



INFLUENTIAL FACTORS IN UNIVERSITY STUDENTS' SNACK CONSUMPTION: A COMPREHENSIVE REVIEW

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Abstract

In today's culture, snacking constitutes over one-third of an average person's daily caloric intake. However, the majority of snack foods are high in calories and low in nutrients. The growing demand for quick-service restaurant snacks, fueled by emerging lifestyle trends, is particularly noticeable among University students. This study aimed to explore the factors influencing the consumption of healthy and unhealthy snacks among college students. Data were collected from various reliable sources such as Google Scholar, Research Gate, Pub Med, and Science Direct, and analyzed using diverse screening approaches. The review of numerous articles revealed several influencing factors categorized as economic, physical, biological, psychological, and social. Despite being aware of the negative impacts of unhealthy snacks and the availability of information, University students tend to prefer unhealthy snacks.

Keywords: *Snacks, Healthy food, Unhealthy food, Nutrients.*

Introduction

The modern pace of life is characterized by the widespread availability of quick and convenient foods. Consumers seek tasty, healthy, accessible, and affordable options, especially while multitasking. Snacks fulfill these criteria but often compromise on healthiness. Snacks, defined as any food consumed between regular meals, serve various purposes, including alleviating hunger, boosting energy, and satisfying taste preferences. Unhealthy snacking

contributes significantly to overweight and obesity. College students, in particular, exhibit poor nutritional choices, influenced by limited campus dining options and academic stress. Lifestyle changes during college years, marked by increased independence and responsibility, may exacerbate issues like anxiety and depression. Addressing these challenges requires interventions to promote mindfulness, reduce stress, and encourage healthier eating habits among college students. When compared to the control group, intention-to-treat analyses revealed that mindfulness did not significantly increase the consumption of nutritious foods but did lead to a reduction in the intake of unhealthy foods. The primary analyses indicated that when mindfulness reduced stress, as confirmed by anxiety assessments, students tended to consume more nutritious foods and fewer junk foods. Addressing dietary choices is crucial as they are a problematic aspect of lifestyle behaviors. Research on college students suggests an elevated risk of eating disorders and substance use issues. Adopting unhealthy eating practices during this period can lead to weight gain, chronic illnesses, and engagement in risky behaviors such as substance use.

A previous study investigated the snacking behaviors of college students, involving 865 participants from Mangalore. Findings revealed that over half of the population engaged in snacking between meals, with a significant proportion reporting problematic snacking habits, particularly during studying or watching TV. Similarly, another study examined how college students cope with stress through their eating and exercise habits, finding variations based on academic year, dorm type, and gender, with significant differences in eating habits among students with differing stress levels.

The concept of healthy snacks aligns with dietary guidelines emphasizing greater intake of fruits, vegetables, and whole grains, and reduced consumption of fats, sodium, and refined sugars. Despite the growing interest in nutritious snacks, highly processed options are increasingly popular. A survey on students' attitudes toward choosing and consuming nutritious snacks revealed that while students recognized the health benefits of such snacks, obstacles such as time management, motivation, preparation, and taste preferences hindered their consumption. While the health effects of frequent snacking remain uncertain, opting for healthy snacks may mitigate potential negative impacts and contribute to promoting nutrient-dense diets among college students. Snacking represents an opportunity for energy and nutrient intake and warrants attention in fostering healthier dietary habits.

Unhealthy snacks, typically consumed between meals, often comprise foods high in fat, sugar, and overall calories, such as chocolate and potato chips, which are favored by college students. Various factors contribute to irregular eating patterns, including social influences, parental attitudes, and the introduction of Western cuisine. Chronic consumption of unhealthy snacks poses risks for non-communicable diseases such as cancer, obesity, high blood pressure, cardiovascular diseases, and diabetes. Research exploring trait and state CHBs (compensatory health beliefs) reveals their significant association with habitual unhealthy snacking, with compensating through increased physical activity showing more positive effects than increased eating. Despite understanding the health risks, students' behaviors regarding unhealthy eating habits often contradict their knowledge, highlighting the need for education on the associated risk.

Studies examining variables influencing teenagers' unhealthy snacking patterns underscore the need for more effective health promotion programs. Factors such as negative parenting styles, affluence, family dynamics, societal norms, and students' lack of knowledge and self-efficacy contribute to unhealthy snacking behaviors. The trend of increased snacking, particularly among school-aged children and college students, is observed in both developed and developing countries, influenced by factors like skipping breakfast, parental behavior, socioeconomic status, and stress. This shift towards energy-dense snacking behaviors, influenced by taste, convenience, advertising, and established habits, is notable among college students, emphasizing the need for interventions promoting healthier dietary choices.

