

Pakistani medical students' specialty preference and the influencing factors

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Abstract

Objective: To elucidate the specialty preferences of Pakistani medical students and the factors which influence medical students to make the decision regarding which specialty to pursue.

Methods: Both basic sciences and clinical students from four medical colleges of Pakistan i.e., Dow Medical College, Sindh Medical College, Liaquat National Medical College and Muhammad Medical College, were included in the cross-sectional survey during the period of July'2008 to Jan'2009. After ethical acceptance, data was collected using convenient sampling technique. The questionnaire covered the following demographic details: 13 common specialties and 15 influencing factors.

Results: Questionnaires included in the analysis were 771. Most students gave preference to surgery and its associated sub-specialties (50.3%) followed by internal medicine (26.8%), paediatrics (23.2%), dermatology (16.7%), gynaecology and obstetrics (16.7%), psychiatry (13.1%), radiology (10.8%), ENT (8.8%), anaesthesiology (8.7%), administrative medicine (8.6%), orthopaedics (8.2%), ophthalmology (7.5%), and laboratory medicine (6.1%).

The highly considered factors (regarding specialties) chosen by 70% of the medical students were: applicable to respective personalities of the individuals, prestige and respect, international opportunities, and time commitment. Surgical-skills, job availability, financial rating, academic performance, and a role model were moderately influencing factors. Hospital environment, parents, general practice, peer-pressure and personal health were the least influential.

Conclusion: This trend suggests competition in surgery and its sub-specialties along with internal medicine, paediatrics, dermatology, gynaecology and obstetrics. Specialty suited to personality, time commitment, prestige/respect and international opportunity, influenced more than 70% of the students.

Keywords: Medical education, Specialty preferences, Medical students and Pakistan (JPMA 61:713; 2011).

Introduction

A number of studies conducted internationally have highlighted the factors influencing specialty preferences,¹⁻⁵ however, there is limited data available for Pakistani medical students.^{6,7} As students learn new skills, acquire clinical exposure, gather knowledge and interact with consultants, residents, patients and fellow medical students, their ambition to progress forward in their profession brightens.^{3,8} Some important factors while formulating a career choice are: life-

style of clinical practice,⁹ salary,^{1,10} gender of the student,^{1-3,6,11} social issues they face¹² and prestige related to certain specialties.^{1,13}

There are all together forty-seven medical colleges in Pakistan.¹⁴ Public colleges are generally the most well established and renowned; they have an average of 300 students per batch of MBBS.¹⁵ Private medical colleges have gained popularity more recently, and are rising sharply in numbers; they have an average of 120 students per batch of

MBBS. Hence, the number of students is variable.¹⁶ Unlike the United States, where it takes eight years to complete a graduate degree in medicine (MD), it takes five years in Pakistan (MBBS). With a few exceptions, the first two years are committed toward basic health sciences with no exposure to clinical rotations.¹⁶ The next three years are associated with clinical experience in the wards at the teaching hospital. This clinical exposure gives an individual ample opportunity to decide upon which specialty to pursue after completion of their college education (for example Surgery, Medicine, Paediatrics, Ophthalmology or Gynaecology).¹⁷

Despite producing a huge number of doctors each year, Karachi loses 65 - 95% of its graduates as they settle and practice internationally.¹⁸ Since the cultural values in Pakistan restrict females from living a professional life, it is generally presumed that a large number of girls leave their profession and become housewives.¹⁹ Gender has a substantial influence on the specialty chosen, as proven by many studies.^{1-3,6,11,13} Certain cultural and social beliefs are thought to hinder females to become practicing doctors. A mentor's role in deciding what career/specialty to pursue is an important factor.²⁰ Proper guidance to students, specifically in relation to the specialties that are most needed in a community, can play a significant role in helping one to decide what to do. For instance, surgery being the most competitive specialty and Family Medicine, which needs more physicians, is the least competitive.

