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Tomorrow's Doctors, Today's Risks: A Comprehensive Assessment of Diet, Physical Activity, Stress and Lifestyle Factors among Medical Students in Himachal Pradesh

Amit Sachdeva[1*] and Anju Sachdeva[2]

[1]Department of Community Medicine, Indira Gandhi Medical College, Shimla, Himachal Pradesh, India
[2]ECHS, Military Hospital, Shimla, Himachal Pradesh, India

Author Designation: [1]Assistant Professor, [2]Physiotherapist

*Corresponding author: Amit Sachdeva (e-mail: dramitsachdeva2410@gmail.com).

Abstract **Background:** Medical students often face high academic stress, irregular schedules and lifestyle disruptions that predispose them to unhealthy behaviors. These include poor dietary patterns, inadequate physical activity, sleep deprivation and increased screen time, which can contribute to long-term non-communicable diseases (NCDs). Despite their importance as the future healthcare workforce, limited evidence exists on the comprehensive health and lifestyle profile of medical students in Himachal Pradesh, India. **Methods:** A descriptive cross-sectional online survey was conducted in 2024 among MBBS students from all six government medical colleges in Himachal Pradesh. Data were collected through a structured, pre-tested Google Form disseminated via social media platforms. The questionnaire assessed sociodemographic profile, dietary habits, physical activity, lifestyle behaviors, health status, family history, mental health, academic and social patterns and clustering of risk factors. Descriptive statistics were applied and results were expressed as frequencies and percentages. **Results:** Of the 999 students, 44.1% were aged 19-20 years and 56.7% were female. Normal BMI was observed in 73.4%, while 11.2% were overweight and 1.1% obese. Non-vegetarian or mixed diet was reported by 57.7%, with frequent junk food intake in 33.1%. Regular exercise was practiced by 61.3%, though 29.6% exercised rarely or never. Smoking and alcohol use at admission were 6.7% and 7.8%, respectively but increased to 11.3 and 19.7% currently. Sleep deprivation (<6 hours) was noted in 18.2%, while 53.8% reported screen/mobile use exceeding 5 hours daily. Self-reported stress was prevalent (33.3% moderate, 14.9% severe) and 34.4% reported fair or poor sleep quality. Academic burnout was identified in 34.4% of students. Importantly, clustering of multiple lifestyle risks was observed, with 19.4% reporting three and 11.3% reporting four or more risk factors. **Conclusion:** This study highlights concerning levels of unhealthy dietary habits, sedentary lifestyle, substance use, high stress and risk factor clustering among medical students in Himachal Pradesh. The findings underscore the urgent need for structured wellness programs, mental health support and lifestyle interventions within medical institutions to promote long-term health and professional sustainability of future doctors.

Key Words Medical students, Lifestyle behaviors, Stress, Risk factors, Himachal Pradesh

INTRODUCTION

Medical education is recognized as one of the most rigorous and stressful professional training programs. Medical students often experience high academic demands, irregular schedules and competitive environments, which may predispose them to unhealthy lifestyle behaviors such as inadequate diet, reduced physical activity, poor sleep, increased screen time and substance use. These factors, coupled with psychosocial stress, increase the risk of both immediate health concerns and long-term non-communicable diseases (NCDs) [1-5]. Globally, studies have documented elevated prevalence of obesity, stress, depression and risky lifestyle practices among medical students, highlighting the need for comprehensive health profiling in this group [6-12].

In India, medical students represent the future healthcare workforce, yet their own health and lifestyle behaviors remain understudied. While some regional studies have explored individual aspects such as smoking, alcohol use, stress or dietary patterns, there is a lack of large-scale,

integrative assessments that capture the multidimensional health profile of medical undergraduates [13-16]. An evidence gap persists in understanding how demographic, anthropometric, dietary, lifestyle, mental health and academic variables interact to shape the overall wellness of Indian medical students.

Himachal Pradesh, a northern hill state of India, presents a particularly relevant setting for such an inquiry. Its unique geographic terrain, sociocultural practices and emerging educational infrastructure may influence student behaviors in distinct ways compared to other regions of the country. However, research examining the comprehensive health and lifestyle patterns of medical students in this state is scarce.

Against this backdrop, the present study was designed to provide an integrated analysis of medical students' sociodemographic profile, dietary intake, physical activity, lifestyle habits, health status, mental health, academic and social behaviors and clustering of risk factors. By offering a holistic assessment, this work aims to generate critical insights that can inform student wellness initiatives, guide institutional health policies and ultimately contribute to the cultivation of a healthier future physician workforce.

