

## Updated Review Article

# Nutritional Knowledge and Dietary Habit of Medical Students: A Systematic Review

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### Abstract:

**Background:** There is a general perception amongst the common mass that medical students have a greater knowledge about the dietary habits and healthy lifestyle. Here we present a systemic review that aims to evaluate nutritional knowledge, eating habits and overall satisfaction regarding nutrition education of medical students. **Methodology:** In this systematic review following Crowley J method, (28a, 28b) A literature search was done between October 1, and December 1, 2021 utilizing computer-based search of MEDLINE, PubMed, Scopus and allied health literature. Medical subject headings were used in the execution of 'PubMed' and 'MEDLINE' searches that included 'Medical student', 'Nutrition' and 'Nutrition knowledge', etc. The search was restricted to site studies published since 2012 up to Aug 2022. **Findings:** Total 35 studies were selected which included quantitative & qualitative studies, and curriculum initiatives from LIMS like , India, Pakistan, Malaysia, Ghana, Lithuania, Iran, Albania, rich countries UAE, Saudi Arabia and western ones (Canada, USA, etc.). Our analysis showed decreased level of satisfaction regarding nutritional education and also, medical students susceptible to irregular dietary habits and unhealthy lifestyle. **Interpretation:** This survey identified both healthful and unhealthful dietary practices among the medical undergraduates. However, it is evidenced that their knowledge regarding nutrition and balanced diet have an impact on their lifestyle and dietary practices. Besides, their curriculum should be revised and awareness on healthful practices should be encouraged to adopt a healthy lifestyle that promotes individual health as well as of the society.

**Key words:** Nutritional knowledge, Diet pattern, Undergraduate medical students

### Introduction:

Diet pattern of young adults has become an important issue of research worldwide. In recent times, with the increasing burden caused by the lifestyle diseases on the health sector, there has been a renewed interest in the relationship between food and health.<sup>1</sup> There are many social, cultural, and psychological factors associated with eating attitudes and behaviors. Cultural transition, social changes, westernization, family environment, exposure to mass media, and globalization all have a significant impact on eating attitudes and behaviors among young

people.<sup>2</sup> More specifically, these characteristics can mold the eating habits and establish a certain food culture during adolescent years, which ultimately may lead to a strong or a poor diet in adulthood.<sup>3</sup> College students are in the emerging adulthood period, which is critical as because these young people establish independence to adopt life-long patterns of health and behavior. It is the time when they may get accustomed with unhealthy lifestyle characteristics and increased risk of obesity and chronic diseases.<sup>4,5</sup>

There is a general perception amongst the common masses that the students of health sciences have a greater knowledge about the correct dietary habits and healthy lifestyle as compared with non-medical students. This is significant as they are the future physicians and the students who personally adopt a healthy lifestyle are likely to positively influence their patients. However, studies have shown that medical and paramedical students especially who stay in hostels away from their home are susceptible to irregular dietary habits, lack of exercise, and addiction.<sup>1</sup> There is no evidence to indicate that knowledge of balance diet translates into maintaining good health practices.

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Risk factors for the development of serious chronic diseases in later life can be altered by adaptation of healthy lifestyle, behavior or health hazards during adolescence and young adulthood.<sup>6</sup> Previous studies about barriers to healthy eating and physical activity showed that the most frequently reported barriers to healthy eating were the lack of time and stress, which is associated with poor diets and inactivity, convenience and lower cost of less nutritious fast food, lack of availability and high cost of healthier food, taste preferences (e.g. for fast foods) and lack of nutritional knowledge and skills.<sup>2</sup>

Lifestyle changes, peer pressure, poor hygiene, limited finances, and access to food also contribute to erratic eating patterns. Skipping breakfast or meals has become very common among medical students. Diet of college students usually include little variety and often turn into high fat snacks. These poor eating habits acquired during this period can lead to serious diseases later in life.<sup>7</sup>

