



Factors Affecting the Choice of Specialty among Undergraduate Medical Students, Qassim University, 2020

Mawahib Ahmed Elawad Abu Elgasim^{1*} and Ola M Omran^{2,3}

¹Department of Family and Community Medicine, College of Medicine, Qassim University, Buraidah, Saudi Arabia

²Department of Pathology, College of Medicine, Qassim University, Buraidah, Saudi Arabia

³Department of Pathology, College of Medicine, Assiut University, Assiut, Egypt

*Corresponding e-mail: M.Abuelgasim@qumed.edu.sa

ABSTRACT

Background: A career is used to describe an occupation or a profession that usually involves special training or formal education, and is considered to be a person's lifework training. **Objective:** To determine the factors affecting the choice of medical basic science versus clinical science among undergraduate medical students, Qassim University. **Methods:** A stratified sampling technique, 204 students were enrolled in the study selected subjects was done according to the proportion of each academic year male and female medical students the, data was collected using structured online Google form due to the health emergency. **Results:** Most of the students, 197 (97.0%) pursue a specialization; the majority of them prefer clinical medical science 183 (94.3%). The top four preferred specialty choices were Surgery, medicine, dermatology, and pediatrics (36.4%, 12.8%, 10.3%, and 7.2%) respectively. The most popular factor in specialty choice was an interesting field. Most of the students (61.8%) are advice for choosing a specialty. There was a statistically significant association between, mother and father qualification, but there is no statistically significant between age, (Any or Both Parents are a doctor), (Given Advice by anyone). **Conclusion:** The majority of the student preferred clinical specialty rather than basic surgery is the most popular career choice among males and females, interest is the most important factor of selection specialty.

Keywords: Factors, Affecting, Choice, Specialty, Medical students

INTRODUCTION

In several countries, there is an increase in medical seats which boosts the call for raising specialty training, and supervision at both graduate and undergraduate levels [1]. Health-care services and medical system improvement is affected by the medical specialties chosen by doctors for their careers [2,3]. Determining how the graduates select their areas of specialization is essential to achieve a balanced distribution of physicians in all specialties [4]. Factors that affect the choice and preference of specialty of doctors and medical students should be recognized for the appropriate distribution of doctors by specialty. Personal and family factors have the greatest impact in a workplace setting, but factors associated with medical student's choice and preference such as gender, career opportunities, prestige, income, the reputation of the specialty, and self-interest can affect as well [5-7].

Males and females have different abilities, so the impact of gender in making a selection of career needs special consideration [8].

It was detected that that student never desires to choose a basic science specialty; they prefer to choose a clinical specialty rather than a preclinical specialty such as Anatomy, Community Medicine, Pathology, etc. As their knowledge and skills become restricted to teaching and learning activities, and to avail the needs of basic medical science teachers, medical colleges have established master and doctorate programs in medical streams especially in Anatomy, Physiology, Biochemistry, etc. Such programs will supply medical colleges with adequate teachers of basic science [8,9].

Qassim University is a public university in the Al-Qassim Province of Saudi Arabia. It includes many different colleges like the College of Medicine which is located in Buraydah (Mllidah area).

College of Medicine in Qassim University is considered a regional leader in medical education. It is the first medical college in Saudi Arabia to adopt the Problem-Based learning (PBL) curriculum, as well as integration within basic sciences and between basic and clinical sciences.

Recently, there is an increase of seats for male and female medical students at Qassim University, therefore, there is an increase in the awareness of the importance of career preference in medicine which has a direct impact on students' learning and academic performances and for the planning of specialty training capacity. Results of previous studies showed that several factors influence medical students' choice of specialty, the information is unclear. Thus, in our research, we tried to find out future career interests and factors that influence undergraduate medical students to choose their future specialization related to basic or clinical sciences.

This study aims to determine the factors that influence medical students' career choices Basic and Clinical Medical Sciences as a career choice among undergraduate medical students in Qassim University.

MATERIALS AND METHODS

Study Design and Setting

This study is a cross-sectional study that was conducted by using a previously validated Questionnaire taken from a previous study and modified to survey medical students from Qassim University. Data was collected using a validated self-administered questionnaire.

This study was conducted in the main campus for 1st to 5th year, male and female medical college students of Qassim University, which is located in Al-Mulida area, Buridah city, Qassim Region, KSA.

Study Population

204 medical students at Qassim University, faculty of medicine were enrolled in the study according to criteria of selection. The participants in the study answered the research questions. The study was carried during the academic year 2019-2020. 195 students completed the questionnaires. The study population includes medical students who were identified through the Faculty of Medicine's Student Affairs by getting a list of the students' names, ID numbers, and serial numbers. The total number was 711 medical students.

