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A Comparative Analysis of The Motivations, Frustrations, And Career Aspirations of Pakistani And Chinese Medical Students Studying in China: A Cross-Sectional Study at Four Medical Universities in Shandong Province

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Abstract

***Introduction:** This study aimed to examine the similarities and differences between Pakistani and Chinese medical students in China. The exchange of knowledge and experiences between these two groups offers a unique opportunity to investigate the similarities and differences in their motivations, frustrations, and career aspirations.*

***Methods:** Using a comparative analysis, we explored the motivations and career aspirations of 738 clinical MBBS students (462 Chinese and 276 Pakistani). These data through the Questionnaire Star platform to complete the questionnaire and were analysed using Pearson's χ^2 test.*

***Results:** About 83.55% of Chinese students and more than 90% of Pakistani students were studying medicine as the first choice, although the specific motivations for this choice varied. Total 180 students from both the groups considered discontinuing their studies, citing the excessive workload of medical studies and that of their future profession as reasons. While approximately 80% Chinese students considered further studies after graduation, Pakistani students expressed interest in directly joining the workforce, and some students from both the groups considered alternative careers.*

***Discussion:** Our study provides insights into what motivates Pakistani and Chinese medical students in China, while clarifying their frustrations and career aspirations. This can inform educational institutions, policymakers, teachers, and student support services in Pakistan and China. The study also provides theoretical support for pursuing higher education in different countries.*

***Keywords:** motivations, frustrations, career aspirations, Pakistani international medical students, Chinese medical students.*

Introduction

Hippocrates, the "father of medicine" in ancient Greece, said that medicine is, of all the arts, the noblest. Statistics from the Chinese Ministry of Education in 2022 show that the number of undergraduate medical students in China exceeded 1.5 million [1]. In the current globalized world, the pursuit of medical education transcends national borders, with students from a variety of countries seeking opportunities to study medicine abroad [2]. With its growing reputation as a hub of medical education, China has attracted numerous international students, including many from Pakistan [3,4]. In 2017, the Chinese Ministry of Education published data showing that China had become the third-highest destination country worldwide and the highest in Asia [5]. In 2019, the data showed that 492,185 international students from 196 countries and regions were studying in China, with Pakistani students ranking third on the list [6]. Understanding medical students' motivations, frustrations, and career aspirations during their studies is crucial for both academic and practical purposes [7].

Previous studies have examined various aspects of medical career choice, including individual motivations, family expectations, social prestige, and financial stability [8-15]. However, there is a dearth of research focusing specifically on the motivations and career aspirations of Pakistani and Chinese medical students studying in China, particularly in a comparative context. The exchange of knowledge and experiences between Pakistani and Chinese medical students in China offers a unique opportunity to investigate the similarities and differences in their motivations, frustrations, and career aspirations.

Therefore, this study aims to fill the gap in the existing literature by conducting a comparative analysis of Pakistani and Chinese medical students in China, focusing on their motivations for choosing medicine, frustrations in the study journey, and career aspirations, as well as the factors that shape their decisions. By exploring these aspects, we hope to provide valuable insights that inform educational institutions, policymakers, teachers, and student support services in Pakistan and China.

Methodology

This study employed a cross-sectional research design to explore the motivations, frustrations, and career aspirations of international medical students of Pakistani descent and Chinese medical students studying in China. This research approach involved quantitative data collection and analysis.

Participants

The study participants consisted of medical students from Pakistan studying in China, and Chinese medical students from different grades, from 2016 to 2022 (where "grade" refers to participants' year of enrolment in medical school). A convenience sampling technique was employed to recruit participants from four medical universities (Shandong First Medical University, Weifang Medical University, Jining Medical University, and Binzhou Medical University). The initial sample size included 1,025 participants, of whom 1,023 were valid. After filtering, 738 students studying clinical medicine or MBBS majors, comprising 462 Chinese students and 276 Pakistani students, were sampled for the study. The distribution of students according to country and grade are shown in Table 1. This study was approved by the IRB of the authors' affiliate institution.