METHODS

Study Design and Setting

A descriptive, cross-sectional survey was conducted in 2024 among MBBS students of Himachal Pradesh, India. The study encompassed all six government medical colleges in the state: Indira Gandhi Medical College (IGMC), Shimla; Dr. Rajendra Prasad Government Medical College (RPGMC), Tanda; Dr. Yashwant Singh Parmar Government Medical College, Nahan; Shri Lal Bahadur Shastri Government Medical College & Hospital, Mandi; Pandit Jawaharlal Nehru Government Medical College, Chamba; and Dr. Radhakrishnan Government Medical College, Hamirpur.

Study Population and Sampling

The target population consisted of undergraduate MBBS students from first year to final year. Participation was voluntary and anonymous. A total of 999 students completed the survey, which formed the final sample size for analysis.

Data Collection Tool and Procedure

Data were collected using a pre-designed, structured questionnaire developed in Google Forms. The link to the survey was disseminated electronically via WhatsApp groups and other social media platforms to ensure maximum reach. The questionnaire included sections on:

- Sociodemographic and anthropometric profile (age, gender, height, weight, BMI, blood group)
- Dietary habits (diet type, fruit/vegetable intake, water intake, junk food consumption, meal frequency, breakfast/lunch/dinner skipping, caffeine use)
- Physical activity (regular exercise, frequency, duration, type of exercise)
- Lifestyle and other habits (smoking, alcohol use, sleep duration, screen/mobile use)
- Health status and family history (self-reported health, chronic illness, family history, medication/self-medication)
- Mental health and stress profile (perceived stress, sleep quality, coping strategies, academic burnout/anxiety)
- Academic and social habits (study hours, extracurricular involvement, social activities, leisure/social media use)
- Clustering of risk factors (smoking, alcohol, frequent junk food, inadequate sleep, excessive screen time, physical inactivity, stress)

The tool was pilot tested on a small subset of students for clarity and feasibility before full deployment.

Ethical Considerations

Participation was entirely voluntary. Informed consent was obtained electronically prior to accessing the questionnaire. Responses were anonymized and confidentiality was maintained throughout. The study adhered to the ethical principles of the Declaration of Helsinki. Institutional ethical approval was obtained prior to commencement of data collection.

Data Analysis

Data were exported from Google Forms into Microsoft Excel and analyzed using statistical software Epi Info version 7. Descriptive statistics were applied and results were expressed as frequencies and percentages. Tables were prepared to present the distribution of variables in a structured manner.

RESULTS

A total of 999 MBBS students from six government medical colleges of Himachal Pradesh participated in the survey. The results provide a comprehensive overview of their demographic profile, lifestyle behaviors, health status and related factors.

Among the 999 MBBS students, the majority (44.1%) were aged 19-20 years, followed by 28.9% in the 21-22 age group. Females (56.7%) slightly outnumbered males (43.3%). Blood group O^+ was most common (29.9%), followed by B^+ (28.6%) and A^+ (22.1%). Regarding anthropometry, most students were within the height range of 160-169 cm (41.3%) and weighed between 50-59 kg (33.6%). The BMI distribution revealed that more than half (73.4%) of the students had normal BMI, while 14.3% were underweight, 11.2% overweight and 1.1% obese (Table 1).

Dietary assessment showed that 57.7% of students consumed a non-vegetarian or mixed diet, whereas 42.3% followed a vegetarian diet. Fruit and vegetable intake was suboptimal, with 33.2% reporting rare fruit consumption and 28.6% reporting low vegetable intake. Daily intake of fruits and vegetables was limited to 25.6 and 29.2%, respectively. Water intake was moderate in most participants (48.7%), while 38.9% consumed more than 2 liters daily.

