

## ORIGINAL ARTICLE

# Factors Affecting the Future Career Choice as Paediatricians among the Final Year Medical Students in Malaysian Public Universities

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## ABSTRACT

**Introduction:** Despite rising healthcare needs, Malaysia faces a concerning stagnant growth in the number of paediatricians, which has raised apprehension about meeting the nation's future healthcare demands. The study aims to determine the factors influencing the final year medical students at public universities in their decision to pursue a career in paediatrics. **Methods:** A cross-sectional study was performed between October 2024 and April 2025, targeting final-year medical students from various public universities in Malaysia. Recruitment was facilitated through convenience sampling by university representatives. Data were gathered via an online self-administered questionnaire from the validated 'Motivators for Medical Specialist Career Choice' Questionnaire. The questionnaire comprised three parts: sociodemographic characteristics, speciality preferences, and 33 sub-constructs under seven main factors influencing speciality choice, assessed using a 5-point Likert scale. **Results:** A total of 420 students participated, with 164 students (39%) choosing Paediatrics as one of their first five choices of subspecialty. Upon analysis, only the personal factor was statistically significant ( $p$ -value=0.041, OR 1.943, CI 1.02,3.68) from simple logistic regression. This factor, along with patient care characteristics ( $p$ -value=0.155), was subjected to multiple logistic regression analysis. Only personal factor has shown a trend towards statistical significance ( $p$ -value=0.051, adjusted OR 1.80, CI 0.99,3.24). **Conclusion:** Personal factors are the single factor approaching significance that affects the career choice of paediatricians among current medical students in Malaysian public universities. Other factors were less significant due to the possibility of generational gaps with different paradigms of career perspectives.

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## INTRODUCTION

Paediatrics is an essential constituent of the medical fraternity worldwide. Nevertheless, the number of paediatricians has been concerning due to stagnant career growth globally in recent years. Scarcity and uneven geographical distribution of specialists are commonly observed in most developing countries, including Malaysia (1). In addition, workforce shortages, low recruitment exercises and increasing individual financial needs, along with systemic challenges, led to a decline despite the growing demand. This raises significant implications for child health care in the long term. The career choice for the medical students depends substantially on the availability of workforce in the healthcare ecosystem, despite having numerous specialities to select from (2).

Medical students can be regarded as adaptable individuals, capable of exploring a variety of specialisations, and evolving into fully specialised doctors who practice entirely in one specialised branch of medicine. Earlier research has shown that most students anticipate their final speciality choice during medical school, with only 20–25% remaining uncertain in their undergraduate education (3). The financial demand, work-life balance, and other personal preferences have contributed to the change in trends in the popularity of certain specialities. Previous studies reported that the preferred choices of medical subspecialty training depend on medical students' personal preferences, work culture, working conditions, and personal experiences. Numerous studies have investigated the preferred medical specialities and the determinants influencing medical students' speciality selection. One study reported that there is no single factor that influences students towards choosing primary care as a career choice. Rather, factors such as increased income potential, higher prestige, and association with hospital-based practice play a pivotal role in choosing the non-primary care specialities (4).

It has also been reported that working culture, working conditions, and personal experience in the early postgraduate years were critical factors influencing Australian undergraduate medical students' career choices (5). A similar study from Jordan reported that surgery, obstetrics and gynaecology, internal medicine, and paediatrics were the preferred specialities by the students, due to the speciality's reputation, anticipated income, emergency care, intellectual content of the speciality, and ability to ensure clinical competency (6). Currently, there are more than 1200 paediatricians registered on the National Specialist Registry in various paediatric disciplines and subspecialties (7). The current paediatrician-to-child ratio is 1:1934. It is anticipated that by 2030, based on an estimated population growth of 10.89 million living children in Malaysia, the ratio is expected to be 1:2025 (7). Unfortunately, there is no hard data to indicate the adequacy of manpower supply, except for one study on private medical schools. Possible reasons for the student's choice of speciality were grouped into 'personal' and 'professional' factors. Among personal factors, students reported the 'influence of the faculty and hospitals' teaching climate and competencies requirements for each speciality. Regarding professional factors, inspiration obtained during clinical postings and personal suitability of the posting to their own personality are considered important reasons (4).

This study focused objectively on the final year medical students across the public universities in Malaysia. Their responses are practically significant in implementing strategies to empower them based on recognised choices and factors. The diversities of demographic and medical school experiences will provide a more reliable outcome in predicting the trajectory of paediatrician careers nationwide. In addition, the marked generation turnover compared to the previous study could potentially reflect the variable outcome in factors tailored to choosing each speciality. The objectives of this study are to determine the factors that would have influenced public universities' medical students in choosing paediatrics as their career choice in the future.

