

Career Choice and Influential Factors Among Medical Students Majoring in Psychiatry in China

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Abstract

Background

The undergraduate program of psychiatry has been widely established in recent years to improve the education and recruitment of psychiatrists in China. We aim to investigate the career choice of medical students majoring in psychiatry in China and the influential factors.

Method

This multicenter study was conducted in 26 medical schools in China that offered undergraduate education in psychiatry in 2019. Participants included 4610 medical students majoring in psychiatry and 3857 medical students majoring in clinical medicine. Multivariable logistic regression was used to investigate the influential factors of students' choices of psychiatry at matriculation and as a career.

Results

44.08% of psychiatry majored students gave psychiatry as a first choice at matriculation, and 56.67% of them would choose psychiatry as a career, which was in sharp contrast to the proportion of clinical medicine majored students who would choose psychiatry as a career (0.69%). Personal interest (59.61%), suggestions from family members (27.96%), and experiencing mental problems (23.19%) were main reasons for choosing psychiatry major at matriculation. Personal interest (odds ratio [OR] = 2.12, 95% confidence interval [CI] = 1.87-2.40), experiencing a psychiatry clerkship (OR = 1.99, 95% CI = 1.28-3.08), being female (OR = 1.50, 95% CI = 1.30-1.68), experiencing mental problems (OR = 1.33, 95% CI = 1.28-1.56), and suggestions from family members (OR = 1.25, 95% CI = 1.08-1.46) correlated positively with students' choice of psychiatry as career. Students who lacked psychiatry knowledge (OR = 0.49, 95% CI = 0.29-0.85) or chose psychiatry because of lower admission scores (OR = 0.80, 95% CI = 0.63-0.97) were less likely to choose psychiatry as a career.

Conclusion

More than half of psychiatry majored medical school students planned to choose psychiatry as their career, whereas very few students in the clinic medicine major would make this choice. Increasing students' interest in psychiatry, strengthening psychiatry clerkships, and popularizing psychiatric knowledge are modifiable factors to increase the psychiatry career intention. The extent to which medical students' attitudes toward psychiatry can be changed through medical school education and greater exposure to psychiatry will need further investigation.

Background

In China, mental health problems are prominent. The disease burden of mental disorders in China accounts for 13% of all non-communicable disease burden domestically and 17% of the global mental disorder burden¹. In 2017, for every 100,000 people in the population, there were only 2.19 psychiatrists

(including assistant practitioners) in China compared with 13.06 psychiatrists in high-income countries².³ Among registered psychiatrists, 40% had only a technical school degree or even no academic degree⁴. Historically, medical education in psychiatry has been a challenge in China. In the 1960s, there were only three medical schools in China that recruited undergraduates to the psychiatry specialty. Based on statistics from the Psychiatry Teaching Steering Committee, the rate of a psychiatry career choice was around 30%. A few studies have evaluated attitudes toward psychiatry and mental illness among Chinese medical students⁵⁻¹⁰, but studies on psychiatry as a career choice have been scarce. One study showed that approximately 1.6% of fourth-year medical students in Xiangya Medical School chose psychiatry as a career⁹.

In recent years, the Chinese government has implemented a series of initiatives to improve mental health services¹¹. As a part of the Healthy China 2030 Plan, countermeasures to increase the recruitment of psychiatrists were implemented by the Chinese Ministry of Education, including the further establishment of psychiatry undergraduate education after 2014 and the Psychiatry Teaching Steering Committee to guide psychiatry education. In many medical colleges, psychiatry has been established as a subspecialty in clinical medicine to promote the recruitment of psychiatrists. Students could choose the psychiatry specialty at the beginning of medical school and graduate with a bachelor's degree in psychiatry. Students in the psychiatry specialty take the same courses as students in the clinical medicine specialty from the first year to the third year. They take courses in psychiatry and psychology in the third year and receive clinical training in the fourth year. They then perform a psychiatry clerkship in the fifth year. As of 2019, the psychiatry specialty was established in 31 medical schools², of which 30 had recruited 6271 students in the psychiatry specialty.

Still unknown, however, is the percentage of students in the psychiatry specialty who are expected to become psychiatrists after graduation. Furthermore, to maintain a sustainable high-quality source of psychiatrists, it is important to learn why students choose the psychiatry specialty at the beginning of their studies in medical school and the factors that influence their choice to become a psychiatrist after graduation. Few studies have explored the career choice of students in the psychiatry specialty and its influential factors.

