

EATING HABITS, PREVALENCE OF UNDERWEIGHT, OVERWEIGHT AND
OBESITY AMONG UNIVERSITY STUDENTS: A SYSTEMATIC STUDY

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Abstract

Background and Objective:Obesity and being underweight are the leading causes in society among adults, nowadays. However, the extent of the problem is increasing day by day, so this systematic review aims to elaborate on the reason for the obesity and overweight among university students which contains mostly adult populations, hence research was conducted to show that either the eating pattern is a reason of obesity and overweight Methodology: Many scientific public domains were used for the literature review as PubMed and Sci-Hub. The keywords used as obesity, prevalence, adults, university students, eating habits, etc.Results: Many articles include in this study which contains 5 observational and 5 RCTs. Among all of these, there is no relation between eating patterns the obesity, most of the factors which affect obesity are socioeconomic status, but high socioeconomic status is not targeted also the population belonging to low economic status also have cases of obesity. Also, the result was drawn that women are facing more problems of obesity than males. Conclusion: The analysis shows that the nutritional intake or the dietary habits did not have much effect on the weight of the participants either there are many other aspects like socioeconomic status, lifestyle, and meal skipping, these are the component that directly and indirectly affects obesity and underweight.

Article Details:

Received on 20 March 2025

Accepted on 14 April 2025

Published on 17 April 2025

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INTRODUCTION

An excess of body adiposity is termed Obesity. Until the 1970s, weight gain was considered a substitute for obesity, which is difficult to assess in regular examinations for practical reasons. Obesity was previously characterized in terms of a target body weight. A body weight that was within the optimum range was linked to a lower risk of premature mortality. The ideal body weight approach was replaced by BMI in the 1980s, and the frequently used scale for evaluating overweight is 25- 30 for both men and women, and obesity is greater than 30 (Caballero, 2007).

It is considered that globally, 9 % of the adult population were underweight and 30 to 40 % were overweight (Schwinger et al., 2020). In the early 20th century in most developed countries, obesity became a public health problem, but recent studies show a dramatic record of an increase in obesity in developing countries. (Schwinger et al., 2020) According to the report of the World Health Organization 2014, most of the burden of communicable diseases has been reduced and most of the burden is now on non-communicable diseases which are at risk due to which 16 million premature death (before age 70) due to heart diseases, lung diseases, lifestyle, and factor associated with eating habits that are increasingly present in the adult population. (Crovetto et al., 2018)

Obesity and being underweight are connected to a high risk of adverse effects. High BMI is a serious health concern for all cardiovascular and kidney disorders, diabetes, several cancers, and musculoskeletal disorders, as well as pregnancy complications in our country, as shown by the predicted rise in mean body mass index (BMI). (Schwinger et al., 2020) Malnutrition, in all of its forms, affects people in every country on earth. Diversion of nutritional status from the normal range is one of the primary risk factors for early death and loss of healthcare years of life. Both being underweight and being overweight have a significant impact on the normal working and development of numerous organs in the body, as well as increasing the chance of death.

It is described that high socioeconomic societies have more rate of obesity. For instance, a national survey held in Brazil concludes that in 1989 obesity is a more emerging state among youngsters of high socioeconomic status while 10 years later it goes beyond the trend high prevalence was observed among the population of lower socioeconomic status. (Caballero, 2007) Numerous countries face a double burden of malnutrition (DBM) where both undernutrition and OWOB (overweight and obesity) occurs in the same community, household, or even individuals. While in countries of high socioeconomic status, OWOB is usually more present in a population of low-income status. (Schwinger et al., 2020).

Being overweight was once thought to be primarily a concern in high-income countries. However, in today's world, the prevalence and distribution of obesity are no longer exclusive to high-income countries. (Chakraborty et al., 2022) Being underweight or obese in childhood and adolescence is linked to long-term negative health implications. Underweight is connected to an increased risk of infectious disease in children and adults, as well as adverse pregnancy outcomes such as maternal death, preterm birth, delivery problems, and microcephaly in women of childbearing age. (Bentham et al., 2017). Although there has been a slight decrease in the prevalence of underweight, the increase in the proportion of people who are overweight or obese is now being regarded as a global pandemic. In the last 30 years, there has been a 50-80% increase in OWOB. Despite these variations, the frequency of OWOB is increasing in both sexes and across all ages, socioeconomic sectors, and countries. (Schwinger et al., 2020). When compared to obese children and adults, the percentage of underweight children and adults is higher. Anorexia nervosa prevalence varies by ethnicity, ranging from 0.01 percent in Africa to 1.05 percent in China. It manifests itself more frequently in women than in men, particularly among the young. Women with AN have a significant reduction in body weight due to calorie restriction, according to the Diagnostic and Statistical Manual of Mental Disorders. Obesity fear and a distorted impression of body weight Women with AN, on the other hand, experience menstrual irregularities. (Boutari et al., 2020).