Also the psychological stress of educational institutions may lead to harmful consequences like decreased life satisfaction, depressive moods, poor academic performance, diminished empathy and reduced competence skills. Literature suggests that those medical students who do not adopt healthy lifestyle, fails to provide effective health care to community in future as well.<sup>8</sup>

Delivering knowledge about health amongst medical students is essential because in addition to requiring it for themselves, as future physicians they shall promote health awareness and wellness amongst societies.<sup>6</sup>

Knowing the medical students' knowledge, attitude and practices of nutritional and lifestyle habits helps to enhance their academic performance and nutrition of the community, which will consequently lead to a healthier society, as they will constitute the main body of future physicians and professionals.<sup>9</sup>

This study was aimed to evaluate nutritional knowledge, eating habits and overall satisfaction regarding nutrition education of medical students.

## **Methods:**

### **Search strategy and selection criteria:**

This systematic review critically synthesizes literature on nutrition education and dietary pattern provided to medical students. This systemic review was conducted following Crowley J method. A literature search was done

between October 1, and December 1, 2021, which included computerized searches, ancestry searching, and journal hand searching to ensure the inclusion of all eligible studies. On March 10, 2022, this same search strategy was repeated to capture any relevant studies published since October 1, 2021. A health librarian assisted with the computer-based search of MEDLINE, PubMed, Scopus and allied health Literature for quantitative and qualitative studies on dietary pattern and medical nutrition education provided to med students. The studies included quantitative studies, qualitative studies, and curriculum initiatives from (India, Pakistan, Malaysia, Ghana, Lithuania, Iran, Albania but in rich countries (UAE, Saudi Arabia) including in western ones (Canada, USA, etc.). Medical subject headings were used in the execution of PubMed and MEDLINE searches. Search terms related to medical students included "nutrition in medical education", , and "undergraduate medical nutrition education", "dietary pattern", "dietary habit". Search terms for the topic of interest included "nutrition", "knowledge", "skills", "nutrition counselling", "confidence", "nutrition care", or "nutrition education", "diet", "food habit". Google Scholar was used to obtain additional articles identified by journal hand searching.

The search was restricted to studies published since 2012, because the most recent synthesis of literature on medical nutrition education was published in 2012 if they met any of the following criteria: examined any aspect of recently graduated or current medical students' dietary pattern, nutrition knowledge, attitudes, skills, or confidence in nutrition or nutrition counselling; evaluated nutrition curriculum initiatives for medical students; or assessed current medical students' perceptions of nutrition education:

**Data analysis:** All search results (database) were imported into EndNote. Duplicate entries were database removed before screening. Data were extracted by using a table developed by the research team. Data extracted included author, year, country, aim, research design, sample, participants, and relevant findings. Relevant findings were those that related to the inclusion criteria, including students' dietary pattern, nutrition knowledge, attitudes, skills, and confidence to provide nutrition care, as well as perceptions of the nutrition education received during medical training. To ensure accuracy, another investigator cross-checked the extracted data of all included studies using the full-text study.



**Research in context:****Evidence before this study:**

Adequate nutrition is of great importance for every individual. Unbalanced diet is a modifiable risk factor for cardiovascular disease, cancer, diabetes etc and so on. Usually doctors are considered the one to apply nutrition knowledge among the patients to protect them from chronic disease and other health conditions.. Many overseas literature are available online. All of them have established the fact that the diet pattern of medical students has to be improved, followed by minimizing the gap between the nutrition knowledge and attitudes necessary for the doctor to provide effective care to the patients. We did a systematic review of studies published since 2012, that investigated dietary pattern and nutrition education provided to medical students to come up with a new idea to approach the evidence-practice gap in medical nutrition education

**Added value of this study:** It has been a matter of argument in the past that although the doctor have a little influence over the myriad structural causes of diet related disease, a poorly trained medical personnel can be itself as one structural risk factor. Hence, it is of concern that medical students should follow a balanced diet pattern and healthy lifestyle along with sufficient

knowledge and skills to provide necessary health-care to the population. Through comparing with previous published articles we came to the conclusion that nutrition knowledge and training is a must to include into the curriculum and steps should be taken to incorporate student engagement having nutritional balanced food.