The present study (1) explored the characteristics of the career choice of undergraduate students in the psychiatry specialty and (2) identified factors that influence their career choice. We sought to generate data that would support psychiatry medical education reform and recruitment policies for psychiatrists in China.

Methods

Participants and procedure

Medical students who majored in psychiatry from all 31 medical universities with a psychiatry specialty in China were invited to participate in this study in 2019. However, students in four schools were not

included in the study. One of these four schools did not start to enroll students, two did not receive ethical approval, and two refused to participate. Finally, the study population comprised all undergraduates (first to fifth year students and year 2019 freshmen) in the psychiatry major in 26 medical universities in China. Students in clinical medicine were included as a comparison group, who were cluster-sampled randomly by classes from the same school and grade as students in the psychiatry major. A total of 12,696 questionnaires were sent to students, and 9054 students completed the questionnaire (71.31% response rate). Of these 9054 students, 8467 (93.52%) were validated respondents (4610 psychiatry students and 3857 clinical medicine students). The number of respondents from each school are shown in Online Resource 1. The questionnaires were collected from May 15 to August 30, 2019. Year 2019 freshmen were surveyed during the first 2 weeks of medical school. Because the beginning of school varies among schools, the survey time among freshmen lasted from September 1 to October 24, 2019.

The participants were well informed of this survey by the investigators of each subcenter and signed written informed consent forms before they had access to the electronic questionnaire. The students could decide to complete the questionnaire either on their mobile phone (by scanning a QR code) or on a computer (by logging in to a website). The questionnaire took approximately 15 min to complete. The data were collected anonymously. Each student was asked to answer the questions on the day they received the survey link. We counted the progress of survey completion every day and gave feedback to investigators in the subcenters. The data were collected and maintained by the H6WORLD Clinical Research Data Platform (<https://h6world.cn>), which is supported by the Peking University National Engineering Research Center. The present study was approved by the ethics committee at Peking University Sixth Hospital.

Measurements

A self-administered questionnaire was used for data collection, which included the main section as following (online Resource 2–4).

Sociodemographics. The sociodemographic information included age, gender, grade (classified into three levels: freshman, first year to third year as low grade, fourth and fifth year as high grade), learning stage (basic knowledge learning, externship [shadowing the attendings in the hospital] and clerkship), family history of mental disorders, history of using psychiatry services, family economic status, and living area.

Specialty choice and influential factors. The specialty choice for psychiatry and related factors were evaluated in two stages. The first stage was the choice for the psychiatry specialty at matriculation. The second stage was the choice of psychiatry as a career. Students in the psychiatry major were asked how they would rank the choice of psychiatry when they completed specialty applications at matriculation. For career choice, the respondents could choose a favorite specialty among 26 specialties in the hospital or “Undecided” or “I don’t plan to practice medicine.”

To reveal the reasons for choosing and rejecting the psychiatry specialty at matriculation, students in the psychiatry major were asked the question, “Why did you choose psychiatry at matriculation?” Students in

clinical medicine were asked, “Why didn’t you choose psychiatry at matriculation?” Answers to these questions were sought as a free-text response. Some respondents gave a single reason, but most of them gave several reasons. Based on the responses, a coding scheme was developed to reflect the main themes that were raised by the respondents (for example statements, see Online Resource 2). Two authors independently coded all of the reasons given, by theme, and compared each other’s coding. These reasons of choosing psychiatry were used as independent variables in the career choice analysis. Moreover, the influence of demographic characteristics on the psychiatry specialty choice at matriculation was also assessed.

The potential influential factors for the psychiatry career choice were assessed among medical students who chose the psychiatry major at matriculation with a series of questions. First, the participants were asked about their general considerations for a career path (e.g., potential income, work-life balance, content of the specialty, etc.). Detailed questions are shown in Online Resource 3. Second, participants’ attitudes toward the psychiatry specialty were evaluated using the 22-item Attitudes Toward Psychiatry (ATP-22) scale, which has been validated and used in Chinese medical students^{5,6}. Third, participants’ self-stigma about mental illness was rated using the 15-item Stigma Scale, which was adapted from the study by Schwenk¹², translated into Chinese and tested for internal consistency and reliability (Cronbach’s α coefficient = 0.74) in medical students¹³. All of the items were added to form a total score (ranging from 0 to 15). Higher scores indicated a higher level of stigma. Fourth, macroscopic factors, such as regional economic level, the capacity of mental health services, and other relevant information from China Health Statistics Yearbook 2018¹⁴, were also collected.

