



Original Research Article

EXPLORING DIETARY BEHAVIOURS AND NUTRITION AWARENESS AMONG UNDERGRADUATE MEDICAL STUDENTS

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ABSTRACT

Background: Dietary habits established during medical training can influence students' current health and future ability to promote healthy lifestyles among patients. Despite exposure to health-related education, medical students may experience a gap between nutrition awareness and actual dietary practices. This study assessed dietary habits and nutrition awareness among undergraduate medical students.

Materials and Methods: A cross-sectional questionnaire-based study was conducted among 100 undergraduate MBBS students, with 25 students recruited from each academic year. A structured questionnaire assessed breakfast consumption, fruit and vegetable intake, fast-food and sugary-drink consumption, water intake, meal skipping, physical activity, nutrition knowledge, calorie awareness, food-label reading, and attitudes towards nutrition education. Data were summarized using descriptive statistics, including frequencies and percentages. Nutrition knowledge was compared across academic years.

Results: Although 83% of students recognised the importance of a balanced diet, only 35% rated their nutrition knowledge as good. Daily breakfast consumption was reported by 56% of students, while only 15% consumed at least five servings of fruits and vegetables daily. Fast food and sugary drinks were consumed frequently by 13% and 20% of students, respectively. Only 28% reported drinking more than 2.5 litres of water daily, and 16% exercised at least five days per week. Knowledge of daily nutrient requirements and regular food-label reading were limited. Most students expressed interest in receiving additional nutrition education.

Conclusion: Medical students demonstrated a substantial gap between nutrition awareness and healthy dietary practices, highlighting the need for practical and structured nutrition education and lifestyle-focused interventions during medical training.

Keywords: Dietary habits, Nutrition awareness, Medical students, Healthy lifestyle, Nutrition education, Food choices

INTRODUCTION

Nutrition is a fundamental determinant of health and plays an essential role in physical growth, cognitive function, psychological well-being, and the prevention of chronic diseases. A balanced diet provides adequate amounts of macronutrients and micronutrients necessary for maintaining normal physiological functions, supporting immunity, and

promoting optimal physical and mental performance.^[1] Healthy dietary practices, including regular meal consumption, adequate intake of fruits and vegetables, sufficient hydration, and limited consumption of processed foods and sugar-sweetened beverages, are therefore important components of a healthy lifestyle.^[2] Conversely, unhealthy dietary behaviours established during adolescence and young adulthood may persist into

later life and contribute to the development of obesity, diabetes, cardiovascular disease, and other non-communicable diseases.^[3] The transition from school to university represents an important period during which individuals develop greater independence and establish lifestyle behaviours that may continue throughout adulthood.^[4] However, university students frequently experience substantial changes in their dietary habits because of changes in living arrangements, academic responsibilities, financial constraints, social influences, and increased independence in food choices.^[5] These changes may result in irregular meal patterns, frequent meal skipping, increased consumption of fast foods and processed foods, and inadequate consumption of fruits and vegetables.^[6] The demanding nature of higher education may further contribute to unhealthy lifestyle practices by reducing the time available for meal preparation, exercise, and other health-promoting behaviours. Medical students represent a particularly important population for studying dietary habits and nutrition awareness. Medical education is academically demanding and is often associated with long study hours, frequent examinations, stress, irregular schedules, and limited opportunities for maintaining healthy lifestyle practices.^[7] These factors may negatively influence dietary behaviour and contribute to breakfast skipping, irregular meals, excessive consumption of convenient foods, and reduced physical activity. Medical students also occupy a unique position as future healthcare providers and health educators. Physicians are expected to promote healthy lifestyles and provide appropriate dietary advice to patients as part of preventive healthcare. Their ability to counsel patients regarding nutrition may be influenced by their own knowledge, attitudes, and personal health behaviours.^[8] Medical professionals who adopt healthy lifestyles themselves may be more likely to promote preventive health behaviours and may also serve as positive role models for their patients.^[9] Therefore, promoting healthy dietary habits among medical students has implications beyond individual health and may contribute to the development of future healthcare professionals who are better prepared to advocate for healthy lifestyles. Despite their medical education and exposure to health-related information, evidence suggests that nutrition knowledge does not always translate into healthy dietary practices among medical students. This phenomenon is commonly described as a knowledge-behaviour gap, in which individuals recognise the importance of healthy eating but experience difficulty applying this knowledge to their everyday dietary choices. Several factors may contribute to this discrepancy. Academic pressure and limited time may encourage students to select foods based on convenience rather than nutritional value. The availability and affordability of healthy food options, taste preferences, social influences, hostel or campus food environments, and limited cooking facilities may also affect dietary choices.^[10]