To evaluate students' view regarding specialties, a study was conducted at Ziauddin Medical University.⁶ However, it had several limitations as it was confined only to final year medical students and just one private medical university. Pakistan is a third world country and generally most students do not prefer private colleges for their high fee structure. Thus, this study covers both the private and public sector medical colleges. It also includes three urban and one rural medical college and a sample size three times larger than that study. Furthermore, this study shows the changes in selecting a specialty, based on trends listed above, most notably learning in a clinically oriented way after their first two years of college.

This study elucidates the specialty preferences and various influencing factors which enable Pakistani medical students to make a decision. Moreover it also highlights the potential impact of gender and preclinical/clinical status of the medical student on specialty preference.

Methodology

This study was conducted on students from all five years in Dow Medical College, Karachi and Sindh Medical College, Karachi, both public sector (Government) medical colleges run by Dow University of Health Sciences, Pakistan. This study also included two private sector medical colleges,

one urban and one rural. Students from first two years of Liaquat National Medical College, Karachi, Pakistan and first four years from Muhammad Medical College, Mirpurkhas, Pakistan were also included. Convenience sampling was employed as the sampling technique.

A well-structured, anonymous, cross sectional questionnaire was developed after extensive review of literature pertaining to the 13 most common specialties and 15 most common factors influencing specialty choice. The questionnaire required the respondents to tick one or more specialty as their preferred choice. The 15 most probable factors were listed as whether they agreed, disagreed or had no idea about the options given to them.

The authors discussed the questionnaire with the two teaching faculty members of Dow University, Pakistan and Edward Marshall University, USA. A pilot study was conducted with 15 medical students to rule out any ambiguity in the questionnaire, and the pilot study data was not included in the final analysis. Minor changes were made in the questionnaire after the pilot study had been conducted.

Each student was briefed about the study during their free period in the campus and oral consent was taken. Students, who didn't understand anything in the questionnaire, were briefed again. The actual ratio of females versus males was ~75:25 in the medical colleges. Similarly, the actual ratio of the number of medical students was also considered i.e., in public sector medical colleges with ~250-350¹⁵ per year and private with ~120 per year.¹⁶

The questionnaire only included the name of the medical college, year in the medical college and the gender of the participant, thus ensuring them to remain anonymous. Incompletely filled questionnaires were excluded.

The Statistical Package for Social Sciences software (SPSS, version 15.0) was used for data analysis. Descriptive biostatistics was applied. Chi square test was used to analyze difference in the proportions. P value less than 0.05 was considered statistically significant.

The questionnaire along with the protocol of the study was approved by the Institutional Ethical Review Committee of Dow University of Health Sciences, Pakistan. No conflict of interests was encountered in the entire study period. No funding was obtained from any sources.

Results

A total of 850 students were approached, however only 771(90.7%) students returned completely filled out questionnaires. Out of 771 students, 178 (23.1%) were males and 593(76.9%) were females. Out of the public sector medical colleges, 60 male and 235 female students were from Dow Medical College and 30 male and 217 female students

Table-1: Demographics in terms of year in the medical college and gender.

	Year 1	Year 2	Year 3	Year 4	Year 5
Males	60	50	17	7	44
Females	193	112	125	87	76
Total	253	162	142	94	120

were from Sindh Medical College. From private medical colleges, 34 male and 57 female students were from Liaquat National Medical College and 44 male and 84 female students were from Mohammad Medical College. Demographics in terms of year in medical college versus gender are given in Table-1.

Most students gave preference to surgery and its sub-specialties, (50.3%) followed by internal medicine and its sub-specialties (26.8%), paediatrics (23.2%), dermatology

(16.7%), gynaecology and obstetrics (16.7%), psychiatry (13.1%), radiology (10.8%), ENT (8.8%), anaesthesiology (8.7%), administrative medicine (8.6%), orthopaedics (8.2%), ophthalmology (7.5%), and laboratory medicine (6.1%). However 73.5% were flexible in their choices.

