doing this continues to be health communication coupled with behaviour change. Understanding the hazards associated with obesity in the social, economic, and cultural environment is crucial for effectively combating the obesity problem. This study aims to assess the association between obesity and social, environmental, nutritional and other lifestyle factors in young women between the ages of 30 and 40^[13, 14].

Material and Methods

A case-control study of this magnitude has been conducted at Tertiary Care Centre, from period of October 2021 to September 2022. Cases and controls were selected at random from the pool of people who participated in a cross-sectional study on cardiovascular disease risk factors.

Vellore is a class 1 town and is considered to be an urban area. 1,701,987 people, or 43.24 percent, of the people of Vellore district live in the city. In the Vellore urban region, there are 844,587 males and 857,400 females overall. In the urban area of Vellore, the female literacy rate is 79.8%, which is equivalent to a national average of 79%. The sampling frame for the present case control study consisted of all female participants from the prior study who were between the ages of 30 and 40.

A department faculty member compiled a list of probable cases and controls without including any information about prior BMI. Using a simple random sampling method, 220 individuals from the prior study were chosen, assuming a 20% loss to follow-up from the list. After using up all the names on this list, more women were approached by going to successive wards (ordered alphabetically), starting at a ward that was chosen at random. The remaining 253 ladies in the sampling window comprised these women.

Results

A total of 160 women were recruited in the study, among whom 110 were cases (BMI ≥ 25 kg/m²) and 50 were controls. The socio-demographic characteristics are shown in Table 5.1. The mean age of cases and controls were 37.13 and 36.29 years respectively.

Table 1: characteristics of the research population's socio-demographics

Variable	Categories	Cases (BMI ≥ 25 kg/m ²) N=110	Controls (BMI < 25 kg/m ²) N=50
Age	30-35 years	29	24
	36-40	81	34
Religion	Hindu	90	49
	Christian	15	7
	Muslim	7	2
Marital status	Married	100	45
	Single	4	9
	Separated	1	0
	Widow	5	4

The illiteracy rate was 25 percent among patients and 19 percent among controls. Both cases and controls had education levels above that of a typical middle schooler. Few people had any education past the 12th grade. The cases and controls both consisted primarily of stay-at-home mothers. On the Modified Kuppasamy Scale, the middle-to-upper-class made up 50% of cases but only 32.7% of controls. The majority of the controls were from middle-to-higher socioeconomic backgrounds.

Table 2: The demographic make-up of the sample population

Variable	Categories	Cases (BMI ≥ 25 kg/m ²) N=110	Controls (BMI < 25 kg/m ²) N=50
Occupation	Housewife alone	90	40
	Unskilled	11	9
	Semiskilled/skilled	6	1
	Clerk, supervisor	1	1
	Semiprofessional	2	1
Literacy	Illiterate	25	19
	Literate	87	39
Education	Nil	13	10
	1-4	5	3
	5-8	22	13
	9-10	50	24
	11-12	15	5
	≥ 13	7	3
SES category	1 Upper	2	0
	2-Upper Middle	21	5
	3-Lower Middle	31	14
	4-Upper lower	56	37
	5-lower	2	2

Medical history of study population

As part of the 2012 WHO STEPS research, participants were evaluated for DHD, Hypertension, and Dyslipidemia. The health of the participants was surveyed. Their current health state is detailed in Table 3.

Table 3: A Case-Control Study of Medical Records

Variable	Category	Cases N=110	Controls N=50
Diabetes	Yes	4	0
	No	106	50
Hypertension	Yes	4	1
	No	106	49
Hyperlipidemia	Yes	13	2
	No	97	48
Treatment Depression	Yes	3	3
	No	107	47

More than 96% of both the patients and controls were not affected by diabetes or hypertension. All cases and controls who had been diagnosed with diabetes or hypertension were compliant with their medication regimens. Dyslipidemia was seen in 12.5% of cases versus 5.2% of controls. Only one person out of the total of 17 who had dyslipidemia was actually taking medication for it. It was found that 3.6% of cases and 1.7% of controls were using antidepressants, based on their medical histories. Table 3 provides information on various medical issues that were present in both cases and controls.

