Determining Factors Affecting The Medical Interns’ Choice Of Specialties Among Governmental Universities In Riyadh

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Abstract

The nature of experience during the medical study at university may play an essential role in choosing the specialty.

Objectives: to determine the effect of governmental universities in general and on medical interns' career choice, taking into consideration the gender difference. Furthermore, to find out when governmental universities educate their students about the different specialties.

Method: It was a cross-sectional study approved in July in 2018 that included 234 Saudi medical intern students from four different medical colleges in governmental universities in Riyadh. These were King Saud University (KSU), Princess Norah University (PNU), Imam University (IU), and King Saud bin Abdulaziz for Health and Science (KSAU-HS) with consideration of gender differences and availability. All participants who are selected randomly completed an online-questioner.

Result: Around two thirds (66%) of the participants ensure that their governmental universities had a positive influence in choosing the specialties dividing equally between both genders. According to the participants’ perceptions, all the items of the medical education system did not affect in choosing the specialty except three of them that have a positive effect which are elective experience (43.59%), clinical year (40.6%) and the personality of instructor (38.46%). Furthermore, one-third (33%) of the participants ensure that they are educated about the specialties in the third year. The most common positive factor is elective experience by 19.36%, while the most common negative factors are improper block duration and the personality of the instructor by 14.52%.

Conclusion: Most governmental universities have a positive effect on their students' career choice, and they educate pre-graduate students about specialties.
Background

Choosing a medical specialty is one of the most critical decisions during the medical carrier because their natures are different, and their numbers increase occasionally. Even though the nature of specialties do not resemble each other, there are many common factors that play important roles in choosing the specialty, including the show of the specialty in society, the salary income, the nature of specialty and its time, the external pressure from the family and the type of personality. However, the quality of the college of medicine is one of the most critical factors that can have a major effect like the other factors. The institutional factor includes a huge number of things like the number of the blocks, the duration of each block, the order of the blocks, the number of the basic and clinical blocks. Also, the educational tools involving anatomy lab, physiology labs, and the clinical center for clinical training beside the quality of the lectures and the workshops which is considered as another aspect of the institutional factors.

There are many recent studies that have been done regarding the top specialties that are preferred by the medical students, while only three studies concern about the reasons that affecting of the choosing the medical college in the worldwide. According to a Dutch study that have been done among the first and fourth medical students in Netherland in 2017, there was a questionnaire distributed randomly among 441 medical students to assess the reasons for choosing this medical college. (1) Among the 300 medical students of the first year, 57% of them indicated the selection procedure, 25% of them indicated city, 11% of them indicated the curriculum and 7% of them indicated the university culture. Furthermore, around 47% among 141 fourth medical students indicated the selection procedure, 36% of them indicate the city, 5% of them indicated the university culture and 12% of them indicated the curriculum. (1) Also, there was another study in the
Taiwan in 2013 among the first and seventh-year medical students and post-graduate students to figure out the specialty choices and briefly the factors that had influence in that. (2) Depending on the result, the personal interest and the academic achievements are listed in the highly impacting factors among the seventh-year medical students. (2) Beside these two studies, there was Nepal study in 2013 in six Nepal colleges among the residents, interns, first and sixth-year medical students. (3) The most common cause after serving the sick was personal interest, while the fourth cause was the best course available in the university. (3) Furthermore, the sixth cause was the research interest. (3) Locally, there are three studies in the middle east which can be related to our study. The most recent one was done in Khartoum university in Sudan in 2015 as a cross section among 887 medical students including the first-year medical students to the fifth-year medical students. (4) The results showed that the main cause of choosing the specialties in 40% of them was personal interest. (4) In addition, 27% of them chose the specialty to help the community, while 8.5% of them thought about the job opportunity, and 7% of them were considering financial reasons. (4) In Kuwait, there was a study in Kuwait university that focused on the most influential causes that influenced the 387 medical students in choosing the specialty. (5) The most common is the good prognosis of the diseases in the specialty by 45% and the challenge in the specialty is the second common by 41%. (5) In Saudi Arabia, there was another study in Dammam university in 2014 including 179 from 4th, 5th and 6th-year medical students to demonstrate the factors affecting the selection of the medical specialty. (6) According to the result, the most common factor was the lifestyle with a percentage around 45%. (6) Even though the clinical rotation can be an important factor, it is considered as third with 11% after the
subspecialty choices with 13%.\(^\text{(6)}\)

