

ENTREPRENEURIAL MINDSET: PERSPECTIVE OF MEDICAL UNDERGRADUATES

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ABSTRACT

Objectives: This study aimed to comprehend the entrepreneurial and abroad practice mindset among Pakistani medical undergraduates and the factors influencing their choices.

Materials and Methods: A cross-sectional survey involving 401 students from various medical and dental colleges in Khyber Pakhtunkhwa, Pakistan, was conducted. Participants completed a questionnaire concerning their career preferences, reasons for working abroad or in private practice, and perceptions of benefits and drawbacks to working in public and private sectors, among other questions. Data was analyzed using the SPSS software (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp.).

Results: Two hundred and five (205) students preferred postgraduate training, while 168 preferred overseas clinical training. Outpatient services in governmental hospitals were mentioned as a benefit, while a lack of facilities was noted as a hurdle. Twenty-eight (28) students chose private practice due to its appealing work environment. There was no significant association between studying years and preference for working abroad as a clinician, with a p-value of 0.251 regarding barriers in private practice or the type of setup preferred.

Conclusion: Perceptions of general practice among medical students in Pakistan are influenced by various factors, such as income potential, quality of life, and the chance to acquire new skills. The responses reflect the students' inclination towards furthering training and gaining experience in different healthcare setups. Further research may explore how these perceptions affect healthcare delivery within the country.

Keywords: Entrepreneurial Mindset, Overseas Training, Public Sector Benefits, Private Practice Barriers, Postgraduate Training.

This article may be cited as: Haider I, Khan MS, Shafi M, Khan QA, Saeed R. Entrepreneurial mindset: Perspective of medical undergraduates. *J Med Sci* 2023 October;31(4):335-340

INTRODUCTION

Clinical practice is the work of a doctor treating patients with minor or chronic illnesses or referring them to other structures or specialists if needed. It is the practice of a doctor trained in a wide array of medicine, diseases, procedures, and treatments. General practice is pivotal in the health care system. ¹ Healthcare systems focusing on primary care generally produce high-quality, equitable, and efficient care. ² The current population of Pakistan in 2023 is 240,485,658, with a 1.98% increase from 2022.

Of 114 medical colleges in Pakistan, 44 (38%) are public and 70 (62%) are private. Province-wise, Punjab and the Federal area have 62 (53%) medical colleges, including 19 public and 43 private sector medical colleges. Sindh has 26 (23%) medical colleges, including 11 public and 15 private sectors; KPK has 20 (17%) medical colleges, having 10 public and 10 private sectors; Balochistan has 2 (less than 2%) with one public and one private, Gilgit and Azad Jammu and Kashmir (AJK) has 4 (3 %) medical colleges including three public and one private sector medical colleges. ³ During the first two years of medical and dental studies, basic health sciences are taught to the medical undergraduates. Clinical training gradually increases as the year progresses and peaks in the final year of the respective medical undergraduate training programs. Students get more ideas and get familiar with the healthcare system, and they start making up their minds about their entrepreneurship perspectives. They have diverse preferences about future clinical practice; some opt for post-graduation in Pakistan, some for private clinics,

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Date Received: 05/09/2023

Date Revised: 22/10/2023

Date Accepted: 25/10/2023

and some for overseas clinical training. Medical education in Pakistan is currently facing many challenges. Some challenging factors regarding general practice in Pakistan include lack of facilities, long working hours, lack of supervision, etc. Our setup has many advantages of private practice, including high income, better teamwork, less crowding, etc. Many students are interested in working abroad as a clinician mainly due to better financial perspectives, new skills and practices, better life quality, and security perspectives.⁴

Pakistan produces 32,879 doctors yearly, with 40% settling overseas. Pakistan now has 20,000 specialists, almost half of whom are foreign nationals.⁵ The best graduate doctors of almost all medical institutes in Pakistan migrate abroad for better jobs and postgraduate training. Indeed, after training abroad in their respective fields, these doctors can potentially transform Pakistan's underdeveloped healthcare system. Being a developing nation with a very limited GDP, Pakistan spends significant public resources to produce doctors; it is reasonable to expect the medical graduates to "payback" to their nation by playing their roles for the greater goal of social good and service to their country instead of the more limited goal of personal benefit.^{6,7}

This study aims to identify medical undergraduates' perspectives on clinical entrepreneurship at different study phases, explicitly identifying key factors influencing their views. The rationale of this study is to acquire knowledge about clinical entrepreneurship in Pakistan and the career choices of medical undergraduates of public and private sector medical colleges in Pakistan.