Survey items (Online Resource 3) that were coded using a Likert scale were recoded as dichotomous variables, and the answers were coded into important and other. For example, for the question, “When thinking about your career specialty after medical school, how important are the following considerations?” answers of very important and partially important were coded as important. Other answers were code as other.

Data analysis

Frequencies and means with standard deviations were calculated for descriptive data, and *t*-tests were used to compare mean values for continuous variables. The χ^2 test was used for categorical variables. Two authors reviewed the survey items. Based on a literature review^{7,9,13,15-37}, they identified 36 student-level factors, including demographic factors, matriculation reasons, and experiential items, that were hypothesized to be associated with the psychiatry career choice (Online Resource 4). Logistic regression analysis was used as the original analysis for variable screening, with the selection of either psychiatry or any other specialty as a career choice as the binary dependent variable. Variables with $p < 0.05$ and variables were selected for the multivariable logistic regression model. A total of 21 significant variables that were identified in the bivariate analysis (Online Resource 4) were then entered into a multivariable model using a backward stepwise procedure, and finally 15 variables remained. All of the analyses were performed using SPSS 26.0 software (SPSS, Chicago, IL, USA).

Results

Demographic characteristics

The mean age of the respondents in psychiatry and clinical medicine was 20.36 ± 1.41 and 19.90 ± 1.39 years old, respectively. Females accounted for 62.22% of the psychiatry major respondents and 53.34% of the clinical medicine respondents. Half of the respondents lived in the city and had a family income of 3,000–10,000 RMB per month. Most of the students were in the basic knowledge learning stage. Detailed demographic information is listed in Table 1.

Table 1
Demographic characteristics of 8467 respondents from 26 medical schools in China, 2019.

| | Psychiatry <i>n</i> = 4610 | Clinical medicine <i>n</i> = 3857 |
|--|--------------------------------------|---|
| Age (years) (mean [SD]) | 20.36 (1.41) | 19.90 (1.39) |
| Female (no. [%]) | 2868 (62.22) | 2061 (53.34) |
| Family monthly income (no. [%]) | | |
| < 1000 RMB | 194 (4.21) | 227 (5.89) |
| 1000–2999 RMB | 843 (18.29) | 790 (20.48) |
| 3000–4999 RMB | 1180 (25.60) | 1027 (26.63) |
| 5000–9999 RMB | 1384 (30.02) | 1077 (27.92) |
| 10000–14999 RMB | 564 (12.23) | 406 (10.53) |
| 15000–20000 RMB | 203 (4.40) | 153 (3.97) |
| > ¥ 20000 RMB | 226 (4.90) | 126 (3.27) |
| Family living area (no. [%]) | | |
| Village | 1349 (29.26) | 1290 (33.45) |
| Town | 955 (20.72) | 890 (23.07) |
| City | 2290 (49.67) | 1626 (42.16) |
| Undergraduate year (no. [%]) | | |
| Freshman | 946 (20.52) | 1721 (44.62) |
| Low grade | 3148 (68.27) | 1979 (51.31) |
| High grade | 517 (11.21) | 157 (4.07) |
| Learning stage (no. [%]) | | |
| Basic knowledge learning | 3949 (85.66) | 3613 (93.67) |
| Externship | 436 (9.50) | 170 (4.41) |
| Clerkship | 225 (4.88) | 74 (1.92) |
| Learning hours per day (mean [SD]) | 6.18 (5.78) | 6.67 (3.87) |
| History of using psychiatry service (no. [%]) | 114 (2.47) | 49 (1.27) |

SD, standard deviation; ATP, Attitudes Toward Psychiatry.

| | Psychiatry <i>n</i> = 4610 | Clinical medicine <i>n</i> = 3857 |
|---|--------------------------------------|---|
| Family history of mental disorders (no. [%]) | 443 (10.63) | 231 (6.37) |
| ATP-22 score (mean [SD]) | 55.80 (8.79) | 52.12 (11.84) |
| Stigma score (mean [SD]) | 8.26 (3.29) | 7.94 (3.38) |
| SD, standard deviation; ATP, Attitudes Toward Psychiatry. | | |

Reasons for choosing and not choosing the psychiatry specialty at matriculation

The results indicated that 59.61% of the students who chose psychiatry and 58.93% of the students who rejected the psychiatry specialty at matriculation made their choice based on “personal interest” (Table 2). A total of 28.01% of the students chose and 7.81% of the students did not choose the psychiatry specialty because of the suggestions or influence of their parents or other family members. A total of 23.19% of the students chose the psychiatry specialty because they hoped to help themselves or other people in need because of their experience with negative mental health status or being a witness to people with mental health problems. Moreover, 11.28% of the students chose the psychiatry specialty because of their lower scores at matriculation, which only met the requirement for the psychiatry specialty.

