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ORIGINAL RESEARCH

Factors Influencing Chinese Medical Students Choice of Infectious Disease Specialty: A Qualitative and Quantitative Survey

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Objective: The selection of medical specialties by medical students (MS) and factors shaping their decisions represent critical determinants of the medical workforce landscape, warranting in-depth exploration. In many countries, infectious diseases (ID) fail to be acknowledged as a satisfying specialty. Furthermore, the shortage of ID specialists has become a critical challenge in China's healthcare system. Therefore, we undertook a survey to investigate MS' specialty preference, especially their interests in ID, and the determinants influencing their decision-making processes.

Methods: We recruited the fifth, sixth, and seventh year MS to carry out this investigation. Initially, 10 semi-structured interviews were conducted to gather qualitative insights. Subsequently, 117 participants completed a questionnaire.

Results: In the qualitative study of 10 MS, motivations for medical school included personal interest (6/10) and a desire to help others (5/10). All planned to practice medicine post-graduation, with intended specialties mainly surgery (5/10) and internal medicine (4/10); key career choice factors were specialty interest (9/10) and job availability (4/10). All were unfamiliar with ID, with limited exposure to ID. None intended to pursue ID careers, primarily due to greater interest in other specialties (10/10), plus concerns like occupational exposure (2/10). In the quantitative study of 117 participants, the majority of MS applied for medical school based on personal interests (76.9%), and most (88.9%) intended to practice medicine after graduation. Internal Medicine (31.6%) and Surgery (24.8%) were the most popular first-choice specialties, with work-life balance (82.1%), interest in the specialty (81.2%), and expected income (70.9%) being the top factors influencing specialty choice. Notably, only 6.8% of MS expressed interest in pursuing a career in ID, while 48.7% reported no interest. The primary reasons for disinterest included concerns about occupational exposure, lack of inherent interest in ID, and limited procedural opportunities. Multivariate logistic regression analysis identified the overall evaluation of the ID curriculum as the sole factor associated with MS' lack of interest in ID (OR 0.376, 95% CI 0.188–0.754, P=0.006).

Conclusion: In our study, MS showed limited interest in becoming ID specialists. To enhance the appeal of the ID specialty, efforts could focus on training students on occupational safety and protection, improving the quality of ID-related courses, and optimizing career incentives. These strategies might help increase MS' interest in ID and contribute to a more balanced medical workforce.

Keywords: medical students, specialty choice, infectious diseases

Background

The imbalance of the supply of physicians has been reported among different specialties and regions in China.[1,2] As the composition of the medical workforce is fundamentally shaped by specialty choices among medical students (MS), exploring these decisions and their influencing factors emerges as a critical research priority. Medical trainees often developed career preference prior to the residency phase.[3] Specialty selection constitutes a dynamic, multi-factorial

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process. Previous studies have identified multiple factors, including demographic characteristics, financial issues including potential income and indebtedness, profession-related beliefs, work-life balance, and personality profiles.[4–8] However, these findings exhibit substantial variability across different countries and student populations. For example, indebtedness was reported to affect career preference in many countries,[9–11] but MS in China have little to no educational debt. In contrast, doctor-patient conflicts—specifically referring to workplace violence, including verbal abuse, threats, or physical harm toward healthcare providers—may exert a more pronounced influence on career choices among Chinese MS. Furthermore, the importance of what students consider may change with time, location, culture, healthcare structure, government policy, age, workforce, etc. The way MS choose their specialties directly shapes the makeup of the medical workforce—and this pattern has a particularly significant impact on specialties that are crucial yet understaffed. Among these, infectious diseases (ID) stands out as a prime example.

In 2019, the World Health Organization identified ten critical threats to global health, six of which were directly associated with ID. Routine ID consultations have been demonstrated to significantly reduce mortality rates in *Staphylococcus aureus*,[12] *Candida*[13] and gram-negative bloodstream infection.[14] ID consultations are also effective in boosting vaccine coverage,[15] reducing healthcare costs[16] and promoting antimicrobial stewardship.[17,18] The coronavirus disease of 2019 (COVID-19) pandemic has further underscored the critical importance of ID expertise and drew public attention to the ID physician workforce again. Despite their indispensable role, ID faces a global workforce crisis, shortage and unequal distribution of ID specialists were reported in many countries including the United States,[19] Canada,[20] Japan,[21] and Korea.[22] Notably, China has witnessed a successive decline in the percentage of ID specialists in hospitals, from 2.2% in 2005 to 1.1% in 2010, and further to 0.7% by 2012.[23] In 2023, China has approximately 68,000 licensed (assistant) physicians specializing in ID, accounting for 1.4% of the total clinical physician workforce, the density of ID physicians in China stands at 0.48 per 10,000 population, far below that of respiratory medicine doctors (1.2 per 10,000) and cardiovascular specialists (1.1 per 10,000).[1]

Career or specialty choice is a pivotal milestone in the professional development of MS, as this decision is hard to change following entry into the residency training. Most previous studies focused on quantitative surveys, in-depth qualitative analysis of decision-making processes are lacking.[4,7,8,24–26] The research on career choices of MS in China is still very limited, such as the career choices of the Chinese 8-year stomatology MS and the influence of COVID-19 on the career choices of MS, etc.[27,28] In many countries, ID fail to be acknowledged as a satisfying specialty.[21–25,28] Less is known about the interest in ID and the potential factors associated with the decision among Chinese MS.

