

Original Research Article

AN EVALUATION OF THE EFFECT OF LANGUAGE BARRIER ON STRESS LEVEL AMONG UNDERGRADUATE MEDICAL STUDENTS

Patel Siddharth B¹, Sutaria Rahi¹, Modiya Kinjal Y², Shukla Apexa B³, Panchal Pavan J³, Patel Dharna A², Panchal Kiran M²

¹Junior Resident, Gujarat Medical Education and Research Society (GMERS) Medical College, Himmatnagar, Gujarat, India

²Assistant Professor, Department of Pharmacology, Gujarat Medical Education and Research Society (GMERS) Medical College, Himmatnagar, Gujarat, India

³Associate Professor, Department of Pharmacology, Gujarat Medical Education and Research Society (GMERS) Medical College, Himmatnagar, Gujarat, India

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Corresponding Author:

Dr. Patel Siddharth B,
Junior Resident, Gujarat Medical
Education and Research Society
(GMERS) Medical College,
Himmatnagar, Gujarat, India.
Email: siddharth.patel6592@gmail.com

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ABSTRACT

Background: Language proficiency is crucial in medical education, where students are expected to understand complex topics and communicate effectively. In regions like Gujarat, many students move from native language schooling to English-medium medical colleges, which can create difficulties in understanding and learning. This lack of understanding can often place students under emotional pressure and may influence how well they adjust to the academic environment. The aim is to assess the impact of language barriers on stress levels among undergraduate medical students and explore associated coping mechanisms.

Materials and Methods: A cross-sectional study was conducted among first- and second-year MBBS students. Self-administered questionnaire responses were collected electronically to assess perceived stress related to language, and coping strategies utilized by them.

Results: High stress related to the language barrier was reported by 28.2% of the students. Male students, first-year students, and those who studied in native language schools had significantly higher stress levels. Students with limited English communication skills showed more stress. Nearly half of the students reported translating English content before understanding it, and many avoided asking questions or participating in class due to language difficulties.

Conclusion: The findings suggest that language barriers add a major burden to medical students, especially in their early years. Offering support through language resources and academic mentoring may help reduce stress and improve both learning and mental well-being.

Keywords: Language Barrier, Stress level, Questionnaire, Medical students.

INTRODUCTION

Language plays a fundamental role in communication, and effective communication is essential for understanding concepts.^[1,2] When education is delivered in a non-native language, differences in language proficiency can lead to difficulties in comprehension and communication.^[3] This lack of understanding often contributes to stress, causing feelings of confusion, self-doubt, and sometimes a loss of confidence when trying to understand complex material in a non-native

language.^[4] As a result, students dealing with such a language barrier may feel more mental pressure, which can negatively affect mental well-being and how they end up becoming reluctant to engage in their studies.^[5,6]

In student life, stress is commonly described as a mental or emotional strain arising when academic or social demands exceed a student's capacity to cope up. Coping mechanisms are deliberate emotional, cognitive, or behavioural approaches employed to manage challenges like language barrier. Such mechanisms have proven to be advantageous in a few

circumstances, and studies imply that a problem-centered approach is the most beneficial.^[7] According to the Transactional Model of Stress, students who perceive language-related challenges as opportunities for growth and actively work to overcome them tend to perform better academically and maintain healthier mental states.^[8]

In middle to low income countries, thirty-seven out of a hundred students are educated in a medium that they do not use to communicate or comprehend at best. In India, a multilingual nation, about 35% of students attend English-medium schools.^[9] While English-medium enrolment in India rose from 15 million to 29 million between 2008 and 2014,^[10] a significant proportion of undergraduate students in Gujarat still come from native backgrounds. Consequently, they often feel underprepared, particularly since medical colleges in India predominantly use English as the primary language of instruction. This mismatch can create linguistic challenges, contributing to diminished academic confidence. Previous studies have reported that around 68% of undergraduate students experience stress related to language barriers, emphasizing the significance of this issue in academic environments.^[11]