Table 1: Sociodemographic and Anthropometric Profile of MBBS Students (N = 999)

Variable	Category	Frequency (n)	Percent (%)
Age (years)	≤18	162	16.2
	19-20	441	44.1
	21-22	289	28.9
	≥23	107	10.7
	Total	999	100.0
Gender	Male	432	43.3
	Female	567	56.7
	Total	999	100.0
Blood Group	A+	221	22.1
	B+	286	28.6
	O+	299	29.9
	AB+	103	10.3
	Others (-ve)	90	9.0
	Total	999	100.0
Height (cm)	<150	74	7.4
	150-159	226	22.6
	160-169	413	41.3
	170-179	216	21.6
	≥180	70	7.1
	Total	999	100.0
Weight (kg)	<50	182	18.2
	50-59	336	33.6
	60-69	287	28.7
	70-79	131	13.1
	≥80	63	6.3
	Total	999	100.0
BMI (kg/m²)	Underweight (<18.5)	143	14.3
	Normal (18.5-24.9)	734	73.4
	Overweight (25-29.9)	112	11.2
	Obese (≥30)	11	1.1
	Total	999	100.0

Caffeine/tea/coffee consumption was common, with about one-third reporting regular use (34.6%). Junk food consumption was widespread, with 51.3% reporting moderate intake and 33.1% reporting frequent intake (≥4 times/week). Most students reported eating three meals per day (65.5%). Skipping meals was also noted: 17.2% frequently skipped breakfast, 11.5% skipped lunch and 9.0% skipped dinner (Table 2).

Regular exercise was reported by 61.3% of students, whereas 38.7% did not engage in structured physical activity. About one-third (31.2%) exercised 1-2 days per week, while 14.2% exercised daily. Exercise duration varied, with 41.2% exercising 30-59 minutes per session and 24.3% exceeding 60 minutes. Aerobic activities such as running and cycling were most common (38.9%), followed by mixed exercise (32.6%), strength/resistance training (14.1%) and other forms such as yoga and dance (14.3%) (Table 3).

Smoking at admission was reported by 6.7% of students, though current smoking prevalence was higher at 11.3%. Alcohol use at admission was 7.8% but current use rose to 19.7%. Sleep patterns indicated that 62.2% slept 6-8 hours per night, while 18.2% slept less than 6 hours. Screen/mobile use was high: 39.2% used devices for 5-7 hours daily and 14.6% for ≥8 hours, with only 10.9% reporting <2 hours daily (Table 4).

Regarding self-reported health, 47.1% of students rated their health as good, 26.8% as excellent, while 20.1% reported fair and 5.9% poor health. Chronic illness was uncommon, with 88.3% reporting none, though 8.1% had one condition and 3.6% reported multiple illnesses. Family history revealed that 22.1% had a history of diabetes, 18.2% hypertension and 9.4% heart disease or stroke, while 8.3% reported other illnesses such as cancer or thyroid disorders. Medication use showed that 78.1% used none, 11.7% engaged in self-medication and 10.1% were on regular prescribed medications (Table 5).

Perceived stress was prevalent, with 37.6% reporting mild and 33.3% moderate stress, while 14.9% reported severe stress. Sleep quality was fair in 38.5% of students and poor in 19.4%. Coping strategies varied: 46.8% adopted healthy approaches such as exercise and hobbies, 31.1% used mixed methods and 22.1% relied on unhealthy practices such as smoking or binge behaviors. Academic burnout/anxiety was reported at varying levels, with 41.8% mild, 22.9% moderate and 11.5% severe cases (Table 6).

Nearly half of the students (47.2%) studied for 3-5 hours daily, while 24.6% studied 6-8 hours and 9.8% more than 8 hours. Extracurricular participation was limited, with 42.8% reporting none; however, 21.7% engaged in sports, 20.3% in academic clubs or volunteering

Table 2: Dietary Habits of MBBS Students (N = 999)

Variable	Category	Frequency (n)	Percent (%)
Diet Type	Vegetarian	423	42.3
	Non-vegetarian / Mixed	576	57.7
	Total	999	100.0
Fruit Intake	Rare (<3 servings/week)	332	33.2
	Moderate (3-6 servings/week)	411	41.1
	Daily (≥1 serving/day)	256	25.6
	Total	999	100.0
Vegetable Intake	Rare (<3 servings/week)	286	28.6
	Moderate (3-6 servings/week)	422	42.2
	Daily (≥1 serving/day)	291	29.2
	Total	999	100.0
Water Intake	<1 L/day	124	12.4
	1-2 L/day	487	48.7
	>2 L/day	388	38.9
	Total	999	100.0
Caffeine/Tea/Coffee	None	298	29.8
	Occasional (≤3 cups/week)	356	35.6
	Regular (≥4 cups/week)	345	34.6
	Total	999	100.0
Junk/Fast Food	Rare (<1 time/week)	156	15.6
	Moderate (1-3 times/week)	512	51.3
	Frequent (≥4 times/week)	331	33.1
	Total	999	100.0
Meals per Day	<3 meals	91	9.1
	3 meals	654	65.5
	>3 meals	254	25.4
	Total	999	100.0
Breakfast Skipping	Never	615	61.6
	Sometimes (<2 days/week)	212	21.2
	Frequent (≥2 days/week)	172	17.2
	Total	999	100.0
Lunch Skipping	Never	721	72.2
	Sometimes (<2 days/week)	163	16.3
	Frequent (≥2 days/week)	115	11.5
	Total	999	100.0
Dinner Skipping	Never	782	78.3
	Sometimes (<2 days/week)	127	12.7
	Frequent (≥2 days/week)	90	9.0
	Total	999	100.0

