Original Article

A nationwide survey on the preference of Indian undergraduate medical students to go abroad for higher studies and residency

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Abstract

Context: Getting residency training abroad is a critical motivator in the emigration of Indian medical students. Brain drain is an emerging issue, especially for developing countries as it causes a shortage of trained staff in the donor country. **Aim:** We aimed to survey Indian medical students to know about their intentions to get trained abroad and to understand the factors influencing their decision. **Materials and Methods:** In this cross-sectional observational study, we surveyed Indian undergraduate medical students of all professional years, including internship. A validated questionnaire collected data on students' demographics and educational characteristics, intention to study overseas or stay back in India, and factors influencing their decision. **Results:** Out of a total of 1199 responses (51.1% males, 48.9% females), 45.0% partakers had planned to pursue their residency abroad, while 33.8% wanted to stay in India and 21.2% were undecided. Better lifestyle and higher pay grades overseas were viewed as the most significant barriers to staying back in India and a key influencer in decision-making among the maximum number of students (412; 76.3%). On the other hand, a whopping 58.2% of participants opined that they wanted to stay back in India for taking care of their parents. **Conclusions:** Source countries with better healthcare facilities and better incomes tend to attract medical students. Awareness among medical educators regarding constantly changing curricula, a shift to a competency-based education system, better pay grades, limited working hours, and interventions to mitigate workplace violence could help prevent brain drain among Indian medical students and graduates.

Keywords: Developing countries, emigration and immigration, India, intention, internship and residency, medical student, physicians

Introduction

International physician migration is an alarming issue that is causing the clustering of trained manpower in developed countries.[1] As the need for human resources grows, a large number of medical graduates and healthcare personnel are migrating to developed countries in seek of better education and opportunities.[2,3] This phenomenon is known as 'brain drain,' and it is described as the large-scale emigration of competent and educated professionals from one nation or sector to another, often in pursuit of a better income and better living conditions. Mullan F. determined that international medical

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graduates (IMGs) account for around 23–28% of practising physicians in the four major recipient nations – the United States, the United Kingdom, Canada, and Australia.[2] Around 40–75% of these IMGs migrate from low- and middle-income countries such as India, Pakistan, and the Philippines.[2] These populated nations face not just long-standing understaffing and diminishing healthcare facilities, but also a loss of intellectual capabilities and educational investment.[4] These migrations are associated with better-established healthcare systems in the destination countries.[5]

Each year, approximately 91927 MBBS students graduate from India's 612 medical colleges aspire to continue their education or training further.[6] However, competition is intense, considering there are limited postgraduate positions available across India. While medical migration has many positive consequences, such as increased international cooperation and the repatriation of nationals with foreign-derived skills and education, the short-term effect is a scarcity of skilled personnel in the countries from where students are migrating. Since residency training abroad is an important motivator in the migration of medical students, the purpose of this study is to survey students in Indian medical colleges to ascertain their intentions to get trained abroad, assess the variables influencing their decision-making, and observe current trends leading to brain drain.

Materials and Methods

Study design and setting

This was a cross-sectional prospective observational study, where we surveyed medical students from all professional years, including internships, at several institutions throughout India. A total of 498 medical institutions in different Indian states and union territories were contacted through e-mail and asked to circulate the Google form-based survey questionnaire to undergraduate medical students. In addition to online Google forms, offline survey questionnaires were sent to medical students. Students who have already graduated were omitted from the research. These online and offline survey forms were distributed across India's medical institutions, not just via e-mails but also through various channels such as medical students' WhatsApp groups, Instagram pages, Twitter, and so on. All replies were kept anonymous and confidential, with only the study's core members having access to them. The research, conducted from February to June 2022, got prior approval from the Institutional Ethics Committee.

Sample size

Using the sample size calculator software,[7] a sample size of 1065 participants was calculated in order to achieve a 95% confidence level such that the true value lies within ± 3% (margin of error) of survey-derived value (assuming a total population of approximately four hundred and fifty thousand medical students studying in various years across different medical colleges of India). Keeping in view a substantial number of incomplete and invalid responses, a higher number of 1365 students were approached.

Survey questionnaire

After conducting a comprehensive literature search, we developed the survey questionnaire based on the objectives of this study, in order to evaluate the likely objectives and intentions of medical students to get trained and educated overseas. The face and content validity were checked by three experts who had previous experience in questionnaire development. The survey questionnaire was pilot tested on 50 randomly chosen medical students and their feedback was used to make a few amendments to the revised questionnaire. This form comprised a subject information sheet regarding the research project as well as a consent form to get their permission to participate in the study voluntarily. An eligible student who expressed his/her willingness and agreed to the informed consent was taken to the survey form.