OBJECTIVES

1. To identify and categorize the various factors influencing the consumption of healthy and unhealthy snacks among university students.
2. To analyze the prevalence of unhealthy snacking behaviors among university students and explore potential contributing factors, including economic, physical, biological, psychological, and social determinants.
3. To investigate the relationship between mental health factors such as anxiety, depression, and stress, and their influence on university students' snack consumption patterns.
4. To propose recommendations for future research directions and interventions to address unhealthy snacking behaviors and promote healthier dietary habits among university students.

REVIEW OF LITERATURE

(Upadhyay, 2022) This article filters out important causes of NCDs like imbalances in diet structure, living facility, social awareness, cleanliness, and hospital care and medicine availability. There is a rising trend of alcoholic, narcotics and drug abuse in school going young population. Dietary patterns and physical disabilities are not normal and people are coming under extravagant consumerism. For quick action social, community, clinical-legal and treatment methods must include in planning and implement them across the world.

(Racine et al., 2022) This study examines the association between student demographic, economic, and behavioral factors and the healthfulness of student fast-food purchases. The 3781 fast-food items sold at the University of North Carolina at Charlotte from fall 2016 to spring 2019 were given a Fast-Food Health Score. This analysis included 14,367 students who generated 1,593,235 transactions valued at \$10,757,110. Multivariate analyses were used to examine demographic, economic, and behavioral factors associated with Student Average Fast-Food Health Scores. Future research utilizing institutional food transaction data to study healthy food choices is warranted.

(Almoraie et al., 2021) This aim of this review was to evaluate various patterns and health outcomes of the snacking habits of different demographical groups, from children to the elderly, throughout their life span. We discuss the snacking pattern among children and adolescents, which is characterized by consuming high energy

foods with low nutrient value, and which is associated with increased risk of obesity. During university years, study stress and lack of time were obstacles to a healthy dietary pattern involving nutritious snacks, In conclusion, encouraging individuals to consume healthy snacks that are high in nutrients through education to help them plan for their snacks is important to enhance health and reduce disease risk.

(Lee & Allen, 2021)This study explores the relationship between the consumption of healthy and unhealthy foods and depression among young adults and the moderating effect of gender on these relationships. A total of 2983 young adults were selected for the final sample. Logistic Regression Analysis and Ordinary Linear Regression were conducted to examine the research questions Young males need to be taught more about the importance of good eating habits. Eating more fruits and vegetables (healthy foods) is more important than avoiding fast food or soft drinks (unhealthy foods) for young adults' mental health. The gender difference in the effect of fruit consumption implies that increased fruit consumption may be critical to reduce young females' depression.

(Sawyer et al., 2021)We aimed to develop and apply novel causal loop diagramming methods in order to construct an evidence-based map of the underlying system of environmental factors that drives dietary intake in low-income groups. Information on the determinants and associations between determinants was extracted from reviews of quantitative and qualitative studies. Determinants were organized using the Determinants of Nutrition and Eating (DONE) framework. Associations were synthesized into causal loop diagrams that were subsequently used to interpret the dynamics underlying the food environment and dietary intake. Our findings reveal how poor dietary intake in low-income groups can be presented as an emergent property of a complex adaptive system that sustains a food environment that increases the accessibility, availability, affordability and acceptability of unhealthy foods.

(Choi, 2020)The purpose of this study was to investigate the physical activities and dietary behaviors of college students in the context of their perceived stress levels. In addition, the demographic characteristics of the students were compared to ascertain their impact on dietary behaviors. Self-reported questionnaires were distributed to college students on campus in Korea. Perceived. These results suggest that stress management should be offered to college students. In addition, programs should be provided to help first-year students adjust to the college environment in order to promote healthy dietary behaviors.

(Voinea et al., 2020)This aim of this study is to provide solutions for reshaping the food pattern by incorporating the principles of sustainable diet. The research conducted is based on qualitative data and the semi-structured interview was used as method of data collection from a sample of 21 Romanians traditional food consumers. Although respondents do not completely reject the idea of flexitarianism, they showed the tendency for overconsumption of meat-based traditional foods and a weak concern for environmental sustainability. The research findings show the need for supporting nutritional education programs and extensive information campaigns targeted at Romanian consumers to encourage the adoption of flexitarian style and the switch to a more sustainable diet in the near future.