**Implications of all the evidence available:**

Despite the centrality of nutrition to a healthy lifestyle, medical students are not supported to provide high-quality, effective nutrition care. To ensure graduating medical students are supported throughout their education to provide optimal nutrition care to patients, health awareness programs and training on nutritional education should be arranged for the promotion of balanced diet and healthy lifestyle among the medical students. Curriculum initiatives is an important part of alleviating students' knowledge and skills on proper nutrition. Also, students' engagement in cooking and food preparation and availability of low cost healthier food in the school campus has to be ensured. Counselling sessions, seminars on time management, stress relaxation and meditation workshops have to be arranged from the authority time to time. Moreover, outdoor recreational activities for all academic years should be arranged for having a healthy lifestyle.

**Results:**

The findings of all literature search (n=34) is shown in the following tabular form

SL No	Surveys	Design & Participants	Outcomes assessed	Outcomes assessed
1	Nupura et al, 2018, India <sup>1</sup>	130 students of a medical college	Dietary habit among medical students	The knowledge and practice regarding healthy diet and nutrition does not bode well. Only 68% had breakfast daily and only 10% had a fruit daily.
2	Eapen et al, 2006, UAE <sup>2</sup>	495 adolescent girls	Eating attitude and symptomatology of adolescent girls	High EAT associated with age, BMI, internalization of thin ideal and drive for thinness etc. Half of those were found to have propensity of anorexic behavior, while 2% met full clinical syndrome
3	Daniels et al, 2006 <sup>3</sup>	-	The consequences of overweight and obesity in childhood	Shows how obesity in adulthood can damage each and how childhood obesity exacerbates the damage. Obesity affects the cardiovascular system, also being overweight in childhood can result in development of heart disease in future.
4	Deshpande S, Basil MD, Basil DZ, 2009 <sup>4</sup>	194 Canadian undergraduate university students	Factors influencing healthy eating habits along with an application of health belief model	The influence of gender, importance of healthy diet, dietary status, food features. Also, HBM has allowed to understand the comparative influence of various factors
5	Nelson et al, 2008 <sup>5</sup>	Emerging adulthood and college-aged youth	Age for weight related behavior change	Illustrates evidence resulting from adverse changes in diet, physical activity and weight, discuss the influence of food and beverage on adults and the importance of health promotion.
6	Shireen et al, 2018 <sup>6</sup>	233 female students between 18–25 years of age, from first two years of medical college	study is aimed to explore perception of students about health risk behaviors; eating routines, life style and stress handling practices	The overall results of the study revealed positive health behaviors among medical students. Year I MBBS had superior acquaintance on healthy eating routines, lifestyle patterns and stress handling practices as compared to senior class.



