JOURNAL OF FOOD AND BIOTECHNOLOGY

Review Article ISSN 3041- 6299 Open Access

Nutritional Deficiencies and their Determinants among Medical Students: A Cross–Sectional Study

Abdushukur A. Yunusov*, Vera P. Askaryants, and Feruza A. Babadjanova

Department of Pharmacology, Normal and Pathological Physiology, Tashkent State Medical University, Tashkent, Uzbekistan

Corresponding author: **Abdushukur A. Yunusov** | E-mail: **yunusov.a.a@tashmeduni.uz**

Citation: Abdushukur A. Yunusov, Vera P. Askaryants, and Feruza A. Babadjanova (2026). Nutritional Deficiencies and their Determinants among Medical Students: A Cross-Sectional Study. *Journal of Food and Biotechnology.* **20 to 22. DOI: https://doi.org/10.51470/FAB.2026.7.1.20**

11 November 2025: Received | 12 December 2025: Revised | 04 January 2026: Accepted | 03 February 2026: Available Online

Abstract

Objective: *This study aimed to evaluate the nutritional patterns of medical students, identify common dietary deficiencies, and determine the key barriers to achieving a balanced diet.*

Methods: *A cross-sectional survey was conducted among 150 medical students (aged 18–20 years) at Tashkent Pediatric Medical Institute. A structured questionnaire was used to assess meal frequency, food preferences, nutritional knowledge, and perceived barriers to healthy eating.*

Results: *The findings revealed widespread nutritional inadequacies. A significant proportion of students reported irregular meal patterns, with many consuming only two meals per day. Diets were dominated by refined carbohydrates, processed foods, and sugary drinks, while the intake of fruits, vegetables, and quality protein sources was insufficient. Key determinants of unhealthy eating behavior included financial limitations, lack of time due to academic schedules, and stress. A notable discrepancy was observed between theoretical knowledge of nutrition and actual dietary practices.*

Conclusion: *Nutritional deficiencies among medical students are multifactorial, stemming from a combination of behavioral, economic, and organizational factors. Addressing these issues requires a comprehensive approach, including improved access to healthy food options on campus, the integration of applied nutrition education into the curriculum, and the implementation of stress-management and nutritional awareness programs. Such interventions are crucial for enhancing student health, academic performance, and long-term well-being.*

Keywords: *Student nutrition, dietary deficiencies, medical students, eating behavior, academic performance.*

INTRODUCTION

Adequate nutrition is a cornerstone of health and is particularly critical for young adults engaged in intensive academic pursuits. A balanced diet supports optimal cognitive function, metabolic regulation, and immune competence, all of which are essential for managing the demands of higher education. However, university students frequently encounter lifestyle changes including academic pressure, irregular schedules, and financial constraints—that adversely affect their dietary habits. These factors often lead to meal skipping, reliance on fast food, and inadequate intake of essential nutrients, which can impair concentration, increase fatigue, and contribute to the development of long-term metabolic disorders (Dotsenko et al., 2003).

Medical students represent a unique subset of this population. Despite receiving formal education in health sciences, they are not immune to these nutritional challenges. The demanding nature of medical and clinical training can exacerbate poor dietary practices. Investigating the specific nutritional patterns and deficiencies within this group is therefore important from both a preventive and an educational standpoint. Understanding the barriers they face can inform targeted interventions to promote healthier eating behaviors. This study aimed to assess the characteristics of nutrition among students at Tashkent Pediatric Medical Institute and to identify the most common dietary deficiencies and contributing factors.

MATERIALS AND METHODS

A cross-sectional study was conducted among students enrolled in the first to third academic years at Tashkent Pediatric Medical Institute. A total of 150 students aged 18–20 years participated in the study. The sample comprised 70 male and 80 female students, selected through convenience sampling.

Data were collected using a structured, self-administered questionnaire developed specifically for this study. The questionnaire included sections on:

- Demographic characteristics: Age, gender, and year of study.
- Meal patterns: Frequency of meals per day, regularity of meal times, and common reasons for meal skipping.

Frequency of consumption of major food groups, including fruits, vegetables, grains, proteins, dairy, processed foods, and sugary beverages.

Basic understanding of rational nutrition principles and the ability to identify healthy food choices. Self-reported financial, time-related, organizational (e.g., cafeteria quality), and psychological (e.g., stress) barriers to maintaining a healthy diet.

Questionnaires were distributed during regular class sessions and collected immediately upon completion to ensure a high response rate. Participation was voluntary and anonymous.

Data were entered into a database and analyzed using descriptive statistics. Frequencies and percentages were calculated for categorical variables related to dietary patterns and perceived barriers.

The study was conducted in accordance with the ethical standards of the institutional research committee. All participants were informed about the purpose of the study, and their completion of the questionnaire implied informed consent. No personal identifiers were collected to ensure anonymity.

RESULTS AND DISCUSSION

The survey results revealed several significant and interconnected nutritional problems among the medical students surveyed. These findings are discussed below in the context of the existing literature and their implications for student health and academic success.