Table 2
Reasons for choosing and rejecting the psychiatry specialty at matriculation.

| Reason | Choosing psychiatry (Psychiatry major) <i>n</i> = 4610 (no. [%]) | Objecting psychiatry (Clinical medicine major) <i>n</i> = 3857 (no. [%]) |
|---|--|--|
| Personal interest | 2748 (59.61) | 2273 (58.93) |
| Family’s suggestion or influence | 1289 (27.96) | 301 (7.81) |
| Experience of mental problems of oneself or others | 1069 (23.19) | — |
| Low admission score of psychiatry | 520 (11.28) | 17 (0.99) |
| Lack knowledge of psychiatry | 72 (1.56) | 83 (2.15) |
| Positive/negative attitudes toward psychiatry | 30 (0.65) | 163 (4.23) |
| School | 11 (0.24) | 117 (3.06) |
| Other reasons | 705 (15.29) | 443 (11.67) |

The influence of demographic characteristics on the psychiatry specialty choice at matriculation is shown in Table 3. Higher family income was the most positively correlated factor of choosing psychiatry at matriculation (odds ratio [OR] = 2.08, 95% confidence interval [CI] = 1.52–2.84, comparing > 20,000 RMB/month and < 1,000 RMB/month). The female gender (OR = 1.47, 95% CI = 1.34–1.61), living in a city (OR = 1.21, 95% CI = 1.08–1.35), a history of utilizing mental health services (OR = 1.55, 95% CI = 1.09–2.20), and a family history of mental disorders (OR = 1.54, 95% CI = 1.30–1.83) were positively associated with choosing the psychiatry specialty at matriculation.

Table 3
Influence of demographic characteristics on psychiatry specialty choice at matriculation.

| Demographic characteristic | <i>n</i> | Choice (no. [%]) | OR (95% CI) | <i>p</i> |
|---|----------|------------------|------------------|----------|
| Gender | | | | |
| Male | 3538 | 848 (24.00) | reference | |
| Female | 4929 | 1733 (35.20) | 1.47 (1.34–1.61) | < 0.001 |
| Family living area | | | | |
| Village | 2638 | 741 (28.10) | reference | |
| Town | 1845 | 544 (29.50) | 0.99 (0.87–1.12) | 0.879 |
| City | 3916 | 1296 (33.10) | 1.21 (1.08–1.35) | 0.001 |
| Family monthly income | | | | |
| < 1000 RMB | 421 | 101 (24.00) | reference | |
| 1000–2999 RMB | 1633 | 447 (27.40) | 1.32 (1.05–1.65) | 0.017 |
| 3000–4999 RMB | 2206 | 695 (31.40) | 1.41 (1.13–1.76) | 0.002 |
| 5000–9999 RMB | 2461 | 782 (31.80) | 1.54 (1.24–1.93) | < 0.001 |
| 10000–14999 RMB | 970 | 320 (33.00) | 1.60 (1.24–2.04) | < 0.001 |
| 15000–20000 RMB | 356 | 116 (32.60) | 1.49 (1.10–2.02) | 0.010 |
| > 20000 RMB | 352 | 120 (34.10) | 2.08 (1.52–2.84) | < 0.001 |
| History of using psychiatry services | | | | |
| No | 8235 | 2508 (30.50) | reference | |
| Yes | 163 | 73 (44.80) | 1.55 (1.09–2.20) | 0.013 |
| Family history of mental disorders | | | | |
| No | 7792 | 2321 (29.80) | reference | |
| Yes | 674 | 260 (38.60) | 1.54 (1.30–1.83) | < 0.001 |

Career choice for the psychiatry specialty during medical education

The results showed that 56.67% (2556/4510) of the students in the psychiatry specialty chose psychiatry as their career (Table 4). The rates of choice among males and females were 48.16% (839/1742) and 59.87% (1717/2868), respectively. Compared with freshmen (471/946, 49.74%), students in high grades (337/517, 65.18%) and students in low grades (1749/3146, 55.58%) had a higher preference for choosing psychiatry as a career ($\chi^2 = 32.58$, $p < 0.001$, significant difference between groups after Bonferroni correction). Only 0.69% (26/3792) of the students in clinical medicine considered psychiatry as a career. Psychiatry-related subjects, such as neurology (11.91% vs. 0.84%, $\chi^2 = 394.92$, $p < 0.001$) and neurosurgery (5.17% vs. 2.48%, $\chi^2 = 48.53$, $p < 0.001$), were also more popular among psychiatry major students compared with students in clinical medicine.