Table 1: Grade and gender distribution of the Chinese and Pakistani medical students (N = 738).

Grade	Chinese Student N (%)	Pakistani Student N (%)
2016	3 (0.65)	21 (7.61)
2017	3 (0.65)	29 (10.51)
2018	4 (0.87)	21 (7.61)
2019	87 (18.83)	35 (12.68)
2020	86 (18.61)	47 (17.03)
2021	78 (16.88)	52 (18.84)
2022	201 (43.51)	71 (25.72)
Gender		
Male	208 (45.02)	191 (69.20)
Female	254 (54.98)	85 (30.80)
Country		
China	462 (62.6)	——
Pakistan	——	276 (37.4)

Data Collection

A questionnaire comprising 10 questions was designed specifically for this study. The questionnaire aimed to gather information on the participants' backgrounds, motivations for choosing medicine, frustrations, and career aspirations. The questionnaire was pilot tested to ensure the clarity and validity of the questions.

Data collection procedure

The questionnaire was distributed electronically to participants via Questionnaire Star platform (https://www.wjx.cn/). Participants were given a designated period to complete the questionnaire. The anonymity and confidentiality of participants were ensured throughout the data collection process (See Picture 1).

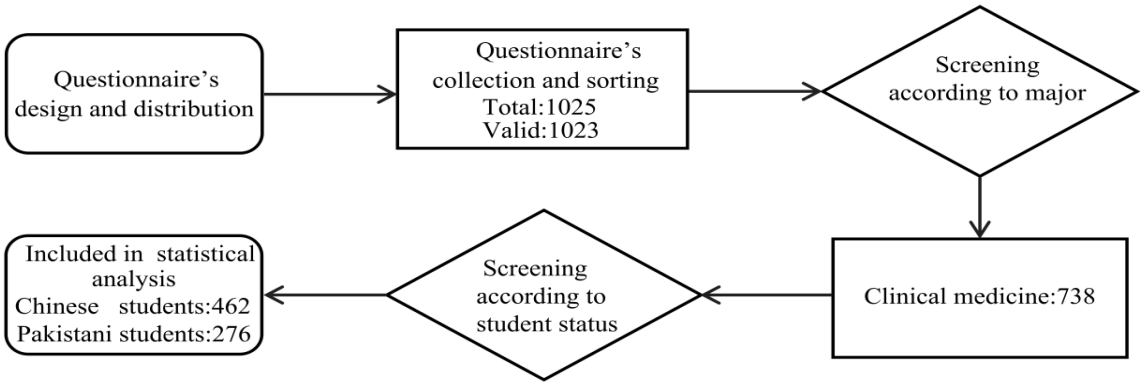

Figure 1: Data collection and analysis process.

Data analysis

The collected data were analyzed using the Pearson χ^2 test, a statistical test that assesses the association between categorical variables. This test was employed to examine the potential relationships between variables, such as motivations and career aspirations, among Pakistani and Chinese medical students in China. Statistical analysis was performed using SPSS 23 software, and the significance level was set at $p < 0.01$.

Results

Background

Question 1: Knowledge about the work of doctors

When asked about their knowledge of doctors' work when choosing to apply for medical school after graduating from high school, their responses varied. Among the Chinese students, 162 (35.06%) indicated that they knew about it, whereas 69 (14.94%) responded that they had significant knowledge. In

contrast, among Pakistani students, 121 (43.84%) knew about it and 119 (43.12%) had significant knowledge. These responses suggest that numerous students had some level of knowledge about the work of doctors, whereas a significant proportion had limited knowledge or were unsure about it. The differences in responses between the Chinese and Pakistani students were statistically significant ($\chi^2 = 126$, $p < 0.01$). The statistical results of participants' knowledge of the work of doctors are shown in Table 2, Q1.

Table 2: Background information of the Chinese and Pakistani medical students.

