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Medical students' choice of specialty and factors determining their choice: A cross-sectional questionnaire survey in Melaka-Manipal Medical College, Malaysia

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Summary **Information about medical students' choice of specialty can be helpful for planning health manpower. However, such information from medical students in Malaysian medical schools is lacking. We carried out a cross-sectional questionnaire survey among fourth- and fifth-year medical undergraduate students at Melaka-Manipal Medical College. A total of 425 students responded to the survey questionnaire. Nearly a quarter of the students indicated internal medicine as their choice of specialty. Other choices were general surgery (13.2%), pediatrics (11.3%), orthopedics (12.7%) and obstetrics & gynecology (Ob/Gyn) (12.1%). Female students (OR 1.91; 95% CI 1.18-3.08), fourth-year students (OR 1.9; 95% CI 1.15-3.12), and students who reported a higher self-rated knowledge of their subject of choice were more likely to choose internal medicine and allied specialties (OR 1.53; 95% CI 1.07-2.19). The influence of teaching faculty and consultants at the teaching hospitals (74.4%) and inspiration obtained during clinical postings (71.9%) were the factors which were rated by the most students as 'important' for choosing a specialty. About half of the students intended to pursue their postgraduate studies in Malaysia, most of the rest in the United Kingdom or Australia. While internal medicine and surgical subspecialties were preferred, students were not inclined towards primary care or diagnostic subspecialties. Incentives should be provided and other measures should be taken to make these branches more attractive.**

Keywords: Undergraduate medical education, postgraduate training, specialty, Malaysia

1. Introduction

Medical education requires undergraduate students to study a wide range of medical subjects. Medical careers begin undifferentiated; during their postgraduate training, doctors specialize in a particular field of practice. Medical students can be seen as a relatively undifferentiated, multi-potent 'stem doctors' (*1*) capable of entering any field of practice; specialization turns them ultimately into fully-differentiated specialists whose practice is almost entirely confined to one specialized branch of medicine. Information about students' preferred choice of specialist training may be useful in planning national health manpower programs and in identifying the specialties with low preference in order to undertake measures to make these specialties more attractive. Such information may also help medical educators to plan training facilities and define selection criteria.

Medical students' decisions about specialist training may be influenced by several factors. However, very little is known about the factors that influence medical students in South and Southeast Asia. Based on the

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existing literature, these factors are thought to include higher income, prestige, hospital-based practice (*2*), experience during clinical postings, inspiration given by academic teaching faculty, working hours, and flexibility of working arrangements (*3*,*4*). Personal intelligence and career opportunities also play a role (*4*). Besides the afore-mentioned factors, advice from family, friends, or practicing specialists may also influence students in deciding their future specialty. In addition, personal life experiences, interest in community-based settings, and passion for providing continuous care to patients may also pave the way to a specialty choice.

Several studies from different countries have reported preferred choices of medical specialist training and factors affecting medical students' choice of specialty. A study from the United States of America (USA) reported that no single factor dominates a student's choice for primary care, and higher income, more prestige, and hospital-based practice play an important role in the choice of non-primary care specialties (*2*). Work culture, working conditions, and personal experience with discipline-based medicine in the early postgraduate years were reported to be important factors among Australian undergraduate medical students (*3*). In New Zealand (*5*), medicine, surgery, general practice (GP), pediatrics, and obstetrics & gynecology (Ob/Gyn). were the most popular choices and faculty and clinical posting experiences were reported as the main influencing factors. A study from Canada (*6*) compared family medicine with other specialties and found that older students, those concerned with medical lifestyles, those who were living in smaller communities during high school, and those more interested in varied-scope practice and less interested in hospital-oriented practice preferred family medicine to other specialties. Personal intelligence, ability preferences, and career opportunities were important factors among Chinese medical undergraduate students (*7*). A similar study from Jordan (*8*) reported that surgery, Ob/Gyn, internal medicine, and pediatrics were preferred specialties, and the specialty's reputation, anticipated income, focus on urgent care, intellectual content of the specialty, and individual's competency were the factors most influencing their choice. Preclinical and clinical experiences as well as role models were the factors reported from Japan (*4*). Prestige, money, and personal development were reported as important factors among Turkish undergraduate medical students (*9*). However, there are no such data about choice of specialty and factors influencing choice among Malaysian medical students. The objectives of our survey were to identify medical students' choice of specialty and the factors considered most important by medical students in Malaysia when choosing their specialty.