In China, ID medicine is categorized as a primary specialty in medical education, not a sub-specialty of internal medicine. However, in practice, ID medicine is integrated into general internal medicine training. MS who receive training in general internal medicine can work directly as ID specialists upon graduation based on their voluntary choice. As a result, MS may lack in-depth exposure to ID as an independent field, reducing their motivation to pursue it. Additionally, major epidemics like COVID-19 have a significant impact on ID specialty choices compared to other fields. Specifically, concerns about occupational hazards may reduce MS' willingness to engage in the field of ID. A survey indicated that 9.5% of participants showed decreased willingness to major in ID after the COVID-19 outbreak.[28]

We aimed to comprehensively understand the specialty preferences (especially interests in ID) of Chinese MS and conduct an in-depth analysis of the factors influencing their specialty choices. By doing so, we hope to develop targeted strategies to offer more effective and personalized career counseling services.

Methods

Participants

At Peking Union Medical College, the standard undergraduate medical education program spans eight years. From the fifth to the eighth year, they engage in clinical medicine studies and clinical practice. We recruited the fifth-, sixth-, and seventh-year MS to conduct this cross-sectional survey.

Interviews

We conducted this survey according to the AMEE Guide.[29] In the initial phase, 10 semi-structured standard script interviews were conducted to explore the major factors assumed to influence MS' career choices and uncover unanticipated factors.

Participants were recruited via convenient sampling and the sample size was determined according to the empirical saturation principle. All interviews were audio-recorded with participants' informed consent, each lasting approximately 10–15 minutes. The interview grid included questions on reasons to apply for medical school, future career plans, factors influencing specialty choices, perceptions of the ID specialty, clinical exposure to ID, the likelihood of choosing the ID specialty and the reasons. The interview guide is provided in Supplementary Data S1.

Questionnaire

In the second phase, we designed and developed a questionnaire (Supplementary Data S2). The questionnaire was developed by referencing existing questionnaires on the topic and adapted to align with China's medical education system.[3,8,24,25,30–32] Additionally, it was evaluated by three ID specialists. Prior to distribution, it underwent review and pretesting by four MS to assess its clarity and comprehensiveness, with modifications made based on their feedback. Each questionnaire required approximately 5 minutes to complete, indicating good feasibility.

The questionnaire included three sections. The first section collected demographic information. The second section (Q1-Q8) focused on the career plan and factors influencing career preference. The third section (Q9-Q17) obtained data about the interest in ID, exposure to ID field, impact of COVID-19 pandemic on ID interest, and potential strategies to enhance the appeal of the ID specialty.

We employed a convenience sampling approach for participant recruitment. The questionnaire, administered in Chinese, was distributed anonymously online in April 2025. It was shared via WeChat across multiple MS groups. To participate, individuals were required to click a "Consent and Continue" button to confirm their voluntary involvement, with submission only permitted after all items had been completed.

Usually, the sample size of valid questionnaires should be 5–10 times the number of questions.[33] There are 17 questions in this questionnaire. Thus, it was determined that a minimum of 85 valid questionnaires were required for this study.

Statistical Analysis

The qualitative interview data were analyzed using thematic analysis, following the six-phase framework outlined by Braun & Clarke.[34] Specifically, we implemented each stage as follows: (1) Familiarization with data: Transcripts were repeatedly read by the research team to gain a holistic understanding, with preliminary notes taken to document initial observations and potential patterns. (2) Generating initial codes: Two researchers independently coded the transcripts inductively, focusing on meaningful units of data, and discrepancies were resolved through discussion to develop a consistent codebook. (3) Searching for themes: Codes were then clustered into potential themes, with the team collectively reviewing how codes aligned to form overarching concepts. (4) Reviewing themes: Themes were refined against the full dataset to ensure they accurately represented the data and did not overlap excessively. (5) Defining themes: Each theme was clearly named and described, with boundaries established to distinguish it from other themes. (6) Writing up: The analysis was synthesized, with illustrative quotes integrated to support interpretations.

