

Exploring Health Struggles Among Medical Students Using Cultural Domain Analysis: A Qualitative Study from North India

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Background: Medical students face multiple health challenges due to the demanding nature of training. While existing research largely emphasizes mental health, limited evidence explores students' own perceptions of their health concerns within their context. This study aimed to identify perceived health struggles among medical students using a cultural domain analysis approach.

Methods: An exploratory qualitative study was conducted among 30 medical students in a tertiary care institution in North India using purposive sampling. Free listing was used to elicit perceived health issues, and salience scores were calculated using Visual Anthropac software. A scree plot identified the most salient items. Pile sorting was subsequently conducted among a subset of participants (n=7) to categorize issues based on perceived urgency. Verbatim responses were recorded.

Results: A total of 46 health-related issues were identified, of which 25 were salient. Improper sanitation, unhealthy food, and animal bite concerns were the most prominent. Although mental health issues were less frequently reported, participants ranked them as critical during pile sorting, along with sleep deprivation and poor diet.

Conclusion: There is a divergence between frequently perceived and urgently prioritized health concerns. Addressing both environmental conditions and psychosocial factors is essential to improve medical students' well-being.

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Introduction

Medical education is widely recognized as a demanding and high-pressure phase of training that exposes students to substantial academic, emotional, and physical challenges. The rigorous curriculum, prolonged study hours, frequent assessments, and early clinical responsibilities contribute to a heightened psychological burden among medical students. A large body of evidence has demonstrated that medical students experience significantly higher levels of depression, anxiety, and psychological distress compared to the general population.¹⁻³ A landmark systematic review and meta-analysis reported that approximately one in

four medical students experience depressive symptoms, highlighting the magnitude of the problem.¹

Burnout has also emerged as a critical concern in this population. Studies have shown that a substantial proportion of medical students experience burnout, which is associated with reduced academic performance, decreased empathy, and adverse professional outcomes.⁴

In addition to psychological morbidity, lifestyle-related factors such as sleep deprivation, poor dietary habits, and physical inactivity are highly prevalent among medical students. Sleep disturbances, in particular, have been shown to be closely associated with increased stress, anxiety, and impaired cognitive functioning.^{5,6} These factors often coexist and interact, contributing to a multidimensional burden on students' health and well-being.

Despite growing recognition of these issues, help-seeking behaviour among medical students remains suboptimal. Barriers such as stigma, concerns regarding

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confidentiality, lack of awareness of available services, and fear of academic consequences continue to limit access to mental healthcare.^{7,8} Evidence from the Indian context similarly highlights gaps in awareness and utilization of mental health services among medical trainees.⁹

Beyond individual lifestyle and psychological factors, students' health is also influenced by the physical and institutional environment in which they live and learn. Living conditions within educational institutions, including sanitation, hygiene facilities, food quality, and residential infrastructure, can affect physical well-being, daily functioning, and overall quality of life. Studies among university students have shown that inadequate sanitation facilities, poor environmental conditions, and food safety challenges may contribute to adverse health outcomes and influence students' perceptions of health priorities.^{11,12}

While existing research has provided important insights into the prevalence and determinants of mental health problems, most studies have relied on quantitative approaches focusing on predefined constructs such as depression, anxiety, or burnout. These approaches may not fully capture the broader spectrum of health concerns as perceived by students themselves, particularly within their sociocultural context.

Cultural domain analysis offers a robust methodological framework to explore shared perceptions within a group. Techniques such as free listing and pile sorting enable the identification of salient issues and their relative importance based on collective cognition.¹⁰ Therefore, this exploratory qualitative study aimed to identify and categorize the health struggles perceived by medical students using a cultural domain analysis approach.

Methodology

Study Design and Approach

This exploratory qualitative study was conducted using a cultural domain analysis framework, incorporating free listing and pile sorting techniques to understand the perceived health struggles among medical students. The study was grounded in an interpretivist paradigm, aiming to explore participants' subjective experiences and shared perceptions.

Study Setting and Participants

The study was conducted at a tertiary care teaching institution in North India. Participants included undergraduate medical (MBBS) students from different academic years to ensure diversity of experiences. Students were approached personally by the investigators

during non-academic hours and informed about the objectives of the study. Participation was voluntary, and written informed consent was obtained prior to data collection.