Consequently, improving theoretical nutrition knowledge alone may not be sufficient to produce sustained improvements in dietary behaviour. Breakfast consumption is one of the dietary behaviours frequently evaluated among university and medical students. Breakfast contributes to daily energy and nutrient intake and may support concentration and cognitive performance during academic activities.^[11] However, breakfast skipping is common among students because of late waking hours, academic schedules, lack of time, and changing lifestyle patterns.

Adequate consumption of fruits and vegetables is another important indicator of dietary quality. Fruits and vegetables are important sources of dietary fibre, vitamins, minerals, and other bioactive compounds and are associated with a reduced risk of several chronic diseases.^[12] Nevertheless, inadequate consumption of fruits and vegetables has been consistently reported among university students. Studies conducted among medical students have demonstrated that many students consume fewer than the recommended servings and may prefer fast foods or junk foods over healthier alternatives.^[5,13] This pattern is concerning because dietary habits developed during young adulthood may continue into later life and contribute to long-term health risks. The consumption of fast foods, fried foods, processed foods, and sugar-sweetened beverages is also common among university students. These foods are often easily accessible, convenient, affordable, and socially appealing, particularly in busy academic environments.^[14] However, frequent consumption of such foods may contribute to excessive calorie intake while providing limited nutritional value. Unhealthy dietary habits have also been associated with psychological well-being among medical students. Studies have reported associations between frequent consumption of fast foods and other unhealthy foods with stress, anxiety, and depressive symptoms.^[15-16] Although such associations do not necessarily establish causality, they highlight the importance of considering dietary behaviour as part of a broader approach to student health and well-being. Physical activity and hydration are additional lifestyle factors closely associated with healthy dietary practices. Regular physical activity contributes to the maintenance of physical fitness, healthy body weight, and psychological well-being, whereas adequate hydration is essential for normal physiological and cognitive functioning.^[17] However, prolonged academic schedules and sedentary study habits may reduce opportunities for exercise among medical students. Similarly, students may fail to maintain adequate water intake because of busy schedules and inadequate attention to daily hydration habits. Assessing these lifestyle behaviours together with dietary practices may therefore provide a broader understanding of health-related behaviours among medical students.

Nutrition education has been identified as an important strategy for improving nutritional

knowledge and dietary behaviour among students. Structured educational interventions may improve awareness regarding balanced diets, nutrient requirements, portion sizes, food choices, and food-label interpretation.^[18] Strategies such as meal planning, food-label reading, practical dietary guidance, and improving access to healthy and affordable food options may be necessary to achieve meaningful behavioural changes. Although nutrition forms an important component of preventive healthcare, practical nutrition awareness among medical students may remain inadequate. Students may understand the general concept of a balanced diet while lacking knowledge regarding daily nutrient requirements, appropriate food portions, calorie intake, and interpretation of food labels. Furthermore, exposure to formal nutrition education during medical training may vary across institutions and academic years. Understanding whether nutrition awareness and dietary practices differ across different stages of medical education may help identify gaps in the existing curriculum and guide the development of targeted educational interventions. In this context, the present study was conducted to assess dietary habits and nutrition awareness among undergraduate medical students across different academic years. Promoting healthy dietary behaviours during medical training may not only improve students' immediate health and well-being but also help prepare future physicians to serve as effective advocates for healthy lifestyles and preventive healthcare.