Because of lacking of detailed studies aiming to assess the effect of the institutional or governmental universities in Riyadh city, we aspired to do a research that considers the institutional effect on the interns in choosing the medical specialty in Riyadh city by including all governmental universities in Riyadh city which are Imam Muhammad ibn Saud Islamic University (IMSIU), King Saud University (KSU), King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) and Princess Nourah Bint Abdulrahman University (PNU). We will assess the effect of the governmental universities on medical interns in choosing specialties and determine the year the medical intern students are educated about the specialties. In addition, this study aims to evaluate the medical education system in the governmental universities and the effects that they exerts on the intern students in choosing the specialties they desire such as the educational tools, the research block, the elective block, the quality of the lectures and problem base learning (PBL) sessions taking into consideration the gender difference. After that, we will hopefully figure out the most common effect of governmental universities in Riyadh city by analyzing their intern students answers and listing the common positive and negative factors regarding the gender difference in both these two objectives. Finally, we will list the common positive and negative institutional factors in governmental university manifest about the gender difference.

**Method**

This cross-sectional study has 234 Saudi students from four governmental universities which are King Saud University (KSU), King Saud bin Abdelaziz for Health and Science (KSAU), Princess Norah University (PNU), and Imam Mohamed Bin Saud Islamic University (IMSIU). The sample size in total is divided equally between both genders, so each gender
is resembled by 117 participants. The sample size includes 39 participants in for each gender in both KSU and KSAU. However, there is only 39 female participants in PNU because this university is only for female. Also, there is only 39 male participants in IMSIU because the female medical students are still in the fourth year in their university curriculum.

We developed an online questioner that is divided into many parts. The first part is demographic data includes the age and university while the second part has 13 questions evaluating the medical system element like the blocks, educational tools, basic year, clinical years, problem-based learning (PBL), and other elements. The third part is regarding to the number of semesters in both basic and clinical years. The last part is about the effect of each universities and the most common negative and positive factor in choosing the specialty. The participants which are selected randomly in each university from the sheets that were taken from the student affairs.

We used JMP version 13 statistical analysis program. The analysis and the calculation were performed beside the Chi-square test to assess the effect of the governmental institutions on the intern students. In addition to this, univariate calculation and estimation, a correlational analysis will be carried out to investigate any relationship between the governmental institutions and other factors that are collected on the research subjects.

**Result**

According to table 1 which represents the demographic and academic characteristics of the participants, the mean age of the 234 participants was 24.2 ± 0.9 years (age range from 22 to 30 years old). Regarding the gender, both male and female were distributed equally. Around one-third of them (33.74%) agreed on that the universities have started to educate them about the specialties from third year.

Regarding the universities’ effect on the medical students’ future career choice, the table
2 shows that around two-third of participants from different universities who almost divided equally in both genders indicate that their universities have a positive effect on their decision in choosing the specialty which is statically significant (P-value is 0.0047). Among those participants who express a positive effect, around 57% of them stated that their universities help them to limit their choices in choosing the specialty. There is no clear biostatistical significance of all the age and gender in choosing the specialties.

According to table 3, some elements in the medical education system show biostatistical significant effect in choosing the specialty like order of blocks (P-value is 0.0416), the show and nature of blocks (P-value is 0.0208), elective block (P-value is 0.0119), PBL sessions (P-value is 0.0204) and educational tools (P-value is 0.0138). Moreover, All the listed elements of the medical educational system have no effect in choosing the specialty with different percentages range from 38.46 % to 62.39% with three exceptions. The elective block show a positive effective with 43.59% distributed almost equally in both genders. Also, the clinical years and the personality of instructor both have a positive with 40.60% and 38.46% respectively especially in males.

According to the table 4, the most positive factors in all these governmental universities in choosing the specially are good experience during the elective and proper clinical period with 19.36% and 18.40% respectively. On other hand, the most negative factors in all these governmental universities in choosing the specially are both the personality of the instructor and block duration by 34%.