A purposive sampling strategy was employed to recruit participants willing to share their perceptions regarding health challenges during medical training. Eligible participants included undergraduate MBBS students who were present during the study period and provided informed consent. Students who were unwilling to participate or unable to complete the exercise were excluded.

A total of 30 students participated in the free-listing exercise. In cultural domain analysis, free-listing studies typically require approximately 20 to 30 participants to adequately capture the majority of items within a shared cultural domain. Data collection continued until thematic saturation was achieved, defined as the point at which no new relevant items emerged in successive responses.

Data Collection

Free Listing

Free listing was used to elicit a comprehensive range of perceived health problems. Participants were asked an open-ended question:

"What are the health-related problems faced by medical students?"

Each participant independently listed all items that came to mind. Responses were recorded in the language preferred by the participant to preserve contextual meaning. Privacy and confidentiality were ensured during data collection.

Pile Sorting

Following free listing, a subset of participants ($n = 7$) with relatively richer responses (i.e., higher number of listed items) were invited to participate in a pile sorting exercise.

Participants were provided with cards containing the most salient items derived from the free list and were asked to group them based on perceived urgency of addressing the issue. They were also encouraged to explain the rationale behind their categorization. Verbatim responses were recorded to capture contextual explanations.

Data Analysis

Free listing data were entered into Visual Anthropac (version 1.0) software. Smith's salience score (S) was calculated for each item, which accounts for both the

frequency of mention and the rank order in individual lists, thereby reflecting the cognitive prominence of each item within the group.

A scree plot was generated to visualize the distribution of salience scores, and a natural cut-off point was identified at the point of inflection. Items above this threshold were considered salient health concerns.

Data from the pile sorting exercise were analyzed descriptively to categorize items into three domains based on perceived urgency:

- Critical (immediate attention required)
- Moderate (requires short-term attention)
- Manageable (can be addressed over time)

Verbatim responses were used to support and interpret the categorization.

Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee prior to the conduct of the study. Written informed consent was obtained from all participants. Confidentiality and anonymity were maintained throughout the study.

Results

Participant Characteristics

A total of 30 medical students participated in the study. Among them, 12 were males and 18 were females. The average list length was comparable across genders, with males reporting a mean of 5.16 items and females 5.44 items. Participants aged ≤ 25 years ($n=17$) had an average list length of 5.35, while those aged >25 years ($n=13$) had a mean of 5.30 (Table 1).

Free Listing Findings

A total of 46 unique health-related issues were identified through the free listing exercise. Based on salience scores and scree plot analysis, 25 items were retained as salient concerns recorded in Table 2 and Figure 1.

The most salient health problems were improper sanitation (salience: 0.552), unhealthy food (0.243), animal

bite-related issues (0.216), and stress (0.226). Higher salience scores indicate greater cognitive prominence and shared perception among participants.

Pile Sorting Findings (Perceived Urgency)

Participants categorized health issues into three domains based on urgency as shown in Table 3.

Verbatim-supported Findings

Critical (Immediate attention required)

Mental health issues were consistently perceived as the most urgent concerns despite lower frequency in free listing.

"Mental health, if ignored, leads to cumulative long-term impact... decreased attendance and overall health." (P1)

"We are told not to take stress, but no one helps us understand why we are stressed." (P2)

Table 2: Frequency, average rank, and salience scores of health challenges

S. No.	Health issue	Frequency (%)	Average rank	Salience
1	Improper sanitation	76.7	2.39	0.552
2	Unhealthy food	43.3	3.31	0.243
3	Animal bite issues	40.0	3.50	0.216
4	Stress	36.7	3.00	0.226
5	Less recreation	23.3	3.71	0.106
6	Long study hours	20.0	3.50	0.104
7	Improper diet	16.7	2.40	0.118
8	Health disparity	16.7	2.80	0.105
9	Less physical activity	16.7	3.20	0.098
10	No mental health promotion	13.3	4.25	0.050
11	Mental health issues	10.0	2.33	0.078
12	Anxiety	10.0	2.00	0.084
13	Insomnia	10.0	4.67	0.022
14	Peer pressure	10.0	3.67	0.058
15	Emotional difficulties	10.0	4.00	0.050
16	Lack of mentorship	10.0	3.00	0.063
17	Sleep deprivation	6.7	2.00	0.053
18	UTI	6.7	4.00	0.027
19	No privacy	6.7	6.00	0.011
20	Substance abuse	6.7	2.00	0.053
21	Unclear career prospects	6.7	1.50	0.058
22	Irregular sleeping pattern	6.7	4.50	0.020
23	Depression	6.7	3.50	0.033
24	Bullying	3.3	3.00	0.022
25	Attendance tension	3.3	6.00	0.006