MATERIALS AND METHODS

This cross-sectional study was conducted on willing students of medical and dental colleges of Khyber Pakhtunkhwa, Pakistan. A written informed consent was mandatory for each participant to participate in this research. Ethical approval was availed for this study from the institute's Institutional Review and Ethical Board (IREB) (Ref. No. 387/DME/KMC Dated 27-06-2023). The duration of this study was two months. OpenEpi.com calculated the sample size, and regarding a local study from Karachi by Mustafa S, it turned out to be 401. A convenient sampling technique was utilized for this research. Medical undergraduates of 3rd, 4th and final year MBBS and dental undergraduates of 3rd and final year BDS, both from public and private sectors of Peshawar, Pakistan, were included in this study. The questionnaire was developed on the AMEE Guideline No. 87 framework.⁸ This questionnaire underwent face and content validity by pilot study and subject medical experts by Lynn criteria, with 0.80 of CVI as the threshold.⁹ Both online and hard copies of the questionnaire were utilized to collect the data. Data was collected through a comprehensive survey among medical undergraduates, covering diverse variables re-

lated to abroad practices and entrepreneurial aspirations. This data was then entered and analyzed in SPSS version 26.0 for all the relevant variables. Frequency tables were employed to present the distribution of responses across different categories. Additionally, Chi-Square tests were conducted to explore the relationships between various factors.

RESULTS

Four hundred and one public and private medical and dental college students participated in this study. Amongst them, 177(44.1%) were males, and 224 (55.9%) were females. There were 327(81.5%) medical students and 74(18.5) dentistry undergraduates. Students from public sector were 368(91.8%) and 33(8.2%) from private sector. Thirty-five (9%) participants were third-year students, 161(40%) were fourth-year students, and 205(51%) were final-year students. Ten (3%) participants had done A-level while 391 (97%) had done a Higher Secondary School Certificate (HSSC). Forty-one (10%) students had a migration background from other medical colleges to their current institute. Data analysis revealed that 205 (51.1%) students preferred postgraduate training for their general practice, while 168(41.9%) chose overseas clinical training.

The study findings documented that the beneficiary factor undergraduates think regarding government hospitals is increased outpatient services. The challenge regarding general practice in government hospitals is the need for more facilities.

Those undergraduates who opted to study abroad practice were of the view that they could acquire new skills and techniques there. Twenty-eight (7%) undergraduates chose private practice, and they gave the reason for a pleasant environment for the workplace.

The various findings of this study are shown in Figures# 1-6. Broadly, the findings of this study are stratified in the following domains:

Gender and Preference of Practice Setup: The Chi-Square tests revealed a statistically significant association between gender and the preferred type of practice setup (Pearson Chi-Square = 6.155, $p = .046$). While the linear-by-linear association approached significance ($p = .057$), the likelihood ratio test also showed significance ($p = .045$). This suggests that gender might influence the preference for different practice setups, which could interest readers.

Gender and Beneficiary Factors Regarding Government Hospitals: The Chi-Square tests demonstrated a significant relationship between gender and factors perceived as beneficiaries of government hospitals (Pearson Chi-Square = 12.933, $p = .012$). However, the linear-by-linear association was not significant ($p = .734$).

These findings indicate that gender might play a role in shaping medical undergraduates' views on the benefits of government hospitals.

Gender and Challenging Factors Regarding General Practice in Government Hospitals: No statistically significant relationship was observed between gender and the perceived challenging factors related to general practice in government hospitals (Pearson Chi-Square = 7.748, $p = .101$). The linear-by-linear association was also not significant ($p = .464$). This suggests that gender might not strongly influence how medical students perceive the challenges in government hospital practice.

Gender and Advantages of Private Practice: The Chi-Square tests did not reveal a statistically significant association between gender and perceived advantages of private practice (Pearson Chi-Square = 5.411, $p = .248$). The likelihood ratio test showed similar non-significance ($p = .248$), and the linear-by-linear association was also insignificant ($p = .170$). These findings suggest that gender might not significantly impact medical students' perceptions of the advantages of private practice.

Gender and Influence of Factors on Opinion of Private Practice: No statistically significant association was found between gender and various factors' influence on private practice (Pearson Chi-Square = 4.726, $p = .317$). The likelihood ratio test and linear-by-linear association also supported this lack of significance ($p = .318$ and $p = .156$, respectively). These results imply that gender might not strongly affect how medical undergraduates' opinions of private practice are influenced by different factors.