Discussion

The present study was conducted across four governmental universities (IMSIU, KSU, PNU, and KSAU-HS) and the participants were medical students from a different gender and age reported the general effect of their universities in choosing the specialties in Riyadh city. Based on the assessment tool that used to examine the general effect of governmental
universities on medical students in choosing the specialty, we found that medical students had a positive influence from their universities to limit their choices and select their specialty preference. Students who had suspicious to determine their future career choice are guided and supported by their universities in specialties that fit their interest for needed in hospitals or healthcare institutions that have manpower shortages \(^{(10,11)}\). Around one-third of the respondents in the present study agreed that the universities have started to educate and guide them about the specialties from the third year. According to some previous studies, the learning environment has a huge impact on student motivation and decisions making and its associated with future outcomes \(^{(1)}\). A study in Taiwan that showed training and learning environment considered as factors influenced career choices of medical student especially in a 7th year \(^{(2)}\). Provide early guidance to medical students in their career future choice will give them reasonable comprehension of being a doctor, that may motivate and lead toward a field turns out to be much more obvious \(^{(12)}\).

Many studies have demonstrated a significant impact from clinical years and training program on students’ future career decision : This could be related to exposing them to more specialties at later stages, or the curriculum that gave them more experience and understanding of each medical specialty \(^{(7,6,8)}\). The participants in the present study had highly positive influence by the clinical years. This result was similar to a Kuwaiti study that showed students in later years of study were more likely to report that they had chosen their future specialty compared to basic year \(^{(5)}\).

Nature and order of blocks, PBL session, and educational tools influenced student perception which gives a clear understanding of the valuable role of curriculum strategy planning. Therefore, a planned curriculum provides the ability and knowledge that gives students the appropriate experience and responsibility that will help him or her in a future
career as a medical student (14). In addition, elective blocks showed a high level of agreement associated with future career choice. These associations were also proved in Saudi study were clinical rotation experience and subspecialty choices reflected the most important factors on the future specialty choice considered a valuable instrument for the improvement of the learning skills and to have a chance to assess and determine their future specialty interest (6,14).

Remarkably, respondents considered instructor personality had significant influence factor on student choice. A study in Nepal highlighted the importance of role model teacher as a great influence on choosing a specialty (3). However, that leads to a very important aspect that the teacher could influence classroom environment by inspire and emphasize student choices positively or have a pressure on them and negative effect on their perception that lead to a negative outcome (3,9). On other hand, there was many studies tried to measure the effect of student spatiality preference in general (3,5,6,13). However, there are no spotlight on university or educational institution strategy consider a very important aspect on student future career decision.

Conclusion

More than one-third of intern students are educated about the specialties at the third years. Furthermore, around two-third of the participants divided equally between male and female ensure that university has a positive effect on their choices in choosing the specialty. Also, the majority of intern student’s emphasis that all the items of the medical education system in governmental universities have no effect in choosing the specialties except three which are elective experience, personality of instructor and the clinical years that have a positive effect in their choice in choosing the specialties. The most common positive factor is the elective experience by 19.36% while the most negative factors are
bad personality of instructor and improper duration of blocks by 14.52%.

Abbreviation

PBL session: Problem Based Learning session
KSU: King Saud University
KSAU-HS: King Saud bin Abdelaziz for Health and Science
PNU: Princess Norah University and Imam University
IMSIU: Imam Mohamed Bin Saud Islamic University

Declarations

Ethics approval and consent to participate

Declarations

This cross-sectional study was approved in the second of the January of 2018 by the institutional review board in the King Saud university in Riyadh city, Saudi Arabia. All participants give us the written constant inform for the questioner which has a special code provided to each participant to avoid the repeating in submitting.