Table 4

Top 10 career choice among students in psychiatry major and clinical medicine major (listed as descending selection rate in each group).

| Specialty | Psychiatry 4510 (no. [%]) | Specialty | Clinical medicine 3792 (no. [%]) |
|---------------------------------|------------------------------|---------------------------|-------------------------------------|
| Psychiatry | 2556 (56.67) | Undecided | 989 (26.08) |
| Undecided | 555 (12.31) | Internal Medicine | 589 (15.53) |
| Neurology | 537 (11.91) | Surgery | 507 (13.37) |
| Neurosurgery | 233 (5.17) | Obstetrics and Gynecology | 247 (6.51) |
| Internal Medicine | 150 (3.33) | Orthopedic Surgery | 241 (6.36) |
| Surgery | 93 (2.06) | Emergency Medicine | 204 (5.38) |
| Anesthesiology | 54 (1.20) | Thoracic Surgery | 119 (3.14) |
| Obstetrics and Gynecology | 49 (1.09) | Ophthalmology | 110 (2.90) |
| Emergency Medicine | 45 (1.00) | Pediatrics | 97 (2.56) |
| Don't plan to practice medicine | 39 (0.86) | Neurosurgery | 94 (2.48) |

Except for undecided students ($n = 989$, 26.08%), the most preferred specialty choice among clinical medicine students was internal medicine ($n = 589$, 15.53%), followed by surgery ($n = 507$, 13.37%), obstetrics and gynecology ($n = 247$, 6.51%), and orthopedic surgery ($n = 241$, 6.36%).

Factors influencing psychiatry career choice

Among students who chose the psychiatry specialty at matriculation, several factors were positively associated with choosing psychiatry as a career (Table 5), including students' personal interest in psychiatry (OR = 2.12, 95% CI = 1.87–2.40), experiencing a psychiatry clerkship (OR = 1.99, 95% CI = 1.28–

3.08), experiencing mental problems oneself or with others (OR = 1.33, 95% CI = 1.28–1.56), influence of family members (OR = 1.25, 95% CI = 1.08–1.46), female (OR = 1.50, 95% CI = 1.30–1.68), high grade (OR = 1.13, 95% CI = 1.07–1.21), reporting work-life balance (OR = 1.15, 95% CI = 1.04–1.26) and content of specialty (OR = 1.10, 95% CI = 1.00–1.19) as important consideration for career path, favorable attitude toward psychiatry (OR = 1.03, 95% CI = 1.02–1.04), and self-stigma of mental disorders (OR = 1.05, 95% CI = 1.03–1.07). Entering the psychiatry major without knowing about psychiatry (OR = 0.49, 95% CI = 0.29–0.85) or because of a lower admission score (OR = 0.80, 95% CI = 0.63–0.97) was negatively associated with choosing psychiatry as a career. Other negative factors included length of residency training (OR = 0.93, 95% CI = 0.85–1.01), level of educational debt (OR = 0.90, 95% CI = 0.84–0.98), and leadership potential (OR = 0.87, 95% CI = 0.80–0.94).

Table 5
Multivariable regression analysis of influential factors for psychiatry career choice among psychiatry major students.