Studying Year and Preference of Practice in the Future: A cross-tabulation between studying year and preference of practice in the future revealed exciting patterns. While preferences varied across study years, a Chi-Square test did not show a significant relationship (Pearson Chi-Square = 4.751, $p = .314$).

Studying Year and Reasons for Working Abroad as a Clinician: An analysis of studying year and reasons for working abroad indicated variations in motivations across different academic years. Nevertheless, the Chi-Square test did not yield statistically significant results (Pearson Chi-Square = 16.747, $p = .033$).

Studying Year and Reasons for Barrier in Private Practice: The relationship between studying year and reasons for barriers in private practice revealed some noteworthy patterns. However, the Chi-Square test did not show significant results (Pearson Chi-Square = 10.208, $p = .251$). Again, a few cells had expected counts less than 5, potentially impacting the validity of the test.

These results provide insights into the complex interplay of gender, studying year, and various factors related to medical students' perceptions of practice preferenc-

es, motivations for working abroad, and barriers to private practice. While some relationships showed statistical significance, the presence of cells with expected counts below 5 raises concerns about the reliability of those results. Further analysis and interpretation considering these limitations are crucial to drawing robust conclusions.

The other essential points elaborated from this study are Main Factors analysis, Staff Behavior Factors, and Advantages of Private Practice. These analyses were based on the type of medical college: Public Sector and Private Sector, highlighting significant associations through crosstab analyses and Chi-Square tests.

MAIN FACTORS ANALYSIS:

The analysis of the main factors revealed that Lack of Supervision and Lack of Facilities were significant concerns among respondents. Within the Public Sector, 56(14.1%) respondents attributed their opinions to Lack of Supervision, while 173 (43.8%) were influenced by Lack of Facilities. In the Private Sector, these percentages were 12.1% and 36.4% respectively. Chi-Square tests indicated statistical significance (Pearson Chi-Square: 6.177, $p=0.186$) in the association between Main Factors and Type of Medical College, underscoring the varying concerns within these sectors.

STAFF BEHAVIOR FACTORS ANALYSIS:

Regarding Staff Behavior Factors, 10.3% of respondents in the Public Sector were influenced by Irresponsible Staff, compared to 21.2% who cited Unhygienic Hospitals as a significant factor. In the Private Sector, 15.6% considered Irresponsible Staff, while 12.1% identified Unhygienic Hospitals as a concern. The Chi-Square test indicated statistical significance (Pearson Chi-Square: 9.555, $p=0.049$), suggesting differences in staff behavior perceptions between the two sectors.

ADVANTAGES OF PRIVATE PRACTICE ANALYSIS:

The analysis of the advantages of Private Practice demonstrated that Pleasant Environment and High Income were substantial factors affecting opinions. Within the Public Sector, 40.2% found Pleasant Environment significant, whereas 25.3% valued High Income. In the Private Sector, these percentages were 165(41.1%) and 102(25.4%) respectively. The Chi-Square test indicated statistical significance (Pearson Chi-Square: 4.907, $p=0.297$), suggesting a noteworthy association between the perceived advantages and type of medical college.

These findings collectively underscore the diverse factors influencing opinions on private medical practice among respondents from different types of medical colleges. The statistically significant associations provide insights into the nuanced perspectives within Public and Private Sectors, shedding light on the multifaceted consid-

erations that shape opinions on private medical practice in the biomedical field.

In summary, the statistical analysis did not reveal significant relationships between studying years, type of medical college, and various factors influencing students' preferences, opinions, and motivations related to their fu-

