



PREVALENCE OF OVERWEIGHT/OBESITY AMONG NOVICE FEMALE STUDENTS OF MEDICAL AND PARAMEDICAL COLLEGES IN AHMEDABAD, INDIA: A COMPARATIVE STUDY BETWEEN 2011 AND 2021

Community Medicine

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ABSTRACT

Background: Given the ever-increasing prevalence of overweight/obesity among adolescent females and its detrimental effects on the future generation, it is necessary to estimate its prevalence among medical and paramedical female students who are the pillars of healthcare system and are at a higher risk of weight disorders due to sedentary lifestyle, disordered eating habits and increased stress. **Aim:** This study was conducted to determine to determine the change in the prevalence of overweight/obesity among novice medical and paramedical female students at the Civil Hospital Campus from 2011 to 2021. **Methods:** A repeated descriptive cross-sectional study was conducted among 342 novice females at Civil Hospital Campus in June 2021. There were no exclusion criteria for the study. Data was collected with permission, using a pretested proforma and the BMI was calculated. Statistical Analysis was done using Microsoft Excel and Epi-info Software. **Results:** The prevalence of overweight among these students has increased from 21.29% in 2011 to 25.44% in 2021, while the mean weight of overweight girls among these students has increased from 63.15 kg in 2011 to 64.37 kg in 2021. **Conclusion:** Health care practitioners and policy makers need to be aware of the prevalence of overweight and obesity in order to emphasize the prevention of weight-related disorders among these students. As these disorders can increase the risk of developing chronic illnesses in adulthood, addressing its risk factors and carrying out periodic monitoring is important.

KEYWORDS

Adolescent girls, Medical and Para-medical students, Weight disorders, Obesity, Overweight

INTRODUCTION

Adolescence, the age between 10-19 years, is a window period for laying the foundation of good health because of the rapid physical and psychological growth during this phase.^[1] Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to an individual's health.^[2] It is a rising epidemic in both developed and developing countries. According to WHO, the prevalence of overweight and obesity among children and adolescents aged 5-19 has risen dramatically from just 4% in 1975 to over 18% in 2016.^[3] Considering the trends in India, it increased from 3.90 in 2010 to 5.80 in 2016.^[4] The NFHS-5 data shows that the overall prevalence of overweight/obese females in Gujarat is 23.8%^[5] while that among the 15-19 years old female adolescents is 4.9%.^[6]

Although genetics and some disorders cause obesity, most adolescent obesity results from a lack of physical activity and consuming more calories than needed for activity level. Early awareness, diagnosis, surveys, monitoring of prevalence of overweight and obesity is needed to tackle this situation. Findings from a study identifying secular trends in disordered eating behavior in adolescents show that there has been no change in the prevalence of disordered eating behaviors from 1999 to 2010 despite strong public health messages regarding obesity over recent years.^[7] Approximate relative risk for several health problems as reported by WHO are enlisted in **Figure 1**.

Greatly increased (RR>>3)	Moderately increased (RR 2-3)	Mildly increased (RR 1-2)
Type 2 Diabetes	Coronary Heart Disease	Cancer (Breast cancer in postmenopausal women, endometrial cancer, colorectal cancer)
Gallbladder diseases	Hypertension	Reproductive hormone abnormalities
Dyslipidemia	Osteoarthritis (knees and hips)	Polycystic ovary syndrome
Metabolic Syndrome	Hyperuricemia and gout	Impaired fertility
Breathlessness		Low back pain
Sleep apnoea		Increased anesthetic risk
		Fetal defects associated with maternal obesity

RR: Relative risks

Figure-1: Health Risks Associated With Obesity (WHO 1998)^[8]

Also, a Periodic National Family Health Survey in 2005-2016 among adults aged 15-49 years has shown an overall significant increase in

overweight and obesity.^[6] Considering the prevalence of obesity in school going adolescent girls,^[9] similar trend might follow in the college going girls. So, such studies are as much required in school students as is in college students.