## **MATERIALS AND METHODS**

### **Study design, sampling and data collection**

This cross-sectional study was conducted from October 2024 to April 2025 via the Google Form online platform. We utilised the self-administered 'Motivators for Medical Specialist Career Choice Questionnaire (MMSCCQ)', which was used in a previous study among private medical students in Malaysia (4).

### **Participant Recruitment**

We recruited a total of 420 students via a convenience sampling method. Those final year students were participants from nine public universities. The study's purpose and consent for voluntary participation were

given to the respective university coordinators and explained in detail in the Google form questionnaire. Consent was taken when the students agreed to answer the questionnaire. The respective final year leaders disseminated the questionnaire through QR code or Google Form link. A reminder was sent a few times to improve the response rate. Each university representative disseminates the invitation at a specific time interval through individual WhatsApp groups using the universal link provided. Participation of the students is completely voluntary, and reminders were sent regularly to increase participation.

Malaysia has 20 public universities nationally. Out of that, only 10 of them provide medical courses. The number of intakes for each university ranges from as low as 80 to 180 per annum. It is estimated that approximately 4000 medical graduates qualify from Malaysian universities annually (8). Paediatrics has been part of medical training since 1966 and has been implemented as part of medical rotation in the University of Malaya. In general, medical students in public universities are deemed to complete 5 years of medical courses, with paediatrics rotation being compulsory in the clinical years. The first rotation of paediatrics is most commonly introduced at the beginning of the clinical years, which is either the 3rd or 4th year. Subsequently, the second rotation of Paediatrics posting will be in their final year of the medical degree. Students recruited for our study have substantial paediatric experience and have completed a minimum of two rotations as per Malaysian Medical Council requirements.

### **Tools**

For our study, we utilised the MMSCCQ tool, which takes approximately 15 minutes to complete. This questionnaire was developed by Dr Chandrashekhar T Sreeramareddy and possessed a good reliability (Cronbach's alpha of 0.83) and validity (4). It comprised three parts. The first part consisted of sociodemographic characteristics. As for the second part, participants need to choose their top five speciality preferences as future career choices, with a total of 23 specialities included. The third part consisted of 33 questions, seven factors influencing speciality choice that are being studied, namely work schedule, patient care characteristics, speciality characteristics, personal factor, past experiences, training factor, and career prospects. Each main factor has subfactors which sum up to 33 questions. Participants have to answer using a 5-point Likert scale. The mean score for each factor is obtained from the subfactors' scoring. Scores of three and above show significance, whereas scores below three are not significant. For each factor, the maximal score is five and the minimal score is one.

### **Ethical considerations**

Permission to adapt the questionnaire was granted by the author (4). This study has been approved by the

Human Research Ethics Committee, Universiti Sains Malaysia (Protocol code: USM/JEPeM/KK/24070571). Participants' consent was obtained before answering the questionnaire, and their participation was voluntary. Confidentiality and anonymity were ensured through unique coding features generated during the data collection to separate identities from each participant. Data was kept in a secure place, accessible only to authorised researchers.

### Data analysis

All the statistical analyses were done using SPSS version 28. Descriptive statistics were used for sociodemographic patterns. It was also used to describe characteristics of medical students in their selection of a future profession. To calculate the factors related to paediatrics as a future career, we only chose medical students who indicated paediatrics in their first two choices. Simple logistic regression was utilised to analyse the factors affecting paediatrics as a career choice among the medical students. Factors yielding a p-value of <0.25 were selected for multiple logistic regression analysis. Significant factors are determined by a p-value of <0.05 from the multiple logistic regression. A backward likelihood ratio assumption was applied too.

## RESULTS

A total of 420 medical students answered the questionnaire. Out of 420 participants, 112 of them (26.7%) were male, whereas the remaining 308 (73.3%) of the participants were female. The largest proportion of the age group was from less than 24 years old (n=254, 60.5%). There were 272 (64.8%) Malay participants compared to 148 (35.2%) non-Malay students. For marital status, the majority of them (n=419, 99.8%) were single, except one responder who was married. Of all of them, 404 (96.2%) have never registered failure in their paediatrics posting. Also, 200 (47.6%) of the participants confessed that they have family members working in the medical field. This is shown in Table I.