MATERIALS AND METHODS

Study design and setting: A cross-sectional questionnaire-based study was designed among undergraduate MBBS students. For demonstration

and statistical workflow purposes, the accompanying dataset contains simulated responses from 100 students, with equal representation from MBBS Years 1–4 (25 students per year).

Study tool and variables: A structured 20-item self-administered questionnaire assessed demographic characteristics, dietary habits, and nutrition awareness. Key variables included meal frequency, breakfast consumption, fruit and vegetable intake, fast-food and sugary-drink consumption, water intake, meal skipping, stress-related eating, protein intake, nutrition knowledge, calorie awareness, food-label reading, nutrition education, and interest in further nutrition training.

Statistical analysis: Data were entered into Microsoft Excel and analysed using descriptive statistics. Categorical variables are presented as frequency and percentage. Age is presented as mean $\pm$ standard deviation. An exploratory chi-square test was used to assess the association between MBBS year and nutrition knowledge. A two-sided p-value <0.05 was considered statistically significant. Because the supplied dataset is simulated, inferential findings should be interpreted only as an example of the analytical approach.

RESULTS

The study included 100 undergraduate MBBS students, with an equal number of participants recruited from each academic year. The mean age of the participants was 22.9 ± 2.3 years. Females constituted the majority of the study population, comprising 59 (59.0%) participants, while 41 (41.0%) were males. Each academic year contributed 25 (25.0%) students, ensuring an equal representation of students from the first, second, third, and fourth years (Table 1).

Table 1: Demographic characteristics of participants

Characteristic	Value
Age, mean $\pm$ SD (years)	22.9 ± 2.3
Female	59 (59.0%)
Male	41 (41.0%)
Year 1	25 (25.0%)
Year 2	25 (25.0%)
Year 3	25 (25.0%)
Year 4	25 (25.0%)

Among the 100 undergraduate medical students, only 56 (56.0%) reported consuming breakfast daily. Adequate fruit and vegetable consumption was relatively uncommon, with only 15 (15.0%) students reporting intake of at least five servings per day. Frequent consumption of fast food (≥ 4 times/week) was reported by 13 (13.0%) students, while 20 (20.0%) consumed sugary drinks at least four times

per week. Regarding hydration, only 28 (28.0%) students reported drinking more than 2.5 litres of water per day. Meal skipping was reported by 15 (15.0%) students, indicating that a proportion of students had irregular meal patterns. Regular physical activity was also limited, with only 16 (16.0%) students reporting exercise on at least five days per week (Table 2; Figure 1).

Table 2: Selected dietary habits

Dietary habit	n	%
Daily breakfast	56	56.0
≥ 5 fruit/vegetable servings/day	15	15.0
Fast food ≥ 4 times/week	13	13.0

Sugary drinks ≥ 4 times/week	20	20.0
>2.5 L water/day	28	28.0
Often skips meals	15	15.0
Exercise ≥ 5 days/week	16	16.0

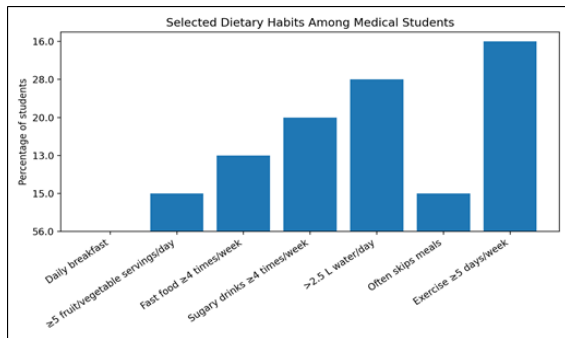


Figure 1: Distribution of selected dietary habits among medical students.

