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Research Article

Occurrence Of Obesity And Fat Accumulation Among Sedentary Female Teachers And Related Health Issues: -A Cross-Sectional Study

Anita Kumari[1*], Dr. Rajesh Dhauta[2]

[1*]Research Scholar, Amity School of Physical Education and Sports Sciences, Amity University Noida UP
[2]Associate Professor, Amity School of Physical Education and Sports Sciences, Amity University Noida UP

***Corresponding Author:** Anita Kumari
*Email: physicaleducation1112@gmail.com

ABSTRACT
Both industrialized and developing nations face the formidable public health challenge of obesity and overweight. Obesity is more common among urban women due to factors such as a lack of time and energy to engage in physical activities, the demands of work and family life, and other similar factors. Among the aims of this research was to demonstrate the prevalence of obesity and associated health problems among inactive female school instructors. One hundred twenty inactive female educators from different private schools in the National Capital Region participated in a descriptive cum cross-sectional survey. We took anthropometric measurements, which include height, weight, and fat percentage. The body mass index (BMI) and blood pressure were measured. The body mass index (BMI) was determined to be normal for 43.3% of the teachers out of 120. The percentage of inactive educators who were overweight or obese was 56.7%. Twenty percent of educators were overweight, with seven percent falling into the latter category's crucial zone. Systolic and diastolic averages with standard deviations Class I teachers' blood pressure was 78.8 ± 8.04 mmHg, class II teachers' blood pressure was 127.75±11.67 mmHg, and class I teachers' blood pressure was 123.66±14.14 mmHg. The average blood pressure among teachers in the Overweight category was 123.59 ± 16.05 mmHg, while the average for their weight category was 78.97 ± 7.8 mmHg. The average blood pressure of healthy people was also below the typical range. Class I and class II obese participants had an accumulation of fat measuring 34.25 ± 8.57 mm at the supra iliac site, 33.66 ± 8.84 mm at the subscapular area, and 18.70 ± 7.32 mm and 28.20 ± 5.26 mm at the triceps and biceps, respectively. Researchers concluded that being overweight and Obesity is a major health problem that can signify a person's overall health and wellness. Women, and especially sedentary female teachers, are more likely to be overweight for a variety of reasons, but this epidemic could be reversed if more people adopted more physically active lifestyles. Obesity, excess body fat, and weight increase are all directly associated with sedentary lifestyles and lack of physical activity.

Keywords: Obesity, Overweight, Blood Pressure, Sedentary Female Teachers, Health

Author for correspondence*: *E-mail Id: *physicaleducation1112@gmail.com*

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INTRODUCTION:

Developed and emerging nations alike recognise obesity and excess weight as serious threats to public health. One in six persons are obese, and almost 2.8 million people die each year as a result of being overweight or obese, according to 2012 World Health Statistics. There are more than 30 million obese people in developing nations like India, and the situation is even worse for women. Urban women who are overweight or obese are most prevalent in three of India's megacities: Chennai (39%) and Hyderabad (34%). Kolkata (30%) ranks third. Worldwide, the prevalence of obesity is on the rise. (WHO)Obesity is more common among urban women due to a multitude of factors, including a lack of time and energy to exercise, unhealthy food options, work and family obligations, and so on. Obesity is being acknowledged as one of the most significant public health concerns due to the fact that it affects more than 30% of adult women. Obesity in women tends to rise beyond the age of thirty. Sedentary lifestyles are linked to obesity and a host of serious health problems, including metabolic disorders and potentially fatal diseases, according to research out of Tel Aviv University. The research conducted by Colle et al. in 1999 According to studies, the more time individuals spend sitting, the more fat they tend to store in their lower bodies, specifically their posteriors. Diabetes, high blood pressure, cholesterol, cardiovascular disease, stroke, some cancers, and arthritis are only few of the many diseases and disorders that it can increase the likelihood of. Daulatabad (2015) and Ujwala P.