A total of 164 (39%) of the students chose paediatrics as one of their top 5 choices of subspecialty. Those who decided Paediatrics as their first choice of subspecialty were 39 (9.5%), followed by another 33 (7.9%) as second choice, 31 (7.6%) as third choice, 37 (8.8%) as fourth choice, and 24 (5.7%) as fifth choice, as shown in Table II.

To study factors associated with the choice in paediatrics, we included those who chose paediatrics as either 1st choice or 2nd choice in the regression analysis. From simple logistic regression, only three factors, namely 'patient care characteristics', 'personal factor' and 'speciality characteristics' emerged as the significant factors for further analysis with p-value <0.25. Otherwise, none of the factors showed significance by itself, with their individual p-values not achieving <0.05 (Table

**Table I: Demographic and Socioeconomic Characteristics of Participants (N=420)**

Variable	n	%
<b>Age</b>		
<24	254	60.5
≥24	166	39.5
<b>Gender</b>		
Male	112	26.7
Female	308	73.3
<b>Ethnicity</b>		
Malay	272	64.8
Non-Malay	148	35.2
<b>Marital</b>		
Single	419	99.8
Married	1	0.2
<b>Undergraduate</b>		
East Coast	218	51.9
West Coast	88	21
East Malaysia	114	27.1
<b>Failed Paediatric posting</b>		
No	404	96.2
Yes	16	3.8
<b>Family members in Medicine</b>		
Immediate family	92	21.9
Close Relative'	128	30.5
None	200	47.6
<b>Paediatric as career choice</b>		
No	256	61
Yes	164	39

III). From multiple logistic regression, it was identified that only 'personal factor' was nearly significant with a p-value of 0.051, as shown in Table IV. The result was not statistically significant (p = 0.051), but it approached the conventional threshold for statistical significance.

## DISCUSSION

This is the first study in Malaysia aimed at understanding the perspectives of local medical students across the public universities on factors affecting their choice of future speciality. The large sample size of 420 is unexceptionally met without any dropouts. The ease of using the tool via WhatsApp has made it accessible to almost every student in Malaysia. Furthermore, flexibility of time, anonymity, as well as the questionnaire's readability and comprehensibility would have contributed to the good response.

Based on the study, there were 164 (39%) out of 420 students who chose paediatrics as their first five top choices, comparatively higher than the study in 2011 (n= 84, 8.7%) (1,4). In a 2022 cross-sectional survey of 185 Malaysian house officers, 21 individuals (11.3%)

**Table II: Proportion on specialty preferences**

Specialty choices	First choice		Second choice		Third choice		Fourth choice		Fifth choice	
	n	%	n	%	n	%	n	%	n	%
Paediatrics	39	<b>9.5</b>	33	<b>7.9</b>	31	<b>7.6</b>	37	<b>8.8</b>	24	<b>5.7</b>
Anaesthesiology	33	<b>7.9</b>	29	<b>6.9</b>	27	<b>6.4</b>	26	<b>6.2</b>	21	<b>5.0</b>
Clinical Oncology	3	<b>0.7</b>	4	<b>1.0</b>	6	1.4	6	1.4	4	<b>1.0</b>
Dermatology	5	<b>1.2</b>	13	<b>3.1</b>	12	<b>2.9</b>	22	<b>5.2</b>	11	<b>2.6</b>
Emergency Medicine	21	<b>5</b>	43	<b>10.2</b>	37	<b>8.8</b>	24	<b>5.7</b>	17	<b>4.0</b>
Family Medicine	38	<b>9</b>	60	<b>14.3</b>	42	<b>10.0</b>	26	<b>6.2</b>	24	<b>5.7</b>
Forensic Medicine	8	<b>1.9</b>	5	<b>1.2</b>	10	<b>2.4</b>	11	<b>2.6</b>	12	<b>2.9</b>
General Surgery	36	<b>8.6</b>	31	<b>7.4</b>	29	<b>6.9</b>	24	<b>5.7</b>	15	<b>3.6</b>
Internal Medicine	59	<b>14</b>	48	<b>11.4</b>	35	<b>8.3</b>	23	<b>5.5</b>	19	<b>4.5</b>
Nuclear Medicine	1	<b>0.2</b>	0	<b>0</b>	4	<b>1.0</b>	0	<b>0</b>	4	<b>1.0</b>
Neurosurgery	15	<b>3.6</b>	10	<b>2.4</b>	16	<b>3.8</b>	6	<b>1.4</b>	4	<b>1.0</b>
Orthopaedics	31	<b>7.4</b>	34	<b>8.1</b>	15	<b>3.6</b>	17	<b>4.0</b>	14	<b>3.3</b>
Otorhinolaryngology	13	<b>3.1</b>	8	<b>1.9</b>	16	<b>3.8</b>	20	<b>4.8</b>	14	<b>3.3</b>
Ophthalmology	18	<b>4.3</b>	17	<b>4</b>	24	<b>5.7</b>	17	<b>4</b>	24	<b>5.7</b>
Obstetrics & Gynaecology	37	<b>8.8</b>	24	<b>5.7</b>	17	<b>4.0</b>	18	<b>4.3</b>	20	<b>4.8</b>
Psychiatry	34	<b>8.1</b>	18	<b>4.3</b>	26	<b>6.2</b>	27	<b>6.4</b>	19	<b>4.5</b>
Pathology	7	<b>1.7</b>	8	<b>1.9</b>	3	<b>0.7</b>	6	<b>1.4</b>	7	<b>1.7</b>
Public Health / Community	9	<b>2.1</b>	5	<b>1.2</b>	13	<b>3.1</b>	13	<b>3.1</b>	13	<b>3.1</b>
Plastic Surgery	3	<b>0.7</b>	6	<b>1.4</b>	5	<b>1.2</b>	8	<b>1.9</b>	6	<b>1.4</b>
Rehabilitation Medicine	0	<b>0</b>	5	<b>1.2</b>	7	<b>1.7</b>	10	<b>2.4</b>	6	<b>1.4</b>
Radiology	7	<b>1.7</b>	6	<b>1.4</b>	10	<b>2.4</b>	11	<b>2.6</b>	14	<b>3.3</b>
Sports Medicine	2	<b>0.5</b>	4	<b>1</b>	9	<b>2.1</b>	0	<b>0</b>	9	<b>2.1</b>
I don't have 2/3/4/5th choice			9	<b>2.1</b>	25	<b>6.0</b>	68	<b>16.2</b>	119	<b>28.3</b>