Questions	Options	Chinese Student N (%)	Pakistani Student N (%)	χ^2	*p*
Q1	I know it	162 (35.06)	121 (43.84)	126	**
	I know it quite well	69 (14.94)	119 (43.12)		
	I do not know much about it	216 (46.75)	29 (10.51)		
	I have no idea about it	15 (3.25)	7 (2.54)		
Q2	Yes	161 (34.85)	104 (37.68)	0.6	0.438
	No	301 (65.15)	172 (62.32)		
Q3	Yes	452 (97.84)	267 (96.74)	0.83	0.363
	No	10 (2.16)	9 (3.26)		
Q4	Yes	264 (57.14)	188 (68.12)	8.8	**
	No	198 (42.86)	88 (31.88)		
Q5	Yes	164 (35.50)	137 (49.64)	14.3	**
	No	298 (64.50)	139 (50.36)		
Q6	High	13 (2.81)	22 (7.97)	79.9	**
	Upper-middle	43 (9.31)	87 (31.52)		
	Middle	299 (64.72)	138 (50.00)		
	Lower-middle	85 (18.40)	25 (9.06)		
	Low	22 (4.76)	4 (1.45)		

Q1: Please recall when you chose to apply for medical school after graduating from high school. Did you know something about the work of doctors?
Q2: Before deciding to apply to medical school, did you have any medicine-related experience? (e.g. medical volunteer or the Red Cross Society).
Q3: Did your parents/family support your choice of the medical profession?
Q4: Do your parents or close relatives practice medicine?
Q5: One or more parents attained a university degree
Q6: What is the income level of your parents/guardian?
P: Pearson χ^2 test; ** $p < 0.01$ (significant).

Question 2: Medicine-related experience

A similar trend was observed among both Chinese and Pakistani students regarding medical experiences before they decided to apply for medical school. A majority of students, 301 (65.15%) Chinese and 172 (62.32%) Pakistani, responded that they had no medicine-related experience. Conversely, 161 (34.85%) Chinese and 104 (37.68%) Pakistani students indicated that they had medicine-related experience. However, the difference in responses between the two groups was not statistically significant ($\chi^2 = 0.6$, $p = 0.438$). The statistical results of participants' prior medicine-related experience are shown in Table 2, Q2.

Question 3: Parental support

In terms of parental support for their choice of medical profession, the majority of both Chinese and Pakistani students reported receiving support from their parents or family. Among Chinese students, 452 (97.84%) indicated that their parents or family supported their choice, whereas 10 (2.16%) stated otherwise. Similarly, among Pakistani students, 267 (96.74%) reported receiving parental support, while 9 (3.26%) did not. However, the difference in responses between the two groups was not statistically significant ($\chi^2 = 0.83$, $p = 0.363$). Table 2, Q3 shows the proportion of participants who had parental support.

Question 4: Parents or close relatives practicing medicine

When asked about their parents or close relatives practicing medicine, a higher proportion of Pakistani students (68.12%) gave affirmative responses than did Chinese students (57.14%). Conversely, more Chinese students (42.86%) responded negatively to this question than Pakistani students (31.88%). The difference in the responses between the two groups was statistically significant ($\chi^2 = 8.8$, $p < 0.01$). The statistical results of participants whose parents or close relatives practice medicine are shown in Table 2, Q4.

Question 5: Parental university education

In terms of parental university education, a higher percentage of Pakistani students (49.64%) than Chinese students (35.50%) reported that one or both of their parents had attained a university degree. However, both groups had a substantial proportion of students whose parents did not hold university degrees. The difference in responses between the two groups was statistically significant ($\chi^2 = 14.3$, $p < 0.01$). The statistical results of the educational background (university education) of parents of participants are shown in Table 2, Q5.

Question 6: Income level of parents/guardian

When examining the income levels of parents/guardians, a notable difference was observed between the Chinese and Pakistani students. Among the Chinese students, the majority fell into the middle-income category (64.72%), followed by lower-middle income (18.40%) and upper-middle income (9.31%). Conversely, Pakistani students had a relatively high representation in the upper-middle income category (31.52%), followed by the middle-income category (50.00%). The differences in the income distribution between the two groups were statistically significant ($\chi^2 = 79.9$, $p < 0.01$). The statistical results of the income level of participants' parents/guardian are shown in Table 2, Q6.