Sampling

We used a stratified sampling technique; students were recruited based on data obtained from undergraduate students' records of the year 2019-2020. The sampling was proportional to the total number of students in the College of Medicine. The students who agreed to join the study were informed about the study, its purpose, and their right to refuse participation. Students who agreed were asked to sign an informed consent. The students were selected proportionally; every academic year of male or female medical students was given a proportion of the sample according to the total number of students in the class.

The sample size was determined by using a modified sample equation where the total population size is known.

In this study modification for the Cochran Formula for Sample Size Calculation in Smaller Populations was used, because the population we're studying is small, we can modify the sample size we calculated in the above formula by using this equation.

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Here n_0 is Cochran's sample size recommendation, N is the population size, and n is the new, adjusted sample size. 711 students in the target population

$$385 / (1 + (384 / 711)) = 275$$

Data Collection Methods and Study Instruments

To collect the data, we used a structured online Google form due to health emergencies, complete lockdown, and prevention issues. Relationships between independent and dependent variables were investigated in an analysis of variance. The semi-structured questionnaire was formulated by the investigators after conducting a thorough literature search the questionnaire was pre-tested in a sample of 5 students-not included in the study- to assess its reliability and to check for ease and clarity of items. Necessary modifications were applied.

Data Analysis

After data collection was accomplished, data was reviewed and ordered. Then Statistical Package for Social Sciences (SPSS) version 21 together with Microsoft Excel 2007 was used for data processing and analysis.

Ethical Considerations

The research proposal was approved by a subcommittee of Health Research Ethics Qassim University, Faculty of medicine.

Verbal consent was to be obtained from the study subjects.

A verbal explanation of the study subjects about the research and its objectives was carried before filling the questionnaire.

RESULTS

Response Rates and Demographic Characteristics

204 undergraduate medical students have completed the questionnaire. There were 116 (56.9%) male and 88 (43.1%) female students with 146 (71.6%) aged between 20 and 23 years and 45 (22.1%) aged between 17-20 and 13 students (6.4%) above 23 years. Majority of participants 192 (94.6%) both of their parents were not a doctor. 197 (97.0%) students pursue a specialization, while 6 (3%) did not, 183 (94%) of the student want to pursue clinical and only 11 (6%) preferred basic specialization, Figure 1 and Figure 2.



Figure 1 Shows pursue a specialization of students (n=203)

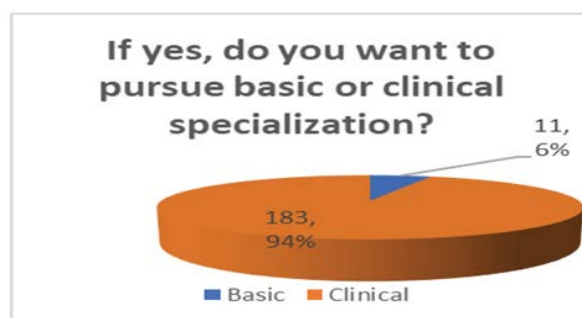


Figure 2 Shows pursue a specialization of students (n=194)

Specialties Selected by the Undergraduate Medical Students

The results showed that 71 (36.4%) students selected general surgery as a major, 25 (12.8%) medicine, 20 (10.3%) dermatology, 14 (7.2%) pediatrics, and 11 (5.6%) selected both orthopedics and emergency medicine. Two students (1.0%) each selected anesthesia, one selected pathology and 5 (2.6%) selected such as anatomy and physiology, etc. (Table 1).

Table 1 Specialties selected by the undergraduate medical students, (n=195)

MedicalC240:E256	Frequency and Percent
Medicine	25 (12.8%)
Pediatrics	14 (7.2%)
Surgery	71 (36.4%)
Obstetrics and gynaecology	7 (3.6%)
Radiology	3 (1.5%)
Ophthalmology	10 (5.1%)
Orthopedics	11 (5.6%)
Psychiatry	3 (1.5%)
Dermatology	20 (10.3%)
Microbiology	3 (1.5%)
ENT (Otorhinolaryngology)	9 (4.6%)
Anesthesia	2 (1.0%)
Emergency Medicine	11 (5.6%)
Pathology	1 (0.5%)
Others (Anatomy, Physiology etc.)	5 (2.6%)
Total	195 (100.0%)

Most of the students (61.8%) advice for choosing their specialty preferred while 76.2% and 23.8% have received advice from their families and other medical students and friends respectively (Table 2 and Table 3).

