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BMI EATING HABITS AND RELATED FACTORS AMONG STUDENTS OF SAVEETHA DENTAL COLLEGE.

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Nathasha A/P Sivakumar[1], GowriSethu[2], Dhanraj Ganapathy[3]

Abstract:*The aim of this research is to evaluate the BMI and eating habits among students in Saveetha Dental College. The last two decades have witnessed tremendous changes in the eating pattern of the Indian population. There has been a revolution in the adolescent's lifestyles and eating patterns which can be largely attributed to changes in family and social environment. The changes in eating patterns may adversely affect their health. 100 students of Saveetha Dental College in the age group of 17-26 years were selected for the study and were divided into five age groups respectively. Age 17-18(group 1), 19-20(group 2), 21-22(group 3), 23-24 (group 4), 25-26 (group 5). The questionnaires were distributed to them and their food intake for 1 whole week was noted down, the collected data is tabulated for further interpretation of the study. The results were assessed statistically. Almost every fourth male student was overweight. Strikingly, 15% of female students were underweight. The highly-significant difference was found between the average body mass index (BMI) of male and female students. Students' BMI did not correlate with average family income or with the frequency of taking breakfast. Increasing the proportion of adolescents meeting recommended dietary and physical activity guidelines has been identified as an important strategy to contrast the epidemic increase in obesity, especially in Western Countries. These students are more concerned about their appearance than their healthy diet intake. They are keener on finishing their work then taking proper care of their health.*

Key Words:*BMI, eating habits, healthy diet, obesity, underweight, carbonated drinks.*

1. Introduction

The prevalence of obesity and overweight is quite high in the world population. According to a 2008 World Health Organization report, one billion of the world population is overweight and an additional 300 million are obese. Changing eating habits can be responsible for the rapid increase in these conditions, particularly among the young population.1 Previous studies have demonstrated that the adoption of an unhealthy lifestyle after becoming a university student, including smoking and alcohol consumption, and poor food preferences may be attributed to moving away from home, poor cooking skills, low income, and little time availability to engage in physically active recreation, and so forth. Such lifestyle changes lead to weight gain and an increase in body fat composition during the first year of university education2.

[1]*Graduate student, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha Dental College, Chennai, India.*
[2]*Professor, Department of Physiology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences (SIMATS), Chennai, India*
[3]*Professor and Head, Department of Prosthodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, 162, Poonamallee High Road, Chennai 600077, Tamil Nadu, India*
Correspondingauthor, Dhanraj Ganapathy
Professor and Head, Department of Prosthodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, 162, Poonamallee High Road, Chennai 600077, Tamil Nadu, India, E-Mail : dhanraj@saveetha.com, Telephone number - 9841504523

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Obesity is associated with a variety of adverse health outcomes. An important risk factor for cardiometabolic disorders, cardiovascular diseases, and premature mortality is obesity. There was evidence that suggests that diabetes, heart disease, osteoarthritis, and high blood pressure may mediate the association between being overweight and health-related quality of life. In the last 20 years, obesity has increased in prevalence worldwide.

The majority of studies focused on overweight, obesity, and less on underweight.3 However, it is necessary to pay more attention to the negative effects that being too skinny has on health, being noted that the mortality risk is associated with underweight. A person may be underweighting because of genetic or metabolic causes, lack of food, or diseases like hyperthyroidism, cancer, tuberculosis, gastrointestinal or liver problems, etc. But a person can be underweight because he/she wants it, as a consequence of the emphasis society puts on "thinness" (thinness, „silhouette ", the fact of not being fat). It can even lead to anorexia nervosa and bulimia nervosa. In the case of anorexia nervosa, there is a loss of appetite, but sometimes the appetite stays while the patient refuses to eat and the bodyweight drastically drops. In the case of bulimia nervosa, hyperphagia of large quantities of food in a short period of time (eating binge) take place, followed by self-induced vomiting, laxatives or diuretics, by periods of feeding ceases (fasting) or intense physical exercises in order to prevent weight gain (binge and purge, approx. "satiation and deprivation"). Underweight individuals are prone to infections, osteoporosis. For women with severe underweight amenorrhea, infertility, complications during pregnancy, anemia, hair loss, etc. can occur.4

