EVOLUTION OF SPECIALTY REFERENCES AND INFLUENCING FACTORS AMONG FINAL-YEAR MBBS STUDENTS: A CROSS-SECTIONAL STUDY

Wajeeha Qayyum[1], Seema Ashraf[2], Maham Khan[1], Zakia Shereen[1], Danish Nabi[3]

ABSTRACT

Introduction: Career selection is one of the most critical decisions in the life of a medical student, which in turn is influenced by multiple factors. This study describes the evolution of career choice during the medical school and factors associated with it.

Methodology: A cross-sectional study was conducted at Rehman Medical College, Peshawar. A structured questionnaire was developed after a literature review and validity. Final year MBBS students were enrolled in the study and asked to fill in the proforma. Data were analyzed using SPSS 27. Frequencies and percentages were calculated for descriptive statistics. McNemar's test was used for paired comparisons between first year and final year career preferences. Effect sizes were calculated as odds ratios with 95% CI.

Results: Of the 86 participants, 40 (46.5%) were male. The mean age was 23.7 ±1.2 years. Nearly half, 41 (47.7%; 95% CI 36.9-58.5%), changed their career preference between the first and final year. Preference for Medicine increased from 26 (30.2%; 95% CI 20.8-40.0%) to 32 (37.2%; 95% CI 27.2-48.1%) (p = 0.020), while Surgery preference declined from 32 (37.2%; 95% CI 27.2-48.1%) to 19 (22.1%; 95% CI 14.0-32.0%) (p = 0.110). Interest in Gynecology rose from 2 (2.3%; 95% CI 0.3-8.1%) to 4 (4.7%; 95% CI 1.3-11.5%), and Dermatology changed from 12 (14.0%; 95% CI 7.4-23.0%) to 10 (11.6%; 95% CI 6.0-19.7%), both showing significant shifts (p < 0.001). Preference for abroad-based postgraduate training increased significantly (p = 0.001), while Pakistan-based training did not show a significant change (p = 0.118). Passion and parents' wish were key motivational factors influencing specialty preference.

Conclusion: Nearly half of medical students changed their specialty choice by the final year. There was a significant shift toward medicine as a specialty and postgraduate training abroad. Common influencing factors for specialty choice were passion and parents' wish.

Keywords: Career, Medicine, Surgery

INTRODUCTION

A medical student's life involves multiple decisions; however, career selection is one of the most difficult and critical ones. This decision not only directs the future of students but also strongly influences the work life balance.

[1] Department of General Medicine, Rehman Medical Institute, Peshawar
[2] Community Medicine, Consultant Family Medicine, Rehman Medical Institute, Peshawar
[3] Neurology, Hayatabad Medical Complex, Peshawar

……..

Address for Correspondence

Dr. Danish Nabi
Assistant Professor/Consultant Neurology, Hayatabad Medical Complex, Peshawar
danish.nabi01@gmail.com
+923459141301

The medical profession offers multiple career opportunities, especially MBBS (Bachelor of Medicine, Bachelor of Surgery) graduates. ranging It ranges from clinical fields to basic sciences, research, and healthcare management.[1,2]

Multiple intrinsic and extrinsic factors affect the decision-making process, which may evolve during a student's progress through undergraduate medical education. First-year MBBS students are full of passion, ambition, and aspirations. However, at this stage, they have limited knowledge of the scope and the practical realities of different medical careers. Their views are based on pre-medical experiences, guidance from family members or mentors, and media portrayals of medical specializations.[3]

As students' progress to their final year, they are exposed to multiple academic challenges, patient care experiences, interactions with professionals and rotations through different

specialties. They start to understand workloads, professional satisfaction, and financial benefits associated with different specializations. They also start focusing on job opportunities, personal strengths and limitations, and the availability of various specialization programs.[4,5] All of these factors may influence their perceptions towards their future career.

This study focuses on final-year MBBS students and describes the evolution of their career choices from first year to final year. The aim is to analyze the differences between their initial and current career choice, as well as the factors associated with this shift. By gathering this information, we can better understand the main factors affecting medical students' decision-making processes. This information is essential for career counselors, educators, and policymakers to provide better guidance and support systems for medical students in align with health care system demands.

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional study was conducted at medical college affiliated with Rehman Medical Institute, Peshawar between May and June 2025. The study population included all final-year MBBS students at Rehman Medical College.