| | <i>n</i> | Choice (no. [%]) | OR (95% CI) | <i>p</i> |
|---|----------|------------------|------------------|----------|
| Demographic characteristic | | | | |
| Gender | | | | |
| Male | 1742 | 839 (48.20) | reference | |
| Female | 2868 | 1716 (59.90) | 1.50 (1.30–1.68) | < 0.001 |
| Grade | | | | |
| Freshman | 946 | 470 (49.70) | reference | |
| Low grade | 3146 | 1748 (55.60) | 1.11 (0.78–1.57) | 0.507 |
| High grade | 517 | 337 (65.20) | 1.13 (1.07–1.21) | < 0.001 |
| Learning stage | | | | |
| Basic knowledge learning | 3949 | 2106 (53.30) | reference | |
| Externship | 436 | 296 (67.90) | 1.74 (1.32–2.31) | < 0.001 |
| Clerkship | 225 | 153 (68.00) | 1.99 (1.28–3.08) | 0.002 |
| Reasons for choosing psychiatry major at matriculation | | | | |
| Personal interest | | | | |
| No | 1862 | 828 (44.50) | reference | |
| Yes | 2748 | 1775 (64.60) | 2.12 (1.87–2.40) | < 0.001 |
| Experience of mental problems of oneself or others | | | | |
| No | 3541 | 1846 (53.50) | reference | |
| Yes | 1069 | 677 (63.30) | 1.33 (1.28–1.56) | 0.001 |
| Family's suggestion or influence | | | | |
| No | 3321 | 1934 (55.70) | reference | |
| Yes | 1289 | 691 (61.37) | 1.25 (1.08–1.46) | 0.004 |
| Lack knowledge of psychiatry | | | | |
| No | 4538 | 2534 (55.80) | reference | |
| Yes | 72 | 21 (29.60) | 0.49 (0.29–0.85) | 0.010 |

ATP, Attitudes Toward Psychiatry.

| | <i>n</i> | Choice (no. [%]) | OR (95% CI) | <i>p</i> |
|--|----------|------------------|------------------|----------|
| Low admission score of psychiatry | | | | |
| No | 4090 | 2323 (56.80) | reference | |
| Yes | 520 | 220 (42.30) | 0.80 (0.63–0.97) | 0.045 |
| General considerations when thinking about career specialty | | | | |
| Work-life balance | | | | |
| Not important | 876 | 486 (55.50) | reference | |
| Important | 3623 | 2060 (56.90) | 1.15 (1.04–1.26) | 0.006 |
| Content of specialty | | | | |
| Not important | 922 | 483 (52.40) | reference | |
| Important | 3577 | 2063 (57.70) | 1.10 (1.00-1.19) | 0.041 |
| Level of educational debt | | | | |
| Not important | 2270 | 1360 (59.90) | reference | |
| Important | 2229 | 1186 (53.20) | 0.90 (0.84–0.98) | 0.006 |
| Length of residency training | | | | |
| Not important | 1685 | 1000 (59.30) | reference | |
| Important | 2813 | 1546 (54.90) | 0.93 (0.85–1.01) | 0.226 |
| Leadership potential | | | | |
| Not important | 2261 | 1333 (59.00) | reference | |
| Important | 2244 | 1219 (54.30) | 0.87 (0.80–0.94) | 0.001 |
| Stigma scale (continuous variable) | | | 1.05 (1.03–1.07) | < 0.001 |
| ATP-22 (continuous variable) | | | 1.03 (1.02–1.04) | < 0.001 |
| ATP, Attitudes Toward Psychiatry. | | | | |

Regional gross domestic product per capita positively correlates with the number of health workers and psychiatrists. However, neither the economic factor nor the mental health service capacity factor was correlated with choosing psychiatry as a career (Online Resource 5).

For clinical medicine, logistic regression was not performed because of the low statistical power of the limited positive samples. A stable and secure future (23, 88.46%), job availability (23, 88.46%), and work-life balance (21, 80.77%) were the most stated reasons among the 26 students who would choose psychiatry as a career.

Discussion

The present study explored the characteristics and related influential factors of career choice among students in psychiatry and clinical medicine specialties in China. The motivation for majoring psychiatry at the point of matriculation, including personal interest, influence of family members, and experiences of mental problems, were pre-medical school factors that had a strong influence on choosing psychiatry as a career. During medical school, medical education, especially psychiatry clerkships and the lifestyle that is associated with a psychiatry career, were attractive to students and influenced their decision to pursue psychiatry as a career. Increasing mental health knowledge and interest among high school students, strengthening psychiatry clerkships, and reducing the stigma of mental illness in the community are modifiable factors that should be considered in education reform. The present study provided information to improve the psychiatry education system and maintaining a stable pool of psychiatry professionals.

After years of cultivating psychiatry as a specialty, the number of registered psychiatrists in China increased from 1.54 per 100,000 in 2010 to 2.19 per 100,000 in 2017. The present results showed that the psychiatry career choice among students who majored in psychiatry increased to 56%, which was only 30% in the 1960s. However, nearly half of the students did not plan to choose psychiatry as a career. Less than 0.7% of the students with a clinical medicine major would choose to work as a psychiatrist. Targeted efforts both before and during medical school should be made to increase the intention of choosing the psychiatry specialty.