Descriptive statistical analyses were performed on questionnaire responses. For single-choice questions, the proportion of each response option was calculated, while selection rates for multiple-choice items were counted. Normally distributed continuous variables were presented as means with standard deviations (SD), while categorical variables were presented as percentages (%). The Chi-square test was applied to categorical variables for group comparisons. Multivariate logistic regression analysis was conducted to identify independent factors associated with MS' lack of interest in ID, variables were chosen based on their relevance to the research topic (supported by prior literature) and results of chi-square analyses ($P<0.10$). Statistical significance was set at $P<0.05$. All analyses were performed using IBM SPSS Statistics 26.0.

Results

Qualitative Study

In this qualitative study, we recruited a sample consisting of five female and five male participants aged between 22 and 26 years old. There were two fifth-year MS, six sixth-year MS, and two seventh-year MS. Themes and a selection of exemplar statements are presented in Table 1.

Table 1 Themes and a Selection of Exemplar Statements

Themes	Participant Statements
Reasons to apply for medical school	• I think it's mainly personal interest. • The most important factor might still come from the clear intention of my family. • I think saving lives and treating patients is indeed a very good thing. I myself also enjoy helping others. • It's a profession you can make a living from. • I chose to become a doctor at a very young age. It was a very firm choice.
Future career plans	• At present, I still prefer to engage in the clinical medicine. My favorite specialty is surgery. • I still think of becoming a doctor. • I'd rather be a surgeon.
Factors influencing specialty choices	• Personally, I think the first point is still one's own interest. • I prefer hands-on operation, so I chose surgery. • The climate of working environment is also very important. What's more, the work hours might affect my professional choice to some extent. • The intensity of the work and the income from it are also factors we need to consider. • The experience of a family member falling ill made me think that becoming a surgeon might save a family. • I think there is also the difficulty level of job hunting. It also has an impact.
Perceptions of ID specialty	• Personally, I think my understanding of this specialty is actually insufficient. • When I was choosing my specialty, I did not have much knowledge about ID at that time. • The job of an ID physician that I know is to consult on antibiotics.
Clinical exposure to ID	• There was patient with liver abscess in the general medicine department and some patients with various types of pneumonia in the respiratory department. • I have just taken some courses related to ID.
Interest in ID specialty and the reasons	• I am still quite satisfied with the specialty I have chosen now. • I am very determined to be a surgeon. • I still want to become a surgeon, but I will learn about ID as a knowledge reserve. • I think the difficulty level of job hunting also has an impact. • It seems that the income of ID doctor might not be very high. • I am a little bothered by occupational exposure.

Abbreviation: ID, infectious diseases.

Reasons for Applying to Medical School

Personal interest (specifically interest in the medical subject itself, 6/10) was the primary driver, followed by a desire to help others (5/10), family expectations (3/10), aspirations for a stable livelihood (1/10), and a childhood wish (1/10).

Post-Graduation Plans

All participants expressed a desire to become a physician.

Intended Specialties

The majority chose surgery (5/10) or internal medicine (4/10), with one participant indicating ophthalmology (1/10).

Factors Influencing Career Choice

Interest in the specialty (9/10) was the most commonly mentioned, followed by job availability (4/10), workload (2/10), income (2/10), suggestions from others (2/10), and personal experience (1/10).

Familiarity with and Exposure to ID

All interviewees reported being unfamiliar with the ID field. Their clinical exposure to ID was limited to taking ID-related courses or encountering infected patients during rotations in other departments.

Willingness to Pursue a Career in ID

None of the participants indicated such a desire. The most common reason was greater interest in other specialties (10/10), with additional concerns including occupational exposure (2/10), low income (1/10), and job availability (1/10).

Quantitative Study

General Characteristics of Participants

In total, 117 responses were collected: 52 from the fifth-year MS, 38 from the sixth-year MS, 27 from the seventh-year MS. The mean age of participants was 24±1 years (range: 23 to 29 years). The sample was composed by 76 (65.0%) females and 41 (35.0%) males, with no significant gender distribution differences observed among the three MS groups. One third of the participants (33.3%, 39/117) reported having doctors or nurses among their family members.

Career Plan and Factors Influencing Career Preference

We have included all items' raw counts and proportions in Supplementary Data S3.

The most frequent reason to apply for medical school was personal interest (76.9%), while only 35.0% of students' choice was affected by family expectation. The majority of MS (88.9%) want to practice medicine after graduation. Internal Medicine and Surgery were the most popular specialty, with 31.6% and 24.8% of MS choosing them as their first specialty choice respectively. Among these factors influencing career plan, work-life balance (82.1%), interest in the specialty (81.2%), and expected income (70.9%) were the three most common ones. Significant difference was found among the three groups of MS from different grades regarding the proportion of those who cited family expectations as the reason for studying medicine, with the proportions ranging from 11.1% to 46.2% (Cramer's V=0.287, P=0.008). Compared with female MS, a higher proportion of male MS chose to study medicine due to family expectations (P=0.007), selected surgery as their first-choice specialty (P=0.030), and were willing to pursue research during their career (P=0.028). Details of each question and and the corresponding answer about career plan and factors influencing career preference are shown in Table 2.