Table 4: Extra Co-Morbidity in the Study Population

Sr. No.	Medical history	No
1	Seizure disorder- control	2
2.	Atrial Septal Defect-control	2
3.	Bronchial Asthma -case	1
4.	Hypothyroidism-case	1
5.	Sheehan's syndrome-case	1
6.	Tuberculosis-case	2
7.	Varicose vein-case	1

The optimum weight and activity level of each person were used to determine their daily energy needs. Most people in the study group had a caloric deficit due to poor dietary habits. Compared to the suggested amount, 43.8% of patients and 75.9% of controls ate less protein than was ideal, whereas 48.3% of cases and 29.6% of controls ate more than 50 grammes of fat per day. More than 80% of the energy in this study came from carbohydrates, although only 16.1% of cases and 24.1% of controls did. Calorie, protein, and fat intake averages for the study population are provided in Table Exercise. About half of the cases and 35% of the controls were inactive, as measured by the International Physical Activity Questionnaire (IPAQ) scale, which divides physical activity into inactive, mildly active, and health-enhancing categories.

Table 5: Analyzing daily physical activities using the IPAQ scale

Level of physical activity	Cases N=110	Control No=50
Inactive	48	19
Minimally active	60	30
High active	2	1

Using the International Physical Activity Questionnaire (IPAQ), 43.8% of patients and 34.5% of controls were classified as physically inactive. Minimal activity was present in 54.5% of cases and 63.8% of controls. Neither the cases nor the controls had a significantly higher percentage of people who engaged in health-improving physical exercise. If a person's total score was higher than two, they were labelled as "having symptoms suggestive of common mental condition". The best possible result was a 12. Thirty percent of both the cases and controls showed signs of mental illness. Generally speaking, menarche occurs between the ages of 13 and 19 for most females. Five point six percent of cases and seven point four percent of controls were unable to conceive despite being married for three years.

Discussion

Overall, 160 female participants were enrolled in the research. Among them, 110 (cases) were considered to be morbidly obese by the World Health Organization, while 50 (controls) were considered to be within normal range. Seventy-three percent of the study's obese participants were between the ages of 35 and 40, whereas just 27 percent were between the ages of 30 and 35. There was a rising tendency in obesity with increasing age, but the correlation was not statistically significant. Scientists Misra *et al.* observed a rise in obesity rates with advancing age. Similar results were also found by Pradeep *et al.*,^[15, 16]

Approximately three quarters of the cases and controls had reading and writing skills above the basic level. The literacy rate among the patients was 82%, while it was just 62.1% among the controls. When compared to the urban average of 85% in the United States, it is lower. Nine percent of them lost a spouse at an early age due to a variety of causes, including automobile accidents, heart attacks and suicide^[17].

Fifty percent of the patients and 63.8% of the control group belonged to the Upper Lower SES Group, as determined by the Modified Kuppusamy Scale. According to the results of a study conducted in an urban slum, the majority of obese residents lived in the upper socioeconomic classes^[18].

Both case and control participants who had been diagnosed with diabetes or hypertension were compliant with their medication regimens. One person in the study suffered from hypertension, diabetes, and high cholesterol. Out of the total sample size of seventeen, only one person was diagnosed with hyperlipidemia and receiving therapy. This is indicative of how people feel and act when it comes to treating hyperlipidemia. They need to be inspired and informed about hyperlipidemia as a condition with preventable implications^[19, 20].

Seventy-five percent or more of the people in the study, including both cases and controls, consumed less calories than recommended. Around two-thirds of people in both categories were taking in far less protein than is advised. Between the cases and the controls, 28.7% of people were eating too much fat. Here, in the study. For more than 80% of their daily energy needs, 16.1% of cases and 24.1% of controls consumed carbohydrates. Undernutrition and obesity are two extremes of the same community health issue: poor nutrition^[21, 22].

In terms of the International Physical Activity Questionnaire (IPAQ), only about 2% were considered to be very active. Reasons could be the rise of the city, the prevalence of new technologies, or a general lack of consciousness. At least one common mental condition was present in 33% of cases and 31% of controls. Nevertheless, just about 2 percent of these women have been diagnosed with depression and are receiving therapy for it. It is evident that there is a significant population of women in the society that suffer from depression that is going untreated^[24, 25].

That's why it's so important to teach family doctors how to spot and help people who are suffering from depression in their local communities. Among couples who had been married for at least three years, % of cases and 7.4% of controls had no children. Notwithstanding progress, primary infertility remains a significant public health issue that must be addressed. Five-seven percent of cases and sixty-five percent of controls breastfed exclusively for the recommended number of months. Women in the case group only breastfed for an average of 2.75 years, whereas women in the control group averaged just 1.75 years. This photo exemplifies the continuing need for health education and community involvement in the topic of breast feeding, as well as the widespread prevalence of both ignorance and traditional traditions^[26].