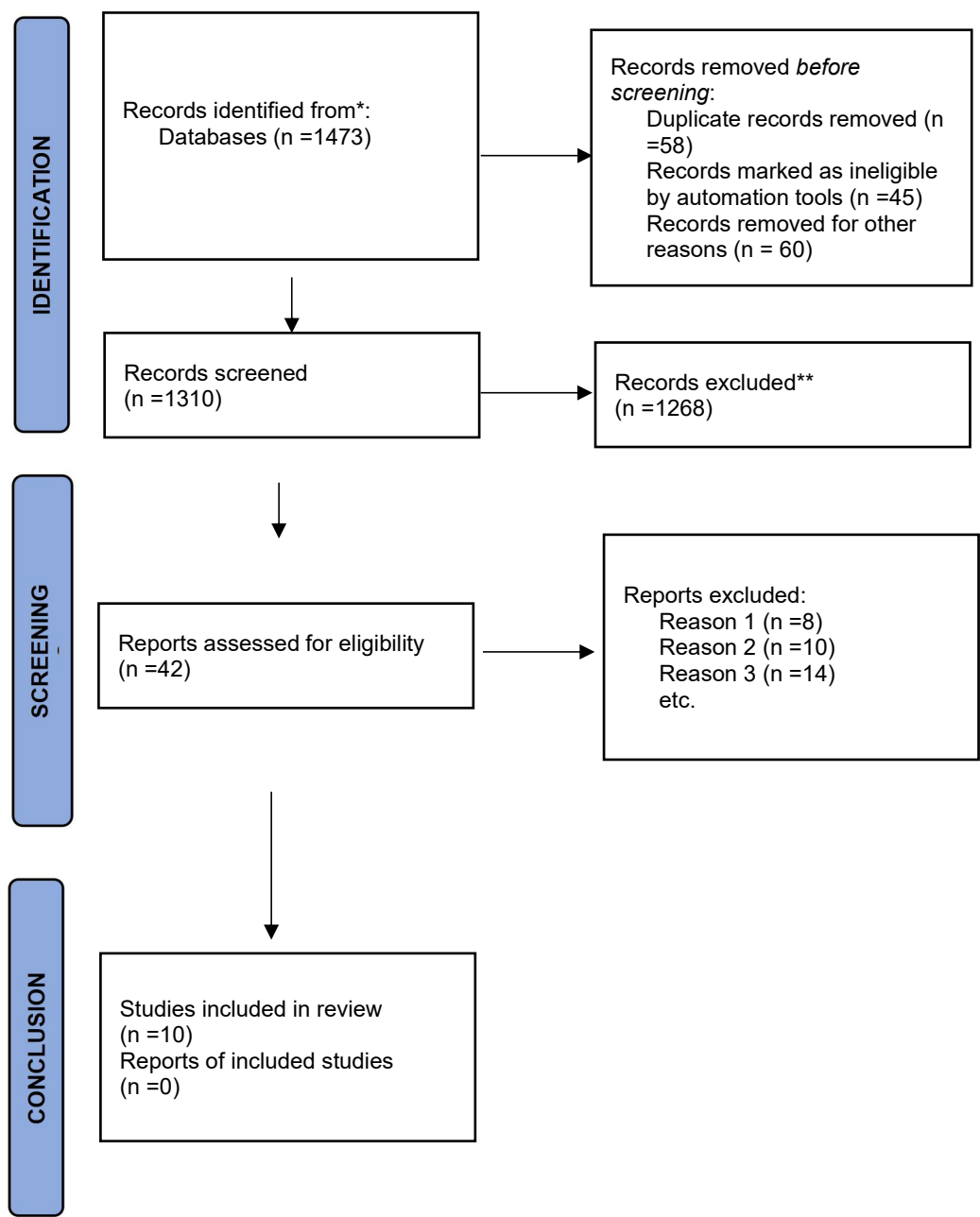


In general, girls have a higher frequency of being underweight than boys in East Asian countries. In Vietnam, as in South Asia, the prevalence of underweight was persistently greater in boys than in girls, with 39.1 percent and 34.4 percent in 1992 and 38.4 percent and 31.2 percent in 2002, respectively. In West Asia, Bahrain had a higher incidence of underweight boys than girls, with 8.6 percent and 2.3 percent, respectively, in 2005-2006, and Iran had a prevalence of 8.1 percent and 5.7 percent, respectively, in 2003-2004. (Mak & Tan, 2012).