Interest in ID and Factors Influencing Specialty Choice

Only 18% of MS stated that they were very familiar or familiar with ID specialty. Regarding the overall evaluation of ID courses, 64.1% of MS declared that were "very good" or "good". Nearly 30.0% of MS had experience with ID as a medical profession, and senior students had more opportunities to be exposed to the ID field. Only 6.8% of MS were interested in pursuing a career in ID, the most common reason was "interest in ID". However, about half of the MS (48.7%) declared that they had no interest in ID specialty, particularly among the sixth-year MS. "Concerned about occupational exposure", "lack of interest in ID", and " lack of procedures" were the three most common reasons why MS had no interest in ID. Among them, the proportion of the fifth-year MS who had concerns about occupational exposure was the highest (Cramer's V=0.535, P<0.001). No significant differences in these opinions were observed between male and female MS groups. The specifics of the questions and responses are presented in Table 3.

Multivariate logistic regression analysis revealed that only the overall evaluation of ID curriculum (OR 0.376, 95% CI 0.188–0.754, P=0.006) was the independent related factor influencing MS' lack of interest in ID (Table 4).

Strategies to Enhance the Appeal of ID Specialty

In terms of " potential measures to enhance the attractiveness of ID", "improved salary" was the most common suggestion, followed by "improved job availability", "early exposure to the broad field of ID", and "decreased workload", with the proportion was 76.9%, 47.0%, 40.2% and 35.0%, respectively. Regarding the "Others" option, two responses mentioned "increasing understanding of the specialty", and these have been categorized under "Early exposure to the broad field of infectious diseases".

Discussion

Studying medicine and pursuing a career as a doctor constitutes a highly challenging journey. There are various motivations behind this decision. In our study, most of the students (76.9%) had made their choice according to their own interests, and nearly half of them made their choice because they think that doctors can help others, these findings were similar to other studies.[35,36] However, a significant proportion of participants (35%) reported that their decision was influenced by family expectations, a common motivator in some countries.[35,37] Notably, in our current study, the proportion of students citing family influence has increased over the past three years (from 11.1% to 46.2%). This trend may reflect the growing prestige of the medical profession in China. However, the reluctance of MS to practice

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Table 2 Career Choice and Factors Influencing Career Preference