Table 2 Distribution of the participants according to given advise by anyone, (n=195)

Given Advise by anyone	Frequency and Percent
Yes	126 (61.8%)
No	78 (38.2%)
Total	204 (100.0%)

Table 3 Distribution of the participants according to from whom you received the advice, (n=195)

If yes, from whom you received the advice?	Frequency and Percent
Family members advice	96 (76.2%)
Friends/Senior Advice	30 (23.8%)
Total	126 (100.0%)

One hundred and fifty-three (78.5%) students chose their major because the specialty “match with self-interest”. As many as 10 (5.1%) students proposed “specialty reputation and to make money” as a factor influencing their specialty selection. The lowest preference by two students was given to the option “early settlement” and one student proposed

“Difficulty of residency” and another one chooses “Less competition” as a factor influencing the choice of their specialty (Table 4).

Table 4 Distribution of Participants based on factor responsible for the selection of particular medical specialty, (n=195)

Factors	Frequency and Percent
Less competition	1 (0.5%)
Specialty reputation	10 (5.1%)
Self interest	153 (78.5%)
Early settlement	2 (1.0%)
To make more money	10 (5.1%)
Preference of terminal branch	3 (1.5%)
To share in health research	1 (0.5%)
Working hours	8 (4.1%)
Difficulty of residency	1 (0.5%)
Potential for community interaction	6 (3.1%)
Total	195 (100.0%)

As Table 5 shows, the gender-wise analysis revealed that males and females had their first career choice in surgery as the first medical specialty desired (33.6%, 40.5% respectively) and medicine as the second desired specialty (15.5%) in males followed by orthopedic while dermatology is the second choice in females followed equally by obstetrics and gynecology and medicine (both 8.9%). Only males choose the following specialties; otorhinolaryngology, radiology, and pathology. Career choice for basic medical science subjects was few (5.1%) for females and minimal for male medical students (0.9%) there is a statistically significant between Medical Specialty desired and Gender (p-value=0.001).

Table 5 Association between (Medical Specialty desired) and Gender, (n=195)

Gender	Male	Female
Medicine	18 (15.57%)	7 (8.9%)
Pediatric	8 (6.95)	6 (7.6%)
Surgery	39 (33.6%)	32 (40.5%)
Obstetrics and gynaecology	0 (0.0%)	7 (8.9%)
Radiology	3 (2.6%)	0 (0.0%)
Ophthalmology	7 (6%)	3 (3.8%)
Orthopedic	10 (8.6 %)	1 (1.3%)
Psychiatry	2 (1.7%)	1 (1.3%)
Dermatology	9 (7.8%)	11 (13.9%)
Microbiology	2 (1.7%)	1 (1.3%)
ENT	9 (7.8%)	0 (0.0%)
Anaesthesia	1 (.9%)	1 (1.3%)
Emergency Medicine	6 (5.2%)	4 (5.1%)
Pathology	1 (.9%)	0 (0.0%)
Others (Anatomy, Physiology etc.)	1 (.9%)	4 (5.1%)
Total	116 (100%)	89 (100%)
p-value	0.001	

Table 6, shows that there was a statistically significant association between, mother and father qualification and specialty selection, it also shows that there is no statistically significant between age, (any or both of parents is a doctor), (given advice by anyone) and specialty selection at significance level 0.05.

There is no statistically significant association between age, any or both parents are a doctor, and given advice by anyone (at significance level 0.05)

While Table 5 shows there is a statistically significant between gender and specialty selection.

Table 6 p-values between specialty selection and age, mother and father qualification, Any or both parents is a doctor, given advice and from whom you received advise, (n=195)

Factors	p-value
Age	0.394
Father qualification and profession	0.013
Mother qualification and profession	0.006
Any or both parents is a doctor	0.054
Given advice by anyone	0.294
From whom you received advise	0.000

There is a statistically significant association between (Medical Specialty desired) and both father's and mother's education. Medical students from parents of under university and above university qualification choose surgery and medicine. However, obstetrics and gynecology is the second most selected specialty by medical students who have above university parents' qualifications, whereas, radiology and psychiatry are the second most selected specialty in cases below university parents' qualifications (Table 6 and Table 7).