Ethical approval was taken from the Research Ethics Committee of Rehman Medical Institute (Reference number: RMI/RMI-REC/Approval/249, dated 09-04-2025). Written informed consent was taken from study participants. Ethical principles including participant anonymity, voluntary participation and confidentiality of responses were taken care of during the study.

Sampling and Participants

All final-year MBBS students at Rehman Medical College were invited to participate (N=100). Of these, 90 students consented to participate in the study, resulting in a response rate of 90%. Out of 90, 86 students completed the questionnaire, while 4 students didn't complete the proforma hence were excluded from the study.

Instrument Development

A structured, well-designed questionnaire was developed on the basis of literature review and adapted to the local context. The questionnaire was designed to assess demographic information (age, gender, marital status, residence, socioeconomic status), academic background (FSC, A levels), family medical background, career choices during first year as well as final year and reasons for choosing the specialty. The questionnaire was set to content validation through review by three senior faculty members from different specialties. It was also set to face validity by pilot testing on 10 MBBS students to assess clarity and completion time. The final questionnaire consisted of 15 main items and took approximately 10 minutes to complete it. The questionnaire was filled out by students in a dedicated session in their classroom.

Study Outcomes

The primary outcome was a change in specialty preference between the first year and final year (yes/no). Secondary outcomes included, specific specialty choice (binary) and postgraduate training location (Pakistan vs abroad) both at two time points.

Statistical Analysis

Data were entered and analyzed using SPSS version 27. Frequencies and percentages were calculated for qualitative variables. To describe the factors associated with career choice change, chi square test was applied. For paired comparisons between first year and final-year career selection and postgraduate preference, McNemar's test was applied by taking binary outcomes. Specialties were categorized into major groups: Medicine and Allied, Surgery and Allied, Gynecology & Obstetrics, Pediatrics, Dermatology, Radiology, Pathology, and Basic Sciences. Effect sizes were calculated as odds ratios with 95% confidence intervals. A p-value <0.05 was considered statistically significant.

RESULTS

Participant Characteristics

A total of 86 final-year medical students were included in the study. The mean age was 23.7 years (SD 1.2, range 22-26). Among them, 46.5%(n=40) were male and 53.5%(n=46) female. The majority were unmarried (93% n=80) and from urban areas (84.9% n=73). Most students belonged to the middle class (34.9% n=30). Almost two-thirds (66.3% n=57) had a doctor in the family, and 19.8% (n=17) reported at least one parent in the medical profession. Regarding academic background, 88.4% (n=76) had completed FSc before entering medical school. The demographic characteristics are summarized in Table 1.

Table1: Participants characteristics n=86

Category	Variable	Subgroup	n (%)
Personal Characteristics	Gender	Male	40 (46.5%)
		Female	46 (53.5%)
	Marital Status	Married	4 (4.7%)
		Unmarried	80 (93.0%)
		Engaged	2 (2.3%)
	Residence	Rural	13 (15.1%)
		Urban	73 (84.9%)
	Socioeconomic Class	Lower	2 (2.3%)
		Lower middle	5 (5.8%)
		Middle	30 (34.9%)
		Upper middle	29 (33.7%)
		Upper	20 (23.3%)
Academic Background	Intermediate Qualification	FSc	76 (88.4%)
		A-levels	10 (11.6%)
Family Background	Parents' Profession	Doctor	17 (19.8%)
		Non-doctor	69 (80.2%)
	Doctor in Family	Yes	57 (66.3%)
		No	29 (33.7%)
	Relation with Doctor	Parent	17 (19.8%)
		Sibling	23 (26.7%)
		Uncle/Aunt	5 (5.8%)
		Cousin	9 (9.1%)
		Spouse	3 (3.5%)
		Not applicable	29 (33.7%)

Nearly half of the respondents (47.7%; 95% CI 36.9-58.5%) reported a change in their career preference between the first and final year. Figure 1 shows the graphical presentation of career choices in 1st year versus final year.