The demographics portion and the preliminary intention for emigration were fixed for all the participants. It collected information about age, gender, state of undergraduate education (in India), type of medical college (private or government), year of study, and the intention of going abroad. Then the form was divided depending on the participant's choices.

The students who chose to study abroad were asked about the country they wanted to settle in, the specialization they wanted to pursue overseas, and the degree of influence certain factors and barriers would have had on their decision to study abroad using a Likert-type scale.

Students who chose to remain and study in India were also questioned about the specialty they intend to pursue in the future as well as the level of influence of numerous variables on their minds to stay back in India. However, those who had not yet determined their future course were not questioned further.

The majority of the questions were closed-ended, with the exception of one in which participants were allowed to specify any supplementary factor that influenced their decision-making. The questionnaire was written in English since it is the language of instruction across all medical colleges in India.

Data analysis

The data was analysed, starting with a descriptive breakdown of students' demographic and educational features, followed by multivariable inferential analyses. As applicable, data were presented in terms of range, mean standard deviation (SD), frequencies (number of instances), and relative frequencies (percentages). The Binomial and Chi-square (χ^2) tests were employed to compare categorical data, and Fisher's exact test was utilized when the anticipated frequency was less than 5. A P value of less than 0.05 was deemed statistically significant. All statistical computations were performed on Microsoft Windows

using the Statistical Package for the Social Science 26 version statistical software (SPSS Inc., Chicago, IL, USA).

Results

Descriptive analyses

In the study, 1199 out of a total of 1365 approached students filled out the forms completely, yielding a response rate of 87.84%. Among the respondents, 540 (45.0%) students decided to travel abroad for future studies, 405 (33.8%) wanted to stay in India, and the remaining 254 (21.2%) had not decided yet about their future plans. The participants' age, gender, location and type of medical college, and year of study are shown in Table 1.

The 540 respondents who opined to go abroad intended to pursue a postgraduate degree in a variety of disciplines, including medicine (175; 32.4%) and surgery (130; 24.1%), but a major chunk (65; 12.0%) had not yet decided which specialty they wanted to pursue in the future. When inquired about the destination country, 284 (52.6%) participants preferred to study and settle in the United States of America (USA), followed by 170 (31.5%) in the United Kingdom (UK), 28 (5.2%) in Australia, and 22 (4.1%) in Canada.

Inferential analyses

Female students accounted for 275 (50.9%) of those planning to pursue residency overseas, with male students accounting for a slightly smaller proportion (265; 49.1%) ($P = 0.69$). Hence, statistically, males and females are equally eager to pursue a higher degree in a foreign country after obtaining an undergraduate degree in India.

Figure 1 depicts students studying in various professional years with their choice for future studies, indicating that the majority of students who have elected to continue studying abroad belonged to their internship year (143; 26.5%). The percentage of students planning to travel abroad was, however, highest in the final year of MBBS (83 out of 156; 53.2%), followed by 50% (143 out of 286) interns ($P = 0.001$).

It was noted that 271 (42.1%) students studying in government medical institutions and 269 (48.5%) students from private medical colleges wish to move overseas. However, 233 (36.2%) of government college students desired to stay in India with 172 (30.9%) such students from private institutions, as illustrated in Figure 2 (P value = 0.071). Hence, the category of the institution does not seem to be a determining factor for choosing abroad for further education.

Several variables that influenced decision-making to study abroad were identified, as depicted in Table 2. A total of 293 (54.3%) students out of 540 who favoured studying abroad strongly agreed that there are more career opportunities overseas than in India. Similarly, 412 (76.3%) strongly agreed that better pay grades and lifestyle overseas is a key factor they considered while making their choice. Another 284 (52.6%) firmly agreed that independent life overseas is a variable that influenced them, 270 (50.0%) believed that a greater sense of personal security abroad is the reason for their decision, and 305 (56.5%) believed that fixed working hours abroad is one of the influencing factor. The majority of students (299; 55.4%) strongly agreed that the standard of training was higher abroad than in India, and 202 (37.4%) participants strongly agreed that there are more