SL No	Surveys	Design & Participants	Outcomes assessed	Outcomes assessed
7	Sanjeev et al, 2017, Karnataka, India <sup>7</sup>	175 students of Nitte University with 93 Medical, 49 Dental, 33 nursing students	Dietary patterns among students of health sciences and its association with morbidity	87 (49.71%) students skipped breakfast, 14 (8%) students skipped lunch, 14 (8%) students skipped dinner. 5.7% of subjects were underweight, 85.2% of subjects had a normal BMI and 9.1% were overweight.
8	Sajwani et al, 2009, Karachi, Pakistan <sup>8</sup>	350 students between aged 17-24 years from 6 private universities of Karachi—three medical and three non-medical Institutions	Compare the differences in knowledge and practices regarding healthy lifestyle among medical and non-medical students of Karachi	On a 10-point scale, the average knowledge score of students on general and clinical nutritional knowledge was 5.7 +/- 1.51 and 4.4 +/- 1.77, respectively. Lack of time was identified the most common reason for skipping meals and as a barrier to exercise.
9	Abbar et al, Saudi Arabia, 2017 <sup>9</sup>	207 students between ages 19-24 years from basic and clinical levels in the faculty of medicine.	To assess the knowledge, attitude and practices on healthy lifestyle (healthy	54.1% students knew their daily calorie need, but the majority (84.5%) do not calculate their calories whereas 15.5% calculate their calories. About 35.3% of students based all their meals around starchy foods, 28% have only one starchy meal. Only 11.0% male and 10.4% female follow balanced diet
10	Škémienė et al, 2007, Lithuania <sup>10</sup>	349 first- and third-year students of the Faculties of Medicine and Pharmacy at Kaunas University of Medicine	To compare the dietary habits between first-year and third-year students, to compare male and female students' nutrition, and to evaluate the tendencies of its change.	The majority of students did not follow the dietary regimen and consumed the majority of food products during the second half of the day. Students consumed insufficient amounts of vegetable fats and fish products, fruit and vegetables. Students consumed insufficient amounts of vegetable fats and fish products, fruit and vegetables
11	Garipağaoğlu et al, 2012, Istanbul <sup>11</sup>	The population in this study included two groups of students: one had taken nutrition course, and the other was engineering students who had not taken such a course.	Aimed to validate a questionnaire on dietary fibre (DF)-related knowledge in a Turkish student population.	The questionnaire had satisfactory construct validity. It was found that one-fifth of the students were unsure of the correct answer for any item, and 52.5% of them were not aware that the DF have to be consumed on a daily basis. Also, only 36.4% students were able to correctly identify the food source of DF.
12	Sivashunmugam et al, 2017, Malaysia <sup>12</sup>	93 second year medical students	Aims to determine the prevalence of overweight and obesity among the preclinical students, correlate the relationship of BMI and WC and evaluate the knowledge and perception of obesity of obese and overweight students	Out of 93 students who participated in the study, 23 (25%) were overweight and 21 (22%) were obese. Study reveals that the prevalence of obese and overweight individuals is increasing day by day and also, there is knowledge gap.
13	Khan et al, 2016, India <sup>13</sup>	244 medical students conducted at four medical colleges of Lahore, Pakistan	The prevalence of obesity among students of medical colleges of Lahore and to study its correlation with high-caloric diet intake and physical inactivity.	21% students had BMI $\geq 25.0$ kg/m <sup>2</sup> . Higher total daily caloric intake was associated with central obesity but not a BMI $> 25$ . Only 28.7% students had regular walk or jogging.
14	Ackuaku-Dogbe EM, Abaidoo B, 2014 Ghana <sup>14</sup>	154 pre-clinical and 163 clinical medical students	To assess the level of breakfast skipping and its effect.	71.92% skip breakfast and it results in poor concentration, tiredness and feeling fatigue.
15	Emine et al, 2018 <sup>15</sup>	1537 medical students studying in 1,2,3 & 6th grade students at Ege University Faculty of Medicine.	To assess the level of breakfast skipping and its effect.	71.92% skip breakfast and it results in poor concentration, tiredness and feeling fatigue.