Personal factors

Personal interest was the most often stated reason by the students for choosing and rejecting psychiatry at matriculation. Moreover, it was the most important factor for choosing psychiatry as a career. Admitting a larger proportion of students with a stated interest in mental health to medical school could be a good strategy for increasing the number of students who ultimately pursue a career in psychiatry³⁸.

In the present study, work-life balance was positively correlated with the psychiatry career choice among students who majored in psychiatry and was also highly valued among students who majored in clinical medicine but considered psychiatry as a career. Balancing work and family has become increasingly important for medical students when considering about a profession²⁸. Psychiatry is a specialty with controllable lifestyle factors, such as control over work hours, the perceived number of nights on call, and adequate time to pursue personal activities^{39, 40}. The students' value of work-life balance positively correlated with the psychiatry career choice²², and controllable lifestyle could explain 55% of the variability in specialty preference among medical students²⁸. Additionally, work-family conflicts (i.e., inter-role conflicts) impacted mental and somatic health⁴¹. With regard to gender, females were more likely to choose psychiatry^{38, 42}. Females were more likely to seek a balance between their professional and private lives⁴³ and were less likely to expect to earn a high income⁴⁴. Therefore, the advantageous

characteristics of the psychiatry profession should be promoted so that more students may be attracted to psychiatry.

Mental illness experience and self-stigma

Mental health knowledge is helpful, especially among those with mental health problems and those who hope to help others^{45,46}. The psychiatry curriculum naturally involves the enrichment of mental health knowledge. The present study found that students who suffered from mental health problems or had family members with mental disorders were more likely to choose the psychiatry specialty, which was consistent with previous research³⁸. Moreover, such experience could be a motivational factor to become a psychiatrist to provide support for both oneself and others in need. Meanwhile, the self-stigma of mental illness was positively correlated with the psychiatry career choice. The source of self-stigma of mental illness among medical students is mainly based on personal experience, social stereotypes³³, and school environment¹². Fear of professional sanctions may negatively impact self-confidence, making them feel less competitive³⁵ and more reluctant to disclose their mental status on licensure and medical staff applications⁴⁷. It may also lead to inappropriate and possibly dangerous approaches of seeking help. Current medical education should focus on student psychiatric knowledge and specific measures to reduce students' self-stigma.

Family and school influence

Family comments and advice, mainly from parents, played an important role in students' choice of specialty. Approximately 8% of clinical medicine students who were interested in psychiatry failed to choose psychiatry as a major at matriculation because of their parents' objections. The values and career views of older generations are significantly different from those of the 21st century⁴⁸. While in the psychiatry major, families' suggestions were a supportive factor for choosing psychiatry at matriculation and as a career. Students with this characteristic mainly reported that they had family members who had favorable experiences in psychiatry, such as achieving better mental health literacy and having controllable lifestyles. Popularizing psychiatry and encouraging family members to participate in recruitment programs may promote the choice of psychiatry as a specialty.

Previous studies reported a positive effect of favorable attitudes toward psychiatry on the career choice of psychiatry^{17,18,20,21}. The present results among medical students in China are consistent with previous studies. The experience of clerkships and other opportunities to interact with patients¹⁹ increases the understanding of psychiatry and fosters the ability to communicate with patients with mental illness⁴⁸, improves attitudes about psychiatry and mental illness⁴⁹, and consequently encourages more students to choose the psychiatry specialty as a career. Meanwhile, psychiatrists who worked with students play an important role in developing creative and imaginative psychiatry programs¹⁹. In the present study, students who had contact with patients with mental illness and finished clinical rotations (e.g., clerkships) in psychiatry were more likely to choose psychiatry as a career, which is consistent with many previous studies^{10,20-22,38}. Medical schools should provide psychiatry clerkships to promote

students' interest in psychiatry. Further research is also needed to explore the relationship between psychiatry clerkship characteristics (e.g., preceptor and mode of teaching) and students' career choice.

Lower admission scores were also associated with choosing the psychiatry specialty at matriculation, but it might not be associated with choosing psychiatry after graduation. In the present study, among students with lower scores upon entrance to medical school, only about a quarter of them would like to pursue psychiatry as a career, whereas half of them changed to other specialties, such as neurology, neurosurgery, internal medicine, and surgery. Thus, lower college admission requirements (e.g., lower admission scores) is not a useful measure for improving the recruitment of students to the psychiatry specialty.