2. Methods

2.1. *Study design and setting*

The study was designed as a cross-sectional self-administered questionnaire-based survey. In Malaysia, undergraduate medical education is offered by both publicly-funded and private medical schools. The undergraduate medical program is of five years' duration with compulsory rotational housemanship after completion of the final qualifying examination. The curricula in most medical schools incorporate problem-based learning (PBL), with more emphasis on tutorials than lectures. In most medical schools, clinical rotations start from the third year. Students undergo clinical training in major medical, surgical, and allied subjects during each academic year, including senior clerkships during the fifth year. Postgraduate specialist training facilities are mostly available in publicly-funded university medical schools; recently, a few private medical schools have also initiated postgraduate specialist training.

This survey was carried out among the undergraduate medical students of Melaka-Manipal Medical College (MMMC), Melaka Campus, Malaysia. MMMC is a private medical college which offers a twinning medical course and is affiliated with Manipal University, India. Students of MMMC undergo 2.5 years of basic sciences and introductory clinical training on the Manipal Campus in India. Subsequently, another 2.5 years of clinical training takes place at the Melaka Campus in Malaysia. The medical degree Bachelor of Medicine and Bachelor of Surgery (MBBS) conferred by Manipal University is recognized by the Government of Malaysia and the Malaysian Medical Council (MMC) and is accredited by the Malaysian Qualifications Agency (MQA). MMMC is also listed in the WHO directory of recognized medical colleges and in the International Medical Education Directory (IMED) of the Educational Commission for Foreign Medical Graduates (ECFMG).

2.2. *Participant*

All fourth- and fifth-year undergraduate medical students studying at Melaka-Manipal Medical College, Melaka campus, were eligible to participate in the survey. These students were chosen because they had already completed at least one clinical rotation in all clinical subjects.

2.3. *Questionnaire*

After a detailed review of existing literature and informal discussions with medical students and teaching faculty at MMMC, a structured questionnaire was developed in English. A draft questionnaire

was subjected to a validation process in which the questionnaire was given to a group of 15 medical students to obtain their feedback and check for item appropriateness and comprehensiveness. The questionnaire was revised based on the responses and feedback received. The questionnaire began with instructions to the participants followed by demographic data. The questions regarding the choice of subject in which the students intended to specialize were open-ended. The participants were instructed to identify their three most preferred subjects, *i.e.*, their first, second, and third choices. A list based on the review of literature of 16 reasons for and factors associated with the students' choice of specialty was also included. The participants were asked to rate the importance of these reasons and factors as 'least important' to 'most important' on a five-point Likert scale. The questionnaire also contained a few questions regarding their self-rated knowledge on their preferred subject choice on a five-point Likert scale and regarding the country where they intended to pursue their postgraduate training.

2.4. *Data collection*

Permission/approval to carry out the survey was obtained from college authorities and the Research Committee. During August and September 2010, data collection was done by members of our team, namely Chew Yu Wei (CYW), Sudeash Rajakrishnan (SR), Low Chin Aun (LCA), and Prakash Kumar Jayapalan (PKJ). Structured questionnaires were distributed to the students before or after small group teaching sessions. All the students in their fourth or fifth years were invited to participate in the survey after being briefed about the objectives. The students were also informed that participation in the survey was voluntary and not compulsory. Assurances of anonymity and confidentiality of the information were given. Consent was sought from all the students before the questionnaires were administered. The students were not required to enter any identifiable personal details like name, address, or roll number on the questionnaire. Completed questionnaires were collected by the research team.

2.5. *Variables*

The 16 possible reasons and factors for the student's choice of specialty were grouped into 'personal' and 'professional' reasons/factors. We computed separate scores for personal reasons and for professional reasons by adding the Likert scores. We used first choice of specialty in our multivariate analysis to identify factors determining the choice of internal medicine and allied subjects (*i.e.*, internal medicine, pediatrics, cardiology, neurology, emergency medicine, primary care medicine, *etc*.). The other category was surgical branches or specialties, including general surgery, orthopedics, obstetrics, gynecology, otolaryngology, *etc*. The choice of internal medicine and allied subjects was used as a dependant variable. We used demographic variables, year of study, self-rated knowledge about their first choice, and reasons/factors influencing the choice (Likert scores for personal reasons and for professional reasons) as independent variables for univariate and multivariate analyses.