(Dutt et al., 2019) In this research, mindfulness was used to alleviate academic stress and, in effect, promote healthier eating behaviours and decision-making. The main analyses revealed that when mindfulness alleviated stress (i.e., by using the anxiety measurements as a manipulation check), students consumed more healthy food and less unhealthy food. While the results appear positive, non-engagement with mindfulness meditation may necessitate the availability of other practices to reduce anxiety and stress. Clinical implications and the integration of health and wellbeing initiatives into universities are discussed.

(Keltner, D., Sauter, D., Tracy, J., Cowen, 2019) The primary purpose of this study was to examine whether social relationship factors are associated with trajectories of depressive symptoms from adolescence into emerging adulthood. Specifically, adolescent-parent communication with mothers and fathers, peer support, and sibling warmth and hostility were examined in relation to depressive symptoms for girls and boys. Findings draw attention to differences in experiences with depressive symptoms by sex and the importance of social relationship factors in the lives of adolescents and emerging adults. Implications for intervention and prevention are discussed.

(Kumar & Chambers, 2019) In this study, we have combined linguistic and contextual perception together to generate consumer texture terminologies. Four focus groups discussions were conducted with consumers from nine different countries in English, Hindi, Mandarin, and Spanish. The findings of this study present a model which can be utilized to conduct cross-cultural research studies. The results can contribute to generate accurate consumer responses, acceptance, preference, and addressing consumers concerns. Food industries could leverage these by using our methodology in product development, finding consumer insights, effective communication, and products testing in international settings.

(Abraham et al., 2018) The purpose of the current study was to explore college students' perceptions of the health effects of fast food consumption and their eating habits. The consequences of increased fast food consumption among college students are raising health problems, which include obesity, diabetes, and metabolic syndrome. The problem was explored in a quantitative survey using a cross-sectional approach with a descriptive design. In this context, the supportive role of families, teachers, and governments in making individuals, especially the younger generation, more educated about health and nutrition can make a significant difference in the improvement of community health worldwide.

(Mueller et al., 2018) This study aims to evaluate health-related behaviors associated with dietary pattern scores among freshmen participating in the Tufts Longitudinal Health Study (TLHS; n = 630). We previously derived dietary patterns using principal components analysis and orthogonal rotation from dietary intake data. Health-related behavior data were collected via survey. All data were collected during the spring semesters of 1998–2007. These findings suggest that intervention efforts aimed at improving eating out behaviors and engaging in healthy weight management strategies may promote healthier dietary patterns among university students.

DEFINITION OF THE CONCEPT

Snack Foods and Satiety

Satiety, the feeling of fullness following a meal, plays a crucial role in preventing excessive calorie intake and subsequent overweight and obesity. Encouraging healthier eating behaviors involves identifying foods and eating patterns that promote satiety without significantly increasing calorie consumption. While studies have examined the satiety effects of specific foods and nutrients, there remains a gap in collectively analyzing these findings. Snacking between meals has the potential to enhance satiety and reduce overeating at subsequent meals, a trend observed among many school-aged children, teenagers, and young adults in developing nations. Nepal, for instance, reflects this global trend, with young children consuming a disproportionate amount of unhealthy snacks. A cross-sectional study of 259 college students focused on snacking habits and the social and environmental factors influencing them, revealing that a significant majority regularly consumes unhealthy snacks obtained from vending machines, grocery stores, or school canteens.

Nutritional Knowledge and Snack Preferences of University Students

Transitioning to college marks a critical period for establishing dietary habits, which often persist into adulthood. While many college students acknowledge the importance of maintaining nutritional balance, practical challenges often hinder their efforts. Despite awareness of dietary requirements, students frequently prioritize convenience, taste, time constraints, and cost over nutritional benefits when selecting meals. This tendency towards quick and flavorful options, often sourced from vending machines, underscores the prevalence of unhealthy eating habits on college campuses. Addressing barriers to healthy eating among college students, such as time constraints, stress, and the availability of high-calorie convenience foods, requires multifaceted interventions targeting individual behaviors and socio ecological factors. Integrating college students into such interventions, including labeling healthier food options and informational campaigns, is crucial for promoting healthier dietary choices and addressing obesity-related health issues in the United States.

Factors Influencing the Consumption of Healthy and Unhealthy Snacks

In a prior qualitative study, researchers conducted 13 focus groups and 25 student interviews, revealing a multitude of factors influencing college students' eating habits and dietary intake. These factors include personal traits such as cooking abilities, food preferences, and societal influences like peer pressure and social norms. University-related aspects such as campus culture and exam frequency, along with environmental factors like cooking resources and food costs, also play pivotal roles in shaping students' snack consumption patterns.