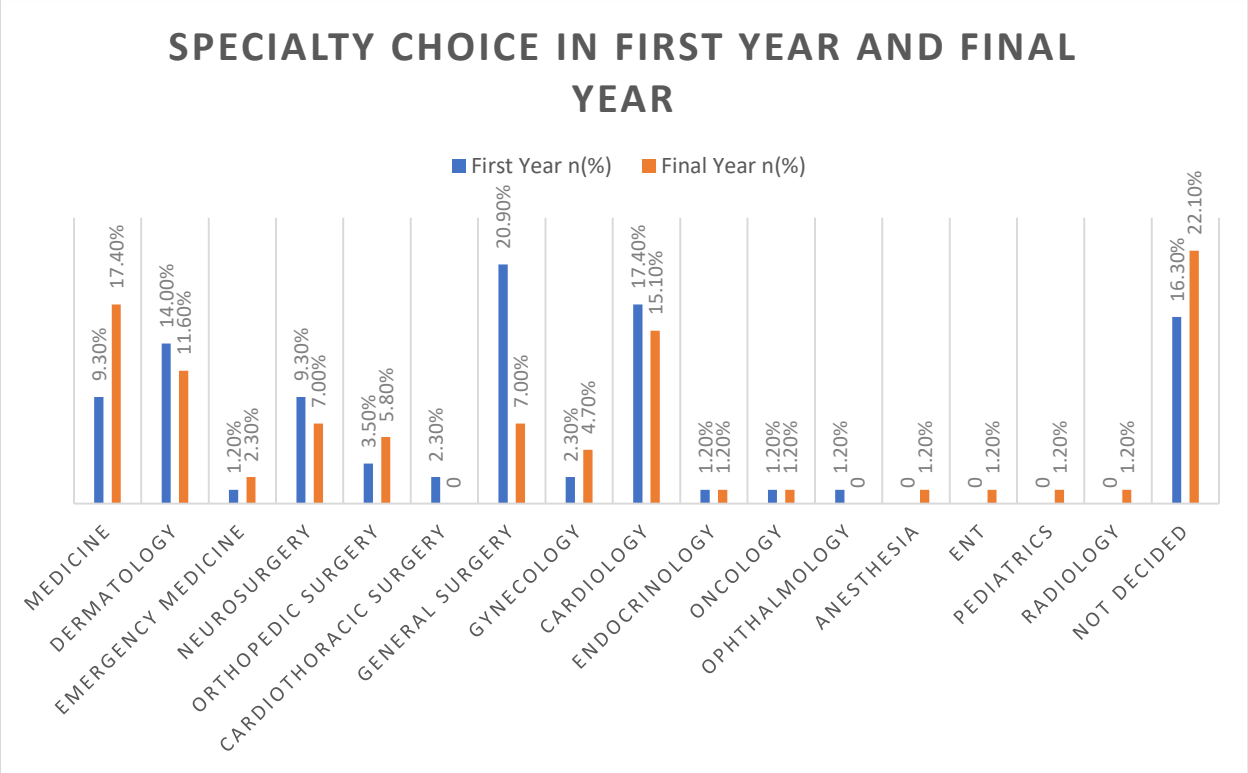

Figure 1. Specialty choice in First year and Final year

For statistical comparison of change in career choice between first and final year, the specialties were consolidated into major groups: Medicine and allied, Surgery and allied, Gynecology & Obstetrics, Pediatrics, Dermatology, Radiology, Pathology, and Basic Sciences.

Among the 86 final-year students surveyed, a statistically significant increase was observed in preference for Medicine from first year to final year (30.2%; 95% CI 20.8-40.0% vs. 37.2%; 95% CI 27.2-48.1%, McNemar's test, p = 0.020, OR = 1.5, 95% CI 1.1-2.1). The preference for Surgery decreased from 37.2% (95% CI 27.2-48.1%) to 22.1% (95% CI 14.0-32.0%), though this change was not statistically significant (McNemar's test, p = 0.110, OR = 0.6, 95% CI 0.3-1.1). Interest in Gynecology and Dermatology also showed significant shifts (McNemar's test, p < 0.001), though absolute numbers remained low. These results suggest that clinical exposure and training experiences during undergraduate years influence the evolution of specialty preferences. Pediatrics. Radiology, Pathology, and Basic Sciences were not computable due to either small or zero cell count.