There was a statistically significant difference between males and females when choosing general surgery and its subspecialties, orthopaedics, gynaecology and obstetrics, paediatrics, dermatology, anaesthesiology and psychiatry ($p < 0.05$). Male chose general surgery and its sub specialties at a percentage of 68% while only 45% of females chose it ($p = 0.000$). Similarly, 14% of males selected orthopaedics as opposed to 6.4% females ($p = 0.001$). On the other hand, 20.4% of females were found to be attracted towards Gynaecology and Obstetrics and males only 4.5% ($p = 0.000$). Likewise 19.1% of females chose dermatology where the choice of males was 9% ($p = 0.002$). In

Table-2: Specialties with respect to gender and preclinical and clinical years.

Specialties	Males			Females			Overall		
	Preclinical N = 110	Clinical N = 68	Total males N = 178	Preclinical N = 305	Clinical N = 288	Total females N = 593	Overall N = 771	P-value*	P-value**
Surgery and sub specialties	80(72.1%)	41(60.3%)	121(68%)	160(52.5%)	107(37.2%)	267(45%)	388(50.3%)	0.000	0.001
Internal medicine and sub specialties	26(23.6%)	24(35.3%)	50(28.1%)	41(13.4%)	116(40.3%)	157(26.5%)	207(26.8%)	0.671	0.000
Orthopaedics	18(16.4%)	7(10.3%)	25(14%)	25(8.2%)	13(4.5%)	38(6.4%)	63(8.2%)	0.001	0.005
Gynaecology and Obstetrics	3(2.7%)	5(7.3%)	8(4.5%)	68(22.3%)	53(18.4%)	121(20.4%)	129(16.7%)	0.000	0.048
Paediatrics	11(1%)	8(11.8%)	19(10.7%)	89(29.2%)	71(24.6%)	160(27%)	179(23.2%)	0.000	0.279
Ophthalmology	6(5.4%)	3(4.4%)	9(5.1%)	32(10.5%)	17(5.9%)	49(8.3%)	58(7.5%)	0.155	0.345
Dermatology	6(5.4%)	10(14.7%)	16(9%)	61(20%)	52(18.1%)	113(19.1%)	129(16.7%)	0.002	0.211
Anaesthesiology	3(2.7%)	5(7.3%)	8(4.5%)	42(13.8%)	17(5.9%)	59(9.9%)	67(8.7%)	0.023	0.110
Psychiatry	6(5.4%)	6(8.8%)	12(6.7%)	60(19.7%)	29(10.1%)	89(15%)	101(13.1%)	0.004	0.628
Administrative medicine	6(5.4%)	7(10.3%)	13(7.3%)	24(7.9%)	29(10.1%)	53(8.9%)	66(8.6%)	0.494	0.441
Laboratory Medicine	7(6.4%)	4(5.9%)	11(6.2%)	17(5.6%)	19(6.6%)	36(6.1%)	47(6.1%)	0.958	0.511
Radiology	12(10.9%)	6(8.8%)	18(10.1%)	41(13.4%)	24(8.3%)	65(11%)	83(10.8%)	0.749	0.117
ENT.	15(13.6%)	7(10.3%)	22(12.3%)	27(8.8%)	19(6.6%)	46(7.8%)	68(8.8%)	0.058	0.595

Specialties with respect to gender distribution in preclinical and clinical years along with over all response. *P-value with respect to male vs. female students in all the participants (n=771). ** p value with respect to preclinical vs. clinical students in all the participants (n=771).

Table-3: Influencing Factors.