Table 3: Physical Activity Profile of MBBS Students (N = 999)

Variable	Category	Frequency (n)	Percent (%)
Regular Exercise	Yes	612	61.3
	No	387	38.7
	Total	999	100.0
Exercise Frequency	Rarely/Never (<1 day/week)	296	29.6
	1-2 days per week	312	31.2
	3-5 days per week	249	24.9
	Daily (≥6 days/week)	142	14.2
	Total	999	100.0
Exercise Duration	<30 minutes/session	344	34.4
	30-59 minutes/session	412	41.2
	≥60 minutes/session	243	24.3
	Total	999	100.0
Type of Exercise	Aerobic (running, cycling, sports)	389	38.9
	Strength/Resistance	141	14.1
	Mixed (aerobic + strength)	326	32.6
	Other (yoga, dance, etc.)	143	14.3
	Total	999	100.0

and 15.1% in cultural activities. Social interactions were moderate in most students (44.2% reported 1-2 outings/ week), while 26.9% reported frequent social outings. Leisure and social media use was widespread, with 41.3% spending 2-4 hours daily and 38.6% ≥5 hours daily (Table 7).

Table 4: Lifestyle and Other Habits of MBBS Students (N = 999)

Variable	Category	Frequency (n)	Percent (%)
Smoking at Admission	Never smoked	932	93.3
	Smoker (occasional/regular)	67	6.7
	Total	999	100.0
Smoking (Current)	Non-smoker	886	88.7
	Smoker (occasional/regular)	113	11.3
	Total	999	100.0
Alcohol at Admission	Never	921	92.2
	Yes (occasional/regular)	78	7.8
	Total	999	100.0
Alcohol (Current)	Non-user	802	80.3
	User (occasional/regular)	197	19.7
	Total	999	100.0
Sleep Duration	<6 hours	182	18.2
	6-8 hours	621	62.2
	>8 hours	196	19.6
	Total	999	100.0
Screen/Mobile Use	<2 hours/day	109	10.9
	2-4 hours/day	352	35.2
	5-7 hours/day	392	39.2
	≥8 hours/day	146	14.6
	Total	999	100.0

Table 5: Health Status and Family History of MBBS Students (N = 999)

Variable	Category	Frequency (n)	Percent (%)
Self-Reported Health	Excellent	268	26.8
	Good	471	47.1
	Fair	201	20.1
	Poor	59	5.9
	Total	999	100.0
Chronic Illness (Student)	None	882	88.3
	One condition (asthma, DM, etc.)	81	8.1
	≥2 conditions	36	3.6
	Total	999	100.0
Family History of Illness	None	419	41.9
	Diabetes mellitus	221	22.1
	Hypertension	182	18.2
	Heart disease/Stroke	94	9.4
	Other (cancer, thyroid, etc.)	83	8.3
	Total	999	100.0
Medication Use	None	781	78.1
	Self-medication (OTC/without Rx)	117	11.7
	Regular prescribed medication	101	10.1
	Total	999	100.0

Table 6: Mental Health and Stress Profile of MBBS Students (N = 999)

Variable	Category	Frequency (n)	Percent (%)
Perceived Stress Level	None	142	14.2
	Mild	376	37.6
	Moderate	332	33.3
	Severe	149	14.9
	Total	999	100.0
Sleep Quality	Good (restful, refreshing)	421	42.1
	Fair (occasional disturbance)	385	38.5
	Poor (frequent disturbance/insomnia)	193	19.4
	Total	999	100.0
Coping Strategies	Healthy (exercise, hobbies, talking)	468	46.8
	Mixed	311	31.1
	Unhealthy (smoking, alcohol, binge)	220	22.1
	Total	999	100.0
Academic Burnout/Anxiety	None	238	23.8
	Mild	417	41.8
	Moderate	229	22.9
	Severe	115	11.5
	Total	999	100.0