OBJECTIVE

The main objective of this systematic study is to observe the effect of eating patterns on the weight of university students by using the food frequency questionnaire, by height, weight, and intake of nutrition.

METHODOLOGY



It is a systematic review of the articles published in the last decades of 2012 to 2022 reporting on the prevalence of Underweight, overweight, and obesity among university students. The study aims to emphasize the effect of nutritional intake on the weight of students. In Literature research we used available domains like PubMed and Sci-Hub by using some keywords such as Obesity, Overweight, Nutritional intake, university students, and Adults. The publication status includes articles up to 30 volumes. The search included 1473 articles, out of which we included 1310 articles from screening and then assessed 42 articles that fall within our eligibility criteria. Then we have 10 Articles under study. The Author keenly screened the articles and decide what can be included according to eligibility criteria which state only Randomized Control Trial and Observational study. The articles were rejected because they did not include the age factor, which was above 18, non-availability of full-text articles, and some articles did not have the option of downloading, and some are of very broad perspective, while some are of different language.

RESULTS

PICOS TABLE

Sr no.	Authors	Year	Participants	Intervention	Comparison	outcome	Study design
1.	Dennis Anheyer, Anna K Koch, Meral S Thoms , Gustav Dobos , Holger Cramer	June 2021	60 women's mean age was 22 ± 3 years	a whole-day workshop for two-week 90 min. Women in the control group did not participate in any study intervention for the first 12 weeks	physical activity was measured using the short questionnaire which contains physical activity at work, sport during leisure time, and physical activity	women attended a mean of 16.1 ± 6.1 out of 24 yoga classes (67.1 %). This equals an overall mean of 30.2 ± 9.2 out of 42 h of supervised yoga practice including the workshop (71.9 %).	single-blind randomized controlled clinical trial
2.	Hua Diao Hong Wang Lianjian Yang Ting Li	(2020)	948 participants were recruited to participate in our study, including 51% boys and 49% girls The average age of participants in this study was around 19.	EpiData 3.1 or QoL	A significant intervention was shown in physiological and pubertal development of compared groups	This intervention's effects were found to be more substantial in boys than in girls.	RCTs
3.	Fala Bede, Samuel Nambile Cumber, Claude Ngwayu Nkfusai	Jan 2020	a total of 203 students 90 males 113 females Mean age 20.8	The research questionnaires were pre-tested with 20 sixth-year medical students	It was a “24 Hour Food Recall” to collect data and the last section to collect anthropometric	33.5% had three meals a day from the 24-hour food recall and most	cross-sectional study



data.

4.	Sam Hernández-Jaña, Tamara Huber-Pérez, Ximena Palma-Leal, Paola Guerrero-Ibacache, Valentina Campos-Núñez, Juan Pablo Zavala-Crichton, Carlos Jorquera-Aguilera, Kabir P. Sadarangani, Fernando Rodríguez-Rodríguez and Carlos Cristi-Montero	July, 2020	23 students 52% women Mean age 20	The control group was given a single nutritional preventive session before a critical period linked to fat gain in university	Fat mass (FM) by dual-energy X-ray absorptiometry (DXA), physical activity by accelerometry, feeding evaluation through three questionnaires	A single RCTs preventive session before a critical period, might not be enough to promote changes in eating and physical activity patterns and prevent fat gain in overweight/obese university students. Long-term interventions are a must.	
5.	S. Dagne, Y. Gelaw, Z. Abebe et.al	2019	A total of 751 adults aged 18–64 years were included	Anthropometric measurement tools	Nil	the prevalence of overweight and obesity in the study area is high	cross-sectional study
6.	H. Lemamsha,1 G. Randhawa, and C. Papadopoulos	July 2019	401 (78%) (148 (29%) males and 253 (49%) females).	WHO STEPS Instrument survey for Noncommunicable Diseases Risk Factor Surveillance	Nil	Among men, the prevalence of obesity was 33.8% and overweight 32.4%, while among women, the prevalence of obesity was 47.4% and overweight 33.2%	cross-sectional study