Age, gender, region, socioeconomic position, etc. all play a role in the obesity prevalence in India. The 2015 ICMR-INDIAB study found that the prevalence rates of obesity range from 11.8% to 31.3% and central obesity from 16.9% to 36.3%. When it comes to cardiovascular disease (CVD), abdominal obesity is a major player in India. According to a number of studies, the rate of obesity is far higher in women than in men. Government health care spending and healthcare costs are disproportionately high due to obesity. (Mondal P.R. and Ahirwar R. 2018)

Educators make up a sizable and rapidly expanding portion of our nation's labour force.In 2018, Monica S.J. and colleagues recorded... A nation's biggest assets are its healthy citizens, and its liabilities are its unhealthy ones. This much is obvious. Since women are the backbone of society and are responsible for raising the next generation, this is a responsibility that everyone must share. If a woman is a teacher, she is also helping to create her country. Teachers are more likely to suffer from lifestyle disorders if their bodies are underdeveloped, grow spongy, or remain stationary. These are the main causes of premature mortality in India today.

This study set out to identify potential risk factors for obesity and related health issues among female school instructors. A cross-sectional survey was carried out among 120 female school teachers who were not physically active.

In order to encourage school teachers to lead healthier lives, the study suggests providing them with relevant health education and using interventional tactics.

Our study aims to investigate the prevalence of obesity and related health issues among female instructors who lead sedentary lifestyles.

LITERATURE REVIEW:

In a study involving boys and girls ages 8–14, Sivrikaya, Ziyagil, and Çebi (2019) sought to ascertain the frequency of obesity and the strength of the correlation between body mass index (BMI) and total skinfold thickness (TST). To verify this connection, we used Spearman rank order correlation. The lower obesity tendency in boys and girls peaked between the ages of 8 and 11, and it was the same for both sexes at 12 years old. "The correlation between body mass index and total serum testosterone in inactive boys was strongest between the ages of 9 and 11, and weakest between the ages of 12 and 14. Between the ages of 9 and 10, the correlation between body mass index and total serum testosterone was strong; however, it was at its weakest between the ages of 12 and 14, in the case of PA boys. The correlation between PA girls' body mass index and their total steroid dose (TST) was strongest at 9, 10, and 11 years of age, and weakest at 12 and 13 years of age. During the years 8–14, the correlation between body mass index and total serum testosterone tends to grow marginally in inactive females. Finally, when assessing the body composition of sedentary and inactive children (8–14 years old), BMI and TST cannot be utilised interchangeably.

In 2019, Lemamsha, Randhawa, and Papadopoulos published! To find out how common overweight and obese people are in Libya, researchers ran a cross-sectional study. From the Benghazi electoral register, 401 adult Libyans were selected at random using a multistage sampling procedure. The subjects' anthropometric measurements, including visceral fat and Body Mass Index (BMI), were taken by qualified nurses using the Segmental Body Composition apparatus. This study's results corroborated those of previous research showing that overweight and obesity are rapidly becoming epidemics, ranking among the most pressing public health concerns facing Libya's government.

Amenta F., Sagaro GG, and Di Canio M. (2021) The goals of this study were to (1) use a modelling technique to investigate the association between body mass index (BMI) and blood pressure and (2) use BMI as a risk factor for hypertension. Six hundred and three sailors' medical examination records were reviewed retrospectively. We used the World Health Organization's standards to record and analyse the seafarer's blood pressure and body mass index. Of the 603 seafarers surveyed, 44.4% were officers and 55.6% were non-officers. People who were not police officers had much higher mean systolic blood pressure, diastolic blood pressure, and body mass index. Both SBP ($r = 0.336$) and DBP ($r = 0.344$) were positively linked ($p < .01$) with BMI. Among those who participated in the

research, approximately 39% had prehypertension and 16.6% had hypertension. People who were overweight or obese were more likely to develop prehypertension and hypertension.

METHODOLOGY AND MATERIALS:

120 sedentary female teachers in private schools aged between 35-50 years were enrolled in the study as study group

Selection criteria: Schools were selected based on willingness to participate and enrolled the goal of identifying population with and without obesity among school teachers. Permission from school authorities as well as approval of study protocol by the independent Ethics committee was obtained before the commencement of the study**.**

Following parameters were studied:

- Body mass index
- Body fat percentage
- Blood pressure

Anthropometric measurements:

Standardised methodologies were used for anthropometric measurement taking. A well-mounted measuring tape was used to obtain the height in centimetres, with a precision of 0.1 cm (Gadget Hero Stature metre: 200 cms). A portable digital weighing machine (OmronHBF-375) was used to measure body weight (in kg) while it was placed on a level surface. All respondents were measured when they were shoeless and wearing only the barest minimum of clothing.