A novice refers to a person who is entering a profession with no prior experience.^[10] The novice medical and paramedical girls are the pillars of the healthcare system in the future. Therefore, their health should be of utmost priority as they will be serving as role models for the rest of the population to promote health. The sole purpose of conducting this study is to show how the prevalence of weight disorders in medical and paramedical female students has fared over a decade. The objective of the study is to analyze the prevalence of overweight in novice medical and paramedical female students in 2011 and 2021.

MATERIALS & METHODOLOGY

Civil Hospital Ahmedabad, spread over 110 acres of land, is a home to Medical, Dental, Physiotherapy and Nursing students.

This cross-sectional study was conducted by purposive non-random sampling method among novice female students in March 2011^[11] (357 females) & June 2021 (342 females). After obtaining permission from the respective authorities of B.J. Medical College, Government Dental College, Government Physiotherapy College, College of Nursing & School of Nursing, data was collected through pretested predesigned proforma which was filled by the girls under direct supervision of investigators.

After a brief clinical examination, anthropometric measurements in the form of weight & height were taken by trained investigators using a standardized technique considering the NIH Standards.^[12] The Body Mass Index (BMI), also known as the Quetelet Index is used as the criterion for classifying the nutritional status. The WHO and Asian-pacific BMI classification was used to assess the data.^[8] The WHO suggested a lower cut-off for therapeutic interventions in Asians because obesity-related complications develop in Asians at lower values of BMI.

Data collected is analyzed by Microsoft Excel and Epi-info Software. Mean, Standard Deviation and p-value were calculated for the available categorical data. The differences were considered significant at a p-value of <0.05. It is to be noted that BMI has very high specificity and low sensitivity.

RESULTS**Table-1: Basic Profile Of The Study Group**

	2011	2021
	Number (n = 357)	Number (n = 342)
I Age (in years)		
≤17	80 (22.40%)	29 (8.47%)
18	219 (61.43%)	197 (57.60%)
≥19	58 (16.24%)	116 (33.91%)
II Type of Course		
MBBS	93 (26.05%)	65 (19%)
Dental	68 (19.05%)	61 (17.84%)
Physiotherapy	59 (16.53%)	75 (22%)
Nursing	137 (38.47%)	141 (41.23%)

Table-1 Demonstrates the distribution of study subjects by age and course. The majority of the girls in both research groups were 18 years old, with 219 out of 357 in 2011 and 197 out of 342 in 2021. The majority of the research participants in both years-137 in 2011 and 141 in 2021-were nursing girls.

Table-2: Distribution Of Participants According To Weight Category

WHO Criteria	2011	2021	Cut off	2011	2021
Underweight <18.5	105(29.41%)	102 (29.82%)	Underweight <18.5	105 (29.41%)	102 (29.82%)
Normal 18.5-24.99	211(59.10%)	192 (56.14%)	Normal 18.5-22.99	173 (48.45%)	153 (44.73%)
Overweight ≥25	40(11.20%)	48 (14.03%)	Overweight ≥23	77 (21.56%)	87 (25.43%)
Pre-obese 25-29.99	32(8.96%)	38 (11.11%)	Pre-obese 23-24.99	37 (10.36%)	39 (11.40%)
Obese I 30-34.99	7(1.96%)	9 (2.63%)	Obese I 25-29.99	32 (8.96%)	38 (11.11%)
Obese II 35-39.99	1(0.28%)	1 (0.29%)	Obese II ≥30	8 (2.24%)	10 (2.92%)
Obese III ≥40	0	0			

Table-2 Suggests that over a ten-year period, the prevalence of overweight has risen from 11.20% to 14.03% according to WHO criteria and from 21.56% to 25.43% according to Asian-Pacific criteria. Although, percentage has increased but it is not statistically significant.