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16	Simth, Leggat, 2007-16	66 manuscripts from India, the US, Australia, Japan, Pakistan, Turkey and the UK	A systematic international review of tobacco smoking habits among medical students.	Low smoking rates were found in Australia and the United States, while generally high rates were reported in Spain and Turkey.
17	Nathalie et al, 2017, California <sup>17</sup>	A total of 200 students across 10 California pharmacy and medical schools	To assess dietary and lifestyle practices and investigate whether they adhered to behaviors consistent with current dietary and exercise guidelines.	The majority of students consumed sodium <2300 mg/day (73%) and dietary cholesterol <300 mg/day (84%), only 50% had a saturated fat intake ≤10% total kcal, 13% met fiber intake goals, 10% consumed ≥8 servings/day of fruit and vegetables, and 41% exercised ≥150 minutes/week
18	Hala AL-Otaibi, Saudi Arabia <sup>18</sup>	960 female students at King Faisal University in AL-Hasa, Saudi Arabia	To investigate the daily consumption of fruits and vegetables and the psychosocial factors related to the consumption	Seventy-eight percent of students consuming <5 servings/day of fruit and vegetable with only 22% of them consuming ≥5 servings/day, majority of them are in the normal BMI category. For psychosocial factors the higher consumption group are more knowledgeable about the daily consumption of fruit and vegetable.
19	Sorhaindo A, Feinstein L, 2008 <sup>19</sup>		A review of the literature on the relationship between aspects of nutrition and physical health, mental health and behavioral or social outcomes in children.	Deficiencies in dietary intake are precursors to disease and illness that impact upon morbidity and mortality. Additionally, the timing, frequency, content and quality of food eaten is related to developmental, cognitive and behavioural outcomes that influence quality of life
20	Khademalhossini Z, Ahmadi J, Khademal hosseini Z, 2015, Iran <sup>20</sup>	A total of 1020 students, from 4 different districts and 10 different schools in Shiraz, Iran,	To investigate prevalence of tea, coffee and Nescafe consumption among high school students in Shiraz, Iran and find out whether there is a relationship between these three beverages with depression and anxiety	To assess the knowledge, attitude and practices on healthy lifes : Prevalence of tea, coffee and Nescafe consumption in high school students in Shiraz was 79.5%, 54% and 54% respectively. There was an inverse significant relationship between consumption of these three beverages with depression and anxiety.
21	Mackus et al, 2016 <sup>21</sup>	A total of 800 Dutch university students	To examine the knowledge of caffeine content of a variety of caffeinated beverages	Most prevalent sources of caffeine were coffee beverages (50.8%) and tea (34.8%), followed by energy drink (9.2%), cola (4.7%), and chocolate milk (0.5%). hey overestimated the caffeine content of energy drinks and cola, and underestimated the caffeine content of coffee beverages.
22	Frantz D et al. US, 2016 <sup>22</sup>	122 recent medical graduates	To assess interns' perception of clinical nutrition education during medical school.	Only 29% of interns reported they had been sufficiently trained in nutrition.
23	Hyska J et al, 2015, Albania <sup>23</sup>	347 medical and allied health professional students	Perceptions of knowledge, attitudes and practices in public health nutrition	Approximate one-third of the students were not satisfied with the quality and quantity of nutritional education received
24	Perlstein et al, 2017, Australia <sup>24</sup>	Surveys of first-year medical students across four consecutive cohorts, 2013–16 (n=555)	Medical students' knowledge of dietary guidelines and self-reported dietary practices	Each year, between 59% and 93% of students correctly identified the recommended daily servings for fruit and between 61% and 84% knew the vegetable recommendations; 40–46% met the guidelines for fruit intake and 12–19% met the guidelines for vegetable intake