Table 7. Academic and Social Habits of MBBS Students (N = 999)

Variable	Category	Frequency (n)	Percent (%)
Study Hours per Day	<3 hours	184	18.4
	3-5 hours	471	47.2
	6-8 hours	246	24.6
	>8 hours	98	9.8
	Total	999	100.0
Extracurricular	None	428	42.8
	Sports	217	21.7
	Cultural/Arts	151	15.1
	Academic clubs/volunteering	203	20.3
	Total	999	100.0
Social Activities	Rare (<1 outing/week)	288	28.8
	Moderate (1-2 outings/week)	442	44.2
	Frequent (≥3 outings/week)	269	26.9
	Total	999	100.0
Leisure/Social Media	<2 hours/day	201	20.1
	2-4 hours/day	413	41.3
	≥5 hours/day	385	38.6
	Total	999	100.0

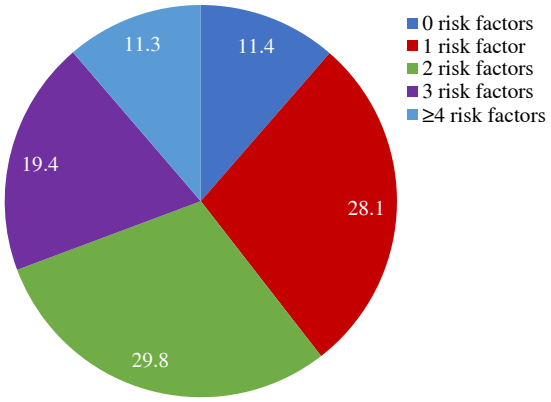

Figure 1: Clustering of Lifestyle and Health Risk Factors among MBBS Students (N = 999)

*Risk factors included: current smoking, current alcohol use, frequent junk food intake (≥4 times/week), inadequate sleep (<6 hrs), high screen/mobile use (≥5 hrs/day), physical inactivity (<2 days/week) and moderate-severe stress

Analysis of combined risk factors revealed that only 11.4% of students reported no risk factors, while 28.1% reported one and 29.8% reported two. Nearly one-third of students exhibited clustering of multiple risks, with 19.4% having three and 11.3% having four or more risk factors. The most common risk factors included physical inactivity, frequent junk food intake, inadequate sleep, excessive screen use and moderate-to-severe stress (Figure 1).

DISCUSSION

This study provides an extensive overview of the sociodemographic, dietary, lifestyle, physical activity, health, mental health and academic behaviors of MBBS students in Himachal Pradesh. The results underscore the coexistence of health-promoting behaviors with significant high-risk practices, reflecting the complex realities of medical student life in India. With a large and representative sample, this survey highlights several patterns that resonate with findings from both national and international literature, while also offering region-specific insights.

The majority of participants were aged 19-22 years, aligning with the typical age distribution of undergraduate medical students in India. Female predominance reflects the growing trend of increased female enrollment in medical schools nationwide. The anthropometric profile indicates a mixed scenario: while three fourth of the students had normal BMI, one eighth were overweight or obese and about one in seven were underweight. This dual burden of malnutrition and overweight mirrors India's broader public health challenges, where undernutrition persists alongside the rising epidemic of obesity and metabolic syndrome. Such findings are consistent with other Indian studies, suggesting that medical students are not immune to the nutritional transitions affecting the wider population [17-22].

Dietary practices emerged as a critical concern. Although a majority followed a mixed diet, daily fruit and vegetable intake remained low, with most students consuming them only occasionally. This is in line with global data showing inadequate fruit and vegetable consumption among young adults, despite their known protective role against NCDs. The widespread reliance on junk food, with one-third consuming it frequently, is alarming. Such eating patterns, often linked to hostel living and limited healthy food availability, have been documented in studies from India and other parts of world [9,12,15,18,19,21]. Skipping meals, especially breakfast, was notable in this cohort. Breakfast skipping has been associated with poor academic performance, reduced cognitive function and higher metabolic risk, suggesting significant academic and health consequences for this group.