Table 1: Respondents' demographics and gross decision

Variable	Category	Number (%)	*P*
Age (years) (mean±SD)	-	21.37±2.175	-
Gender	Male	613 (51.1)	0.45*
	Female	586 (48.9)	
Region	North India	610 (50.9)	<0.0001†
	West India	323 (26.9)	
	South India	175 (14.6)	
	East India	91 (7.6)	
Type of medical college	Government	644 (53.7)	0.01*
	Private	555 (46.3)	
Year of study	1st Professional MBBS	302 (25.2)	<0.0001†
	2nd Professional MBBS	249 (20.8)	
	3rd Professional MBBS	206 (17.2)	
	4th Professional MBBS	156 (13.0)	
	Intern	286 (23.8)	
Decision	Going abroad	540 (45.0%)	<0.0001†
	Staying in India	405 (33.8%)	
	Not decided yet	254 (21.2%)	

MBBS=Bachelor of Medicine and Bachelor of Surgery. *P of Binomial test. †P of Chi-square test

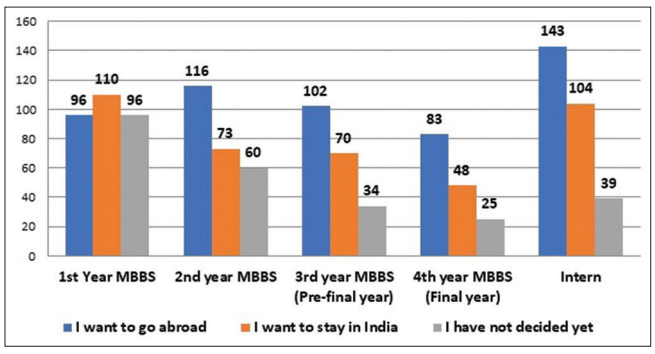

Figure 1: Medical students' preference for further studies in accordance with their professional year of MBBS

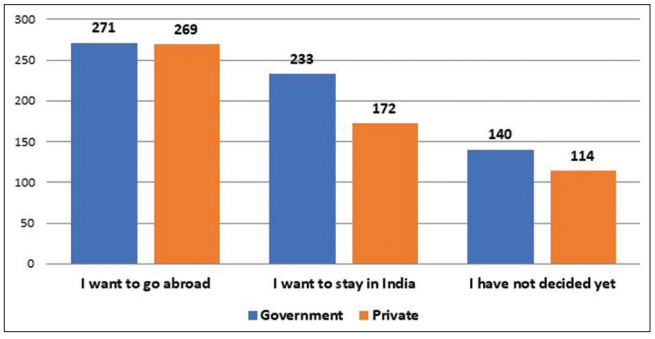

Figure 2: Preference of students regarding their future plans in correspondence to the type of medical colleges they are currently studying in

residency seats per applicant abroad. Also, the limited number of seats owing to the caste-based reservation system in India was the key reason that affected the choice among a great percentage of students planning to settle abroad in the future (371 out of 540; 68.7%).

When the 540 respondents who wished to go abroad were asked whether any recent change in the world had influenced their decision-making, about 127 respondents (23.5%) replied in affirmation, with the COVID-19 pandemic accounting for the bulk (73 out of 127; 57.4%).

In contrast, those who chose to remain in India had their own reasons, which are summarized in Table 3. Around 171 (42.2%) strongly agreed and 134 (33.1%) agreed that they wish to stay back in India to serve their own nation. A total of 236 (58.3%) future medical professionals opined that they intended to remain in India to care for their parents. Of the 405 respondents who wanted to remain in India, 150 (37.0%) disagreed and 132 (32.6%) strongly disagreed with "parents are in the same profession" as a factor impacting their decisions.

On correlating the specialty of interest students wanted to pursue abroad and the country they wanted to pursue it in, we discovered that the majority of those 175 (32.4%) who wanted to pursue a career in medicine were interested in settling in the United States (118; 67.4%), followed by the United Kingdom (35; 20.0%), Australia, Canada, and others. Around 130 (24.1%) of those who planned to pursue a career in surgery were interested in settling in either the United States (64; 49.2%) or the United Kingdom (49; 37.7%). Even among those planning to settle overseas, who had not yet decided (65 participants; 12%) on their future field of interest, the majority desired to settle in the United States (26; 40.0%) or the United Kingdom (22; 33.8%).

Analysis of the postgraduation disciplines which medical students wanted to opt for in India revealed a trend, in which approximately 104 (25.7%) of individuals wanted to go for Surgery, 97 (24.0%) for Medicine. This was in sharp contrast to the career options desired by medical students moving overseas, with Medicine (32.4%) being the most popular, followed by Surgery (24.1%).