Weight in kilogrammes divided by height in metres squared (BMI) was utilised as a marker for overweight and obesity in the current investigation. The most widely accepted cutoff for obesity according to BMI I is a body mass index (BMI) of 30.

BMI	BODY COMPOSITION
18.6-24.9	Healthy
25.0-29.9	Over weight
30.0-34.9	Class I obese
35.0-39.9	Class II obese
40.0& above	Class III obese

CLINICAL ASSESMENT:

Following a 5-minute period of sitting with one arm resting on a table, respondents' blood pressure was taken using an automated digital electronic instrument (Rossmax model: -MJ701). In 2018, Monica S.J. and colleagues recorded...

The final reading was the average of two independent readings. We classified blood pressure according on the criteria established by the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure.

SKIN FOLD CALIPER:

It is a realistic way to gauge the overall amount of fat in the body. Kuczmarski (1997) found a strong correlation between total body fat and skin fold measurement at different sites. We used a skin fold calliper to assess the thickness of the skin folds at four different locations: the biceps, triceps, suprailliac, and subscapular regions. (Cescorf Innovare 4)

RESULT:

The health indicators of 120 female educators, ranging in age from 35 to 50 years old (mean ± 5 years), were evaluated. Teachers had an average weight of 67.13 ± 11.84 kg and a height of 1.59 ± 0.09 metres. With a mean BMI of 26.72 ± 4.8, the samples were classified as overweight, while the maximum BMI of 39.89 placed them in the Class III obese group, suggesting a severe BMI. A fat percentage of 36.92 ± 6.9% was determined using four skin-fold callipers.

With a maximum systolic BP measured at 184 mmHg, the physiological parameters show an average systolic blood pressure of 124 ± 14.6 mmHg and a diastolic blood pressure of 79 ± 8.6 mmHg.

Table 1
Descriptive Statistics

Table 1 descriptive analysis of teachers

	N	Minimum	Maximum	Mean	Std. Deviation
Age	120	32.00	50.00	41.9000	4.64432
Height (in mts)	120	1.25	1.80	1.5889	.09206
Weight (in kg)	120	48.00	104.10	67.1358	11.84555
BMI	120	18.83	39.89	26.7201	4.80534
sys_bp	120	96.00	184.00	124.0250	14.62211
dia_bp	120	54.00	105.00	79.3250	8.62979

Out of 120 subjects, 43.3% of the teachers were found to be Normal with BMI under the range, and rest 56.7% of teachers could be classified on the verge of either overweight or Obesity. A hefty proportion of teachers falls under overweight which is extensive in number. A total of 20 % of teachers, inducing class I and II obesity were obese and out of which 7.5% were on the critical mark of the latter class.

Table 2
Frequency Table

Table 2 categorical representation of BMI % for teachers who are normal, overweight, and obese

Classification	Frequency	Percent
Class II obese	9	7.5
Class I obese	15	12.5
Overweight	44	36.7
Normal	52	43.3
Total	120	100.0

52 out of 120 which constitutes 43.3% of the total sample nonetheless falls under the normal category, but the mean fat percentage of 37.87 ± 3.7 % indicates the serious high mark of fat in the body. Whereas the mean fat percentage of obese class I (BMI-31.2 ± 2.63) and Class II (BMI - 38.04 ± 0.79) was 40.51 ± 4.71 % and 41.5 ± 1.66 % respectively, the overweight category with a mean BMI of 27.47 ± 1.58 had 39.16 ± 2.77 % of fat accumulation.