While a majority of students reported engaging in exercise, only a small proportion engaged in daily or sustained physical activity. Aerobic exercise was most common, reflecting its accessibility but strength training and mixed forms were less prevalent. Comparable results have been observed in Indian and international studies, where medical students frequently cite time constraints and academic workload as barriers to regular exercise [6,8,11,14,22]. Physical inactivity, particularly in young adulthood, is a known risk factor for cardiovascular disease,

obesity and mental health problems. The findings highlight the need for medical institutions to provide structured opportunities and encouragement for physical activity within campus life.

The study revealed a worrying increase in smoking and alcohol use during medical training compared to the time of admission. This suggests that exposure to stress, peer networks and hostel culture may contribute to the initiation or escalation of these habits. Similar trends have been observed in studies around the globe, where medical training years are often associated with rising substance use [13,22-24]. High screen time and inadequate sleep further compound these risks. With nearly 40% of students spending ≥5 hours daily on screens and 18% sleeping less than six hours, the implications include disrupted circadian rhythms, impaired academic performance and increased susceptibility to anxiety and depression.

Although most students self-reported good or excellent health, one-fourth rated their health as fair or poor, underscoring perceived health concerns even among future healthcare professionals. The prevalence of chronic illness among students was relatively low but family history of diabetes and hypertension was common. This finding mirrors the epidemiological profile of India, where NCDs contribute significantly to morbidity and mortality. The presence of family history increases students' vulnerability to these conditions, especially when combined with lifestyle risks. Of particular note is the prevalence of self-medication, reported by over 11% of students. While this may stem from easy drug access and medical knowledge, it raises concerns about inappropriate medication use, masking of underlying conditions and risks such as antibiotic resistance.

High levels of stress were a defining feature of this cohort, with over two-thirds reporting mild to severe stress and more than one in ten experiencing severe burnout. Sleep quality was compromised for many, with almost 20% describing it as poor. These findings are consistent with global research documenting medical training as a period of heightened psychological vulnerability [25-28]. Stress, sleep disturbances and burnout not only affect academic performance but also jeopardize long-term mental health and professional development. Coping strategies varied, with nearly half adopting healthy methods such as exercise or hobbies, while one-fifth relied on maladaptive behaviors like alcohol and smoking. This underscores the need for early identification of stress and structured mental health support systems within medical institutions.

Academic demands were reflected in long study hours, with nearly half of students dedicating 3-5 hours per day to academics. While such dedication is expected, the limited engagement in extracurricular activities is concerning, as balanced involvement in sports, cultural and social events has been shown to foster resilience and reduce burnout. Social engagement was moderate in most students but high leisure and social media use (≥5 hours in nearly 40% of students) suggests potential displacement of healthier activities such as exercise, sleep or interpersonal interactions. This pattern aligns with studies worldwide reporting social media overuse among university students as both a coping mechanism and a contributor to stress [29-32].

Perhaps the most striking finding of this study is the clustering of multiple lifestyle risk factors. Nearly one-third of students had three or more coexisting risks such as poor diet, physical inactivity, high screen time, inadequate sleep, substance use and stress. This clustering has been recognized in youth health literature as a precursor to early onset of NCDs, including hypertension, diabetes and cardiovascular disease. The coexistence of these behaviors in such a young population is particularly concerning, as it may set the stage for lifelong patterns of ill health if not addressed early.

Regional Relevance and Public Health Implications

The setting of Himachal Pradesh adds a unique dimension to these findings. The hill state's sociocultural practices, geographic constraints and relatively limited recreational infrastructure may contribute to specific lifestyle behaviors among students, including dietary reliance on high-calorie foods, limited access to varied fruits and vegetables and restricted opportunities for structured physical activity. These regional influences, combined with the universal pressures of medical training, create a distinctive health profile that requires tailored interventions.

From a public health perspective, these findings carry significant implications. Medical students are the future custodians of healthcare delivery and their health practices are likely to influence not only their personal well-being but also their professional attitudes towards patient counseling and community health promotion. Therefore, interventions aimed at fostering healthier diets, promoting structured physical activity, offering stress management programs and discouraging substance use must be prioritized within medical institutions.