The majority (69; 48.2%) of interns wishing to travel overseas wanted to study Medicine during their residency, followed by 17 (11.9%) who wanted to pursue Surgery, and so on. In addition to this trend, practically all students who wanted to get trained abroad aimed to remain and work in foreign countries after their training, with a minority who desired to return and serve in their home country after working overseas for a varied number of years.

Discussion

For addressing the scarcity of physicians, the number of MBBS seats in India has increased exponentially over the past few years. Although India has achieved the WHO-recommended doctor-population ratio of 1:1000, the number of physicians of modern medicine working in India is still fewer than the required quantity.[8] The migration of Indian physicians to foreign nations for higher education, followed by practice abroad, has been identified as a key issue contributing to the shortage of doctors in India. In this regard, the four major destination nations, in order of preference, are the United States, the United Kingdom, Canada, and Australia.

Table 2: Factors (and their degree of influence) that impact the decision of those planning to go abroad

Factor	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
More career opportunities abroad than India	293 (54.3)	166 (30.7)	73 (13.5)	6 (1.1)	2 (0.4)
Better pay grade abroad than in India	412 (76.3)	93 (17.2)	29 (5.4)	4 (0.7)	2 (0.4)
Independent life abroad	284 (52.6)	135 (25.0)	106 (19.6)	10 (1.9)	5 (0.9)
Better sense of personal security abroad	270 (50.0)	140 (25.9)	103 (19.1)	16 (3.0)	11 (2.0)
Fixed working hours abroad	305 (56.5)	138 (25.6)	72 (13.3)	21 (3.9)	4 (0.7)
Going abroad is your parent's choice	37 (6.9)	47 (8.7)	188 (34.8)	147 (27.2)	121 (22.4)
Standard of training is better abroad than India	299 (55.4)	156 (28.9)	67 (12.4)	13 (2.4)	5 (0.9)
More residency seats per number of applicants abroad	202 (37.4)	132 (24.4)	153 (28.3)	43 (8.0)	10 (1.9)
Compulsory bond period after NEET-PG in India	175 (32.4)	114 (21.1)	169 (31.3)	52 (9.6)	30 (5.6)
Limited seats due to reservation in India	371 (68.7)	89 (16.5)	52 (9.6)	11 (2.0)	17 (3.1)

NEET-PG=National Eligibility cum Entrance Test-Postgraduate

Table 3: Factors (and their degree of influence) taken into consideration to stay in India

Factor	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Time required to crack NEET PG is less compared to exams abroad	74 (18.3)	119 (29.4)	128 (31.6)	64 (15.8)	20 (4.9)
I want to serve my country	171 (42.2)	134 (33.1)	76 (18.8)	15 (3.7)	9 (2.2)
For taking care of parents	236 (58.3)	130 (32.1)	33 (8.1)	3 (0.7)	3 (0.7)
Post-graduation period is shorter in India	49 (12.1)	105 (25.9)	184 (45.4)	53 (13.1)	14 (3.5)
Parents are in the same profession	36 (8.9)	24 (5.9)	63 (15.6)	150 (37.0)	132 (32.6)

NEET-PG=National Eligibility cum Entrance Test-Postgraduate

Our survey indicated that at least one-third of the students wished to study abroad, and numerous variables that contributed to this choice were subsequently examined. Students who migrate to a foreign country are drawn to a better lifestyle outside India, with more privileges and higher wages to finance a better living. Furthermore, the comparison of work schedules in India and overseas has its own impact since postgraduate students in India have longer work hours and are not compensated for the additional time spent working, while students working abroad are compensated for their extra shifts.

Another Indian study found that 59% of Indian medical students planned to train overseas, with 42% preferring the United States and 43% preferring the United Kingdom. This Indian research, however, was confined to two medical schools in India and may not be representative of all the medical students graduating each year in such a diverse nation.[9] In comparison, our survey sampled the perspectives of 1199 medical school students across India, but even this sample is not representative.[6]

In a study conducted among Lebanese medical students, 406 (96%) of 425 students from pre-final and final years in Lebanon's medical schools intended to travel abroad either for specialty training (330; 77.6%) or subspecialty training (76; 17.9%), a much greater proportion in comparison to Indian medical students in our study. The top four choices of destination countries were the United States (301; 74.1%), France (49; 12.1%), the United Kingdom (31; 7.6%), and Canada (17; 4.2%), almost similar to what we concluded.[1]