Table 7 Association between (medical specialty desired) and mother education, (n=195)

Mother education	Under university	University and above
Medicine	12 (12.6%)	13 (13%)
Pediatric	9 (9.5%)	5 (5%)
Surgery	33 (34.7%)	38 (38 %)
Obstetrics and gynaecology	1 (1.1%)	6 (6 %)
Radiology	3 (3.2%)	0 (0.0%)
Ophthalmology	7 (7.4%)	3 (3%)
Orthopedic	8 (8.4 %)	3 (3%)
Psychiatry	3 (3.2%)	0 (0.0%)
Dermatology	10.50%	10 (10%)
Microbiology	0 (0.0%)	3 (3%)
ENT	6 (6.3%)	3 (3%)
Anaesthesia	1 (1.1%)	1 (1 %)
Emergency Medicine	2 (2.1%)	9 (9%)
Pathology	0 (0.0%)	1 (1 %)
Others (Anatomy, Physiology etc.)	0 (0.0%)	5 (5%)
Total	95 (100%)	100 (100%)
p-value	0.006	

There is no statistically significant association between (Medical Specialty desired) and (any or both of parent is a doctor). Otorhinolaryngology (27.3%) was the most desired subject among the medical students in the case of medical doctor parents, whereas in the case of non-medical professional parents, surgery (37.2%) was the most medical specialty desired. p-value=0.294 (Table 8).

Table 8 Association between (Medical Specialty desired) any or both of parent is a doctor, (n=195)

Any or both of parent is a doctor	Yes	No
Medicine	20 (16.5%)	5 (6.8%)
Pediatric	9 (7.4%)	5 (6.8%)
Surgery	39 (32.2%)	32 (43.2%)
Obs and Gune	4 (3.3%)	3 (4.1%)
Radiology	0 (0.0%)	3 (4.1%)
Ophthalmology	6 (5%)	4 (5.4%)
Orthopedic	6 (5%)	5 (6.8%)
Psychiatry	3 (2.5%)	0 (0.0%)
Dermatology	15 (12.4%)	5 (6.8%)
Microbiology	1 (0.8%)	2 (2.7%)
ENT	5 (4.1%)	4 (5.4%)
Anaesthesia	1 (0.8%%)	1.41%
Emergency Medicine	7 (5.8%)	4 (5.4%)
Pathology	1 (0.8%%)	0 (0.0%)
Others (Anatomy, Physiology etc.)	4 (3.3%)	1 (1.4%)
total	121 (100%)	74 (100%)
p-value	0.054	

DISCUSSION

In this cross-sectional study, we observed that majority of medical students; one hundred ninety-seven (97.0%) students pursue a specialization, the same result was obtained by other studies, and (94.3%) of them pursue clinically specialization, while only 3% pursue a basic specialization [7,10]. These findings indicate that Basic Medical Science subjects were least preferred by medical students which may be due to the limitation of chances of basic sciences that are restricted to teaching and research. On the other hand, clinical sciences have more income these findings were agreed with several studies conducted in medical schools in China, Malaysia, and regions of South Asia [9].

Our study revealed that males and females had their first career choice in surgery as the first medical specialty and internal medicine as the second desired specialty in males followed by orthopedic while dermatology is the second choice in females followed equally by Obstetrics and Gynecology and medicine (both 8.9%) [11,12].

Similar findings were observed in the studies which were done in India, regions of South Asia and Khartoum, Sudan and Bahrain while a study done in Taif University faculty found that the first choice was internal medicine specialty followed surgical specialty, was differed from our results [7-9,13,14].

The important findings gender-specific preferences in our study, we observed that only males choose the following specialties; otorhinolaryngology, radiology, and pathology.

The current study also analyzed the factors influencing students' choice of their specialty majority of the students reported that "match with self-interest". a similar conclusion was obtained by the systematic research in which its data were extracted from 75 studies. Overall, the factors influencing medical students' choice of subspecialty training mainly included academic interests supported by studies [3,8].

Our study also analyzed whether there is any influence of father's and mother's education level and the choice of medical specialty. A significant association between (Medical Specialty desired) and both father's and mother's education. Medical students from parents of under university and above university qualification choose surgery and medicine. That emphasized the surgery was the principal medical specialty required for students and it was also preferred by their parents regardless of their level of education. This also could be explained by the fact that surgery is often seen as a more family-focused specialty.

Parents play a vital role in career choices we found a significant association between this supported by studies, our study revealed that Otorhinolaryngology were the most desired subjects among the medical students in case of medical doctor parents, this might be a result of the fact that parent's selection according to their experience [8,15]. It seems that this specialty has more income and has no heavy workloads.

CONCLUSION

The majority of the student preferred clinical specialization. The most prevalent career choice in this study is Surgery among males and females and Internal medicine is the second choice for males while dermatology is the second choice for females. The most important reason for the selection of the specialty is that students felt they were interested in fields. There is a need for another cohort study to identify whether they change their choice or not, also, more attention is needed for basic science.