Previous studies in India have shown the relationship between language barrier and academic stress, the topic remains underexplored among medical students in peripheral colleges in western India. A study by Mehta et al. found that students who had not received schooling in English experienced significantly higher stress levels than their peers.^[12] Similarly, other research indicated that first-year students educated in native languages faced greater difficulty in English-medium instruction, which hindered their communication with faculty and peers.^[13]

There is limited research focusing on how transitioning from native-language schooling to English impacts stress levels specifically among MBBS (Bachelor of Medicine and Bachelor of Surgery) students. Moreover, emotional challenges and the role of coping mechanisms, such as peer support or digital tools like Google Translate, are not well understood.

This study aims to address this by examining how students' prior language of instruction influences stress levels among undergraduate medical students. By collecting the data directly from students at our institution, we aim to provide practical insights into their academic experiences and the language-related stressors they encounter.

MATERIALS AND METHODS

Research design: This cross-sectional, observational study was conducted using a structured, questionnaire-based approach among medical undergraduate students. The study was carried out over a period of two months (from April 2025 to May 2025) in the lecture hall of medical college.

Inclusion Criteria

The study included first- and second-year MBBS students during the academic year 2024–2025 from our institute. In addition to their academic enrolment, participants were also required to provide electronic informed consent after being fully informed about the purpose, procedures, potential risks, and benefits of the research.

Exclusion Criteria

Third-year MBBS students, interns, students who did not provide informed consent, and those who exhibited signs of severe anxiety based on the Generalized Anxiety Disorder (GAD-7) scale were excluded from the study.^[14]

Study procedure: The study obtained prior approval from the Institutional Ethics Committee (No. GMERS/MCG/IEC/41/2025, Dated: 09/04/2025) before its implementation. A purposive sample was selected to send the invitation for the study through Facebook, WhatsApp or E-mail. To gather information from the participants, we developed an online questionnaire using Google Form[®] that limits one-time participation per unique IP address to avoid duplicate entries. The questionnaire, within which the informed consent is embedded, will be sent to the eligible participants through electronic messenger platforms and offered the choice to stop the survey at any moment or skip any questions. Participants were given 10 to 15 minutes to complete the questionnaire, allowing for prompt responses while minimizing the risk of peer influence or discussion during the process. This study ensured anonymity at all times and the responses provided in the questionnaire were kept confidential with no one other than researchers having any access to the data.

Data Gathering Tools: The structured questionnaire was developed with a variety of question formats, such as select all-apply, open-ended, and yes/no questions. The majority of questions were prepared from previously similar studies to increase the quality and validity of the data and their easy comparability with other populations.^[15,16] The questionnaire was validated by two expert reviewers to evaluate the time needed to complete the questionnaire and assure that all the questions and sections of the questionnaire are phrased clearly and appropriately for comprehension and to avoid bias that might arise otherwise. Changes were incorporated according to the feedback obtained from expert reviewers during the validation process. The questionnaire was tested on a small group of health care professionals before applying to the study population to check for the appropriateness of the questions regarding their proximity to providing answers corresponding to the aims of the study. The questionnaire was prepared in English language, and it includes four sections. The questionnaire contains demographic details in the first section. The second section incorporated the Generalized Anxiety Disorder Questionnaire (GAD-7).^[14] The total of 7 questions were scored from 0-3, beginning with "Not at all (0), then "Several days (1)", followed by "More than half the days (2)", and lastly "Nearly every day

(3)". Participants were categorized as no anxiety, mild, moderate and severe anxiety based on score 0-4, 5-9, 10-14 and 15-21 respectively. The third section has 14 items on students' self-reported language proficiency and their comfort level in academic and clinical communication in the second section. In this section, Questions 8 to 21 used a 4-point Likert scale with responses scored as Strongly disagree (1), disagree (2), agree (3), and strongly agree (4) points. The total possible score ranged from 0 to 56. A score of 39 or above indicates high stress levels. Lastly, the fourth section consisted of the strategies used by students to cope with challenges related to the language barrier, as well as the perceived effectiveness of those strategies in their daily academic and clinical lives.