Strengths and Limitations

This study represents one of the most comprehensive assessments of lifestyle, health and psychosocial factors among medical students in Himachal Pradesh, with a large sample size (N = 999) across all government medical colleges of the state, thereby ensuring strong representativeness and generalizability. The multidimensional approach-covering sociodemographic, dietary, physical activity, lifestyle, mental health and academic domains-adds significant value to the existing evidence base. However, the cross-sectional design precludes causal inference and reliance on self-reported online data may introduce recall bias or social desirability bias. Additionally, while the study captures breadth, objective clinical measures (e.g., biochemical parameters) were not included, which may have provided deeper physiological correlates of lifestyle patterns.

CONCLUSIONS

The findings demonstrate that medical students in Himachal Pradesh are exposed to a mix of positive health behaviors

and concerning lifestyle risks, including inadequate dietary intake, high screen use, insufficient sleep, stress and clustering of multiple risk factors. Despite relatively good self-reported health, the presence of overweight/obesity, widespread stress and engagement in unhealthy coping mechanisms point to significant vulnerabilities in this young population. Addressing these issues is critical not only for safeguarding students' well-being but also for shaping a healthier future physician workforce.

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REFERENCES

[1] Voltmer, E. *et al.* "Stress and Behavior Patterns throughout Medical Education: A Six-Year Longitudinal Study." *BMC Medical Education*, vol. 21, no. 1, 2021, p. 454.

[2] Abdulghani, H.M. *et al.* "Stress and Its Effects on Medical Students: A Cross-Sectional Study at a College of Medicine in Saudi Arabia." *Journal of Health, Population and Nutrition*, vol. 29, no. 5, 2011, pp. 516-522.

[3] Santiago, I.S. *et al.* "Stress and Exhaustion among Medical Students: A Prospective Longitudinal Study on the Impact of the Assessment Period on Medical Education." *BMC Medical Education*, vol. 24, 2024, p. 630.

[4] Ragab, E.A. *et al.* "Stress and Its Correlates among Medical Students in Six Medical Colleges: An Attempt to Understand the Current Situation." *Middle East Current Psychiatry*, vol. 28, 2021, p. 75.

[5] Mohsen, Z.A. "The Effect of Academic Stress on Lifestyle Habits among Medical Students." *Journal of Education Technology in Health Sciences*, vol. 10, no. 2, 2023, pp. 29-34.

[6] Shafiee, A. *et al.* "Global Prevalence of Obesity and Overweight among Medical Students: A Systematic Review and Meta-Analysis." *BMC Public Health*, vol. 24, no. 1, June 2024, p. 1673.

[7] Iqassimi, S. *et al.* "Overweight, Obesity, and Associated Risk Factors among Students at the Faculty of Medicine, Jazan University." *Medicina (Kaunas)*, vol. 60, no. 6, June 2024, p. 940.

[8] Szemik, S. *et al.* "Prevalence and Determinants of Overweight or Obesity among Medical Students over a 2-Year Observation." *Frontiers in Nutrition*, vol. 11, 2024, p. 1437292.

[9] Krishna, T.S. *et al.* "Prevalence of Obesity and Its Association with Stress Levels among Undergraduate Medical Students." *International Journal of Clinical Biochemistry Research*, vol. 8, no. 3, 2021, pp. 222-225.

[10] Dodin, Y. *et al.* "Mental Health and Lifestyle-Related Behaviors in Medical Students in a Jordanian University, and Variations by Clerkship Status." *BMC Medical Education*, vol. 24, 2024, p. 1283.

[11] Nag, K. *et al.* "A Cross-Sectional Study on the Prevalence of Depression and Its Association with Overweight and Obesity among Students of a Medical College of Tripura." *Journal of Comprehensive Health*, vol. 12, 2024, pp. 50-55.

[12] Nepal, S. *et al.* "Health Risk Behaviors among Medical and Nursing Students of Lumbini Medical College, Nepal: A Cross-Sectional Study." *Health Science Reports*, vol. 7, no. 10, October 2024, e70140.

[13] Gupta, H. *et al.* "Magnitude of Substance Use and Its Associated Factors among the Medical Students in India and Implications for Medical Education: A Narrative Review." *Indian Journal of Psychological Medicine*, vol. 44, no. 3, 2021, pp. 218-226.

[14] Majra, J.P. "Do Our Medical Colleges Inculcate Health-Promoting Lifestyle among Medical Students? A Pilot Study from Two Medical Colleges in Southern India." *International Journal of Preventive Medicine*, vol. 4, no. 4, April 2013, pp. 425-429.