Table 1: Sociodemographic characteristics and average list length

Variable	Category	n	Average list length
Gender	Male	12	5.16
	Female	18	5.44
	Total	30	5.33
Age	≤ 25 years	17	5.35
	>25 years	13	5.30
	Total	30	5.33

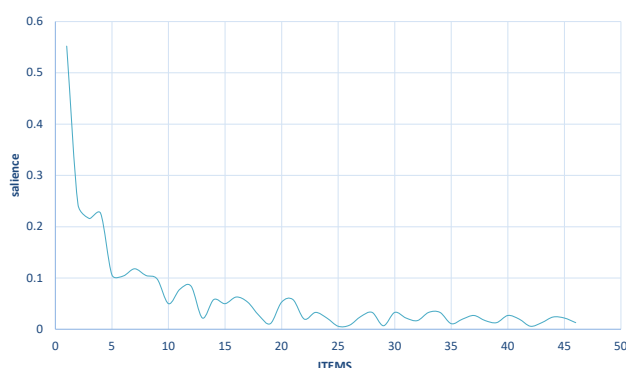


Figure 1: Scree plot showing distribution of salience scores

Table 3: Categorization of health struggles based on urgency

S.No.	Critical (Immediate)	Moderate (Short-term)	Manageable (Long-term)
1	Mental health issues	Less physical activity	Lack of mentorship
2	Sleep deprivation	No mental health promotion	Less recreation
3	Insomnia	Unclear career prospects	No privacy
4	Improper diet		
5	Unhealthy food		
6	Health disparity		
7	Improper sanitation		
8	Peer pressure		
9	Substance abuse		
10	Stress		

Sleep deprivation emerged as another critical issue affecting daily functioning:

"We're expected to function on little to no sleep, and it's affecting our concentration." (P7)

Dietary concerns were also emphasized:

"The food options on campus are not good, and unhealthy food makes us feel tired." (P3)

Environmental issues such as sanitation were linked to physical illness:

"Improper sanitation leads to problems like diarrhoea... almost everyone faces it." (P2)

Peer pressure and substance use reflected unhealthy coping mechanisms:

"Some students use substances just to cope with stress—it becomes a dangerous cycle." (P1)

Moderate (Short-term attention required)

Issues such as physical inactivity and lack of mental health promotion were considered important but modifiable.

"We tell others to exercise, but we don't get time ourselves." (P4)

"There is little awareness of mental health, and faculty are not approachable." (P6)

Career-related uncertainty was also noted:

"We don't get proper guidance about career options or exams." (Participant)

Manageable (Long-term concerns)

Certain issues were perceived as less urgent.

"There's very little time for relaxation, but we can manage if we plan better." (Participant)

"Hostel sharing is an issue, but it's not a major concern." (Participant)

Key Observation

A notable finding was the divergence between salience and urgency. While environmental issues such as improper sanitation emerged as the most salient concerns in free listing, mental health-related issues were consistently prioritized as the most critical during pile sorting.

Discussion

This exploratory qualitative study provides a nuanced understanding of health struggles among medical students by integrating cultural domain analysis with free listing and pile sorting techniques. The findings highlight a multidimensional burden encompassing environmental, lifestyle, and psychological domains. A key contribution of this study is the identification of a disconnect between cognitive salience and perceived urgency, indicating that what students frequently experience may differ from what they consider most impactful.

The prominence of environmental concerns such as improper sanitation and unhealthy food in free listing suggests that immediate living conditions strongly shape students' day-to-day experiences. Although these factors are less emphasized in mainstream medical education literature, evidence indicates that institutional environments, including hostel conditions and food quality, significantly influence student health and well-being.^{11,12} Poor sanitation and hygiene have been linked to increased risk of infections and gastrointestinal illnesses in institutional settings, which may contribute to recurrent morbidity among students.