Socioeconomic status and medical health service factors

Family income status was a predictive factor for medical students' career choice⁵⁰. In the present study, students with a family income over 20,000 RMB per month were twice as likely to choose psychiatry at the beginning of medical school compared with those with a family income of less than 1,000 RMB per month. Socioeconomic factors may have a profound impact on medical students' career choice. A long-term observational study of a cohort of medical students reported a change in career choice for psychiatry as socioeconomic status changed over time^{22-24, 51}. However, in the present study, none of the socioeconomic factors or mental health service capacity factors significantly correlated with the career choice of psychiatry (Online Resource 5). The possible reason for this finding could be that some relatively underdeveloped areas may have special support programs and employment promotion policies for students' recruitment to the psychiatry specialty, which makes the job possibility much greater than in developed provinces. However, psychiatry students' employment choice is consistent nationwide in China. The economic level of the province where the school is located does not necessarily represent the target location of the vocation. Future studies should explore the relationship between more specific socioeconomic factors and the career choice of psychiatry, including average income of the local psychiatry department and investment in psychiatry.

To meet the public demand for mental health services, teams of mental health professionals, including psychiatrists, should be strengthened^{3, 52}. It is challenging to establish a strategy to recruit more students, especially outstanding students in psychiatry and clinical medicine specialties, to study and work in the mental health field. The following strategies should be considered. First, the national psychiatry education and training system should be strengthened to include enrichment activities in the undergraduate psychiatry curriculum and clerkships. Second, mental health services should be emphasized in the medical health services system so that more students in psychiatry and clinical medicine specialties might be encouraged to work in the mental health field. Third, given the lack of mental health knowledge among the general population, education on mental health and psychological problems should be improved in high schools.

Limitations

The present study has limitations. First, this was a cross-sectional survey, and the reasons for the specialty choice at matriculation may have been influenced by recall bias. The extent to which views about psychiatry among psychiatry students can be modified by the medical school education and greater exposure to psychiatry needs further investigation. Longitudinal follow-up studies should be conducted to explore students' career choice after they graduate from medical school. Second, the samples were designed to be equally distributed in the two majors. However, because of different response rates, the samples included fewer freshmen and more first-year to fifth-year students in the psychiatry major compared with clinical medicine. The hierarchical analysis was conducted by grade (Supplemental Digital Content 6). The results of freshmen and low-grade students was consistent with the total population. However, because of the relatively small number of respondents, only one variable (family living area) was significant in high-grade students. Third, the choice of psychiatry as a career was influenced by personal factors, such as sex, interest in the specialty, lifestyle, family influences, medical education, specialty content, and stigma of mental illness. We collected these data and explored the impact on students' choices. However, the underlying relationships and mechanisms of these factors are still unknown. Further studies are needed to address these limitations.

Conclusions

More than half of the students in the psychiatry specialty planned to choose psychiatry as their long-term career in medical school, whereas students in the clinical medicine specialty seldom did so. Increasing mental health knowledge and interest among high school students, strengthening psychiatry clerkships, removing barriers from families and schools, and reducing the stigma of mental illness are crucial for the development of mental health professionals.

Abbreviations

OR: Odds ratio; CI: Confidence interval; ATP-22: 22-item Attitudes Toward Psychiatry scale; SD: Standard deviation.

Declarations

Ethics approval and consent to participate

This study was approved by the ethics committee at Peking University Sixth Hospital on May 17, 2019 (no. 2019-8) and was approved by each participating institution. Written informed consent for publication was obtained from all participants.

Consent for publication

Not applicable.

Availability of data and material

Our data and materials will not be available at present.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

LL, YPB and YJZ proposed the topic and main idea. YJZ, JYQ, SHC, JML, SCY, CXA, YMK, HSX, YMW, LFZ, WFZ, YLS, DWX, HZL, WQW, CXL, WQY, LZ, JBZ, MYY, JYC, HT, JP, XJZ, YX, NZ, LK, ZJL, YHW carried out the investigation and collected data. YJZ wrote the initial draft. KY, WY, LS, JHD, YMG, MSR, JS, YPB, and LL commented on and revised the manuscript. LL, JS, and YPB made the final version. All authors contributed to the final draft of the manuscript.

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