Among the 100 undergraduate medical students, 35 (35.0%) rated their nutrition knowledge as good,

Table 3: Nutrition awareness indicators

Nutrition awareness indicator	n	%
Good nutrition knowledge	35	35.0
Aware of calorie requirements	38	38.0
Often reads food labels	21	21.0
Agrees balanced diet is important	83	83.0
Knows daily nutrient requirements	23	23.0
Received formal nutrition education	67	67.0
Wants additional nutrition training	83	83.0

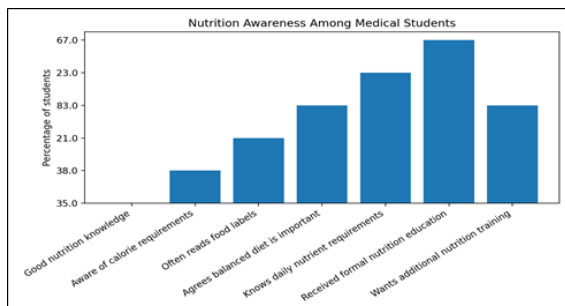


Figure 2: Nutrition awareness indicators among medical students

DISCUSSION

The present study assessed dietary habits and nutrition awareness among 100 undergraduate medical students across the four academic years. The findings revealed a substantial gap between awareness regarding the importance of healthy nutrition and the adoption of healthy dietary practices. Although 83% of students recognised the importance of a balanced diet, only 35% considered their nutrition knowledge to be good. Furthermore, inadequate fruit and vegetable consumption, irregular breakfast intake, frequent consumption of fast food and sugary drinks, low water intake, and limited physical activity were observed. These findings indicate that awareness alone may not be sufficient to ensure healthy dietary behaviour among medical students. In the present study, 56% of students

while 38 (38.0%) reported being aware of their daily calorie requirements. Regular food-label reading was reported by only 21 (21.0%) students. In contrast, a substantially higher proportion, 83 (83.0%), agreed that consuming a balanced diet is important. Only 23 (23.0%) students reported having adequate knowledge of their daily nutrient requirements. Although 67 (67.0%) students had received some form of formal nutrition education, a large majority, 83 (83.0%), expressed a desire for additional nutrition training (Table 3; Figure 2). Nutrition knowledge differed across academic years ($\chi^2=4.16$, $p=0.655$); this exploratory analysis used simulated data.

reported consuming breakfast daily, indicating that a considerable proportion had irregular breakfast habits. Irregular meal patterns and meal skipping are common among medical students because of demanding academic schedules, stress, limited time for food preparation, and changing lifestyle patterns. Dumitriu Carcoana et al.,^[21] explored the motivations and barriers influencing dietary habits among medical students and highlighted the importance of practical factors and personal circumstances in achieving health-related dietary goals. The findings of the present study similarly suggest that medical students may encounter difficulties in translating healthy dietary intentions into regular dietary practices. Fruit and vegetable consumption was particularly inadequate, with only 15% of students consuming at least five servings per day. This finding is concerning because adequate consumption of fruits and vegetables is an important component of a balanced diet. The low intake observed in the present study, despite a high proportion of students recognising the importance of a balanced diet, further supports the presence of a knowledge-behaviour gap. Kosendiak et al.,^[22] examined the relationship between dietary choices and nutritional knowledge among medical students and demonstrated the complex association between nutritional awareness and actual dietary behaviour. Therefore, improving nutrition knowledge alone may not necessarily result in healthier food choices unless behavioural and environmental barriers are also addressed. The

present study also identified frequent consumption of unhealthy foods and beverages among some students, with 13% consuming fast food and 20% consuming sugary drinks at least four times per week. Such dietary practices may have broader consequences beyond physical health. Shanmugapriya et al.,^[19] investigated the association between dietary eating habits and mental health among medical students in Tamil Nadu, highlighting the relationship between dietary patterns and psychological well-being. Although the present study did not assess mental health outcomes, the coexistence of unhealthy dietary practices among medical students emphasises the importance of considering nutrition as an integral component of overall student well-being. Physical activity and hydration practices were also suboptimal in the present study. Only 16% of students reported exercising at least five days per week, while 28% consumed more than 2.5 litres of water daily. Medical education is frequently associated with prolonged study periods and sedentary routines, which may make it difficult for students to maintain regular exercise and other healthy lifestyle practices. The findings therefore suggest that dietary interventions should be integrated with broader lifestyle promotion strategies addressing physical activity, hydration, stress management, and time management.