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Acknowledgment

We gratefully thank the students of Qassim University basic phase the university for their permission to conduct the study and for their great efforts and also great thanks to the research committee of the Faculty of Medicine Qassim University for their help and advice.

Authors' Contributions

This work was carried out in collaboration between all authors. Authors Mawahib Ahmed Elawad Abu Elgasim and Ola M Omran designed the study. Authors Mawahib Ahmed Elawad Abu Elgasim and Ola M Omran designed the questionnaire. Authors Mawahib Ahmed Elawad Abu Elgasim revised the tools for data collection Authors Mawahib Ahmed Elawad Abu Elgasim and Ola M Omran reviewed the data. All authors participate in summarizing and analyzing data, drafted the first manuscript, revised the manuscript for grammar and spelling, and write public health implication paragraphs.

REFERENCES

- [1] Bhat, Smitha, Landric d'Souza, and Jeffrey Fernandez. "Factors influencing the career choices of medical graduates." *Journal of Clinical and Diagnostic Research*, Vol. 6, No. 1, 2012, pp. 61-64.
- [2] Buddeberg-Fischer, Barbara, et al. "Swiss residents' speciality choices-Impact of gender, personality traits, career motivation and life goals." *BMC Health Services Research*, Vol. 6, No. 1, 2006, pp. 1-9.
- [3] Yang, Yahan, et al. "Factors influencing subspecialty choice among medical students: A systematic review and meta-analysis." *BMJ Open*, Vol. 9, No. 3, 2019, p. e022097.
- [4] Peel, John K., Christopher M. Schlachta, and Nawar A. Alkhamisi. "A systematic review of the factors affecting choice of surgery as a career." *Canadian Journal of Surgery*, Vol. 61, No. 1, 2018, pp. 58-67.
- [5] Cuesta-Briand, Beatriz, et al. "Understanding the factors influencing junior doctors' career decision-making to address rural workforce issues: Testing a conceptual framework." *International Journal of Environmental*

Research and Public Health, Vol. 17, No. 2, 2020, p. 537.

- [6] Fukuda, Yoshiharu, and Tadanari Harada. "Gender differences in specialty preference and mismatch with real needs in Japanese medical students." *BMC Medical Education*, Vol. 10, No. 1, 2010, pp. 1-7.
- [7] Kishore, Y. et al. "Career preferences and factors influencing speciality choices among the medical students in Telangana: A cross sectional study." *The Journal of Community Health Management*, Vol. 5, No. 1, 2020, pp. 17-20.
- [8] Anand, Ruban, and Prakash Somi Sankaran. "Factors influencing the career preferences of medical students and interns: A cross-sectional, questionnaire-based survey from India." *Journal of Educational Evaluation for Health Professions*, Vol. 16, 2019.
- [9] Kumar, Arun, et al. "Factors influencing medical students' choice of future specialization in medical sciences: A cross-sectional questionnaire survey from medical schools in China, Malaysia and regions of South Asian Association for Regional Cooperation." *North American Journal of Medical Sciences*, Vol. 6, No. 3, 2014, pp. 119-25.
- [10] Gour, Neeraj, et al. "Specialty preference among medical students and factors affecting it." *Online Journal of Health and Allied Sciences*, Vol. 10, No. 2, 2011.
- [11] Andersson, Jenny, et al. "Comparing gender awareness in Dutch and Swedish first-year medical students-results from a questionnaire." *BMC Medical Education*, Vol. 12, No. 1, 2012, pp. 1-10.
- [12] AbouZaid, Lamyaa Z., et al. "Career choice and its influencing factors: Perception of senior medical students." *Journal of Contemporary Medical Education*, Vol. 2, No. 3, 2014, pp. 168-73.
- [13] Mann-Isah, Nabila Aisha, et al. "Career choices among medical students and factors influencing their choices." *Global Journal of Health Science*, Vol. 11, No. 4, 2019, p. 132.
- [14] Alawad, Awad Ali Mohamed Ahmed, et al. "Factors considered by undergraduate medical students when selecting specialty of their future careers." *Pan African Medical Journal*, Vol. 20, No. 1, 2015.
- [15] Wateen Assad Hammadi, Haneen Asaad Hammadi and Etemadi A A El-Sheree, "Study of future specialty career choice among female medical students in medical college, Taif University, Saudi Arabia." *International Journal of Medical Research & Health Sciences*, Vol. 9, No. 9, 2020, pp. 40-48.