	Total n=117 n (%)	Fifth-Year MS n=52 n (%)	Sixth-Year MS n=38 n (%)	Seventh-Year MS n=27 n (%)	Cramer's V_a	P_a	Male MS n=41 n (%)	Female MS N=76 n (%)	Cramer's V_b	P_b
Q1: Why did you apply to a medical school (select all that apply) ?										
Personal interest	90(76.9)	40(76.9)	29(76.3)	21(77.8)	0.013	0.991	30(73.2)	60(78.9)	0.065	0.479
The ability of physicians to save lives and embody personal values	61(52.1)	30(57.7)	19(50.0%)	12(44.4)	0.108	0.508	25(61.0)	36(47.4)	0.130	0.160
High income, social status, and job stability to be a physician	51(43.6)	26(50.0)	18(47.4)	7(25.9)	0.196	0.105	18(43.9)	33(43.4)	0.005	0.960
Family expectation	41(35.0)	24(46.2)	14(36.8)	3(11.1)	0.287	0.008	21(51.2)	20(26.3)	0.249	0.007
The doctor profession can benefit oneself and relatives and friends	37(31.6)	18(34.6)	14(36.8)	5(18.5)	0.156	0.242	15(36.6)	22(28.9)	0.078	0.397
Others*	9(7.7)	4(7.6)	3(7.9)	2(7.4)	0.007	0.997	3(7.3)	6(7.9)	0.010	1.000
Q2: What is your career plan after graduation?										
Clinical medicine	104(88.9)	45(86.5)	35(92.1)	24(88.9)	0.077	0.700	36(87.8)	68(89.5)	0.025	1.000
Q3: For those who chose "clinical medicine" in Q2, what is your current most interested specialty?										
Internal Medicine	37(31.6)	11(21.2)	13(34.2)	12(44.4)	0.203	0.089	9(22.0)	28(36.8)	0.153	0.098
Surgery	29(24.8)	10(19.2)	13(34.2)	6(22.2)	0.154	0.251	15(36.6)	14(18.4)	0.201	0.030
Q4: For those who chose "clinical medicine" in Q2, what other specialties are you currently interested in (select all that apply) ?										
Internal Medicine	45(38.5)	21(40.4)	15(39.5)	9(33.3)	0.058	0.820	13(31.7)	32(42.7)	0.102	0.270
Surgery	41(35.0)	18(34.6)	15(39.5)	8(29.6)	0.076	0.712	17(41.5)	24(31.6)	0.099	0.285
Imaging Medicine and Nuclear Medicine	28(23.9)	15(28.8)	9(23.7)	4(14.8)	0.128	0.382	9(22.0)	19(25.0)	0.034	0.712
Oncology	23(19.7)	13(25.0)	6(15.8)	4(14.8)	0.121	0.427	11(26.8)	12(15.8)	0.133	0.152
Q5: What are the factors influencing your career preference (select all that apply) ?										
Work-life balance	96(82.1)	47(90.4)	28(73.7)	21(77.8)	0.198	0.091	33(80.5)	63(82.9)	0.030	0.746
Interest in the specialty	95(81.2)	39(75.0)	32(84.2)	24(88.9)	0.149	0.275	32(78.0)	63(82.9)	0.059	0.522
Expected income	83(70.9)	38(73.1)	26(68.4)	19(70.4)	0.045	0.889	25(61.0)	58(76.3)	0.161	0.081
Employment opportunities	60(51.3)	30(57.7)	17(44.7)	13(48.1)	0.117	0.446	22(53.7)	38(50.0)	0.035	0.706
Influence of mentors or role models	46(39.3)	21(40.3)	14(36.8)	11(40.7)	0.035	0.930	20(48.8)	26(34.2)	0.142	0.124
Specialty prestige	42(35.9)	14(26.9)	15(39.5)	13(48.1)	0.180	0.150	15(36.6)	27(35.5)	0.011	0.909
Patient-provider conflict	36(30.8)	1630.8)	11(28.9)	9(33.3)	0.035	0.931	10(24.4)	26(34.2)	0.102	0.272
Personal experiences	23(19.7)	11(21.2)	8(21.1)	4(14.8)	0.067	0.770	9(22.0)	14(18.4)	0.042	0.647
Suggestions from others	21(17.9)	9(17.3)	8(21.1)	4(14.8)	0.062	0.802	10(24.4)	11(14.5)	0.123	0.182

Q6: Are you interested in pursuing research during your career?										
Very interested	11(9.4)	6(11.5)	2(5.3)	3(11.1)	0.107	0.513	7(17.1)	4(5.3)	0.203	0.028
Somewhat interested	28(23.9)	14(26.9)	10(26.3)	4(14.8)			12(29.3)	16(21.1)		
Neutral	41(35.0)	16(30.8)	14(36.8)	11(40.7)	0.086	0.652	13(31.7)	28(36.8)	0.051	0.579
Somewhat disinterested	25(21.4)	11(21.2)	9(23.7)	5(18.5)	0.022	0.973	3(7.3)	22(28.9)	0.153	0.098
Very disinterested	12(10.3)	5(9.6)	3(7.9)	4(14.8)			6(14.6)	6(7.9)		
Q7: Are you interested in teaching (medical students, residents, fellows) in your career?										
Very interested	21(17.9)	5(9.6)	9(23.7)	7(25.9)	0.153	0.252	12(29.3)	9(11.8)	0.004	0.962
Somewhat interested	50(42.7)	23(44.2)	18(47.4)	9(33.3)			13(31.7)	37(48.7)		
Neutral	33(28.2)	17(32.7)	7(18.4)	9(33.3)	0.151	0.264	10(24.4)	23(30.3)	0.062	0.501
Somewhat disinterested	8(6.8)	4(7.7)	3(7.9)	1(3.7)	0.076	0.702	3(7.3)	5(6.6)	0.082	0.560
Very disinterested	5(4.3)	3(5.8)	1(2.6)	1(3.7)			3(7.3)	2(2.6)		
Q8: Are you interested in public health?										
Very interested	5(4.3)	1(1.9)	2(5.3)	2(7.4)	0.114	0.466	3(7.3)	2(2.6)	0.064	0.488
Somewhat interested	37(31.6)	19(36.5)	13(34.2)	5(18.5)			10(24.4)	27(35.5)		
Neutral	44(37.6)	22(42.3)	12(31.6)	10(37.0)	0.096	0.582	13(31.7)	31(40.8)	0.089	0.333
Somewhat disinterested	21(17.9)	9(17.3)	7(18.4)	5(18.5)	0.162	0.216	9(22.0)	12(15.8)	0.168	0.069
Very disinterested	10(8.5)	1(1.9)	4(10.5)	5(18.5)			6(14.6)	4(5.3)		

Notes: *Other reasons include Childhood dream 3, Personal experience with disease or another person's disease 3, Influence of role model 1, Having a very high college entrance examination mark 1. †Other specialties include Imaging Medicine and Nuclear Medicine 2, Anesthesiology 1, Pediatrics 1, Otolaryngology 1, Rehabilitation Medicine and Physiotherapy 1, Clinical Laboratory Diagnosis 1, and Psychiatry 1. *Cramer's V_a and P_a*: Comparison among the fifth, sixth, and seventh year MS groups. *Cramer's V_b and P_b*: Comparison between the male and female MS groups.