Economic determinants, such as cost, income, and availability

Economic determinants, such as cost, income, and availability, significantly influence college students' snack preferences. Limited financial resources often lead students to opt for inexpensive and easily accessible snacks. The

preference for cheap options contributes to the consumption of unhealthy snacks, as healthier alternatives tend to be costlier. An unhealthy diet can be attributed to a complex adaptive system that favors the widespread availability, accessibility, affordability, and social acceptance of unhealthy food options.

Physical determinants, including access, education, skills (e.g., cooking), and time

Physical determinants, including access, education, skills (e.g., cooking), and time, also impact students' snack choices. The time-consuming nature of food preparation prompts students to opt for snacks, which are readily available and save time, allowing them to focus on academic pursuits. Previous research has explored how gender moderates the relationship between eating habits and depression, with young men exhibiting a higher likelihood of unhealthy eating habits. Notably, fruits and vegetables have shown a significant inverse association with depression among young individuals.

Biological determinants, including hunger, appetite, and taste

Biological determinants, including hunger, appetite, and taste, play a fundamental role in human survival, with individuals instinctively seeking food to sustain their lives and meet their energy and nutritional needs. Despite the importance of nutrient intake, many college students prioritize satisfying their hunger without considering the nutritional value of their snacks. The enticing flavor of snacks, often unhealthy and inexpensive, further encourages students to prioritize taste over health. Palatability significantly influences food consumption, with increased palatability leading to higher intake, particularly of sugary and fatty foods.

Psychological determinants, such as mood, stress, and guilt

Psychological determinants, such as mood, stress, and guilt, profoundly influence individuals' eating behaviors, especially among college students experiencing the transition to independent living. Stress can trigger alterations in eating habits, with some individuals eating more and others less in response to stressors. Psychosocial variables significantly impact college students' eating behaviors, with food cravings and self-efficacy influencing snacking habits.

Social determinants, including culture, family, peers, and meal patterns

Social determinants, including culture, family, peers, and meal patterns, shape individuals' food choices and consumption behaviors. Cultural influences dictate customary food intake and preparation traditions, sometimes leading to dietary restrictions. Social influences, both direct and indirect, impact food choices through purchasing habits, learning from peers' behavior, and the transfer of beliefs. Even when eating alone, social variables influence food choices, reflecting the pervasive influence of social interactions on dietary habits, particularly evident in college life. Socioeconomic status influences teenage snacking habits, with variations observed across genders and countries with differing levels of prosperity.

RESULTS

Factors Influencing Snack Consumption: The review identified various factors influencing the consumption of both healthy and unhealthy snacks among university students. These factors were categorized into economic, physical, biological, psychological, and social determinants. Economic factors such as cost and availability, physical factors like access and time constraints, biological factors including hunger and taste preferences, psychological factors such as mood and stress, and social factors like culture and peer influence all play significant roles in shaping students' snack choices.

Prevalence of Unhealthy Snacking Behaviors: The review indicates that unhealthy snacking behaviors are prevalent among university students. Despite awareness of the negative consequences associated with unhealthy snack consumption, many students still prefer unhealthy options over healthier alternatives.

Relationship between Mental Health and Snack Consumption: Mental health factors such as anxiety, depression, and stress were found to influence university students' snack consumption patterns. Stress management interventions and programs to promote healthy dietary behaviors, especially among first-year students, were recommended to address these issues.

FUTURE RESEARCH DIRECTIONS:

The paper proposed recommendations for future research directions and interventions to address unhealthy snacking behaviors and promote healthier dietary habits among university students. These recommendations include educational programs, stress management initiatives, and interventions targeting individual behaviors and socio-ecological factors.

CONCLUSION

The consumption of snacks significantly impacts the overall nutritional quality of a University student's diet, as snacks contribute to daily energy and nutrient intake. After thoroughly reviewing previous studies on the factors influencing snack consumption among University students, it is evident that snack consumption has been on the rise in recent years. Despite being aware of the negative consequences associated with unhealthy snack consumption, many University students still prefer unhealthy options over healthier alternatives. The study highlights the key factors influencing snack choices among University students, emphasizing the importance of understanding their eating behaviors.

Furthermore, mental health issues such as anxiety and despair also play a significant role in influencing university students' snack choices. Unhealthy eating behaviors and habits pose considerable risks for various non-communicable diseases, including cancer, obesity, high blood pressure, cardiovascular diseases, and diabetes. Conversely, opting for healthy snacks contributes to a balanced and healthy lifestyle for University students.

Therefore, efforts to promote healthier snack choices among university students are crucial for mitigating the risks associated with unhealthy eating habits and fostering overall well-being.

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