Motivation to Study Medicine

Question 7: Medical study as the first choice

Next, we analyzed the students' career choices and motivations. Table 3, Q7 shows that as a first choice, among Chinese students, medical universities were the top choice for 83.55% of participants, whereas more than 90% of Pakistani participants considered applying to medical universities as their first choice. The differences in the first choice between the two groups were statistically significant ($\chi^2 = 7.2$, $p < 0.01$).

Question 8: Reasons for choosing to study medicine

In the survey on reasons for choosing to study medicine, we found that both Chinese and Pakistani students were more likely to choose "personal interest" and "parental support," and the proportions of these two options were more or less equal in both groups (Chinese students: 31.82% and 14.72%; Pakistani students: 35.51% and 10.14%). Moreover, the most frequently chosen option among Pakistani students was "wanting to help others" (37.32%). Among the Chinese students, "personal experience" (14%) was the second most common choice after "parental support," whereas "good job prospects" was the most important reason for approximately 12% of students in this group. The differences in the reasons for studying medicine between the two groups were statistically significant ($\chi^2 = 150.2$, $p < 0.01$). Table 3, Q8, explains the reasons for participants' choice to study medicine.

Table 3: Motivation to study medicine for the Chinese and Pakistani medical students.

Questions	Options	Chinese Student N (%)	Pakistani Student N (%)	χ^2	*p*
Q7	Yes	386 (83.55)	250 (90.58)	7.2	**
	No	76 (16.45)	26 (9.42)		
Q8	Personal interest	147 (31.82)	98 (35.51)	150.2	**
	Parental support	68 (14.72)	28 (10.14)		
	High social status	26 (5.63)	18 (6.52)		
	High economic status	15 (3.25)	4 (1.45)		
	Wanting to help others	32 (6.93)	103 (37.32)		
	Personal experience	66 (14.29)	10 (3.62)		
	No other plans or choices	26 (5.63)	9 (3.26)		
	Recommended by friends or teachers	28 (6.06)	0 (0.00)		
	Good job prospects	54 (11.69)	6 (2.17)		

Q7: Was studying medicine your first choice?
Q8: What is your most important reason for choosing to study medicine?
P: Pearson χ^2 test; ** $p < 0.01$(significant).

Frustrations

Question 9: Persistence and giving up

We analyzed the performance of the two groups of students in dealing with setbacks in their medical studies. The data in Table 4, Q9-1 showed that of the 462 Chinese clinical students who participated in the survey, 180 students reported that they had considered discontinuing their studies. Further, 65.56% (N = 118) of this group cited "too much pressure" as the reason for wanting to discontinue their studies, followed by "doctors' work is too hard" and "burn out" at 11.67% and 10.56%, respectively. Of the participants, 282 students stated that they had never considered quitting their medical studies. For approximately 39% of them, the reason was "strong interest in studying"; for 34%, family and social factors were the reasons, and for a quarter, "more and better understanding of the medical profession" was the reason. The differences in persistence between the two groups were statistically significant ($\chi^2 = 32.8$, $p < 0.01$).

Of the 276 Pakistani students, 23.55% (N = 65) said that they had thought about discontinuing their studies. Apart from the two main reasons of "Too much academic pressure" and "Doctors work too hard," the reasons were different for Chinese students: "Family's economic status" and "Having better opportunities" were important reasons for Pakistani students to discontinue their studies. In contrast, 76.45% (N = 211) of the students said they had never thought of discontinuing their studies since they chose medicine, with the largest proportion being "more and more understanding of the medical profession" at approximately 45%. The differences in giving up the study of medicine between the two groups were statistically significant ($\chi^2 = 51.3$, $p < 0.01$). The statistical results of the most frequent frustrations faced by participant in the course of their medical studies are shown in Table 4, Q9-2.