2.6. *Statistical analysis*

Statistical analyses were carried out using Statistical Package for Social Sciences (SPSS) version 14. We generated summary statistics for demographic variables and choice of medical specialty. We carried out univariate and multivariate analyses to assess the factors determining the choice of internal medicine and allied subjects. We calculated crude and adjusted odds ratios (OR) and their 95% confidence intervals (95% CI). A p value less than 0.05 was considered significant.

3. Results

3.1. *Response rates and demographic characteristics*

Out of 524 students in their fourth- or fifth-year MBBS program, 425 students responded to the questionnaire, giving an overall response rate of 81.2%. Of these students, 23 had not completed all the sections of the questionnaires and were not included in the analysis. Thus 402 completed questionnaires were analyzed. Of these students, 243 were in their fourth year and 159 were in their fifth year. The students' median age was 23 years (mean = 23.6 years, S.D. = 1.02). Demographic characteristics of the respondents according to gender are shown in Table 1. About 73% of the students were single, 26% were currently in a relationship. The ethnic distribution of students was nearly a third each for Malay, Chinese and Indian. The vast majority (97%) of the students were Malaysians; 12 students were from Seychelles or Sri Lanka. About 9% of the students had a medical doctor parent; 40% had one or more siblings who were doctors.

3.2. *Choice of medical specialty*

Thirty-one students (7.7%) did not indicate any intention to specialize in any subject. For nearly one-fourth of the students, internal medicine was their first, second, as well as third choice. General surgery (13.2%), pediatrics (11.3%), orthopedics (12.7%) and Ob/Gyn (12.1%) were indicated as first choice by almost equal percentages of students (Table 2). Men were more likely to choose surgical branches while women were more likely to choose internal medicine

Table 1. Socio-demographic characteristics of participants

	Male (*n* = 177)	Female (*n* = 225)	Total (*n* = 402)	*p*
Nationality				
Malaysian	173 (97.7%)	217 (96.4%)	390 (97.0%)	
Non-Malaysian	4 (2.3%)	8 (3.6%)	12 (3.0%)	0.448
State of residence				
West Malaysia				
North	47 (27.2%)	71 (32.7%)	118 (30.2%)	
South	115 (66.5%)	136 (62.7%)	251 (64.4%)	
East Malaysia	11 (6.4%)	10 (4.6%)	21 (5.4%)	0.421
Ethnicity				
Malay	46 (26.0%)	79 (35.1%)	125 (31.1%)	
Indian	56 (31.6%)	75 (33.3%)	131 (32.6%)	
Chinese	69 (39.0%)	62 (27.6%)	131 (32.6%)	
Others	6 (3.4%)	9 (4.0%)	15 (3.7%)	0.078
Religion				
Islam	49 (27.7%)	87 (38.7%)	136 (33.8%)	
Buddhist	47 (26.6%)	50 (22.2%)	97 (24.1%)	
Christian	25 (14.1%)	23 (10.2%)	48 (11.9%)	
Hindu	43 (24.3%)	55 (24.4%)	98 (24.4%)	
Others	13 (7.3%)	10 (4.5%)	23 (5.8%)	0.135
Year of study				
Fourth	95 (53.7%)	148 (65.8%)	243 (60.4%)	
Fifth	82 (46.3%)	77 (34.2%)	159 (80.5%)	0.014
Parents' occupation				
Doctor	15 (8.5%)	22 (9.8%)	37 (9.2%)	
Others	162 (91.5%)	203 (90.2%)	365 (90.8%)	0.650
Siblings' occupation				
Doctor	66 (37.3%)	95 (42.2%)	161 (40.0%)	
Others	111 (62.7%)	130 (57.8%)	241 (60.0%)	0.316