In 1993, the WHO assembled an Expert Consultation Group with a charge of developing uniform categories of BMI. The results were published as a technical report in 1995.Four categories were established: underweight, normal, overweight, and obese. An individual would be considered to be underweight if his/her BMI was in the range of 15 to 19.9, normal weight if the BMI was 20 to 24.9, overweight if the BMI was 25 to 29.9, and obese if it was 30 to 35 or greater. Using linear regression, a BMI of 16.9 in men and 13.7 in women represents a complete absence of body fat stores.

The above 4 categories are similar to those suggested by John S. Garrow in 1981, but the terminology was changed. The terminology he used was "desirable" for a BMI up to 25, "grade I obesity" between 25 and 29.9, "grade II obesity," between 30 and 40, and "grade III obesity" for BMI greater than 40.

The latter classification was based on Rosenbaum and colleagues' own data obtained in a survey of an adult to 39.9 is class II obesity and a BMI of 40 or greater is class III obesity.

Over the past several decades, there has been an increase in BMI in the general population. This has resulted in predictions of a public health disaster. It should be recognized that in the United States during the period from 1960 to 2002 not only has the mean weight increased by 24 lbs. among men aged 20 to 74 years, but also the height has increased by about 1 in. We can then calculate that the weight increase per year has only been 0.57 lb. and as indicated above, this could be due to an increase in lean mass rather than fat mass, or it may be a combination of the two. In women, there was a similar increase in weight and height.

In an earlier report, life-insured men up to age 40 years were reported to be 0.5 to 1.5 inches taller and 2 to 9 lbs. heavier for the same height in 1959 than those studied 50 to 60 years prior to 1959. Also, in the earlier study, the mortality rate was lowest in those with higher weight-to-height ratios. This was attributed to the presence in the population of wasting diseases such as tuberculosis that resulted in an increased death rate. Previously, a secular upward trend in height

in adults in the United Kingdom also was reported. In addition, in a twin study in the United Kingdom, children in 2005 were not only heavier but also taller than 1990 norms, whereas their BMIs were essentially the same.

Overall, the history of changes in height and weight in Western European men and probably women has been that of an increase in both weight and height. In the 17th century, the average height of men in Northern Europe was ~5 ft. 3 in. It now approaches 6 ft. These data suggest that the BMI categories should be adjusted upward periodically to accommodate population-based changes. Improvements in mortality rates also suggest an adjustment would be useful.

The new terminology appears to be a bit presumptuous and careless because the BMI is not a direct measure of the percent of fat mass, and the dynamic concept that those in the former "overweight" category are now in the "pre obesity" category invariably going on to "obesity" is not the case. Also those with a lower BMI initially, but with a dynamic weight gain over time, would have to transition through this category in order to become classified as "obese" regardless of the terminology.

There exists at present enormous concern amongst the population of the developed world regarding being overweight and obese. This concern is generally justified by alleging health motives. The deeper motivation is, however, to a considerable extent, aesthetic. It is a slim body that is considered an attractive body in our society, amongst other things because, in the context of nutritional overabundance, it is more and more difficult to maintain a normal weight. In this cultural context all kinds of strategies to lose weight have flourished: hypocaloric diets, restrictive eating habits, nutritional compounds, pharmaceutical products, and such extreme measures as skipping certain meals. Thus, we find ourselves in a situation where more than 70% of the population of the western world admits that they are attempting either to lose weight or to maintain their present weight.5