Table 4: The reasons for the persistence or giving up of Chinese and Pakistani medical students**.**

Questions	Options	Chinese Student N (%)	Pakistani Student N (%)	χ^2	p
Q9	Yes	180 (38.96)	65 (23.55)	18.5	**
	No	282 (61.04)	211 (76.45)		
Q9-1	Strong interest in learning	110 (39.01)	81 (38.39)	32.8	**
	More and more understanding of the medical profession	73 (25.89)	95 (45.02)		
	Influenced by family and/or social factors (High social-economic status)	96 (34.04)	30 (14.22)		
	Influenced by the teacher	3 (1.06)	5 (2.37)		
Q9-2	Too much academic pressure	118 (65.56)	22 (33.85)	51.3	**
	Doctors work too hard	21 (11.67)	19 (29.23)		
	Dangerous working conditions	15 (8.33)	0 (0.00)		
	Family economic status	6 (3.33)	7 (10.77)		
	Lack of parental support/approval	0 (0.00)	2 (3.08)		
	Have better options	1 (0.56)	8 (12.31)		
	Burn out	19 (10.56)	7 (10.77)		

Q9: During the process of studying medicine, have you ever thought of discontinuing your studies?
Q9-1: What best describes why you continue studying medicine?
Q9-2: What best describes why you wanted (or were forced) to discontinue your studies?
P: Pearson χ^2 test; ** $p < 0.01$(significant).

Career Aspirations

Question 10: Plans for after graduation

Table 5, Q10 explains the analysis of the career aspirations of the 738 clinical medicine students and showed that, of the 462 Chinese medical students, approximately 80% chose to continue their studies (apply for postgraduate studies), 16.67% chose to work directly in the clinic after completing their undergraduate studies, and only 3.47% chose to work in other jobs in the future (2.6% medicine-related, 0.89% not medicine-related). Among the 276 Pakistani students, the most frequently selected option was "Engaged in clinical work" with approximately 48%. Approximately 1/3 of the students chose to "Apply to graduate school"; surprisingly, 18.48% chose "other work (medicine-related)" in the future, and only one student chose "other work (not medicine-related)." The differences in the career aspirations between the two groups were statistically significant ($\chi^2 = 173$, $p < 0.01$).

Table 5: Plans of the Chinese and Pakistani medical students after graduation.

Questions	Options	Chinese Student N (%)	Pakistani Student N (%)	χ^2	p
Q10	Engaged in clinical work	77 (16.67)	133 (48.19)	173	**
	Applying for graduate school	369 (79.87)	91 (32.97)		
	Other work (medicine-related)	12 (2.60)	51 (18.48)		
	Other work (not medical related)	4 (0.87)	1 (0.36)		

Discussion

The advancement of medicine is inextricably linked to the education and development of medical students, who are integral to improving patient outcomes and discovering novel treatments for a variety of diseases [7,16]. China has witnessed a notable increase in the number of medical students, reflecting the importance of cultivating talent in the field. According to the Chinese Ministry of Education, there were more than 1.5 million medical undergraduate students in China in 2021, making it the country with the highest number of medical students worldwide [1]. Since China launched its "Belt and Road" education campaign, the number of international students worldwide has rapidly increased [17]. China, which is the most popular destination for international students in Asia, has attracted many Pakistani students to study there [18]. The main aim of this study was to fill the gaps in the understanding of the motivations, related frustrations, and career aspirations of Pakistani and Chinese medical students in China. A comparative study was conducted to illustrate the respective characteristics of and the differences between Chinese and Pakistani students.

Various factors contribute to the choice of studying medicine among Pakistani and Chinese medical students in China. The decision to pursue a career in medicine is influenced by a combination of personal, familial, and societal factors [19,20]. One prominent factor is the level of knowledge of the work that doctors do. The results of our survey showed that 50% of Chinese students claimed to know something about medicine before applying to medical school, compared with 87% of Pakistani international students. This could be related to the different methods of application to universities in these two countries. Chinese students may be transferred into medical majors based on their scores in college entrance exams or based on recommendations by teachers and counsellors. However,

their Pakistani counterparts often go through a more rigorous admission process, which implies that they must at least have a fair idea of the journey ahead. Additionally, in Question 7, we found that the proportion of Chinese students applying to medicine as a non-first choice was significantly higher than that of Pakistani students. Another significant factor was parental support. The support and encouragement received from parents and family members play a vital role in shaping students' career choices.