Table 2. Specialty preferences among fourth- and fifth-year medical students

Subject of choice for specialization	First choice (*n* = 371)	Second choice (*n* = 333)	Third choice (*n* = 259)	Total (*n* = 963)
Medicine	97 (26.1%)	75 (22.5%)	57 (22.0%)	229 (23.8%)
Surgery	49 (13.2%)	61 (18.3%)	29 (11.3%)	139 (14.4%)
Pediatrics	42 (11.3%)	22 (6.6%)	20 (7.7%)	84 (8.7%)
Ob/Gyn	45 (12.1%)	39 (11.7%)	32 (12.4%)	116 (12.0%)
Orthopedics	47 (12.7%)	28 (8.4%)	26 (10.0%)	101 (10.5%)
Otolaryngology	16 (4.4%)	33 (9.9%)	14 (5.4%)	63 (6.5%)
Ophthalmology	7 (1.9%)	14 (4.2%)	15 (5.8%)	36 (3.8%)
Psychiatry	12 (3.2%)	7 (2.1%)	15 (5.8%)	34 (3.5%)
Public Health	12 (3.2%)	11 (3.3%)	8 (3.1%)	31 (3.2%)
Emergency Medicine	11 (3.0%)	13 (3.9%)	11 (4.2%)	35 (3.7%)
Anesthesia	14 (3.8%)	12 (3.7%)	10 (3.9%)	36 (3.8%)
Radiology	9 (2.4%)	11 (3.3%)	11 (4.2%)	31 (3.2%)
Others	10 (2.7%)	7 (2.1%)	11 (4. 2%)	28 (2.9%)

subjects. Ob/Gyn was indicated by 37 (16.4%) female students and by only eight (4.5%) male students. Nearly 50% of the students wanted to undergo specialty training in Malaysia, about 45% in the United Kingdom, followed in popularity by Australia.

3.3. *Factors affecting choice of medicine and allied subjects for specialist training*

By univariate analysis (Table 3), the proportion of female students choosing medical subjects was significantly higher than that of males (39% *versus* 26%, OR 1.83, 95% CI 1.19-2.81). Fourth-year students were 1.56 times more likely to choose an internal medicine specialty than fifth-year students (39.4% *versus* 29.3%, OR 1.56, 95% CI 1.03-2.38). Students with a higher self-reported knowledge about their subject of choice were 1.81 times more likely to select that subject (OR 1.81, 95% CI 1.25-2.64). Students who rated personal factors as 'important' or 'very important' were 1.06 times more likely to choose a medical subject ($p = 0.01$, 95% CI 1.02-1.12). Similarly the professional factors score also differed significantly (OR 1.06, 95% CI 1.01-1.10). The following factors were not statistically significant: age ($p = 0.917$), marital status ($p = 0.75$), postgraduate country ($p = 0.192$), sibling doctors ($p = 0.238$).

The results of multivariate analysis are shown in

Table 3. Univariate analysis of medical subjects as student's choice of specialisation

Factor/variable	Medical specialty	Odds Ratio (95% CI)	*p*
Age (mean and S.D.)*	23.6 years	1.01 (0.82-1.24)	0.917
Gender			
Male	46/177 (26)	1	
Female	88/225 (39)	1.83 (1.19-2.81)	0.006
Ethnicity			
Indian	51/131 (38.9)	1	
Chinese	46/146 (31.5)	1.52 (0.90-2.55)	0.120
Malay	37/125 (29.6)	1.38 (0.85-2.27)	0.197
Marital status			
In a relationship	35/109 (32.1)	1	
Single	99/293 (33.8)	0.93 (0.58-1.48)	0.750
Year of study			
Year 5	63/160 (39.4)	1	
Year 4	71/242 (29.3)	1.56 (1.03-2.38)	0.037
Country for postgraduate studies			
Malaysia	61/187 (32.6)	1	
Non-Malaysia	72/184 (39.1)	1.33 (0.87-2.03)	0.192
Doctor sibling			
No sibling doctor	48/166 (30.0)	1	
At least one doctor	86/241 (35.7)	1.30 (0.84-1.99)	0.238
Knowledge score (mean and S.D.)*	2.2 (0.6)	1.81 (1.25-2.64)	0.002
Personal score (mean and S.D.)*	27.6 (4.6)	1.06 (1.02-1.12)	0.010
Professional score (mean and S.D.)*	26.0 (5.2)	1.06 (1.01-1.10)	0.090

* For these variables we compared medical subjects with 'other' subjects.

Table 4. Female students were 1.91 times more likely to choose internal medicine than males (OR 1.91, 95% CI 1.18-3.08). Fourth-year students were 1.9 times more likely to select internal medicine than fifth-year students (OR 1.9, 95% CI 1.15-3.12). The score of self-rated knowledge on subject of choice was associated with choice of subject (OR 1.53, 95% CI 1.07-2.19). Professional factors also determined the choice of an internal medicine speciality (OR 1.06, 95% CI 1.00-1.12). Other factors like age (p = 0.339), country of choice for postgraduate education (p = 0.296), and personal factors (p = 0.647) were not statistically significant.