	Males N = 178	Females N = 593	Overall n = 771	P value
Financially highly paid specialty.	124(69.7%)	339(57.2%)	463(60.0%)	0.003
Field requiring surgical skills/work.	122(68.5%)	364(61.4%)	486(63%)	0.083
Willingness to work in hospital.	68(38.2%)	260(43.8%)	328(42.5%)	0.182
To work as a General Practitioner/Primary Care Physician.	57(32%)	226(38.1%)	283(36.7%)	0.139
Suited to an individual personality.	151(84.8%)	519(87.5%)	670(86.9%)	0.351
Awareness of time and work before choosing.	139(78.1%)	509(85.8%)	648(84%)	0.013
Prestige labeled to a specialty.	133(74.7%)	445(75%)	578(75%)	0.930
Academic results in the same specialty.	83(46.6%)	301(50.8%)	384(49%)	0.334
Peer pressure (friend's choice).	43(24.2%)	119(20.1%)	162(21%)	0.240
Jobs availability.	106(59.5%)	375(63.2%)	481(62.4%)	0.373
Parent's influence.	58(32.6%)	258(43.5%)	316(41%)	0.009
Personal health.	47(26.4%)	160(27%)	207(26.8%)	0.879
Impressed by a role-model.	85(47.7%)	271(45.7%)	356(46.2%)	0.630
Flexibility (can change their specialty choice).	126(70.8%)	441(74.4%)	567(73.5%)	0.342
Scope of a specialty internationally.	139(78.1%)	438(73.9%)	577(74.8%)	0.254

Influencing factors versus gender distribution of the students. The p-value with respect to male vs. female students in all the participants (n=771).

anaesthesiology percentage of female interest was higher at 9.9% compared to 4.5% of males ($p=0.023$). Lastly, psychiatry attracted 15% of the females and only 6.7% of male students ($p=0.004$).

As medical students progressed to their clinical years, there was a gradual decline in major specialties i.e., surgery ($p=0.001$), internal medicine (0.005), orthopaedics ($p=0.005$) and gynaecology and obstetrics ($p=0.048$).

Chi square test results showed the differences in preferred specialties among medical students with regards to the gender (female vs. male) and before and after achieving clinical status (Table-2).

Influencing factors for specialty preference:

The highly considered factors (regarding specialties) chosen by more than 70% of the medical students were: applicable to respective personalities of the individuals, prestige and respect, international opportunities, and time commitment. Surgical-skills, job availability, financial rating, academic performance, and a role model were moderately influencing factors (50-70%). Hospital environment, parents, general practice, peer-pressure and personal health were the least influential (50% or less).

Our study established that high salaries attracted notably male students (69.7%) more than females (57.2%) ($p=0.003$). Surgical work/skill application influenced males significantly (68.5%) than female students (61.4%) ($p=0.083$). Female students were heavily predisposed by time commitment (85.8%) than males (78.1%) ($p=0.013$), besides females (43.5%) were found to be pressurized by their parents to a greater extent than males (32.6%) when it came to decision making for a specialty ($p=0.009$). Table-3 shows the details of influencing factors with respect to the gender. Chi square tests were applied to show the significant differences in the responses with respect to the gender.

Discussion

Our study confirms that specialty selection is based on complex factors, including intrinsic factors (personal attributes) and extrinsic factors (local medical environmental effects).

Surgery with its allied sub-specialties, internal medicine with its subspecialties followed by paediatrics, dermatology and gynaecology and obstetrics were the most preferred specialties by the medical students in Pakistan, and this fact can be compared to other parts of the world.^{1,6,13} There has been a substantial rise in the likeness of dermatology from 5.2% to 16.7% as compared to a local study.⁶ ENT (Ear, Nose and Throat), anaesthesiology, administrative medicine, orthopaedics, ophthalmology and laboratory medicine were liked by less than 10% of the

students which coincides with the previous studies.^{1,5,6} However, a local study conducted on the third year medical students of two private colleges showed that only 7% of the students were interested in psychiatry⁷ whereas Huda et al's study showed that 4.7% of final year students were interested in psychiatry.⁶ This contradicts our results of 13.1% students who were interested for psychiatry which could be attributed to differences in the demography of our sample population. Huda et al also contradicts our data by showing that internal medicine was preferred over general surgery.⁶