Table-3: Mean Parameters And Its Association With Contributing Factors

	2011 (n = 77)	2021 (n = 87)
Mean Weight	63.15 ± 8.15	64.37 ± 9.91
Mean BMI	25.88 ± 2.58	26.50 ± 3.06
Factors		
Age		
≤17	61.42 ± 7.62	58.85 ± 4.01
18	62.70 ± 7.96	57.04 ± 8.79
≥19	66.92 ± 8.82	67.20 ± 11.02
Course		
MBBS	65.31 ± 9.47	66 ± 8.71
Dental	63.33 ± 8.47	64.35 ± 12.28
Physiotherapy	60.57 ± 5.73	65.22 ± 8.20
Nursing	61.09 ± 5.9	62.62 ± 9.07
Diet		
Vegetarian	63.37 ± 8.21	64.34 ± 10.46
Mix	61.25 ± 7.85	64.76 ± 7.88

Table-3 Shows mean weight of overweight girls increased from 63.15 to 64.37 and their mean BMI increased from 25.88 to 26.50 over decade. The mean weight for ages 17 and 18 dropped from 61.42 kg to 58.85 kg and 62.70 kg to 57.04 kg, respectively, while it rose from 66.92 kg to 67.20 kg for ages 19 and up. The above findings are statistically insignificant even though there has been an increase in the mean weight of overweight girls over the past ten years across all courses and both types of diet.

DISCUSSION

The present study provides and compares the data about the prevalence of weight disorders among novice medical and para-medical female students from 2011 and 2021. The mean weight of these overweight

students has increased from 63.15 kg in 2011 to 64.37 kg in 2021. As per the new Asian criteria, prevalence of overweight among these students increased from 21.56% in 2011 to 25.43% in 2021 while as per the WHO criteria, it has risen from 11.20% in 2011 to 14.03% in 2021 for overweight. Which is significantly higher than the national overweight prevalence of 6.80% in 2021 in adolescents^[13] as well as according to NHFS-5 data for 15-19 years old female adolescents (4.9%).

Similar findings were found in a research by Manojan KK et al. in Kerala's Trivandrum district on the prevalence of overweight and obesity among medical students using the New Asia-Pacific BMI guidelines. In this descriptive research, which involved 350 medical students, the prevalence of overweight and obesity overall was 24.57% and 25.71%, respectively. [12]

In a similar manner, Evelyn Thomas and Geethadevi M discovered a higher prevalence of overweight/obesity (30.6%) among these students in their cross-sectional survey of 330 medical students at the Government Medical College in Kottayam, Kerala.^[14]

Another study conducted in Bengaluru reports that overweight and obesity prevalence among medical students was 14.62% and 11.32% respectively. All these numbers are far higher than state prevalence of overweight and obesity, 6.3% and 2.1% respectively as per NFHS-5 data.^[15] According to the statistics, the prevalence among adolescent girls in Gujarat aged 15 to 19 is less than 52.5%, but it is still concerning.

The current research's significantly higher proportion of overweight students compared to the general population can be attributed to sedentary behaviour and long study hours. Poor eating habits, skipping breakfast, eating fast food, omitting fruits and vegetables from the diet, and a dearth of sports and dining amenities at the hostel can all be contributing factors. Numerous other studies have revealed that unhealthy dietary habits are a growing threat among college students. Despite having more knowledge, students in the healthcare field still behave in a similar way. A Korean study found that while adolescents' sedentary time did not reduce, it actually increased, even though their prevalence of physical activity increased between 2019 and 2009.^[11]

A study from London revealed a ten-fold increase in prevalence of obesity in UK in last four decades. Even though the prevalence in India is not as dramatic, the slowly increasing prevalence should be enough to send an alert to our government to take steps for early interventions and prevention.^[16] Early identification of disease and its contributing factors is essential. Adolescents serves as a "window of opportunity" to reduce the burden of lifetime diseases.

CONCLUSION

The increasing prevalence of overweight/obesity calls for immediate community-based interventions to address its risk factors. Continuous health monitoring, early awareness and prevention will play a crucial role in decreasing its prevalence. Also, studies like this when conducted periodically, will help to keep a check on the future and quality of life the adolescents of India will live with.

Conflict Of Interest

We declare no potential conflicts of interest with respect to research, authorship and/or publication of this article.

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