Participants were asked to rate the importance of 16 factors that may have influenced their choice of specialty; the ratings are shown in Table 5. Among personal factors, 74.4% of the students reported the 'influence of teaching faculty and consultants at teaching hospitals' and 53.8% 'possession of competencies required for the specialty' as 'important'. Among professional factors, 71.9% students responded 'inspiration obtained during clinical postings' and 63.4% 'suitability of the specialty to their own personality' as important.

Table 4. Multivariate analysis of students' choice of specialty

Factor/variable	Odds Ratio (95% CI)	*p*
Age	1.12 (0.88-1.43)	0.339
Gender		
Male	1	
Female	1.91 (1.18-3.08)	0.008
Ethnicity		
Malay	1	
Chinese	1.77 (0.98-3.20)	0.060
Indian	1.76 (1.01-3.07)	0.045
Year of Study		
Year 4	1	
Year 5	1.89 (1.15-3.12)	0.012
Country for postgraduate training		
Malaysia	1	
Non-Malaysia	1.28 (0.81-2.04)	0.296
Knowledge	1.53 (1.07-2.19)	0.019
Personal score	1.02 (0.95-1.08)	0.647
Professional score	1.06 (1.00-1.12)	0.045

4. Discussion

Our survey results showed that internal medicine was the most preferred subject for specialty training, followed by general surgery, pediatrics, orthopedics and Ob/Gyn. Most students preferred Malaysia, the United Kingdom, or Australia for their postgraduate education. Univariate analysis showed students in their fourth year and female students to be more likely to choose internal medicine and allied subjects for their specialist training. Personal factors and students' (good) self-rated knowledge of the specialty also influenced their choice of internal medicine and allied subjects for specialist training. Multivariate analysis showed female gender, year of study (fourth year), a higher self-rated knowledge, and professional factors to be determinants of the choice of internal medicine and allied subjects for specialist training.

To the best of our knowledge, studies about medical students' choice of specialty have not been carried out in

Table 5. Reasons or factors considered by medical students when choosing a specialty

Reasons/factors	Important number (%)	Very important number (%)
Personal factors		
1. Influence of teaching faculty and hospital consultants	134 (40.2)	125 (34.2)
2. Advice from parents/siblings/relatives	76 (20.8)	34 (9.3)
3. Advice from friends/seniors	89 (24.3)	23 (6.3)
4. Possession of competency needed for this specialty	127 (34.7)	70 (19.1)
5. Financial rewards	82 (22.4)	46 (12.6)
6. Less work pressure and better quality of life	99 (27.0)	57 (15.6)
7. Less working hours/ability to spend time with family	98 (26.8)	71 (19.4)
8. Personal experience pertaining to the field	129 (35.2)	56 (15.3)
Professional factors		
9. Inspiration during clinical posting	140 (38.3)	123 (33.6)
10. Advice from practicing doctors	128 (35.0)	53 (14.5)
11. Lack of experts in the field in Malaysia	91 (24.9)	37 (10.1)
12. Continuous care for patients	138 (37.7)	47 (12.8)
13. No night calls	56 (15.3)	60 (16.4)
14. Preference for community-based settings	80 (21.9)	30 (8.2)
15. Suitability of specialty to own personality	149 (40.7)	83 (22.7)
16. Very challenging nature of this field	145 (39.6)	75 (20.5)

There are missing values, because in each case, a few students did not respond.

Malaysia or South and Southeast Asia. Our results can help medical educationists and policy makers to plan postgraduate training and health manpower programs in Malaysia. Such information may also provide a basis for the development of strategies to enhance the attractiveness of specialties which have inadequate trained manpower. Similar to previous surveys, only a small proportion of the students indicated diagnostic branches, primary care, or public health as their choice for specialist training (*9,15*).