However, despite all these attempts to lose weight, figures show that the prevalence of obesity and being overweight has grown continually and alarmingly since the eighties. All of this would lead one to suspect that, although for many these strategies may be of use in the short term, this is not the case in the long term. Several studies seem to show this. Half of the people tend to give up hypocaloric diets within two months of starting them.6 Furthermore, 95% of people tend to recover their initial weight between one and five years after finishing the diet. Similarly, it has been observed that some subjects may gain a surplus of additional weight with respect to their weight before the diet. Recent prospective studies show that attempts to lose weight seem to be associated in some subjects with a subsequent greater increase in weight (equal to or greater than 2 kg). Finally, weight and food can be the cause of great worry in some people.7

The body mass index (BMI) is a value gained from the calculation of weightand height of an individual. A student's eating habits depends on their lecture schedules and availability of food inside or in the vicinity of the university area. As a result of the increase in the fast-food market and lack of appropriate food courts, students usually face meal skipping, inadequate variety of foods, and snacking8.

Because calculation requires height and weight, it is cheaper and easy to use for clinicians and for the general public.9 BMI can be used as a screening tool for body fatness but is not diagnostic.BMI does not only measure body fat directly, but BMI is slightly correlated with more direct measures the body fat obtained from skin thickness measurements, bioelectrical impedance, densitometry, dual-energy x-ray absorptiometry (DXA) and other methods.10

The purpose of this study was to quantify the prevalence of overweight and obesity among a sample of students at Saveetha Dental College and to describe their main eating habits. This study is part of a larger analytical investigation among the students of Saveetha Dental College, which estimated factors associated with quality of life.

A particular problem with BMI as an index of obesity is that it does not differentiate between body lean mass and body fat mass; that is, a person can have a high BMI but still have a very low-fat mass and vice versa.

From an anatomical and metabolic perspective, the term obesity should refer to an excessive accumulation of body fat (triacylglycerol), and upon these grounds, the accuracy of the BMI as a determinant of body fat mass has been repeatedly questioned, because it clearly has limitations in this regard. Gender, age, ethnic group, and leg length are important variables. It should be noted that in population-based studies women generally have a BMI that is lower than that in men, even though their fat mass relative to their body build or BMI is considerably greater (~20% to 45%+).

The relatively poor correlation between the percent of body fat mass and BMI in males has been known for many yearsand was clearly shown in a study in which percent of body fat was determined by a densitometric method. For men with a BMI of 27 in that study, the 95% confidence intervals for percent of body fat were 10% to 32%; that is, in this group, the percent of body fat varied from very little to that considered to be in the obesity range. (NIH-suggested criterion for obesity based on the percent of body fat for men is ≥25%, and that for women is ≥35%)

2. Materials and Methods

2.1 Ethical Approval

The present cross-sectional study was carried out after obtaining Ethical approval from the Institutional review board of Saveetha Dental College.

2.2 Study Design

The survey was conducted in a single dental school in Chennai. This was one of the first studies to assess the knowledge of BMI, eating habits, and its related factors among dental students. Since it was easy to recruit the study population from a single dental school, a purposive sampling technique was chosen. A sample of 100 undergraduate students in a Saveetha Dental School, Chennai, India was included in the study.

The study was undertaken in two stages stage 1 and Stage 2. Stage 1 comprised formulating, designing, and validating the questionnaire, whereas Stage 2 tested the validated questionnaire among 100 undergraduate dental students.

Stage 1 (designing and validation of the questionnaire)

A standardized self-constructed questionnaire was formulated by two investigators (NS, DR,). Both the investigators (NS, DR,) independently formulated the questionnaire, and after a consensus, they arrived at a final list of 15 questions. Initially, content validation of the questionnaire was performed by circulating the questionnaire to 100 students of Saveetha Dental College. A panel discussion was conducted among 10 qualified General dentists, and they had rated the questionnaire using a content validity ratio. [1416] There was a good agreement between the investigators, with a rating of >0.7. Finally, the questionnaire was distributed to 10 random General dentists for face validation, and it was evaluated using 5point Likert scale.

Stage 2 (testing of the validated questionnaire)

After the content and face validation, the questionnaire was distributed to 100 undergraduate students to complete the questionnaire. Distribution and collection of the questionnaire were done by one Graduate dentist (NS).