Table 3
BMI to FAT % Table

Table 3 BMI to FAT% comparison of different categories

Classification	BMI (mean ± S.D)	Fat % (mean ± S.D)
Class II obese	38.04 ± 0.79	40.51 ± 4.71
Class I obese	31.2 ± 2.63	41.5 ± 1.66
Overweight	27.47 ± 1.58	39.16 ± 2.77
normal	22.9 ± 1.84	37.5 ± 2.85

The mean and S.D for Systolic and diastolic Blood pressure in class II obese teachers was 127.75±11.67 mmHg, for class I, it was 123.66 ± 14.14 mmHg and 78.8 ± 8.04 mmHg respectively. Blood pressure for Overweight category teachers was 123.59 ± 16.05 mmHg, and 78.97 ± 7.8 mmHg. And the mean blood pressure in Normal individuals was under the normal range.

Table 4: Fat accumulation in Obese and Normal, comparison Table

Region (mean ± s.d)	**Obese (I & II)**	**Normal**
superailliac	34.25 ± 8.57	22.09 ± 5.42
subscapular	33.66 ± 8.84	22.15 ± 5.91
triceps	18.70 ± 7.32	11.25 ± 5.01
biceps	28.20 ± 5.26	19.52 ± 4.99

The fat accumulation in Class I and class II obese subjects on the supra iliac site was accounted to be 34.25 ± 8.57 mm, for the subscapular region was 33.66 ± 8.84 mm, for triceps and biceps it was 18.70 ± 7.32 mm, and 28.20 ± 5.26 mm respectively. In the case of teachers under normal remark, the mean supra iliac fat deposition was recorded to be 22.09 ± 5.43 mm, the subscapular region accounts for a mean of 22.15 ± 5.91 mm, whereas triceps and bicep accumulated 11.25 ± 5.01 mm and 19.52 ± 4.99 mm respectively.

DISCUSSION:

Many conclusions and aspects could be addressed based on the study's above-mentioned results. There are concerning findings from a study of urban female teachers in India's National Capital Region who are sedentary and in their 40s to 50s. This region has a high prevalence of obesity and overweight-related diseases, and the majority of female teachers in this region are obese. The remaining female teachers are either overweight or normal. Reasons for the lack of correlation between obesity and high blood pressure at rest include a small sample size, the fact that people's normal physiological parameters are unaffected by excess fat when they're at rest, and the fact that people's blood pressure and other physiological parameters are negatively impacted when they engage in vigorous physical activity or perform demanding daily tasks.

The study also notes that body mass index (BMI) is not always the best indicator of health since it can be misleading; for example, it shows that those in the normal BMI range can still be at risk for obesity-related

disorders". It is concerning because research showed a remarkably high percentage of fat in normal professors as well, even though this percentage was expected to be higher in overweight and Class I and II obese participants. The fat percentage for Class II obese instructors was almost 40%, while the usual, healthy fat percentage for teachers was rather near to that of Class II obese teachers, at 37%. Regardless of healthy and normal BMI readings, this shows a significant amount of fat storage. It can be deduced that a healthier fat percentage (~22% to 30%) could be a more accurate measure of health than a normal body mass index (BMI), and that this shift in viewpoint is necessary.

In line with research into the eating patterns and daily routines of working women, which has shown that they tend to accumulate excess fat and have a poor body mass index (Gebretsadik et al., 2022), there are a number of potential causes for this. Women face additional health risks due to factors including ignorance about proper nutrition. There is a strong association between the job profile and work demands of women teachers, which include not only professional work but also managing personal lives and families, and their deteriorating health and lack of personal time for health and fitness.

The study's findings are in line with those of Gouda & Prusty (2014), who also noted that, due to the pressures of work and a lack of time for self-care, urban working women are more likely to be obese than urban non-working women or rural women. Recent studies have shown that being overweight or obese, with levels of body fat that are significantly higher than normal across all study populations, increases the risk of developing diabetes, coronary heart disease, heart problems, and cardio-respiratory problems in old age. Particularly among inactive women, obesity may be linked to hypertension.

Obesity is a major health problem that can lead to a host of other health problems and is an indicator of a person's overall health and wellness. Women, and working women in particular, are more likely to be overweight for a variety of reasons, but this epidemic could be reversed if people took simple steps every day to improve their health, such as eating a balanced diet and not smoking. Obesity, excess body fat, and weight increase are all directly associated with sedentary lifestyles and lack of physical activity.

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