A number of studies from different countries have shown that choices of specialist training by undergraduate students vary (*1-16*). Results of these studies have shown that students are usually inclined towards medical or surgical specialties or subspecialties. The most preferred specialty of students in our study was internal medicine. Internal medicine and allied subjects were preferred by the plurality of students in our study, similar to results reported by studies in other countries (*9,10-14*). However, contrary to the findings of our study, students in Jordan and Greece preferred surgical branches over medical branches (*8,15*). Surprisingly, in a survey from Turkey, one-fourth of the students preferred subspecialty cardiology for specialization (*9*). We note that some students in our college did not indicate any specialty preference, while only a small proportion wanted to specialize in public health or primary care. This trend is similar to results reported from developed countries (*5,6,10,13,15*). Further, no one indicated a preference for a preclinical subject such as biochemistry, microbiology, or pathology; these subjects are thought to be less lucrative and are not well recognized as specialties in the medical fraternity (*8,9*).

There could be several reasons for internal medicine being medical students' most preferred specialty. Internal medicine specialists are known as 'doctor's doctors' who are always called upon for consultations by other physicians (*17*). Besides, we expect that television series like 'House' and 'ER' may also have played a role in influencing these students to choose internal medicine. Internal medicine may also have been considered as an interesting prospect because it opens up more choices for subspecialization. The students may also be aware of the growing burden of chronic non-communicable diseases in Malaysia, which increases the demand for internists (*18*). Most people want to become doctors to care for patients, and this desire matches the continuous care required by patients treated in internal medicine.

In our study, gender differences were noted in the preference for certain specialties. Female students were more likely to prefer internal medicine and allied subjects over surgical specialties. Female students were more likely to choose Ob/Gyn than their their male counterparts. This result is similar to findings from Japan, Jordan, Turkey, and Switzerland (*4,8,9,16*). Female students were more likely to choose internal medicine and allied subjects because they involve less physical work than surgical fields like general surgery and orthopedics. In Malaysia as well as the countries mentioned above, conservative Islamic societies, women generally prefer to consult a female doctor for pregnancy or gynecological problems. More women might be inclined toward Ob/Gyn for this reason. Our study showed that fourth-year and final-year students preferred medical over surgical specialties; this is in agreement with the studies reported from Jordan and the USA (*8,10,13*), where students' progress through medical school is reported to change their choice from surgical specialties to internal medicine and allied specialties.

Some studies have also explored factors that influence the choice of specialist training

(*3,4,7-9,14*). These studies have reported that financial considerations, prestige, personal competencies as well as intelligence, and clinical experience were the main factors influencing decisions to choose a specialty. We elucidated all these factors using a Likert scale. Our study found both personal and professional factors to be significant. This is in agreement with the results of studies from Japan, Canada, Jordan, Turkey, and the USA (*4,6,8-10,13,14*). Our survey found that, among the personal factors, the influence of teaching faculty and hospital consultants was the most important, while among professional factors, inspiration during clinical postings, the challenging nature of a specialty, and suitability to the student's personality were 'important'. The approach we used to determine the factors influencing the choice of subject was different from other studies from Australia (*3*), Canada (*6*), and Taiwan (*7*), which have analyzed the factors with different statistical methods, while a study from Japan used a qualitative approach (*4*). Studies from Jordan (*8*) and Turkey (*9*) only listed the factors and did not use any analytical methods. This issue of reasons or factors influencing choice of specialty is complex and often more than one factor may be involved in decision making. Future studies should focus more on a qualitative than a quantitative approach.

Most students intended to undergo specialist training in Malaysia, though some students indicated the United Kingdom and Australia as alternatives. More creditability, their better reputation, and the worldwide recognition of postgraduate courses in these countries may be the reasons for choosing these countries (*17*). We are unsure if migration was a motive for seeking entry into these countries for postgraduate training. Malaysia remained the first choice because the cost of training is nominal and the course structure is tailored to suit the Malaysian health care system and the disease burden. On the other hand, postgraduate training courses in Malaysia are available in only three public universities.

However, our survey was conducted only among clinical-phase students from one private medical school. Therefore, our findings may not reflect the true picture of medical students' choice of specialty in all medical schools in Malaysia. Though our response rate was fairly high, more female than male students responded, we cannot rule out some selection bias.

5. Conclusion

Though internal medicine and allied specialties and surgical specialties were indicated as preferred subjects for specialization, the students surveyed were not inclined towards primary care or diagnostic specialties. Incentives and other measures must be put in place to make these branches more attractive to young doctors. Qualitative studies are necessary to assess the complex issue of factors influencing choices of specialty. Further studies should be carried out on a representative sample of students at other medical schools of Malaysia.

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