Statistical analysis: For efficient categorization of the responses, all the data was systematically coded in Microsoft Excel. The data collected was also analysed using GraphPad Prism 9.4.1 for Windows, GraphPad Software, www.graphpad.com. Percentage, frequency, mean and standard deviations were calculated for demographic data. Potential factors influencing stress, including age, gender, year of study, domicile, nationality, native language, other language spoken, schooling done in which language were analysed. These factors were analysed using univariate analysis, where categorical variables were tested using the χ^2 or Fisher's exact test.

RESULTS

Demographic information: A total of 310 students from first year and second year MBBS students participated in this study who gave consent. Initially, we analogized mild, moderate and severe anxiety among medical students by using generalized anxiety disease score (GAD-7).^[14] More than half of the students (57.1%) fall in no anxiety range, followed by (31.2%) mild anxiety of participants, (11.6%) moderate anxiety and (3%) severe anxiety group. Hence, we excluded students who had severe anxiety. Further, we analysed 301 students to find out the association between language barrier and stress level among undergraduate medical students. The demographic variables age was divided into two age groups. Majority of the students 242 (80.4%) came under the age group 19 to 23 years, followed by 59 (19.6%) students who were enrolled in the age group of ≥ 18 years with median age is 19 years. In gender factor, majority of the students 192 (63.8%) are males and 109 (36.2%) of students female. Most of the students with n=190 (63.1%) have completed their schooling in Native/regional language while n=111 (36.9%) students have finished schooling in English medium. Among all, n=264 (87.7%) students are using Gujarati as native language for communication and 22 (7.3%) are using Hindi as their mother tongue.

Table 1: Frequency and percentage distribution of 1st year & 2nd year M.B.B.S students

Demographic variables	Frequency	Percentage (%)
Age		
17-18	59	19.6
19-23	242	80.4
Gender		
Male	192	63.8
Female	109	36.2
Year of M.B.B.S		
First Year	115	38.2
Second Year	186	61.8
Native Language		
Gujarati	264	87.7
Hindi	22	7.3
Others	15	5.0
Nationality		
Indian	301	100
Others	0	0
Domicile		
Gujarat	299	99.3
Rajasthan	2	0.7
Medium of Instruction in school		
English	111	36.9
Native/regional language	190	63.1

Stress level among medical students: Stress levels among 301 students MBBS students due to language barriers have been defined in [Table 2]. The findings indicated that overall stress was notable high among 85 (28.2%) students. The average stress score was 31,

ranging from 14-55 out of 56 points. Stress levels are almost equally distributed across age groups. Male students reported higher stress n=62 (32.3%) than female students n=23 (21.1%), with statistically significant (p value <0.05).

Table 2: Analysis of stress levels among MBBS students due to language barriers

Demographic variables		High stress	Low stress	P value
Age	≤ 18	17	42	0.91
	> 18	68	174	
Gender	Male	62	130	0.03*
	Female	23	86	

Year level	First	39	76	0.08
	Second	46	140	
Native Lang#	Gujarati	81	183	0.009**
	Hindi	4	18	
	Others	0	15	
Other language spoken	English	30	149	0.001**
	Non-English	55	67	
Domicile#	Gujarati	84	215	0.48
	Rajasthan	1	1	
Schooling in native#	Yes	81	109	0.001**
	No	4	107	

Fischer exact test and for the rest of the variables Chi-squared test (χ^2) was applied. ** $p < 0.05$: Statistically significant.