Table 2: Evolution of Career Choice: First year vs final year

Specialty	**First Year Preference (n, %)**	**Final Year Preference (n, %)**	**McNemar p-value**	**Odds Ratio (95% CI)**
Medicine and allied	26 (30.2%)	32 (37.2%)	0.020	1.5 (1.1-2.1)
Surgery and allied	32 (37.2%)	19 (22.1%)	0.110	0.6 (0.3-1.1)
Gynaecology	2 (2.3%)	4 (4.7%)	<0.001	2.1 (1.3-3.4)
Dermatology	12 (14.0%)	10 (11.6%)	<0.001	0.8 (0.7-0.9)

A McNemar test was performed to assess the change in students' preferences between postgraduate training in Pakistan and abroad, at two points i.e. first and final year. In the first year, 34 students preferred foreign training. Among them, 85.3% (n=29) maintained the same preference, while 14.7%

(n=5) shifted their preference to Pakistan-based training. On the other hand, out of 52 students had initially preferred Pakistan-based training, 46.2% (n=24) shifted their preference to abroad based training in the final year, while 53.8% (n=28) remained consistent with their preference in final year. This change was found to be statistically significant (McNemar exact p = 0.001, OR = 3.2, 95% CI 1.6-6.5), indicating a significant shift towards abroad-based training in the final year.

For Pakistan-based training, 26 students had initially preferred it, with 84.6% (n=22) maintaining their choice and 15.4% (n=4) shifting towards abroad-based training. Among those who had not initially preferred Pakistan-based training, 18.3% (n=11) later opted for it, while 81.7% (n=49) remained unchanged. The change was not statistically significant (p = 0.118, OR = 0.7, 95% CI 0.4-1.2), suggesting that the preference for Pakistan-based training did not significantly change at two points.

A variety of motivational factors influencing the career choice were observed. They were divided into Intrinsic factors like Passion, money, jobs opportunities abroad, inspiration from teachers. Work-related factors like easy working hours and the work environment. Extrinsic influences like present and future global trends, parents wish, society demand, media, peer and spouse influences.

Passion (51%) was the most cited reasons followed by parental choice/wish (32%). Details can be seen in Figure 2.

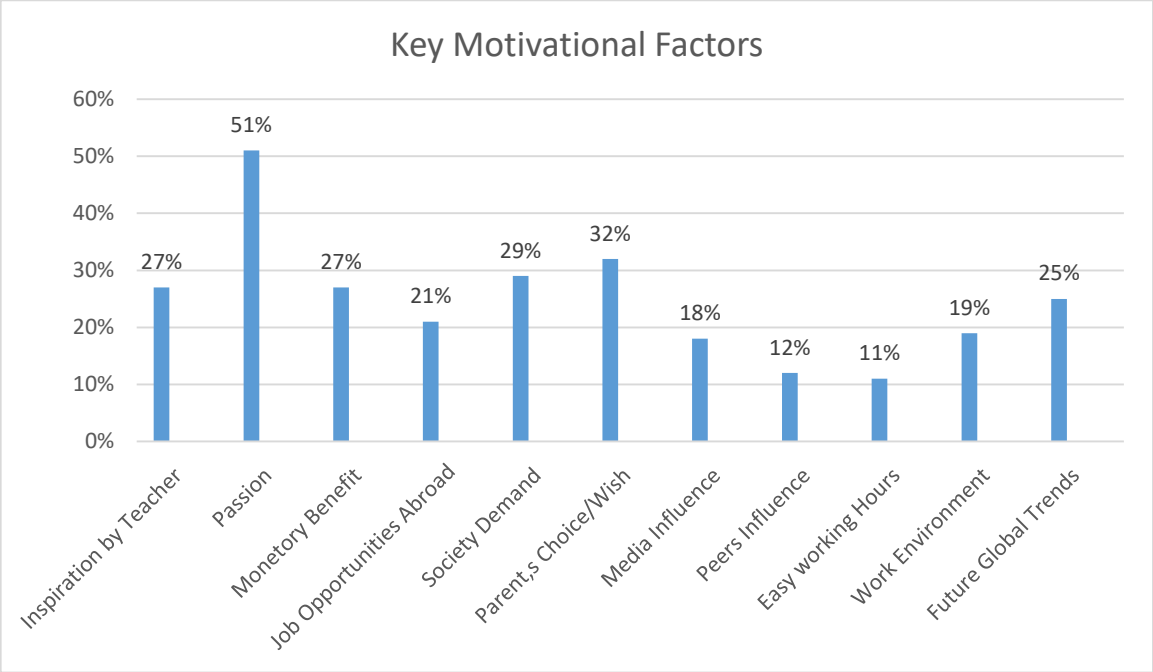

Figure 2: Key Motivational Factors Behind Career Selection

Different demographic factors, family, and educational background were examined for their association with career change. None of them had any significant association with the career changing decisions. Details have been described in table 3.