Abbreviation: MS, medical students.

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Table 3 Interests in the Infectious Diseases Specialty and Factors Influencing Specialty Choice

	Total n=117 n(%)	Fifth-Year MS n=52 n(%)	Sixth-Year MS n=38 n(%)	Seventh-Year MS n=27 n(%)	Cramer's V_a	p_a	Male MS n=41 n(%)	Female MS N=76 n(%)	Cramer's V_b	P_b
Q9: To what degree, do you know about the infectious diseases specialty?										
Very familiar	1(0.9)	0(0)	1(2.6)	0(0)	0.211	0.072	1(2.4)	0(0)	0.170	0.066
Relatively well-informed	20(17.1)	5(9.6)	7(18.4)	8(29.6)			10(24.4)	10(13.2)		
Average	57(48.7)	26(50.0)	18(47.4)	13(48.1)	0.024	0.968	18(43.9)	39(51.3)	0.071	0.444
Not very familiar	39(33.3)	21(40.4)	12(31.6)	6(22.2)	0.152	0.257	12(29.3)	27(35.5)	0.063	0.493
Completely unaware	0(0)	0(0)	0(0)	0(0)			0(0)	0(0)		
Q10: What is your overall evaluation of the infectious diseases courses you have taken?										
Very good	10(9.4)	4(7.7)	2(5.3)	4(14.8)	0.076	0.714	5(12.2)	5(6.6)	0.003	0.978
Good	64(54.7)	31(59.6)	21(55.3)	12(44.4)			21(51.2)	43(56.6)		
Average	36(30.8)	13(25.0)	13(34.2)	10(37.0)	0.114	0.467	12(29.3)	24(31.6)	0.024	0.796
Poor	6(5.1)	3(5.8)	2(5.3)	1(3.7)	0.069	0.751	2(4.9)	4(5.3)	0.041	0.969
Very poor	1(0.9)	1(1.9)	0(0)	0(0)			1(2.4)	0(0)		
Q11: What is your experience with infectious diseases as a medical profession (select all that apply)?										
Reported at least one of the mentioned experiences	35(29.9)	3(5.8)	13(34.2)	19(70.4)	0.554	<0.001	14(34.1)	21(27.6)	0.068	0.463
Q12: For those who selected "Rotated in the infectious diseases ward" in Q11, what is your overall evaluation of the rotation in the infectious diseases ward?										
Very good	6/20(30.0)	0(0)	2/6(33.3)	4/14(28.6)	/	/	3/9(33.3)	3/11(27.3)	/	/
Good	9/20(45.0)	0(0)	2/6(33.3)	7/14(50.0)			3/9(33.3)	6/11(54.5)		
Average	2/20(10.0)	0(0)	1/6(16.7)	1/14(7.1)	/	/	1/9(11.1)	1/11(9.1)	/	/
Poor	3/20(15.0)	0(0)	1/6(16.7)	2/14(14.3)	/	/	2/9(22.2)	1/11(9.1)	/	/
Very poor	0/20(0)	0(0)	0/6(0)	0/14(0)			0/9(0)	0/11(0)		
Q13: What is your interest in pursuing a career in infectious diseases?										
Very interested	0(0)	0(0)	0(0)	0(0)	0.043	0.891	0(0)	0(0)	0.014	1.000
Somewhat interested	8(6.8)	4(7.6)	2(5.3)	2(7.4)			3(7.3)	5(6.6)		
Neutral	52(44.4)	29(55.8)	12(31.6)	11(40.7)	0.215	0.067	14(34.1)	38(50.0)	0.152	0.100
Somewhat disinterested	44(37.6)	15(28.8)	20(52.6)	9(33.3)	0.233	0.041	16(39.0)	28(36.8)	0.144	0.119
Very disinterested	13(11.1)	4(7.7)	4(10.5)	5(18.5)			8(19.5)	5(6.6)		