2.3 Statistical Analysis

Data were collected and entered into the SPSS software version (SPSS Inc., Chicago, IL, USA) 20.0 for percentages.

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3. Results And Discussion

Basic demographic data were shown. Male students were, on average, significantly taller and weighed more than females BMI 23.4±2.7 and 21.0±2.6 respectively. Mean BMI across genders varied within the normal weight range. According to BMI categories, three-quarters had normal weight (Table 1). Almost every fourth male student was overweight. In contrast, 15% of females were underweight. Obese students were the least common category with a prevalence of only 1.5%. Students' BMI did not correlate with average family income or with the frequency of taking breakfast. Mean BMI did not differ between those who ate breakfast and those who skipped it. In addition, BMI did not differ according to students' residence (with parents/alone/student dormitory. More than half of the students (57.3%) ate their breakfast regularly. One-third of subjects drank coffee every day, opposed to 27.3% who never drank it. The majority of students (80.1%) ate meat at least two times a week. Half of them ate one portion of fruits and vegetables daily (Table 2). There were no gender differences between the consumption of fruits, vegetables, and meat.

TABLE 1: Distribution of students according to BMI categories

	MALE (NUM)	MALE (%)	FEMALE (NUM)	FEMALE (%)	TOTAL (NUM)	TOTAL (%)
UNDERWEIGHT	1	2.17	9	16.67	10	10
NORMAL	34	73.91	42	77.78	76	76
OVERWEIGHT	10	21.75	2	3.7	12	12
OBESE	1	2.17	1	1.85	2	2
TOTAL	46	100	54	100	100	100

TABLE 2: Distribution of students according to daily consumption of fruits and vegetables

DAILY PORTION	FRUITS%	VEGETABLES(%)
ONE	46.8	46.6
TWO	22.7	25.6
THREE	8.9	9.8
FOUR	2	1.2
FIVE	1.9	0.9
MISSING	17.7	15.9

Most of the Saveetha Dental College students were of normal nutritional status. A similar mean BMI was documented in students of different cultural backgrounds.11 Obese students accounted for only 1.5% in our sample.12 During 1997-2007, eating habits in the population of Serbia have been associated with irregular meals, a decrease in fruits and vegetable consumption, along with related augmented intake of high-energy ingredients. In 2006, only half of the adults had had three regular meals per day while more than half were overweight.13

In contrast, the overall prevalence of underweight among Serbian students was recorded to be 10.6%. The proportion of females who were underweight was even higher (15.3%). Bodily proportions and BMI are certainly subject to emotional and physical well-being.14 which is particularly addressed in concomitant eating disorders.15 Also, the university settings may have an important role in weight loss in young adults as well. Academic pressures and time limits might often prevent students from regular meal consumption, leading to unintentional weight loss. Another possible explanation for such a high prevalence of underweight in female students might be related to eating disorders.16

In this study, BMI in students did not differ among the diverse places of residence during university schooling, implicating that parental involvement in meal regularity does not have an impact upon weight change.17 On the other

hand, individuals who take care of meal frequency on their own, accomplish this in a responsible manner without experiencing dramatic weight losses or gains.18

The importance of taking breakfast was emphasized because of the local circumstance that the university schooling schedule covers the period from 8 am to 3 pm. Therefore, it is crucial that students have regular morning meal before the start of daily duties.19

Since the students were filling in the questionnaire independently, we may consider the reliability of data and potential information as well as recall bias. Additionally, there were no food intake diaries to quantify the exact consumption of the ingredients20.

4. Conclusion

Nutritional interventions among students have already shown positive results. Therefore, the promotion of healthy food consumption, with abundant fibers, whole grains, dairy products, and low energy-dense foods is needed. In addition, there is a growing demand for global health strategies which would encourage healthy body-image and figure; thus, these initiatives should mobilize the society on a national and international level.

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Conflict of Interest

The authors declare that there was no conflict of interest

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