Table 3: Factors associated with change in career choice

Variable	Category	Change in career choice: n(%)	p-value	Effect size (Cramer's V)
Gender	Male	18 (43.9%)	0.643	0.06 (very small)
	Female	23 (56.1%)		
Intermediate	FSC	35 (85.4%)	0.406	0.10 (small)
	A levels	6 (14.6%)		
Residence	Rural	5 (12.2%)	0.470	0.09 (very small)
	Urban	36 (87.8%)		
	Doctor	10 (24.4%)	0.304	0.12 (small)

Parents' Profession	Non-doctor	31 (75.6%)		
Socioeconomic Status	Lower class	1 (2.4%)	0.738	0.08 (very small)
	Lower middle	1 (2.4%)		
	Middle	14 (34.1%)		
	Upper middle	14 (34.1%)		
	Upper	11 (26.8%)		
Doctor in Family	Yes	25 (61.0%)	0.321	0.12 (small)
	No	16 (39.0%)		

DISCUSSION

The study shows a substantial shift in career preferences among final-year MBBS students, compared with their choices in the first year. Nearly half of students (47.7%; 95% CI 36.9-58.5%) changed their specialty preference during a journey to the final year. This finding is similar to another study with a larger sample size in which 56% of students changed their specialty choice during their educational years.[6]

The most substantial shift observed was a decline in interest in surgical specialties accompanied by a rise in preferences for medicine. These findings align with studies conducted in Jordan and Saudi Arabia, where internal medicine emerged as the most preferred specialty choice among medical students.[7,8] Contrary to a study from Pakistan which concluded that, interest in surgery as a career was significantly high in the final year compared to the first year of medical school (14% vs 49%).[9] Likewise, a systematic analysis carried out on 54 articles worldwide found that surgery was the most attractive specialty chosen by medical students from both occidental and non-occidental countries.[10] However, these two studies documented career choice at one point rather than career choice evolution. Divergence in specialty selection at different levels of medical school has also been observed, with a shift from surgery to medicine in another study[11], hence supporting our study findings.

All participants in our study opted for clinical fields, with none choosing basic sciences or public health. This is in accordance with other studies conducted globally.[6,7,12] However, this finding may reflect sampling bias or local context rather than a universal trend.

Passion and parental wish were considered important reasons for choosing the specific profession, while work-related factors like easy working hours and the workplace environment had less influence. The literature review revealed that the monetary benefits and passion were strong influences on selecting a specific career.[7,12] This variation may be due to social and cultural differences. In settings like ours, where family as well as community influence, and work life balance are highly valued, personal passion or financial motivation is outweighed in shaping career choices. In contrast, in individualistic societies, personal interest, self-satisfaction, and monetary benefits emerge as stronger determinants of career decisions. These differences highlight the role of socioeconomic and cultural values and mentorship environments in influencing students' career preferences.

Regarding postgraduate specialization, we have observed a considerable shift toward international residency programs. This trend reflects a growing inclination toward global medical careers and aligns with findings from Japan, where the COVID-19 pandemic initially reduced students' interest in studying abroad, but interest levels returned to pre-pandemic levels as the situation improved.[12] In our context, factors such as inflation, poor economic conditions, limited opportunities, and lower remuneration may have contributed to the trend to move abroad for better lifestyle and monetary benefits.

Limitations

Our study has several limitations. It relied on retrospective recall of first-year preferences; that may have introduced recall bias. Being a single institution study, may have limited the generalizability of findings. The small sample size may have limited the statistical power for detecting differences, particularly for less common specialties. This study is subject to social desirability bias, as students may have given more acceptable responses rather than their true inputs. Additionally, since 14% of students who might have different career preferences or influencing factors did not participate, this may give rise to non-response bias. Another limitation of the study is that due

to the wide distribution of responses across many individual specialties, we have combined them into broader groups (e.g., Medicine and allied, Surgery and allied) to allow meaningful statistical comparison and analysis, it may have masked the differences within individual specialty choice. For the same reason, we could not apply the more suitable method for multi-category paired data, Bowker's test, because several specialty categories had very small or zero cell counts, making the test computationally invalid. The analysis primarily relied on McNemar's test, which is suitable for paired binary variables.

Despite these limitations, our study provides valuable insights into the evolution of career preferences among medical students in Pakistan and highlights the need for structured career counseling programs and mentorship throughout medical education.