Consent for publication

Not applicable

Availability of data and material

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request

Competing interests

The authors declare that they have no competing interests

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Authors’ contributions
Ahmad Tariq Al Swaidan: First author, data collection, interpretation and the conclusion
Lama Abdullah Al Luhidan: writing the discussion, students Data collection from the female KSAU intern students
Khaled Abdullah Albarrak: writing the discussion, Data collection from the male KSAU intern students
Rehab Abdullah Al Mubrick: Data analysis
Hessah Ibrahim Al Suwaidan: Writing interpretation and discussion
Rawan Abdulaziz Alshammari: writing introduction, Data collection from the female prince Norah intern students
Rima MHD Belal Barakeh: questioner formation, Data collection from the female KSU intern students
Moath Khalid Al-Ghusoon: Literature review, Data collection from the male KSU intern students
Bander Munir Alruwaily: Study design, Data collection from the male Imam intern students
Prof. Sulaiman Abdullah Al Shammar: Supervisor of the whole project and review and edit the final manuscript

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Limitation and Recommendation

There are many limitations in this study like including only Saudi Intern participation from collages of medicine in governmental universities beside the gender availability because there is no male participants in PNU and there is no female participant from IMSIU. As a result, we recommend to conducting a big study includes Saudi participants from both governmental and private universities with include the female intern from IMSIU especially in coming two years.

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**Tables**

| The characteristics | The frequency | The percentage (%) |
|---------------------|---------------|--------------------|
| **The age**         |               |                    |
| Age < 24            | 25            | 10.68 %            |
| 24 < Age < 25       | 197           | 84.20 %            |
| Age >25             | 12            | 5.12 %             |
| Mean ± SD           | 24.2 ± 0.9    |                    |
| **Gender**          |               |                    |
| Male                | 117           | 50 %               |
| Female              | 117           | 50 %               |
| **University**      |               |                    |
| KSU                 | 78            | 33.33 %            |
| IMSIUU              | 39            | 16.67 %            |
| PNU                 | 39            | 16.67 %            |
| KSAU-HS             | 78            | 33.33 %            |
| **Informing about the specialties (by universities)** | | |
| Third year          | 79            | 33.74 %            |
| Fourth year         | 37            | 15.80 %            |
| Fifth year          | 40            | 17.10 %            |
| Sixth year          | 20            | 8.52 %             |
| Seventh year        | 4             | 1.80 %             |
| I do not know       | 27            | 11.52 %            |
| No concern          | 27            | 11.52 %            |
| Positive                      | Negative                      | I do not know | P-value |
|-------------------------------|-------------------------------|---------------|---------|
| Expand my choice              | Limit my choice               | Exclude some interested specialties | Include some undesirable specialties | Both |  |
| 3.42%                         | 3.42%                         | 2.14%         | 0.00%   | 0.85% | 2 | 0.6521 |
| 18.38%                        | 23.93%                        | 7.26%         | 1.71%   | 3.85% | 9 | 9.83%  |
| 5.98%                         | 9.40%                         | 1.28%         | 1.71%   | 1.28% | 3 | 4.70%  |
| 12.39%                        | 19.66%                        | 3.85%         | 2.14%   | 3.85% | 9 | 8.12%  |
| 15.38%                        | 17.09%                        | 6.84%         | 1.28%   | 2.14% | 5 | 7.26%  |
| 12.39%                        | 12.39%                        | 2.99%         | 0.43%   | 0.85% | 2 | 4.27%  |
| 5.98%                         | 6.41%                         | 0.00%         | 0.85%   | 1.71% | 4 | 1.71%  |
| 4.70%                         | 5.98%                         | 2.99%         | 1.28%   | 0.85% | 2 | 0.85%  |
| 4.70%                         | 11.97%                        | 4.70%         | 0.85%   | 2.56% | 6 | 8.55%  |
| Positive | Negative | No effect | Other | P-value |
|---------|---------|----------|-------|---------|
| Male    | Female  | Male     | Female |         |         |
| 29      | 33      | 24       | 22     | 58      | 54      | 6       | 8       | 0.8558  |
| 2.39%   | 14.1%   | 10.26%   | 9.40%  | 24.79%  | 23.08%  | 2.56%   | 3.42%   |
| 34      | 21      | 19       | 24     | 61      | 61      | 3       | 11      | 0.0416  |
| 4.53%   | 8.97%   | 8.12%    | 10.26% | 26.07%  | 26.07%  | 1.28%   | 4.70%   |
| 41      | 43      | 17       | 16     | 43      | 47      | 16      | 11      | 0.7574  |
| 7.52%   | 18.38%  | 7.26%    | 6.84%  | 18.38%  | 20.09%  | 6.84%   | 4.70%   |
| 39      | 47      | 24       | 10     | 48      | 46      | 6       | 14      | 0.0208  |
| 5.67%   | 20.1%   | 10.26%   | 4.27%  | 20.51%  | 19.66%  | 2.56%   | 5.98%   |
| 50      | 52      | 32       | 47     | 24      | 17      | 11      | 1       | 0.0119  |
| 1.37%   | 22.2%   | 13.68%   | 20.09% | 10.26%  | 7.26%   | 4.70%   | 0.43%   |
| 20      | 32      | 20       | 19     | 65      | 58      | 12      | 8       | 0.3624  |
| 0.55%   | 13.7%   | 8.55%    | 8.12%  | 27.78%  | 24.79%  | 5.13%   | 3.42%   |
| 42      | 32      | 17       | 9      | 55      | 71      | 3       | 5       | 0.0960  |
| 7.95%   | 13.7%   | 7.26%    | 3.85%  | 23.50%  | 30.34%  | 1.28%   | 2.14%   |
| 31      | 27      | 16       | 19     | 61      | 65      | 9       | 6       | 0.7387  |
| 1.25%   | 11.5%   | 6.84%    | 8.12%  | 26.07%  | 27.78%  | 3.85%   | 2.56%   |
| 52      | 43      | 27       | 43     | 20      | 17      | 18      | 14      | 0.1542  |
| 2.22%   | 18.3%   | 11.54%   | 18.38% | 8.55%   | 7.26%   | 7.69%   | 5.98%   |
| 24      | 24      | 23       | 8      | 64      | 82      | 6       | 3       | 0.0204  |
| 0.2%    | 10.2%   | 9.83%    | 3.42%  | 27.35%  | 35.04%  | 2.56%   | 1.28%   |
| 27      | 40      | 29       | 10     | 55      | 61      | 6       | 6       | 0.0138  |
| 1.54%   | 17.1%   | 12.39%   | 4.27%  | 23.50%  | 26.07%  | 2.56%   | 2.57%   |
| 52      | 38      | 27       | 35     | 31      | 40      | 7       | 4       | 0.1598  |
| 2.22%   | 16.2%   | 11.54%   | 14.96% | 13.25%  | 17.09%  | 2.99%   | 1.71%   |
| 31      | 25      | 15       | 12     | 54      | 54      | 17      | 26      | 0.4645  |
| 3.25%   | 10.68%  | 6.41%    | 5.13%  | 23.08%  | 23.08%  | 7.26%   | 11.11%  |
The intern perception about the most positive and negative governmental factors in selection the specialties (Table 4) (N=234)