7.	Lynnette Nathalie Lyzwinski Liam Caffery, Sisira Edirippulige	April, 2019	undergraduate students between 18 and 25 years of age	The control group received an electronic self-monitoring diary for its diet and exercise.	control group intervention group	Mindfulness app holds promise for weight-related lifestyle behaviors related to stress and stress eating, but more studies are needed to confirm these relationships.	RCTS
8.	Wischmeyer, Paul E. Hasselmann, Michel Kummerlen, Christine Kozar, et.al	2017	125 patients	Polymeric solution with standardized nutrition delivery was used.	SPN+EN versus EN	Plot trial to achieve an increased calorie and protein delivered by SPN and EN versus EN	RCT, plot
9.	Najat Yahia Daniel Wang Melyssa Rapley Rajarshi De	July 2016	A sample of 237 students(73% female and 23% male) mean age 20.6 ± 2.07 years	Tanita body composition analyzer	Analysis of covariance (ANCOVA)	78% Of female students are within the healthy weight range compared to 52% of male students	Cross- sectional study
10.	Enhad A Chowdhury Judith D Richardson, Geoffrey D Holman, Kostas Tsintzas, Dylan Thompson, James A Betts	2016 March	A cohort of obese adults, above 20	\$700 kcal before 1100 daily, with at least half consumed within 2 h of breakfast group or fasting group (i.e., plain water only) until 1200 each day	Comparison between breakfast and fasting group	Individuals with morning fast must consume low energy than those who take breakfast	RCTs.

DISCUSSION

In current years, there was a growing quantity of literature on Eating Habits and Nutritional Status. The reason for this study was to evaluate weight status, nutritional conduct, physical Activity, nutritional beliefs, and vitamin expertise among a pattern of college students from Central Michigan University. A cross-sectional survey was performed amongst a pattern of undergraduate college students who finished an internet questionnaire that covered questions associated with their consumption conduct, physical Activity and lifestyle, nutritional beliefs, and dietary expertise. Weight, height, and waist circumference have been measured. Percentage frame fats and visceral fats rating have been decided in the usage of a Tanita frame composition analyzer (SC-331S). Outcomes of this look indicated that 78% of women college students have

been inside a healthy weight, as compared to 52% of male college students. Visceral frame fats and waist circumference ratings have been better in adult males than in females. Physical activity and way of living indicated that most students were not physically active, only 4% of students had satisfactory knowledge of Nutrition and 7% of students had an active lifestyle. Many university students, specifically females, have been inside the healthy frame weight range. Students' nutritional habits have been satisfactory. However, physical activity, students' knowledge of healthy and unhealthy diet habits, and nutritional knowledge require improvement. Developing gender-specific projects for promoting healthy lifestyle practices among students is recommended. (Yahia et al., 2016)

Previous studies have reported that the prevalence of obesity in adults is less well-documented in Arab nations, particularly Libya. The escalating issues of obesity and overweight are one of the most alarming public health challenges confronting Libyan authorities. There is an urgent need for effective prevention strategies as the obesity epidemic in Libya worsens more research is required. The study showed that the prevalence of overweight and obesity among Libyan women has consistently been greater than among Libyan males, due to the absence of prevention and control measures in Libya. This study suggests that with increasing age, the prevalence of obesity is increasing as well in both genders. (Lemamsha et al., 2019).

The present findings seem to be consistent with other research found in middle- and low-income nations like Ethiopia, the rising prevalence of overweight and obesity is becoming a public health concern. This study's goal was to determine the prevalence of overweight and obesity in adults in Dessie town, northeast Ethiopia, as well as the factors that contribute to it. The study participants were chosen to use a multistage process followed by a systematic random sampling procedure. Snacking, drinking alcohol, and having a high economic status were all linked to a higher nutritional status. A high prevalence of obesity and overweight was seen in the study area, resulting in an emerging problem there. Hence, a strategy for controlling and preventing overweight and obesity risk factors that are possibly modifiable is required. This finding can be used to develop health and nutrition programs, as well as intervention measures, to combat adult obesity. (Dagne et al., 2019)

Recent evidence suggests that body images have an important role in self-evaluation and self-representation. According to the national eating disorders association, 20 million women in the United States have faced eating disorders once in their life. The reason for an eating disorder is the peer's body size in comparison with others. This is more common in women during adolescence as compared to men. This interpersonal comparison causes distorted self-perception. They think of themselves as heavier than they are just because of the comparison with the thinner peer group. Negative self-evaluations lead to body dissatisfaction, which may cause the development of eating disorders. Understanding the reason for eating disorders at the arrival age is critical because earlier treatment increases the chances of physical and emotional recovery. (Arduini et al., 2019).

Several researchers have reported that nutritional states can be measured by the states of under-nutritional and over-nutritional. Malnutrition is most common among young people, which leads to heart and metabolic disease. The main reason for this unbalance diet is poor food intake and dietary habits. Samuel Nambile Cumber (2020) found that meal skipping was a very common habit among students. 33.5% had proper three meals for 24 hours, while 49.8% had only two meals in a day. Most students had supper than breakfast. They observed that the consumption of milk, fruits, vegetables, and other organic food was poor among students. The bad habits of skipping a meal, low fruits, milk, and vegetable intake are to be discouraged, so they can be prevented from the negative effect on their health. (Bede et al., 2020).