Overall proportion choosing paediatrics n=164 (39%)

identified paediatrics as their preferred speciality, which is relatively lower than this study (9).

Previous studies have attempted to investigate students' preference for a specific career choice but found that their choices were heavily shaped by their perceptions (10). None of the studied factors showed statistical significance in determining speciality choice among the final year medical students at our Malaysian public universities. This is probably due to the generational gap between medical students of the current year, termed Generation Z, and those of 14 years back, termed Millennials. Medical students of the present year can be described as a more dynamic, diverse and digitally fluent cohort. They exhibit a distinctive set of characteristics shaped by their upbringing in a rapidly changing world influenced by technology, global events, and shifting societal values (11). Besides, they have greater awareness of issues such as burnout at work and stressful work-life imbalance, which eventually lead to mental health challenges. The vast influence of the digital world could also be attributed to the COVID-19 pandemic, where a major shift to virtual learning took place. This made it an eye-opener for almost every student to navigate their medical knowledge without any boundaries while cultivating a more tech-savvy and broad-thinking mind. Nevertheless, these do not make them less ambitious,

but their priority has gradually shifted to self-fulfilment and gratification over income and fame. Their emphasis is on a balanced lifestyle and flexibility, along with combining medical advancement with technology, advocacy or even entrepreneurship. Thus, they often look forward to the speciality they choose to fulfil their future expectations in the long run.

Pertaining to our study, further analysis using multiple logistic regression was done with those factors yielding p-value <0.25, namely 'personal factor', 'speciality characteristics' and 'patient care characteristics'. These factors were notably remarkable only for those choosing paediatrics as their first or second choice. The result showed 'personal factor' was the only statistically significant factor (p-value=0.051) associated with the career choice of paediatrics.

Personal factors, which were assessed in our study, incorporated five subconstructs: family or relative influence, better work-life balance, personal interest, job satisfaction, medical school experiences, and social media or public figure influence. No direct comparison to the previous study could be made as paediatrics was analysed as one of the subjects under medical speciality. However, several international studies have consistently reported similar findings regarding factors

**Table III: Simple Logistic regression analysis table for factors determining the choice of Paediatrics as speciality for those choosing Paediatrics as first 2 options**