In contrast, the pile sorting exercise revealed that mental health issues, sleep deprivation, and academic stress were perceived as the most critical concerns, despite lower salience scores. This divergence reflects a cognitive normalization of stressors, where frequently encountered

issues may be underprioritized unless explicitly evaluated for severity. This finding aligns with studies demonstrating a high prevalence of depression, anxiety, and burnout among medical students globally.^{1-4,13} A recent meta-analysis reported that a substantial proportion of medical students experience moderate to severe psychological distress, reinforcing the urgency of addressing mental health in this population.¹³

Academic stress emerged as a central contributor to mental health burden, driven by extensive curriculum demands, competitive environments, and high expectations. Similar findings have been reported in multiple studies, where academic pressure was identified as a primary stressor affecting both psychological well-being and academic performance.^{14,15} Prolonged exposure to such stressors may contribute to burnout, emotional exhaustion, and reduced professional satisfaction.

Sleep deprivation was another critical issue identified in this study, with participants reporting its impact on concentration, productivity, and physical health. Previous research has consistently demonstrated poor sleep quality among medical students, often associated with increased stress, anxiety, and impaired cognitive performance.^{5,6,16} The bidirectional relationship between sleep disturbances and mental health further exacerbates the overall burden of illness.

The role of peer pressure, competitive culture, and lack of supportive mentorship also emerged as important contributors to student stress. Studies have shown that negative learning environments, lack of peer support, and hierarchical structures within medical training can adversely affect students' mental health.^{17,18} Additionally, uncertainty regarding career prospects and inadequate guidance were identified as sources of anxiety, consistent with findings from previous research highlighting career-related stress among medical trainees.¹⁹

Despite the high burden of psychological distress, help-seeking behavior remains limited. Consistent with prior literature, barriers such as stigma, concerns about confidentiality, and fear of professional repercussions were identified as significant obstacles.^{7-9,20} These findings underscore the need for accessible, confidential, and student-friendly mental health services within medical institutions.

A notable strength of this study is its use of cultural domain analysis, which allowed for the identification of context-specific concerns that may not emerge through conventional quantitative approaches. While most existing studies focus primarily on psychological morbidity, this study highlights the importance of

environmental and lifestyle factors, providing a more comprehensive understanding of student well-being. This approach aligns with emerging calls for context-sensitive and student-centered research frameworks in medical education.⁴

The findings of this study have important implications for policy and practice. Interventions aimed at improving medical student well-being should adopt a holistic approach, addressing not only mental health but also environmental and lifestyle determinants. Improving hostel sanitation, ensuring availability of healthy food, promoting physical activity, and fostering supportive academic environments are essential. Additionally, strengthening mentorship systems and integrating mental health promotion into medical curricula may help mitigate stress and improve coping mechanisms.

This study has certain limitations. The findings are based on a relatively small sample from a single institution, which may limit generalizability. Additionally, purposive sampling may introduce selection bias. However, the qualitative design enabled in-depth exploration of students' perceptions, which was the primary objective. Future research should consider multi-institutional studies and mixed-method approaches to validate and extend these findings. The study did not record the academic-year distribution of participants, limiting the ability to explore differences in perceived health concerns across stages of medical training.

Conclusion

This exploratory qualitative study highlights the multifaceted health challenges faced by medical students, encompassing environmental, lifestyle, and psychological domains. While environmental issues such as sanitation and food quality were most salient in free listing, mental health concerns, sleep deprivation, and academic stress were perceived as the most critical during prioritization.

The findings underscore a clear divergence between frequently experienced problems and those considered most impactful, emphasizing the need for a more nuanced understanding of student well-being. Addressing these challenges requires a comprehensive approach that integrates improvements in living conditions, promotion of healthy lifestyle practices, and strengthening of mental health support systems.

Institutional efforts should focus on creating a supportive academic environment, improving basic amenities, and reducing barriers to help-seeking. Such measures are essential to enhance the overall well-being

and professional development of future healthcare providers.

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