Forty-two percent of the people in the research were overweight. Anuradha *et al.*, urbans Chennai study supported this. Also showing a 55.8% rate was a research by the ICMR conducted in the city of Vellore. (26). There may not be a statistically meaningful correlation between obesity and becoming older because the sample size was so tiny. There is a correlation between the number of years a woman spends in school and her likelihood of being overweight. It's possible that this is due to the fact that women with lower levels of education were responsible for other tasks, such as delivering water and doing

housework. The significance of this discovery, however, was confirmed in additional investigations conducted in urban Chennai and Kerala by Anuradha *et al.*, and Praeep *et al.*, respectively. Traditional explanations for why those of lower socioeconomic status have been less likely to become obese point to the following. Food insecurity and high energy expenditure habits could be the primary causes. It's also worth noting the elite's superior ability to secure adequate subsistence levels. This will be heavily influenced by cultural norms, particularly those associated with how we value our bodies and how we portray ourselves to the world ^[27].

Very few people had a family history of diabetes or high blood pressure. This explains the lack of a statistically meaningful link between diabetes and other complications. Keep in mind that this research was conducted on a relatively young population. The results of this study showed, however, that women with a history of hyperlipidemia had a 4.458% greater risk of becoming obese than women with no such history. This result agreed with similar research ^[28].

Our study found that compared to women who consumed less calories than recommended, those who consumed an extra 300 calories per day had a 3.8 times higher risk of being overweight or obese. Many studies have demonstrated that high-calorie diet is a major contributor to obesity.

Women who consumed less protein than they needed actually reduced their risk of becoming obese or overweight, according to this study. Plantega *et al.*, found that a protein consumption that was just 20% greater reduced weight regain by 50%. Research, however, suggests that a high-protein diet may help those who are overweight. Those with lower socioeconomic status have a lower protein intake than those with higher socioeconomic status. In this case, socioeconomic status appears to be the confounding element ^[29].

If you're a woman and you consume more than 50 grammes of fat per day, your risk of being overweight increases by a factor of 3.88 compared to if you consume less than that amount. High-SES individuals, in comparison to those with lower socioeconomic status, consumed significantly higher quantities of processed and fatty meals. The results matched those of previous research. No correlation between exercise and weight gain was discovered. While the IPAQ short form can be used for mass screening in populations, it often overestimates physical activity and provides inaccurate results. Since participants were only given a one-week window to recall their past behaviours, this history cannot be relied upon to provide an accurate depiction of the long-term, everyday physical activities to which they devote their time. Common mental problems and obesity were not linked in this study, despite the use of validated questionnaires. There was a 35% concordance rate between cases and controls for the presence of a mental condition. Considering that both binge eating and undereating are symptoms of depression, it's possible that the lack of a correlation between the two conditions is due to the fact that both are symptoms of depression. Women with three or more children had a lower chance of becoming obese than those with two or fewer offspring. However other research has found a favourable correlation between increasing maternal age and weight gain. It's possible that fewer women are having more than three children or less than two ^[27, 28].

Most mothers have two kids. A mother with more than two children may find herself constantly on the go. Women who had LSCS were 2.98 times more likely to become obese or overweight than women who had a vaginal delivery. That has been shown conclusively in previous investigations (90) Compared to women who had a natural delivery, women who underwent LSCS were less likely to return to work within the first three months after giving birth and were less likely to move heavy objects ^[29, 30].

Cesarean delivery history and socioeconomic status in the upper middle or higher classes were found to be significant risk variables in this analysis. Several avoidable metabolic complications are highlighted as a result of obesity, which is highlighted by this study. Because of their vital role in society, housewives need to be checked, educated, and treated for obesity and related issues.

Conclusion

Obesity is a global pandemic. Obesity is one of the most under-recognized worldwide health issues, according to the WHO. Urban emerging nations have the greatest obesity rates. This study investigated why women are more likely to be obese, overweight, and have other health issues. The most significant finding was weight changes between 2012 and now. Even among women with normal BMIs, obesity rates rose dramatically. This reduced research "controls." Yet, the study's findings can be applied to obesity prevention efforts. Diet and exercise can help prevent obesity. This study's participants ate too few calories. Overconsumes of protein and fat were more likely to be overweight or obese.

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