| The factors                              | Most Positive | Most Negative |
|------------------------------------------|---------------|---------------|
| The Basic Science period                |               |               |
|                                           | 4 (1.73%)     | 7 (2.90%)     |
| The clinical period                      | 43 (18.40%)   | 31 (13.24%)   |
| The numbers of blocks                    | 6 (2.60%)     | 5 (2.13%)     |
| Block Duration                           |               |               |
|                                           | 12 (5.23%)    | 34 (14.52%)   |
| The grades of block                      | 22 (9.51%)    | 17 (7.52%)    |
| The personality of the instructor or coordinator | 25 (10.70%) | 34 (14.52%)   |
| The elective experience                  | 45 (19.36%)   | 5 (2.13%)     |
| The PBL session experience               | 9 (3.85%)     | 13 (5.55%)    |
| The nature of block materials            | 24 (10.40%)   | 18 (7.69%)    |
| the organization orders of the block     | 17 (6.40%)    | 18 (7.69%)    |
| The research block                       | 3 (1.40%)     | 3 (1.28%)     |
| The university concern                   | 0 (0%)        | 18 (7.69%)    |
| The quality of facilities and research team | 2 (0.85%) | 2 (0.85%)     |
| I do not know                            | 22 (9.57%)    | 29 (12.39%)   |