Another survey performed in Ethiopia by Deressa *et al.* found that over 53% of undergraduate students expressed a desire to emigrate after graduation, particularly to the United States (43%) and European countries (15%).[10] In comparison to female students and students in pre-clinical years, male students and those with clinical training (fourth-year and internship) had much more statistically significant attitudes toward emigration. respectively. As per research performed in Bangladesh, 51% of respondents aspired to practice overseas owing to personal interests and a wide range of job opportunities.[11]

Migration intentions were also found to be on the higher side among Lithuanian medical and paramedical personnel. About 39% of medical students, 21% of residents, 12% of nurses, and 6% of doctors expected to relocate overseas during the next two years, owing to the socio-demographic, organizational, social, and economic variables.[12]

A cross-continental survey involving medical and nursing students from Asia and Africa demonstrated quite similar findings. Approximately 28% of students opined to continue their education and practice abroad, particularly noticeable among nursing students.[13]

The necessity of the hour is to avoid brain drain among medical students today, which is attainable via immediate action plans to ameliorate the medical education standards throughout the nation. To create a higher-quality teaching environment in Indian medical institutions, educators require to have improved self-awareness regarding the constantly changing practices in the medical sector. Rajan *et al.* found that practitioners who used faculty development programs improved their awareness over time, enabling them to make essential modifications to boost student learning and thereby improving the student-teacher relationship.[14] Another significant endeavor by the National Medical Council is to execute curricular reforms that would enable a paradigm shift from knowledge-based education to competency-based practical healthcare delivery across the country, ensuring competent, motivated, and talented graduate physicians.[15] This would help students to translate their skills to improve their chances of getting into postgraduate programs in India.[16] These initiatives need the participation of all stakeholders, including academic leaders, policymakers, expert committee members, and professors, in order to provide continuous feedback and invest in the development of education policies.

There is an urgent need for strategies to mitigate workplace violence. Steps in this direction include simulated professional training and transformation of healthcare management practices. These sessions should focus on recognizing warning signs of aggressive behavior among the patient's attendants, devising preventative techniques in violent situations, and dealing with the aftermath of such events.[17] Learning self-defense tactics, activating violence management code systems, and forming teams to deal with vicious episodes, among other things, may help avoid similar situations in the future.

This study is relevant to primary care physicians in India as it provides valuable insights into the motivations and preferences of medical students regarding pursuing higher studies and residency abroad. Today's medical students are tomorrow's workforce for primary healthcare. By understanding the factors of brain drain, stakeholders can gain a better understanding of the mindset of future doctors and the potential implications for the availability of primary care providers in the country. This information can help inform policy decisions and strategies aimed at addressing the shortage of primary care physicians, particularly in underserved areas of India.[18,19]

Novelty and limitations

We employed relevant student mindset traits in the research to uncover emigration predictors, which has its implications on education and healthcare policies, particularly in donor lower and middle-income countries like India. Obviously, many of these choices have been influenced by political upheavals and the COVID-19 pandemic. This is one of the first Indian studies with such a large sample size on demographics and emigration statistics among Indian medical students. We included a larger sample of the Indian medical student community as calculated to account for response bias in the study. One of the limitations of our cross-sectional survey was

assessing only the participants' migration intentions rather than their actual migration behaviors. Their response, if influenced by social desirability bias, was beyond our control. Our future follow-up study with this cohort of students will determine whether their intentions are translated into future behaviors.

Key messages

- About 45% of medical students want to study abroad after primary medical qualification.
- Better lifestyle and higher pay grades abroad are the most influential factors for students to choose abroad for further training.

This study implies influencing the medical education policies which are already in place and the ones, which will be made in the future, that can facilitate the expectations of healthcare workers and prevent the emigration out of the country.

Conclusion

Our study indicates that source nations with superior healthcare facilities, higher incomes, more economic growth, higher health expenditure per capita, and a higher doctor–patient ratio are likely to attract medical students. This will have a significant influence on the efficacy and competency of healthcare systems in both source and donor countries. While developing future healthcare policies and a comprehensive national health workforce strategy, it is critical that we do not disregard the goals of this set of medical students. These findings are concerning not just for policymakers but also intrigue research into the problem of brain drain among Indian doctors. Change to a competency-based education system as well as interventions to reduce workplace violence might be among the beneficial approaches to minimize brain drain among Indian medical students and graduates.

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Conflicts of interest

There are no conflicts of interest.

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