[15] Patel, P.H. *et al.* "Cross-Sectional Descriptive Study of Lifestyle Patterns of Undergraduate Medical Students in a Metropolitan Medical College." *International Journal of Community Medicine and Public Health*, vol. 3, no. 10, 2016, pp. 2866-2873.

[16] Debnath, A. *et al.* "Prevalence of Alcohol Use Disorder among Medical Students in New Delhi: A Cross-Sectional Study." *Indian Journal of Community Medicine*, vol. 50, no. 1, Jan.-Feb. 2025, pp. 43-47.

[17] Vibhute, N.A. *et al.* "Dietary Habits amongst Medical Students: An Institution-Based Study." *Journal of Family Medicine and Primary Care*, vol. 7, no. 6, Nov.-Dec. 2018, pp. 1464-1466.

[18] Kosendiak, A.A. *et al.* "Impact of Medical School on the Relationship between Nutritional Knowledge and Sleep Quality: A Longitudinal Study of Students at Wroclaw Medical University in Poland." *Nutrients*, vol. 16, no. 2, January 2024, p. 278.

[19] Subamalani, S. *et al.* "A Correlation between Dietary and Exercise Habits and Perceived Barriers among Medical Students in Tertiary Health Care Institutions in South India." *European Journal of Cardiovascular Medicine*, vol. 15, no. 4, 2025, pp. 1076-1081.

[20] Joseph, N. *et al.* "Nutritional Supplement and Functional Food Use among Medical Students in India." *Journal of Dietary Supplements*, vol. 15, no. 6, 2018, pp. 1-15.

[21] Desai, K. and N. Khatib. "Review Article on Prevalence of Malnutrition in Medical Students." *Journal of Research in Medical and Dental Science*, vol. 10, no. 12, 2022, pp. 238-242.

[22] Dutta, G. and G.K. Medhi. "Lifestyle Behaviour of Future Medical Professionals in a Tertiary Care Institute in North-Eastern India: A Cross-Sectional Descriptive Study." *International Journal of Community Medicine and Public Health*, vol. 9, 2022, pp. 269-275.

[23] Arora, A. *et al.* "Substance Abuse amongst the Medical Graduate Students in a Developing Country." *Indian Journal of Medical Research*, vol. 143, no. 1, Jan. 2016, pp. 101-103.

[24] Klein, H.J. and S.M. McCarthy. "Student Wellness Trends and Interventions in Medical Education: A Narrative Review." *Humanities and Social Sciences Communications*, vol. 9, 2022, p. 92.

[25] Asaoka, H. *et al.* "Longitudinal Change of Psychological Distress among Healthcare Professionals with and without Psychological First Aid Training Experience during the COVID-19 Pandemic." *International Journal of Environmental Research and Public Health*, vol. 18, no. 23, November 2021, p. 12474.

[26] Wainberg, M.L. *et al.* "Challenges and Opportunities in Global Mental Health: A Research-to-Practice Perspective." *Current Psychiatry Reports*, vol. 19, no. 5, May 2017, p. 28.

[27] Jaafari, M. *et al.* "Unveiling the Burden: Mental Health Challenges and Coping Strategies among Moroccan Medical Students." *BMC Medical Education*, vol. 25, 2025, p. 1353.

[28] Jeyapalan, T. and E. Blair. "The Factors Causing Stress in Medical Students and Their Impact on Academic Outcomes: A Narrative Qualitative Systematic Review." *International Journal of Medical Students*, vol. 12, no. 2, Apr.-June 2024, pp. 195-203.

[29] Beyari, H. "The Relationship between Social Media and the Increase in Mental Health Problems." *International Journal of Environmental Research and Public Health*, vol. 20, no. 3, January 2023, p. 2383.

[30] Zewude, G.T. *et al.* "A Multi-Mediation Analysis on the Impact of Social Media and Internet Addiction on University and High School Students' Mental Health through Social Capital and Mindfulness." *International Journal of Environmental Research and Public Health*, vol. 22, no. 1, 2025, p. 57.

[31] Dong, R. *et al.* "Exploring the Relationship between Social Media Dependence and Internet Addiction among College Students from a Bibliometric Perspective." *Frontiers in Psychology*, vol. 16, 2025, p. 1463671.

[32] Jiang, Y. "Problematic Social Media Usage and Anxiety among University Students during the COVID-19 Pandemic: The Mediating Role of Psychological Capital and the Moderating Role of Academic Burnout." *Frontiers in Psychology*, vol. 12, 2021, p. 612007.