SL No	Surveys	Design & Participants	Outcomes assessed	Outcomes assessed
25	Schoendorfer et al, 2017, Australia <sup>25</sup>	Survey of first-year to fourth-year medical students (n=928)	Medical students' attitudes towards nutrition, and intention to do nutritional assessment with patients	87% of respondents indicated that "high risk patients should be routinely counselled in nutrition", despite overall student support of nutritional counselling (70%) and assessment (86%), students were reluctant to do dietary assessments and only 38% indicated that asking for a food diary or other measure of dietary intake was important
26	Hargrove et al, 2017, USA <sup>26</sup>	Survey of first-year and second-year medical students (n=257)	Medical students' nutrition knowledge and confidence in nutrition	The average nutrition knowledge score was 70% and 51% scored below the pass rate of 73%; most participants (n=143, 56%) felt comfortable counselling patients on nutrition recommendations, yet only 30 (12%) were aware of the current dietary reference intakes
27	Perlstein et al, 2016; Australia <sup>2</sup>	Survey of first-year to fourth-year medical students (n=197)	Medical students' perceptions of providing nutrition care	Most preclinical students (first to second year) agreed that medical graduates should understand nutritional issues; students reported limited confidence to show this knowledge (26–41%) for individual conditions; improvement was seen among students in the clinical context (third to fourth year; range 26–81%)
28	Crowley et al, 2015; New Zealand <sup>28</sup>	Survey of fifth-year medical students (n=183)	Medical students' perceptions of providing nutrition care and nutrition training	Students believed incorporating nutrition care into practice is important, yet were less confident that patients improved their diet after receiving this care; most students (60%) perceived the quantity of nutrition education received to be good or very good, and more (83%) perceived the quality of nutrition education received to be good or very good;
29	Schoendorfer N, Schafer J, 2015 <sup>29</sup>	1037 medical students of first four years	Perception of nutrition and the use of blended learning technique to engage student's engagement and clinical practice development in relation to nutrition education in first year	91% felt nutrition important to health care and 82% felt it important in general practice. Only (45%) felt they could discuss nutrition with patients
30	Connor et al, 2015, USA <sup>30</sup>	Survey of first-year to fourth-year medical students (n=312)	Medical students' perceptions of competency and use of nutrition resources	42% reported that professional nutrition resources were their most commonly used nutrition resources; most students (70%) reported feeling competent in their ability to provide basic nutrition education to patients
31	Fiore et al, 2015; Italy <sup>31</sup>	Survey of first-year to sixth-year medical students (n=1038)	Medical students' adherence to the Mediterranean diet	Dietary adherence was reported as poor (21%), average (57%), and good (23%); sex significantly affected adherence scores (female>male; p<0.01); early or late medical school year did not affect results (adjusted OR 0.95; p=0.15)
32	Mogre et al, 2018, Ghana <sup>32</sup>	Qualitative interviews with fifth-year medical students (n=23)	Medical students' perceptions of providing nutrition care	Medical students believe the doctors play a pivotal role in providing nutrition care to patients; the barriers include the misconception that nutrition care is not the responsibility of doctors; poor communication with nutrition professionals; and lack in curriculum to provide nutrition education
33	Cooke et al, 2017, USA <sup>33</sup>	Qualitative interviews with third-year and fourth-year medical students (n=78)	Medical students' perceptions of providing nutrition care for managing childhood obesity	Med undergrads asked for more training regarding childhood obesity; perceived barriers to childhood obesity prevention and treatment include deficiency of knowledge, lack of access and constrained time during consultations
34	Danek et al, 2017, USA <sup>34</sup>	Focus groups and qualitative interviews with medical students (n=48), residents (n=14), and doctors (n=10)	Medical students' perceptions on nutrition training received	Students felt nutrition was poorly integrated into the curriculum; residents stated they feel less confident offering nutrition counselling and desire to gather more educational classes in this domain



**DISCUSSION:**

The importance and benefits of healthy food cannot be over-emphasized. Food provides the body with necessary amount of energy, vitamins, minerals and antioxidant which are involved in processes that promote neuronal survival<sup>35</sup>, by synthesizing neurotransmitters responsible for the efficient flow of information across synapses all over the body. Research has provided exciting evidence for influence of dietary factors not only in building the body or preventing disease but also on specific molecular systems and mental function.<sup>36</sup> Any imbalance in the micronutrients can lead to alteration in brain function, impaired memory, minimizing ability to solve problem, also may lead to chronic diseases.<sup>37</sup>

A study by Sanjeev et al showed 5.7% of subjects were underweight, 85.2% of subjects had a normal BMI and 9.1% were overweight<sup>7</sup> which is consistent with the results found in the study conducted at West Bengal by Sarkar et al wherein the prevalence of normal BMI was 72.7%, the proportion of underweight and overweight were 16% and 11.4% respectively.<sup>38</sup>