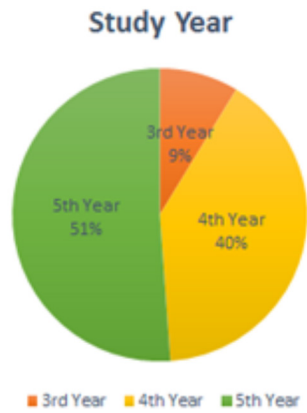


Fig 1: Study Year of Participants

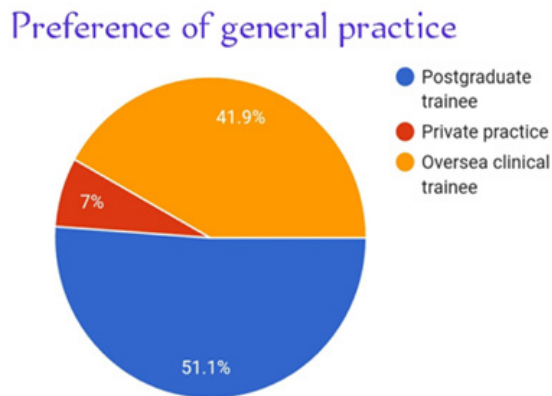


Fig 2: Preference of general practices in study participants

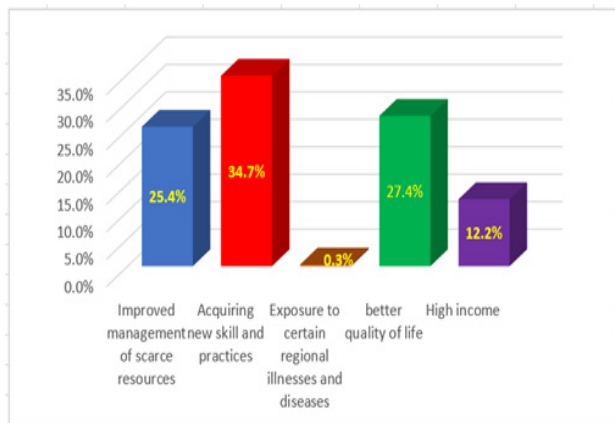


Fig 3: Reasons for working abroad as a clinician

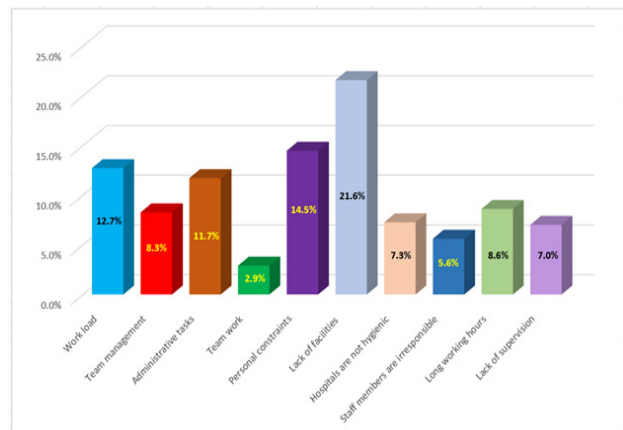


Fig 4: Barriers to private and government practices

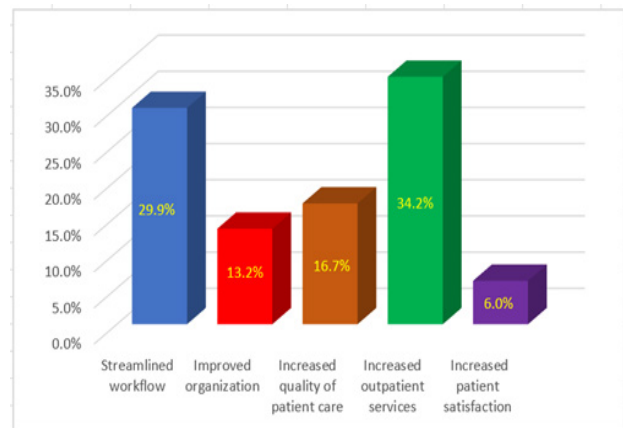


Fig 5: Beneficiary Factors Regarding Government Hospitals

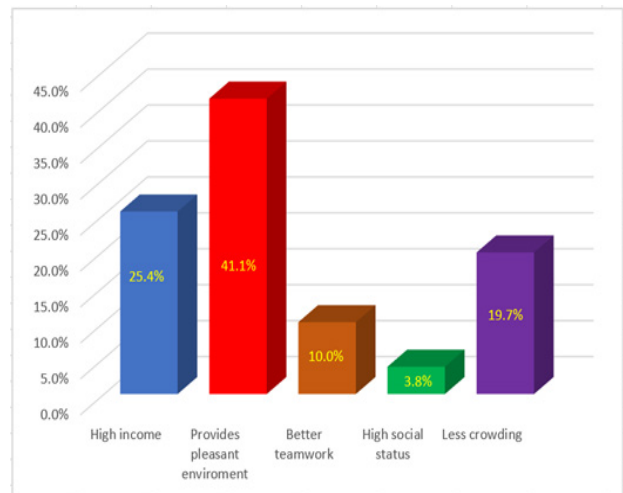


Fig 6: Advantages of Private Setup

ture medical practice setups and decisions.