Many kinds of research proved that obesity rates are quickly rising over the world, posing a severe public health threat. Including China, a developing country that contributes to the two third of obese people living in a developing country. In known studies, lifestyle adjustments such

as dietary alterations and physical activity remain the cornerstone for optimal prevention and treatment strategies in overweight and obese youngsters. The study's goal was to assess the efficacy of an obesity-related comprehensive interventional approach targeted at enhancing Chinese teenagers' QoL. This study showed the impact of pubertal development on the quality of life and the psychological, and social measures to some extent which is more pronounced in boys than in girls. The limitations that arose in this study are that physical exercise and diet control intervention was not systematically assessed, and record and their significance were not observed separately. (Diao et al., 2020)

According to recent studies, the obesity rate is usually high in developed countries. The rate of obesity is increasing rapidly in these countries. Obesity causes many diseases like coronary heart disease and cerebrovascular disease. Obesity is also dangerous for the abdominal region of the body due to the presence of fats which imbalance the hormones in the body. The reduction in obesity is a major issue for health policy in the coming years. There are many dietary interventions for this, but people's adherence is low. The best way to get over obesity is yoga. It helps to maintain a healthy lifestyle and discipline. People who do yoga are physically more active as compared to those who do not do yoga. (Anheyer et al., 2021)

It is the first RCT that examined the utility and efficacy of a student-tailored mindfulness app for stress and weight management. Over the semester, the mindfulness app did not help with weight loss, and there were no significant variations in weight between the mindfulness app intervention group and the behavioral self-monitoring e-diary group. The app helped with a few eating disorders as well as with increasing mindfulness, ME (mindful exercise), and reducing Stress in adhere. The mindfulness app group had appreciably decreased stress levels. Moderate-to-vigorous physical activity levels were greater in the e-diary group. Even though the mindfulness app did not aid in weight loss, pupils did not gain weight throughout the semester. It can be concluded that mindfulness apps can prevent weight gain or ensure weight maintenance as compared to e-diary. (Lyzwinski et al., 2019)

There is a large volume of published studies describing the role of nutrition in the underweight and overweight of those people who are ill in some cases. Nutritional guidelines that give recommendations usually differ in parenteral nutrition (PN) and clinical trial data. The recent observational study clears that the amount of protein that a patient gets in ICU affects the death of a patient and the inadequate amount of nutrition gave with according to BMI. Thus, it is hypothesized that intake of nutrition via SPN (supplemental PN) or EN (enteral nutrition) to patients overweight and underweight would increase the quality of life and the span of 60 days of survival. (Wischmeyer et al., 2017)

A randomized control trial was conducted to determine the link between the breakfast habits and energy-related components of obese people. Two groups were made; the breakfast group where consumption of energy-related components was present and the fasting group where the morning meal was skipped. The variables measured were resting metabolic rate, physical activity thermogenesis, diet-induced thermogenesis, and energy intake. The result showed that the Breakfast group ended up with greater physical activity thermogenesis throughout the morning time than when fasting during that period. Thus, as a result, daily breakfast set appreciable physical activity whereas the morning fast resulted in limited dietary compensation. No significant difference in weight was shown between the groups and the health outcomes. (Chowdhury et al., 2016).

The study focused on the investigation of the consequences of the single nutritional precautionary session before reaching a critical period connected to obesity among university students. This randomized controlled trial was single blinded include 23 students. The students were divided into a control group and an intervention group. Fat mass, physical activity, and feeding evaluation were measured through three questionnaires. The evaluation of the set of healthy lifestyle recommendations is done before and after the national holidays. The results

showed that the fat mass increased in the control group. During the national holidays, no statistical differences were observed. It showed that counseling only once for prevention might not be enough to encourage changes in physical activities and eating and precautionary fat gain in obese University students.(Hernández-Jaña et al., 2020)

CONCLUSION

The analysis shows that the nutritional intake or the dietary habits did not have much effect on the weight of the participants either there are many other aspects like socioeconomic status, lifestyle, and meal skipping, these are the component that directly and indirectly affects obesity and underweight. This systematic review highlights that people not only those who belong to high socioeconomic status have obesity but also people with low socioeconomic status who leads to obesity. So, there is a need for a proper balanced diet and approach toward the economic transition to effectively tackle this burden.

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