An important finding of the present study was the limited level of practical nutrition awareness. Only 23% of students reported knowledge of their daily nutrient requirements, and only 21% regularly read food labels. Despite these gaps, 83% of students expressed interest in receiving additional nutrition education. This indicates a clear opportunity for educational intervention. Kumar et al.,^[20] demonstrated that nutrition education among MBBS students was associated with improvements in dietary habits, including increased balanced meal consumption and fruit and vegetable intake, along with reductions in fast-food and sugar-sweetened beverage consumption. Their findings support the potential value of structured nutrition education programmes within medical training. Interestingly, nutrition knowledge did not show significant differences across academic years in the present study. This may indicate that progression through medical education alone does not necessarily lead to improved practical nutrition awareness or healthier dietary behaviour. Kosendiak et al.,^[22] similarly emphasised that nutritional knowledge and dietary choices have a complex relationship, suggesting that knowledge alone cannot fully explain eating behaviour. Therefore, nutrition education should move beyond theoretical concepts and incorporate practical components such as meal planning, food-label interpretation, healthy food selection, and strategies for overcoming common barriers. Overall, the findings of the present study demonstrate a significant discrepancy between positive attitudes towards nutrition and the actual dietary practices of medical students. The evidence from previous

studies.^[19–22] further supports the need to address dietary behaviour through a comprehensive approach that considers nutritional knowledge, practical barriers, lifestyle factors, and psychological well-being. Incorporating structured and practical nutrition education into the medical curriculum may help students develop sustainable healthy habits while also strengthening their capacity as future healthcare professionals to promote healthy lifestyles among patients.

Limitations: This study has several limitations that should be considered when interpreting the findings. First, the study used a cross-sectional design, which provides information on dietary behaviours and nutrition awareness at a single point in time and therefore cannot establish temporal or causal relationships between nutrition knowledge and dietary practices. Second, the sample size was relatively small, comprising 100 undergraduate medical students, with 25 participants from each academic year, which may limit the generalisability of the findings to medical students in other institutions or regions. Third, dietary habits and nutrition awareness were assessed using a self-administered questionnaire and were therefore subject to recall bias and social desirability bias. Students may have over-reported healthy behaviours or under-reported unhealthy dietary practices. Fourth, the study primarily relied on self-reported indicators rather than objective dietary assessment methods such as dietary recalls, food diaries, anthropometric measurements, or biochemical parameters. In addition, potentially important determinants of dietary behaviour, including socioeconomic status, hostel or residential conditions, food availability and affordability, academic stress, sleep patterns, and family dietary practices, were not comprehensively evaluated. Finally, the accompanying dataset was simulated for demonstration and statistical workflow purposes; therefore, the findings, including the exploratory comparison of nutrition knowledge across academic years, should not be interpreted as representing definitive population-level estimates.

CONCLUSION

The present study demonstrated a clear gap between general nutrition awareness and actual healthy dietary practices among undergraduate medical students. Although 83.0% of students recognised the importance of a balanced diet, only 35.0% considered their nutrition knowledge to be good. Healthy dietary behaviours were also suboptimal, with limited daily breakfast consumption, inadequate fruit and vegetable intake, and insufficient physical activity. Practical nutrition awareness was particularly limited, as only 23.0% reported knowledge of daily nutrient requirements and 21.0% regularly read food labels. Despite these limitations, 83.0% of students expressed interest in receiving additional nutrition

training, indicating a strong opportunity for intervention. Nutrition education during medical training should therefore move beyond theoretical knowledge and incorporate practical components such as meal planning, food-label interpretation, healthy food selection, hydration, physical activity, and strategies to overcome lifestyle barriers. Integrating structured, practical nutrition and lifestyle education into the undergraduate medical curriculum may help students develop healthier personal behaviours and improve their preparedness to provide effective nutrition and preventive-health counselling to future patients.

Availability of Data: The data generated and/or analysed during the present study are available from the corresponding author on reasonable request, subject to applicable institutional and ethical restrictions.

Authors' Contributions: All authors contributed to the conception and design of the study, data collection, analysis and interpretation of the findings, and preparation and critical revision of the manuscript. All authors approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

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