First - year students show more stress (33.9%) compared to second-year students (24.7%), indicating that adaptation over time may reduce language-related stress. Students with Gujarati as a native language reported significantly higher stress levels. Interestingly, students with 'Other' native languages also reported stress, which may reflect better adaptability or fewer expectations of language comfort. Students not fluent in English reported significantly higher stress (45.1%) compared to

English speakers (16.8%). Students who had done their schooling in their native language showed much higher stress (42.6%) compared to those who didn't (3.6%). The responses of the study participants to individual items of the stress reporting scale are summarized in Table 3. When question is asked "You often feel stressed about the need to improve your English to succeed in medical school? About (n=152) 50.50 % of participants agreed. In the final analysis, we asked, "You

Table 3: Stress reporting scale among MBBS students (1 = strongly disagree to 4 = strongly agree)

Sr No	Question	1 (%)	2 (%)	3 (%)	4 (%)
1	You feel anxious before attending classes taught in English?	70 (23.26)	132 (43.85)	90 (29.90)	9 (2.99)
2	You often feel stressed about the need to improve your English to succeed in medical school?	31 (10.30)	90 (29.90)	152 (50.50)	28 (9.30)
3	Does reading medical textbooks in English take you significantly more time compared to your peers?	57 (18.94)	93 (30.90)	117 (38.87)	34 (11.30)
4	You hesitate to ask questions in class because you are worried about your English-speaking skills?	46 (15.28)	134 (44.52)	96 (31.89)	25 (8.31)
5	You have difficulty in concentrating during lectures because of language barrier.	52 (17.27)	146 (48.51)	88 (29.24)	15 (4.98)
6	You feel that your academic performance is negatively affected due to difficulty in understanding English?	59 (19.60)	134 (44.52)	97 (32.23)	11 (3.65)
7	You avoid participating in group discussions or presentations because of fear of speaking English?	52 (17.27)	167 (55.48)	69 (22.92)	13 (4.32)
8	You experienced physical symptoms (e.g., headache, rapid heartbeat) due to stress when trying to understand medical content in English?	69 (22.92)	172 (57.14)	56 (18.60)	4 (1.33)
9	You feel that you cannot express your thoughts effectively in written exams due to limited English vocabulary?	41 (13.62)	114 (37.87)	111 (36.88)	35 (11.63)
10	You often translate English content into your native language before understanding it?	47 (15.61)	89 (29.57)	139 (46.18)	26 (8.64)
11	You have considered switching your course or dropping out due to language difficulties?	115 (38.21)	148 (49.17)	34 (11.30)	4 (1.33)
12	Does language barrier affect your confidence in practical examination or sessions?	45 (14.95)	102 (33.89)	128 (42.52)	26 (8.64)
13	You feel isolated from peers who are more fluent in English?	55 (18.27)	137 (45.51)	96 (31.89)	13 (4.32)
14	How would you rate your proficiency in the language of instruction (e.g., English)?	24 (7.97)	104 (34.55)	160 (53.16)	13 (4.32)

often translate English content into your native language before understanding it?" and 46.18 % students responded agreed. Second question was asked "How would you rate your proficiency in the language of instruction (e.g., English)? And n=160 (53.16 %) participants gave positive answers. A total of 42.52 % of students agreed that language barrier affects confidence in practical examinations or sessions.

Coping Mechanisms: As [Figure 1] shows analysis of the various coping mechanisms adopted by 301

MBBS students to manage and overcome language barriers, most of the students (195, 64.8 %) widely used translation tools in all students. Moreover, n=60 (70.6 %) from high stress group also used same method to overcome their stress followed by n=16 (18.8 %) seeking help from peers overcome stress. Most students who had high stress level that the coping strategies are moderately effective n=36 (42.3%) followed by slight effective in (n=25) 29.4 % of students. A small portion of students (7.06 %) feel the current strategies do not help them at all.