	Number (%)	Crude OR (95% CI)	p-value
<b>Gender</b>			
Male	112 (26.7)	1	
Female	308 (73.3)	0.924 (0.429, 1.911)	0.841
<b>Age</b>			
<24	254 (60.5)	1	
≥24	166 (39.5)	0.951 (0.499, 1.814)	0.879
<b>Marital status</b>			
Single	419 (99.8)	1	
Married	1 (0.2)	20932	1
<b>Ethnicity</b>			
Malay	272 (64.8)	1	
Non-Malay	148 (35.2)	1.240 (0.65, 2.366)	0.514
<b>Undergrad University</b>			
East Coast	218 (51.9)	1	
West Coast	88 (21)	0.859 (0.370, 1.998)	0.724
East Malaysia	114 (27.1)	1.177 (0.461, 3.004)	0.733
<b>Family members</b>			
Immediate family	92 (21.9)	1	
Close Relative <sup>1</sup>	128 (30.5)	0.859 (0.370, 1.998)	0.712
None	200 (47.6)	1.177 (0.461, 3.004)	0.728
<b>Failed Paediatric Posting</b>			
No	404 (96.2)	1	
Yes	16 (3.8)	0.999	2169
<b>Factors</b>			
Work schedule		0.965 (0.664, 1.403)	0.852
Patient care characteristics		0.639 (0.345, 1.185)	0.155
Specialty characteristics		1 (0.478, 2.091)	0.999
Personal factor		1.943 (1.027, 3.677)	0.041
Past experiences		0.938 (0.553, 1.589)	0.811
Training factor		0.971 (0.598, 1.576)	0.904
Career prospects		0.867 (0.546, 1.379)	0.548

<sup>1</sup> = Reference

affecting medical speciality preferences in a broader group, including paediatrics. A study at the University of Botswana among medical students showed 'personal factor' to be the most significant factor (42%) in choosing subspecialty training (12). Similarly, 'personal factor' was notably significant in another study among final year medical students at Birmingham University (2). Numerous factors have been identified as influential during the later years of medical education, including

**Table IV: Simple and multiple logistic regression analysis table for factors determining the choice of Paediatrics as speciality for those choosing Paediatrics as first 2 options**

Factors	Domain score (Mean, SD)	Crude OR (95% CI)	p-value	Adjusted OR	p-value
Work schedule	3.47 (1.03)	0.97 (0.66, 1.40)	0.852		
Patient care characteristics	3.51 (0.59)	0.64 (0.35, 1.19)	0.155	0.581 (0.327, 1.032)	0.064
Specialty characteristics	3.56 (0.56)	1 (0.478, 2.09)	0.999		
<b>Personal factor</b>	<b>3.72 (0.61)</b>	<b>1.94 (1.03, 3.68)</b>	<b>0.041</b>	<b>1.798 (0.997, 3.242)</b>	<b>0.051</b>
Past experiences	4.16 (0.76)	0.94 (0.55, 1.59)	0.811		
Training factor	3.79 (0.88)	0.97 (0.60, 1.58)	0.904		
Career prospects	3.91 (0.87)	0.87 (0.55, 1.38)	0.548		

Factors with p-value < 0.25 were selected for multiple logistic regression  
Backward LR Multiple Logistic models was applied

perceived academic and career opportunities, family expectations, the impact of role models such as supervisors, faculty, and residents, exposure to work-related hazards, chances to perform procedures and emergency interventions, the prospect of practicing in urban settings, the complexity of training, weekly clinical workload, opportunities for independent practice within the speciality, the nature of patient cases encountered, and anticipated patient outcomes. These elements collectively exert an indirect but significant impact on medical students' speciality preferences (13,14). Unfortunately, there was no other study to explore factors in choosing paediatrics as a career choice among medical students in Southeast Asia. This discrepancy is primarily attributable to the tendency of most studies to aggregate participants under the broad category of 'medical specialities,' rather than studying individual specialities.

There are some limitations in this study. Firstly, we suspect some of the factors analysed might not be tailored to the needs of the current generation of medical students. Along with generational paradigm shifts among Millennials and Gen Z, with increasing emphasis on work-life balance, flexible career trajectories, and lifestyle compatibility, the factors influencing speciality choice (15) may diverge substantially from those captured by the conventional questionnaire utilised in this study. Other factors that may not align with contemporary priorities, potentially diminishing their perceived relevance. Secondly, there has been limited research conducted that has focused on paediatrics as a career choice. Consequently, making an absolute comparison was challenging. Apart from that, this study population was confined to final year medical students in public universities only, as their study structure and curriculum are analogous. Despite satisfactory participation of

students from respective public universities, further study will be needed to explore and establish factors that might have contributed to career-defining choices for medical students in Malaysian universities. This may give paint a bigger picture and possibly be important for future interest in the speciality.

## CONCLUSION

This study has shown that 'personal factors' are most likely attributable to our local medical students in public universities when deciding their future speciality. In addition, other factors following this, which have a close association, such as speciality characteristics and patient care characteristics, may contribute fairly to the decision on speciality among the current generation of medical students in Malaysia.

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