From our results, it can be projected that in the future there would be more competition in general surgery and allied (50.3%) as compared to internal medicine and its sub specialties (26.8%). Gender differences have been identified previously which were confirmed in our study that males preferred surgery² and females internal medicine as a career.³ While those who selected surgery, females were influenced by the financial rating, local hospital working environment, prestige and parents' expectations while decision making in males was based on their academic performance, peer pressure, personal health and a role model. Gender has its due role in the selection of Obstetric and Gynaecology as a speciality.^{2,3} However the cultural and religious reasons can be held responsible for the decreased number of male students in Obstetric and Gynaecology. Dermatology, anaesthesiology and psychiatry, fields that hold a controllable life style attracted female students to this occupation greatly as shown by another study.¹ ENT and orthopaedics was preferred by the male students as suggested by other studies.¹

There has been a regular change in the specialty preferences as the students move from preclinical to clinical years.¹⁷ The trend for general surgery and allied decreased in the medical students as they progressed in their medical education ($p=0.001$). On the contrary students developed preference for internal medicine ($p=0.001$) which was affirmed by Held et al²¹ Paediatrics was the least preferred i.e., 1% by the preclinical male medical students however, it increased to 11% in clinical male students and it decreased in female students. Both the genders lost interest in orthopaedics as they became seniors ($p=0.005$). We also noted that students lost interest in gynaecology and obstetrics during medical education ($p=0.048$). Comparison with a study done in Jordan, showed results were similar regarding anaesthesiology in preclinical male students.¹

Factors coinciding with previous studies were as follows:^{1-5,8,9,11-13,17} The most important influencing factors in specialty selection were personality and life style.²² Our results matched with Chang et al.²² Prestige labeled to a specialty^{1,13} was also highly considered in our population.

Financial status and jobs in a particular field were found to be important from the students' stand point, thus confirming the previous studies.^{1,10,12} Our study shows moderate level of impact of a role model for specialty selection on students which is strengthened by many other studies.^{3,5,12,20}

Morrissey et al delineated the dissatisfaction for the major specialties among medical students,²³ which was corroborated by our study showing that 8.6% students wanted to switch to administrative medicine. Working in local hospitals and practicing as general clinicians attracted 42.5% and 36.7% of the students respectively. This explains why 74.8% students, particularly males, are interested in following their field of specialty choice abroad. Lower salaries in Pakistan tend to add to their dissatisfaction, since more male students look for financial pay associated with a specialty ($p=0.03$). Another reason could be advanced surgical techniques connected with a specialty ($p=0.083$) due to which the students' prefer the specialty. Nevertheless even students in the Western countries look for international opportunities in their choice of specialty.²⁴ Predilection, towards working in the local setting attracted females much more than the male students and hence the migratory intent was low in the females. This could be attributed to social and cultural values such as, parental pressure to choose a specialty which was higher in females ($p=0.009$). Depending, on the circumstance, 73.5% were flexible with their specialty, i.e., and considered changing to another specialty if they had better opportunities available. Likewise specialty switching trends have been observed to change in the United States also to a comparable extent.²¹

This study has several limitations, as it was conducted in four medical colleges of one province, thus it may not reflect the whole country. In our sample, male 23.1% and females 76.9% show almost the actual gender ratio in the medical colleges in Pakistan; further in private colleges, male vs. female ratio was better as reflected by our sample too. Demographics regarding the number of students from private and government colleges differ because private colleges have 120 students on average per class and the public sector have 300 plus on average. Nevertheless our sample has a lesser ratio of students in the clinical years vs. preclinical years which can be a potential limitation however, it's not statistically significant. The study only concentrates on the thirteen major specialties while it does not inquire about other minor and sub specialties. Moreover, the influencing factors were given in the close ended questions which might have overlooked some other unidentified factors.

Further research is highly recommended which should include greater number of institutions, longitudinal design and with open ended questionnaire which will help

recognize the unidentified influencing factors.

Conclusion

According to the current trend, there is more competition in general surgery and associated subspecialties along with internal medicine and its subspecialties, paediatrics, dermatology and gynaecology and obstetrics. Gender and year in the medical college has a major impact on the specialty preference. More than 70% of the students were influenced by a specialty that was suited to their personality, time commitment, prestige labeled, and its scope internationally.

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