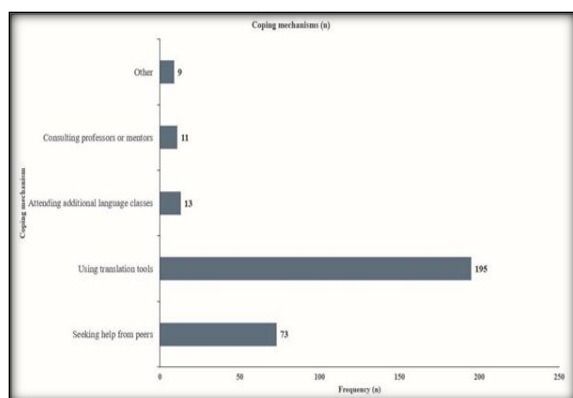


Figure 1: Strategies used by students to overcome their language barriers

DISCUSSION

Creating an optimal learning environment in medical education requires effective communication between faculty and students. Among various challenges in undergraduate medical education, language barriers stand out as a significant obstacle, as they influence how medical knowledge is presented, comprehended, and applied in clinical settings. Language proficiency impacts academic performance, professional communication, and, ultimately, the quality of learning and readiness for clinical practice.^[2,17]

This study examined the association between language barrier and stress level among 301 first- and second-year undergraduate medical students. The demographic analysis revealed that male students reported significantly higher stress levels compared to female students. This finding aligns with a study by Saxena et al., which reported that male students experience higher academic stress during their initial years of medical education.^[18] This contrasts with the commonly observed trend of higher stress levels among female students in academic settings. A possible explanation is that female students may be more inclined to seek academic and emotional support from peers or mentors, whereas male students often rely on independent coping strategies. Students with limited English proficiency experienced significantly higher stress levels, consistent with existing literature on language anxiety. Studies indicate that lower proficiency in the language of instruction increases self-doubt, anxiety and academic stress.^[19] This is particularly evident during the early years of medical education, where students face heightened stress when required to read, write, and present in a non-native language.^[20]

The majority of students reporting high stress in our study (95.3%) had received their previous education in Gujarati or another native language. This abrupt change from schooling in native language to English-medium instruction likely contributes to their academic stress. Gujarati-medium schools may provide only basic English instruction, leaving students inadequately prepared for the rigorous language demands of medical education. These

findings align with previous studies that emphasize the impact of language barriers on academic stress and performance.^[21] Conversely, students from multilingual backgrounds may have found the transition somewhat easier due to prior exposure to diverse linguistic settings.^[22]

Similar studies involving international students in countries like Indonesia and Turkey have reported that language-related challenges adversely affect not only academic performance but also students' confidence and mental health.^[11,23,24] Our participants echoed similar challenges, particularly in practical sessions and peer interactions, where language proficiency influenced their confidence and participation. Language barriers in the classroom often lead to social isolation, reduced class participation, hesitation in asking questions, and communication difficulties in clinical environments.^[25] These barriers can be further compounded by the fear of peer judgment and insufficient institutional support.^[26]

More than half of the students in this study rated their English proficiency as intermediate or beginner, which strongly correlated with elevated stress levels. These students face significant mental pressure to understand complex medical terminology, participate in clinical discussions, and meet academic expectations. Alrashid & Abdel Latif (2025) similarly found that Saudi medical students with lower English proficiency reported higher academic stress and struggled particularly with clinical communication.^[21]

Coping strategies that students use to overcome language barrier play an important role in shaping students' academic experiences. In this study, most students reported using digital translation tools to overcome language barriers, reflecting a reliance on accessible and convenient technological aids. However, while helpful, such tools may not be sufficient to support deep learning and clinical competence in the long term. These findings are consistent with other study, and it also highlights the need for medical institutions to offer more structured support, including faculty-student mentorship programs and language training, to address the academic needs of students facing language barriers.^[27]

Overall, this study provided us with valuable insights into how the language barrier can result in stress during early undergraduate years. The patterns that we observed made us realize that limited English proficiency not only impacts students in their academics but also emotionally. Their preference for managing challenges on their own by relying on translational tools rather than going to their mentors or faculty reflects a need for a more approachable support system. By better understanding how students feel and cope, institutions can create an environment that feels more inclusive, encouraging, and supportive for everyone, regardless of their linguistic background.

CONCLUSION

This study concludes that language barriers exacerbate the stress that many medical students already face. Most students manage silently through tools rather than seeking help. There is a need for targeted language support initiatives within medical institutions to promote both academic performance and student well-being.

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