Implications and Future Directions

Our study highlights the importance of providing comprehensive career counseling and exposure to various specialties throughout medical school to support stable career choices. Secondly, there is a need for strategies to improve working conditions, career opportunities and incentives within Pakistan to retain medical graduates here. Thirdly, our study highlights the value of mentorship programs to guide students in making career decisions aligned with their interests and capabilities and healthcare system demand.

Future research should employ prospective longitudinal designs to track career preferences throughout medical education and beyond. Multi-center studies with larger samples would enhance the generalizability of findings. Additionally, qualitative studies could provide deeper insights into the decision-making processes and factors influencing career choices.

CONCLUSION

In this single-centered study, a significant number of medical students changed their specialty choice by the end of their medical school. There was a significant shift toward the specialty of medicine and foreign postgraduate training. Passion and parental wish were described as important reasons for career selection.

ACKNOWLEDGEMENTS

We would like to acknowledge the faculty members who helped us with the validation of the questionnaire.

FUNDING

NIL

CONFLICTS OF INTEREST

NIL

DATA AVAILABILITY STATEMENT

The data related to this study can be requested from corresponding author.

REFERENCES

1. Fatima S, Safian HA, Hassan SW, Khan JS, Akram N, Sanaullah HM, et al. Career trends and influences on medical career choice among female medical students. Prof Med J. 2022;29(11):1975-80. doi:10.29309/TPMJ/2022.29.11.7025.
2. Ibrahim MM, Fadelalla MA, Elsaye ME. Medicine as a career choice: a comprehensive study on factors influencing Sudanese students to opt in/out medical career. BMC Med Educ. 2023;23:418. doi:10.1186/s12909-023-04415-w.
3. Soomro AM, Qureshi A, Qureshi MA, Srewal AA, Rajar AB, Khowaja SA. Factors affecting career choice among medical students. Ann Punjab Med Coll. 2022;16(4):314-20. doi:10.29054/apmc/2022.1120.
4. Mann-Isah NA, Ameen N, Jassim G. Career choices among medical students and factors influencing their choices. Glob J Health Sci. 2019;11(4):132-7. doi:10.5539/gjhs.v11n4p132.
5. Khaliq H, Syed R, Syed H, Ahmed D, Ahmed D, Asad M. Comparison of factors affecting clinical performance and choice of specialty among medical students. Pak Armed Forces Med J. 2025;75(Supplement-6):S920–S924. doi:10.51253/pafmj.v75iSUPPL-6.9529.
6. Rachoin JS, Vilceanu MO, Franzblau N, Gordon S, Cerceo E. How often do medical students change career preferences over the course of medical school? BMC Med Educ. 2023;23(1):596. doi:10.1186/s12909-023-04598-2.
7. Al-Zubi M, Ali MM, Alzoubi S, Bani-Hani M, Awwad MA, Seetan K, et al. Preference of and factors that influence future specialty among medical students in Jordan: a cross-sectional study. Ann Med Surg (Lond). 2021;67:102527. doi:10.1016/j.amsu.2021.102527.

8. Mohamed EY. Specialty preferences and factors affecting the choices of postgraduate specialty among undergraduate medical students. Pak J Med Sci. 2022;38(6):1431-5. doi:10.12669/pjms.38.6.5571.
9. Shahid R, Zeb S, Khan S. Career choices among medical students of Rawalpindi Medical University, Pakistan: a comparative study. J Community Med Public Health Rep. 2021;2(11). doi:10.38207/JCMPHR/2021/0211205.
10. Levaillant M, Levaillant L, Lerolle N, Vallet B, Hamel-Broza JF. Factors influencing medical students' choice of specialization: a gender-based systematic review. E Clinical Medicine. 2020;28:100589. doi:10.1016/j.eclinm.2020.100589.
11. Arif MM, Nisar W, Agha K, Qureshi MG, Mansoor A, Malik AU, et al. Exploring specialty selection and influencing factors among medical students and postgraduates: an observational study. Pak J Health Sci. 2023;4(6). doi:10.54393/pjhs.v4i06.803.
12. Adebajo GO, Ijadunola MY, Akinwamide ES, Oluduro MIE, Eluyinka OD, Odedeyi CA, et al. Specialty preferences and influencing factors among medical students at a South-Western Nigerian University. Discover Education. 2024;3:230. doi:10.1186/s12909-025-07189-5.
13. Goudarzi H, Onozawa M, Takahashi M. Future career plans of medical students and the COVID-19 pandemic: time to recover? J Gen Fam Med. 2022;24(2):139-40. doi:10.1002/jgf2.591.