A considerable proportion of respondents reported irregular meal schedules. The data indicated a trend towards reduced meal frequency in higher academic years, with a notable increase in the number of third-year students consuming only two meals per day, while the share eating three regular meals decreased (Table 1). A small number of students reported eating only once daily, a pattern that falls significantly short of physiological recommendations for this age group.

Table 1: Self-Reported Daily Meal Frequency by Year of Study

Meal Frequency	Year 1 (n=50)	Year 2 (n=50)	Year 3 (n=50)
1 meal/day	2 (4%)	3 (6%)	5 (10%)
2 meals/day	12 (24%)	18 (36%)	23 (46%)
3 meals/day	36 (72%)	29 (58%)	22 (44%)

Students consistently cited short breaks between classes, lengthy commutes, and a heavy academic workload as primary reasons for prolonged intervals between meals. This irregularity can lead to fluctuations in blood glucose levels, potentially impairing concentration, reducing cognitive performance, and increasing fatigue—all of which are detrimental to academic success (Litvinova et al., 2009).

Analysis of dietary composition revealed a predominance of energy-dense, nutrient-poor foods. Students' diets were frequently dominated by refined carbohydrates (bread, pasta), fatty foods, packaged snacks, and carbonated drinks. In contrast, the consumption of fruits, vegetables, and high-quality protein sources was reported as insufficient by a majority of respondents. This pattern suggests a high risk of inadequate intake of essential micronutrients (vitamins, minerals) and dietary fiber. Such a dietary imbalance is a known risk factor for the development of metabolic disorders, including obesity, insulin resistance, and cardiovascular diseases later in life (Campbell & Campbell, 2006).

Approximately half of the respondents demonstrated an insufficient understanding of the principles of rational nutrition. A key observation was the tendency among many students to evaluate food primarily by its quantity or satiety value rather than its nutritional quality. This reveals a significant knowledge-practice gap: despite being medical students, their theoretical understanding does not consistently translate into healthy dietary behaviors. This finding underscores the need for nutrition education that is not merely theoretical but also applied, focusing on practical skills like meal planning and making healthy choices under constraints.

Students identified a range of barriers that reinforced their unhealthy dietary habits.

Financial instability and the high cost of healthy food, particularly fresh produce and quality protein, were cited as major barriers. The rising prices in university cafeterias were also mentioned, often forcing students to choose cheaper, less nutritious options from external vendors.

Limited time for grocery shopping and cooking, coupled with the convenience and low cost of processed foods and fast food outlets near the university, created an environment conducive to poor nutrition.

Academic stress and examination pressure were reported to significantly influence eating behavior. Many students reported an increased consumption of sweets and high-calorie snacks as a coping mechanism during stressful periods. This stress-induced eating can create a vicious cycle, as poor nutrition can, in turn, exacerbate the physiological effects of stress.

The combination of these factors creates a powerful web that traps students in unhealthy dietary patterns. As the ancient wisdom attributed to Hippocrates suggests, diet is a powerful tool for preserving health, a concept that is highly relevant for modern student populations facing these complex challenges.

CONCLUSION

This study confirms that nutritional deficiencies among medical students at Tashkent Pediatric Medical Institute are a widespread and multifactorial problem. The key findings reveal a pattern of irregular meals, a diet dominated by processed and refined foods, and insufficient intake of fruits, vegetables, and quality proteins. These unhealthy eating behaviors are driven by a confluence of academic, economic, organizational, and psychological factors, with financial constraints and time pressure being primary determinants. A critical finding is the disconnect between nutritional knowledge and actual dietary practice, highlighting that education alone is insufficient without addressing environmental and personal barriers.

The implications of these deficiencies extend beyond immediate health, potentially impacting cognitive function, academic performance, and long-term risk for chronic disease. Therefore, improving student nutrition requires a comprehensive and multi-level approach. This should include: (1) increasing institutional support to improve access to affordable, healthy food options on campus; (2) integrating applied, skills-based nutrition education into the medical curriculum; (3) implementing programs that promote regular eating schedules and stress management; and (4) fostering a university culture that values and supports health and well-being.

Addressing these factors is an investment in students' present health, their academic success, and their future effectiveness as healthcare professionals.

ACKNOWLEDGMENTS

The authors would like to thank all the students at Tashkent Pediatric Medical Institute who voluntarily participated in this study and generously shared their time and experiences.

REFERENCES

1. Dotsenko, V. A., Dmitrieva, G. A., & Vlasova, V. V. (2003). Scientific and methodological substantiation of assessing dietary risk factors affecting human health. Bulletin of the St. Petersburg State Medical Academy.
2. Litvinova, O. S., Vereshchagin, A. I., & Mikhailov, N. A. (2009). Model for monitoring chemical contamination of food products in real time. Nutrition Issues.
3. Bauer, J. (n.d.). The complete idiot's guide to nutrition. Alpha Books.
4. Campbell, T. C., & Campbell, T. M. (2006). The China study: The most comprehensive study of nutrition ever conducted and the startling implications for diet, weight loss and long-term health. BenBella Books.
5. Makarova, L. G., & Kalman, O. Y. (n.d.). Fundamentals of rational nutrition.