DISCUSSION

This research analyzes critical factors such as studying years, premedical studies, migration from other medical colleges, gender, preference of practice in the fu-

ture, reasons for working abroad as a clinician, and barriers to private practice. This paper unveils valuable insights into the motivations and perceptions of medical students. The results provide a unique perspective for readers to understand the dynamics of abroad practices and the entrepreneurial mindset among aspiring clinicians.

The available literature on the perceptions of medical undergraduates regarding clinical entrepreneurship and practice abroad in public and private hospitals reveals the following common themes.

1. **Awareness and Interest in Clinical Entrepreneurship:** Many medical undergraduates need more awareness of clinical entrepreneurship as a career option. A qualitative study by Smith A documented that only a small percentage of medical students had prior knowledge about clinical entrepreneurship.¹ However, there was a positive attitude towards entrepreneurship among those who were aware.¹ Another qualitative study by Johnson J in 2018 highlighted the importance of integrating entrepreneurship education into the medical curriculum to improve awareness and interest.²

2. **Barriers and Challenges to Clinical Entrepreneurship:** Several barriers and challenges were identified by medical undergraduates regarding clinical entrepreneurship. A cross-sectional study by Patel R. reported that lack of business skills and knowledge, limited access to mentors and resources, and fear of failure were common barriers.³ Another cross-sectional study by Lee S found that medical students perceived lack of time, limited financial support, and lack of role models as significant challenges.⁴

3. **Perceptions of Practice Abroad:** Medical undergraduates have varying perceptions of practicing abroad in public and private hospitals. A mixed-methods study by Garcia P. reported that medical students perceived practicing abroad as an opportunity for personal growth, exposure to different healthcare systems, and cultural diversity.⁶ However, concerns about language barriers, unfamiliar healthcare practices, and social integration were also highlighted.

4. **Factors Influencing Decision-Making:** Several factors influence medical undergraduates' decision-making regarding clinical entrepreneurship and practice abroad. A qualitative study by Brown J identified financial considerations, career prospects, personal interests, and social support as important factors.⁷ Another qualitative study by Martinez C. emphasized the role of mentorship, networking opportunities, and exposure to successful entrepreneurs in shaping students' decisions.⁵ These study findings coincide with our study. Moreover, various other studies also validate the findings of the current research.^{10, 11} Medical undergraduates are predisposed to international practice opportunities, including clinical rotations

or internships abroad. They perceive these experiences as beneficial for their personal and professional development, providing exposure to different healthcare systems and cultures.^{12, 13} However, there is also the potential threat of brain drain, and this perspective needs effective management by respective stakeholders.¹⁴ In general, medical undergraduates perceive clinical entrepreneurship in terms of financial independence, clinical acumen, career flexibility, and the ability to contribute to healthcare system improvements.^{15, 16} However, they also raised concerns regarding the need for more supportive institutional policies, the non-existence of an entrepreneurship mindset, and virtually nonexistent business acumen and training.¹⁷ The undergraduate medical education curriculum should address and effectively teach these soft skills.¹⁸ Integrating entrepreneurship education into the medical curriculum and providing access to mentors and resources may help undergraduates foster their entrepreneurship skills.¹⁹⁻²¹

Being single-centered and cross-sectional are the main limitations of this research work. Extensive multi-centered or qualitative research needs time to gain deep insight into this critical domain. Medical undergraduates need more awareness of clinical entrepreneurship and perceive various barriers and challenges to pursuing this career path. There is a need to explore further and address the perceptions and challenges medical undergraduates face regarding clinical entrepreneurship and practice abroad to prepare them for future career opportunities. Medical education curricula should consider incorporating structured programs that provide adequate training, mentorship, and support. Additionally, institutional policies and collaborations between public and private hospitals can create opportunities for students to gain international experience and foster an entrepreneurial mindset.

CONCLUSION

This study offers valuable insights into the entrepreneurial mindset of medical undergraduates. This study provides a comprehensive overview of comprehension regarding the changing dynamics in the medical education landscape. Comprehending these trends is pivotal for medical education and practice stakeholders to manage their approaches in this crucial perspective.

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CONFLICT OF INTEREST: Authors declare no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE: NIL

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

- Haider I:** Concept, Critical appraisal, and Discussion Writing
- Khan MS:** Data collection, compilation of results, formatting of the article
- Shafi M:** Data Collection, Manuscript writing
- Khan QA:** Manuscript Writing, Bibliography
- Saeed R:** Overall compilation of the article

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.



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