Q14: For those who select "very interested" or "somewhat interested" in Q13, please indicate why you are interested in infectious diseases as a medical profession (select all that apply).										
Interest in infectious diseases	8/8(100)	4/8(100)	2/2(100)	2/2(100)	/	/	3/8(37.5)	5/8(62.5)	/	/
Interested in infectious disease related research	2/8(25.0)	0/4(0)	1/2(50.0)	1/2(50.0)	/	/	0/8(0)	2/8(25.0)	/	/
Suggestions from others	1(12.5)	1/4(25.0)	0/2(0)	0/2(0)	/	/	1/8(12.5)	0/8(0)	/	/
Q15: For those who select "somewhat disinterested" or "very disinterested" in Q13, please indicate why you are not interested in infectious diseases as a medical profession (select all that apply).										
Concerned about occupational exposure	37/57(64.9)	19/19(100)	10/24(41.7)	8/14(57.1)	0.535	<0.001	13/24(54.2)	24/33(72.7)	0.192	0.147
Lack of interest in infectious diseases	33/57(57.9)	11/19(57.9)	13/24(54.2)	9/14(64.3)	0.081	0.831	15/24(62.5)	18/33(54.5)	0.080	0.548
Lack of procedures	18/57(31.6)	6/19(31.6)	9/24(37.5)	3/14(21.4)	0.136	0.579	7/24(29.2)	11/33(33.3)	0.044	0.738
Low potential salary	11/57(19.3)	4/19(21.1)	3/24(12.5)	4/14(28.6)	0.163	0.466	4/24(16.7)	7/33(21.2)	0.057	0.929
Q16: Did the COVID-19 pandemic have any impact on your choice of the infectious diseases specialty?										
More willing to become an infectious diseases physician	7(6.0)	3(5.8)	3(7.9)	1(3.7)	0.065	0.772	4(9.8)	3(3.9)	0.117	0.392
Less willing to become an infectious diseases physician	29(24.8)	17(32.7)	5(13.2)	7(25.9)	0.197	0.104	7(17.1)	22(28.9)	0.131	0.156
No impact	81(69.2)	32(61.5)	30(78.9)	19(70.4)	0.164	0.208	30(73.2)	51(67.1)	0.063	0.498

Notes: Due to extremely low frequencies for some items, no statistical analyses were performed. *Cramer's V_a and P_a*: Comparison among the fifth, sixth, and seventh year MS groups. *Cramer's V_b and P_b*: Comparison between the male and female MS groups.

Abbreviation: MS, medical students.

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Table 4 Results of Multivariate Logistic Regression Analysis

Variables	B	OR	95% CI of OR	*P*
Grade	0.539	1.715	0.929–3.164	0.084
Gender	0.606	1.833	0.802–4.193	0.151
Having doctors or nurses among family members	0.121	1.128	0.480–2.652	0.782
Interest in public health	−0.158	0.854	0.511–1.426	0.546
Familiarity with the ID field	0.254	1.289	0.691–2.403	0.425
The overall evaluation of ID curriculum	−0.977	0.376	0.188–0.754	0.006
Experience with ID as a medical profession	−0.507	0.602	0.202–1.796	0.363
Impact of COVID-19 pandemic	0.242	1.273	0.653–2.485	0.478

Abbreviations: OR, odds ratio; 95% CI, 95% confidence interval; ID, infectious disease; COVID-19, the coronavirus disease of 2019.

medicine after graduation remains a concern. A recent study found that only 66.99% of medical undergraduates in China were willing to practice medicine after graduation.[38] In contrast, 88.9% of students in our study expressed a strong desire to become doctors. This high level of commitment could be attributed to the fact that our participants were graduates of one of China's top medical colleges, where career prospects are typically better.

Choosing a medical specialty is a complex process influenced by multiple factors. A recent thematic network study has identified five key themes that shape specialty selection among MS in low- and middle-income countries: personal determinants, life fulfillment aspects, influential career aspects, educational determinants, and interpersonal effects. Additionally, the most frequently observed sub-themes included specific personal factors, controllable lifestyle, quality of working life, and future working conditions.[39] We found that Internal Medicine and Surgery were the most preferred medical specialties, and the determinants for specialty choice included work-life balance, personal interest, income, and job availability, etc. These findings are similar with previous studies in many countries. A large number of studies reported that controllable lifestyle is an important determinant of specialty selection by MS, which is related to working hours, having enough personal or leisure time, and life stability.[4,30,39] Additionally, some studies also revealed that one of the most important factor for choosing a specialty is that the individual student thinks it interesting and challenging.[7,39,40] It is worthy noting that up to 30.8% of MS considered patient-provider conflict as a factor influencing career choice in our study. Previous research has also shown that workplace violence is a significant predictor of dropout intentions among Chinese medical undergraduates.[41] Another study also noted that both safety needs and risk aversion motivation hold significant importance in Chinese MS' career choice in the face of severe workplace violence.[42] These challenges highlight the need for policymakers to address these issues by alleviating the doctor-patient relationship.