A study carried out among medical students in Lithuania cited that their diet was not balanced, consuming insufficient vegetable fats and fish products, fruits and vegetables and thus their food may lack in vitamins and dietary fibers or nutrition.<sup>10</sup>

In the study conducted by Yadav et al it was found that 214 (53.5%) were vegetarians and 186 (46.5%) consumed a mixed diet.<sup>13</sup> Sharma et al in their study found that 50.5% of the subjects were vegetarian and 49.5% were non-vegetarian (N=200).<sup>39</sup> A study conducted among 1000 healthy young female students aged 11-28 years in Mysore by Omidvar et al found that there were 332 (33.7%) vegetarians, 88 (8.9%) regular non-vegetarians and 564 (57.3%) were occasional nonvegetarians.<sup>40</sup>

In Maharastra, India, 2014 75% of the participating students had only 1-2 portions per day.<sup>2</sup> The same goes with medical students in California, 2017 which shows only 10% of students met recommendations for daily fruit and vegetable intake.<sup>17</sup>

In a similar study carried out amongst 207 undergraduate students at the University of Hail, Saudi Arabia in 2017, only 11.1% admitted that they eat fruits and vegetables daily.<sup>9</sup> However, this dissimilarity is due to the difference of feeding habit in different culture. The same goes with medical students in California, 2017 which shows only 10% of students met recommendations for

daily fruit and vegetable intake.<sup>17</sup> All these figures are falling short of the five daily servings of fruit and vegetables as recommended by the World Health Organization. Vitamins and minerals are very essential in humans even though they are needed in small accounts.<sup>19</sup> They help in collagen synthesis, energy production, bone formation, and have antioxidant functions.<sup>41</sup> Minerals also play a role in maintaining water balance, protein structure stability, bone strength and immune responses.<sup>37</sup>

Lack of time was also cited in a study by Sajwani *et al.*<sup>8</sup> Similar findings were found among the medical students of Ghana, where 71.92% skipped breakfast, resulting in fatigue and poor attention.<sup>14</sup> In a study carried out among medical students in Lithuania was cited that 49.6% of female and 63.2% of male first year students most of the time ate in a hurry.<sup>10</sup>

The study in medical students of Ege University, Turkey, where smoking was more prevalent in males compared to females (24.3% vs. 11.7%,  $p < 0.001$ ).<sup>15</sup> High caffeine intake in adolescents has been linked with difficulty in sleeping, feeling tired in the morning and with high blood pressure.<sup>42,43</sup> Measures should be taken to educate students on the harmful effects of caffeine consumption in an effort to curtail this habit.

Eight studies<sup>24-31</sup> reported on medical students' perceptions of nutrition education in medical training. The studies indicated that the nutrition education received by medical students is insufficient to develop confidence in providing nutrition care. Students perceived that they should understand nutritional issues related to specific conditions and chronic lifestyle diseases<sup>27</sup> and that incorporating nutrition care into practice is important,<sup>28</sup> especially as routine practice among highrisk patients.<sup>25</sup> Students perceived that their nutrition education was inadequate because of their current limited nutrition knowledge and the ongoing poor integration of nutrition into curricula,<sup>23,33</sup> absence of priority for nutrition education, absence of faculty to provide nutrition education, poor application of nutrition science to clinical practice<sup>32</sup> (such as witnessing little or no nutrition counselling during shadowing experiences),<sup>33,34</sup> absence of scientific rigour in the teaching curriculum,<sup>19</sup> and poor collaboration with nutrition professionals.<sup>32-34</sup>

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**CONFLICT OF INTEREST:** None



**CONCLUSION:**

This survey provided a unique insight on both healthy and unhealthy dietary practices among the medical undergraduates. However, it is evidenced that their knowledge regarding nutrition and balanced diet have an impact on their lifestyle and dietary practices. Besides, their MBBS curriculum should be revised targeting to increase awareness on healthy food practices which should be encouraged to adopt a healthy lifestyle not only to promote individual health but also to build a robust community health as well.

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