In this study, we found that the parents of over 95% of both Chinese and Pakistani students favored medicine as a study option. The influence of parental profession and education cannot be ignored. Additionally, students whose parents have attained university degrees, particularly in the medical field, may be inspired to follow similar paths. The percentage of parents or relatives of Pakistani international students who are in the medical field and "parent/s attended university" is higher than that of Chinese students. Having parents or close relatives who practice medicine may expose students to the healthcare field at an early age, making them considerably familiar and comfortable with the profession [21]. Socioeconomic factors, such as the income levels of parents or guardians, can also impact the decision to pursue medicine. Interestingly, among the groups examined in this study, the proportion of Pakistani international students whose family economic status was above the middle level was three times that of Chinese students, although the proportion of family economic status was similar.

Motivation is a major determinant of the quality and success of learning [22,23]. Extrinsic motivation comes from external factors and is most often related to the future of the individual, whereas intrinsic motivation generally has nothing directly to do with the future of the learner and their economic interests [24-26]. We consider "personal interest" and "wanting to help others" as intrinsic motivations and the other options as extrinsic motivations. The proportion of Pakistani international students who are intrinsically motivated to study medicine is twice the proportion of Chinese students who are thus motivated. Their motivation to learn is not immutable. Intrinsic motivation and extrinsic motivation may transform each other because of the changes in the environment. The dynamic nature of motivation shows that teachers should not only understand students' motivation to learn but also guide them to turn from extrinsic to intrinsic motivation.

Life in medicine can be challenging for many students, as reflected by the 38.96% of Chinese and 25.55% of Pakistani participants who contemplated giving up on their studies. Of the reasons provided, "too much academic pressure" ranked highest; however, interestingly, we found that the anticipation of a heavy workload as medical doctors also played a role in the thought of giving up for some students. Similarly, a considerable number of those who considered giving up their studies attributed this to feeling burned out. Faced with similar conditions, 61.04% and 76.45% of Chinese and Pakistani participants, respectively, attributed their lack of desire to give up to having a strong interest in learning, developing an increasing understanding of the medical profession, and family and social factors. Teachers and other stakeholders can modify the curriculum and other learning approaches to decrease the monotony of studying and effectively decrease the workload of students to mitigate the rising desire to quit.

In China, the most popular career options for medical graduates are clinical practice, research, teaching, and management or administration. However, in recent years, there has been a growing trend of applications for a master's degree. Factors influencing this decision include the difficulty of finding undergraduate jobs, the lack of confidence in finding an ideal job, and the desire for campus life. According to a Chinese News website, the number of applicants for postgraduate entrance examinations reached 4.57 million in 2022, with medical students topping the list for three consecutive years.[27] Correspondingly, this study found that the proportion of students in the Chinese student group choosing the "Applying for graduate school" option was approximately 80%. Only one-third of Pakistani international students choose this option. There are several reasons Pakistani medical students do not continue their studies after graduation. The most common reasons include financial constraints, lack of access to educational resources, and family and societal pressures to earn. Additionally, some students felt that they had already acquired sufficient knowledge and skills during their medical studies to practice medicine in their home country.

Limitations

This international education study only compared Pakistani students and Chinese students; it did not involve more countries and educational backgrounds due to the limitations of the research group.

Conclusion

Our research offers an understanding of the driving factors behind Pakistani and Chinese medical students studying in China and delves deeper into their challenges and professional goals while attending medical school. Further, we provide fundamental information and theoretical background to assist in the education of exceptionally skilled medical scholars. Our study also provides theoretical support for studying higher education in different countries.

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Ethics approval

Ethical approval was obtained from the Binzhou Medical University Academic Ethics Committee.

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