The imbalance in the supply of doctors across different specialties is critical to the healthcare workforce. Our research shows only 6.8% of MS expressed their interest in ID, while nearly half of the participants declared that they had no interest in ID specialty. Concerns about occupational exposure emerged as a key factor, with a strong, practically meaningful association across training years (Cramer's V=0.535, $P<0.001$). This large effect size underscores the significance of the observed pattern: fifth-year MS reported the highest proportion of such concerns, in contrast to 41.7% of sixth-year and 57.1% of seventh-year MS. This pattern likely relates to clinical exposure timing—fifth-year students, newly entering clinical settings, may lack familiarity with occupational exposure risks, leading to widespread concern. Moreover, 24.8% of students indicated that their willingness to pursue an ID career had decreased following the COVID-19 pandemic. Similarly, a survey in Japan also revealed that only 1.5% (5/328) of MS expressed a desire to become ID specialists, while 11% of the students developed a negative preference toward ID specialty after experiencing the COVID-19 pandemic.[25] Therefore, strengthening the training of occupational safety and protection to prevent the occurrence of occupational exposure, alongside optimizing workplace safety protocols, may reduce MS' concerns about occupational exposure and increase their interest in ID.

We found that the quality of ID-related courses was the only independent factor negatively associated with disinterest in ID specialties. This observation suggests that improving the quality of such courses may enhance MS' interest in ID. Notably, a study involving pharmacy students similarly showed that enhancing the quality of didactic ID curriculum has

the potential to boost interest in ID career.[32] Consistent results were reported in two separate studies examining the link between ID education and fellowship choices among internal medicine residents.[3,43] Although this research found no direct association between interest in ID and exposure to ID, some interviewees mentioned that if they had a deeper understanding of ID specialty at that time, they might have considered it as a career choice. Previous literature showed that early exposure to ID including clerkship experiences, mentored by an ID physician and participation in medical student interest groups can impact future career choice of ID.[24,44,45]

To enhance the attractiveness of ID, most participants believed that raising salaries is an effective measure. Although educational debt is not an important issue among MS in China, there are still difficulties in promoting specialization in low-income fields like ID without debt-driven financial pressures. A national survey has indicated that ID physicians in China experienced higher mental stress, lower salaries, and greater job dissatisfaction compared to other physicians. Of the 1071 physicians surveyed, 942 (88.0%) earned an annual income below $15,000.[23] Therefore, it is crucial for healthcare authorities to address this issue by increasing compensation for ID physicians to ensure fair remuneration for their essential work.

This study has several limitations. First, this study may be subject to selection bias. Given that it was conducted at a single institution, institutional-specific factors—such as curriculum design and clinical exposure models—could have influenced the results, potentially limiting their generalizability to other medical schools. Additionally, participation was voluntary, which might introduce bias if students with stronger (or weaker) career preferences were more likely to respond. That said, to our knowledge, this is the first study conducted in Chinese MS to explore their interest in ID and influencing factors. As such, the results may offer valuable preliminary insights into this area. Second, the process of specialty selection is intricately complex. Although we designed the questionnaire through an extensive literature review and integration of in-depth interview findings, there is still a possibility that some influencing factors might have been overlooked. Additionally, for certain identified factors—such as rare or context-specific barriers—small cell counts in our data limited our ability to conduct robust statistical testing. Our analysis provided only preliminary data on Chinese MS' choice regarding ID specialty, the findings may serve as a foundation to inform future research—such as larger cohort studies or intervention studies on curriculum improvements. Third, this study is a cross - sectional investigation. MS' specialty preferences may change during their medical education. A longitudinal study with multiple time-point assessments would provide more comprehensive insights into the dynamic nature of their decision-making processes.

In conclusion, our study found that MS showed limited enthusiasm for pursuing careers as ID specialists. Thus, sustained efforts are needed to boost interest in the ID specialty. Specifically, we propose targeted measures as follows: alleviating concerns over occupational exposure via specialized occupational safety training and refined workplace safety protocols; enhancing the quality of ID-related courses by revising curricula to incorporate case-based discussions and clinician-led sessions; and optimizing career incentives—including ensuring competitive salary structures and emphasizing the unique professional value of ID specialists. These measures might contribute to fostering greater enthusiasm for pursuing a career in ID.

Ethical Approval and Informed Consent

This study was approved by the Ethics Committee of Peking Union Medical College Hospital (No. I-25PJ1129). Before the survey commenced, all participants were presented with an online informed consent form that detailed the study purpose and procedures. Participants were required to click the "Consent and Continue" button to confirm their voluntary participation; non-clicking prevented access to the survey questions.

Disclosure

Ling Qin, Tianxi Wang, Ruiyi Yan and XiaoQin are co-first authors for this study. The authors declare that there are no financial or commercial interests that may constitute a conflict of interest.

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