

# Factors influencing urology physicians in Saudi Arabia for choosing their subspecialty program

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## Abstract

**Aim:** The aim of the study was to identify factors that influence urology physicians for choosing subspecialty and to know the most competitive urology subspecialty among residents.

**Methodology:** An online questionnaire was sent to all Saudi Urology residents, registrars, and fellows all over Saudi Arabia, during February 2019–June 2019. The survey included demographic data, level and location of training, a subspecialty of interest, as well as 15 influencing factors that could affect physicians' choice in the form of Likert scale, ranging from strongly disagree = 0 to strongly agree = 4.

**Results:** Of the 193 urology Saudi physicians, 85 replied (44.1%). Their mean age was 29 + 3.2 years. The majority of them were male (98.8%). There were 66 (77.6%) residents, 12 (14.1%) were fellows, and 7 (8.2%) were registrars. Four factors were found to be significantly different across positions, i.e., personal interest in the subspecialty, patient's prognosis, potential to join a private hospital, and family/friend advice. Among residents, the highest score means of the impact factors were the patient's prognosis, potential to join a private hospital and family/friend advice. The most prominent factors that influence urology physicians to select their subspecialty were personal interest in the specialty (88.2%), followed by the patient prognosis and lifestyle (84.7%, 78.8%). About 28.2% of the participants have a desire of endourology, followed by infertility and pediatric urology (23.5% and 20%, respectively).

**Conclusion:** The most influencing factors among urology physicians for choosing their subspecialty are the patient's prognosis and personal interest. Female medical graduates should be encouraged to join a urology residency.

**Keywords:** Fellows, residents, Saudi Arabia, subspecialty, urology physicians

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## INTRODUCTION

Urology is considered to be one of the major surgical specialties that can manage all aspects of the genitourinary tracts of male and female diseases medically and surgically. It has been divided into multiple different subspecialties

including pediatric, andrology, transplantation, oncology, urolithiasis, female, functional, and neurourology.<sup>[1]</sup>

Urology has been found to be one of the most competitive surgical specialties among others, for that reason, it has

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been the goal of many medical students who have strong motivations to commit to professional life.<sup>[2]</sup>

Urology fellowships range from 1 to 3 years' training in specific subspecialty after completing the general urology residency program; the goal of these fellowships is to gain knowledge and experience in a specific subspecialty in which the resident has not been exposed sufficiently during the residency program, such as oncology, pediatrics, and reconstruction.<sup>[3]</sup>

In recent years, residents enrolled in fellowships are growing in numbers over time.<sup>[3]</sup> Welk *et al.* examined 258 postgraduate Canadian urology residents from 1998 to 2009 in training type and job options and found that 72% pursued and finished fellowships training where the majority chose minimally invasive subspecialties such as endourology (39%).<sup>[3]</sup>

Freilich *et al.* examined 71 urology residents and postgraduates and found that the most common factors influencing proceeding to fellowship training are intellectual appeal (82%), mentors (79%), the desire for an additional point of view for surgical training (58%), and the desire to pursue a career in academics (52%).<sup>[4]</sup>

Other factors that have an impact on the decision of choosing a fellowship program during residency years are operative experience, geographic location, and prestige.<sup>[2]</sup>

The aim of our study was to identify factors that influence urology physicians to choose subspecialty, to determine the proportion of males and females in urology residency, and to know the most competitive urology subspecialty among residents.

## METHODOLOGY

This is a cross-sectional study conducted by the Department of Urology at King Khalid University Hospital in Riyadh, Saudi Arabia, during February 2019–June 2019. An online questionnaire was sent to all Saudi Urology residents, registrars, and fellows all over the kingdom. Their correspondence was obtained from the database of the residency and fellowship program of the Saudi Commission for health specialties. We also used (WhatsApp) application to guarantee that our survey reaches all physicians. The survey included demographic data, level of training, location of the training center, a subspecialty of interest, as well as 15 influencing factors that could affect physicians' choice. It was in the form of Likert scale, ranging from strongly disagree = 0 to strongly agree = 4.

The definition of physicians' training level in Saudi Arabia prescribed by Saudi Commission for Health Specialties is as follows: a resident is a physician who has a bachelor's degree in medicine, 1 year internship, and experience in the specialty (general/main) not <2 years or a 1 year diploma or an enrollment in a postgraduate training program. A registrar is a physician who has a postgraduate qualification with 2 years' training in the field of the specialty and completion of the required experience so that the postgraduate training period and later experience totals 4 years and considered as a Saudi Board Certified. A fellow is a physician who is a Saudi Board Certified in a specialty and ingoing with a training program for specialization.

A pilot study among 10 urology physicians at King Khalid University Hospital was conducted where Cronbach's alpha was 69%.

Statistical analysis was done using SPSS version 22 (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp). The continuous variables were expressed as a mean  $\pm$  standard deviation (SD) and the categorical variables were expressed as percentages. The *t*-test and one-way analysis of variance were used for continuous variables.  $P < 0.05$  was considered statistically significant.

## RESULTS

Of the 193 urology Saudi physicians (residents, registrars and fellows) who are registered with the Saudi Commission for health specialties, 85 replied (44.1%). Their mean age was 29 + 3.2 years. The majority of them were male (98.8%) and 47.1% were married. Sixty-six (77.6%) of the respondents were residents, 12 (14.1%) were fellows, and 7 (8.2%) were registrars. Most of the responses were from military hospitals, while no responses came from private hospitals.

The mean scores of the influencing factors across training levels and position are shown in Table 1. Four factors were found to be significantly different across positions, i.e., personal interest in the subspecialty, patient's prognosis, potential to join a private hospital, and family/friend advice. Among residents, the highest score means of the impact factors were the patient's prognosis, potential to join a private hospital and family/friend advice. While the highest mean  $\pm$  SD (3.91 + 0.28) for the factor personal interest in the specialty was reported by the fellows. Income and lack of competition showed no statistically significant difference and had the lowest mean score across the position.

**Table 1: Mean score of influencing factors according to the level of the surgeons: Residents, registrar, and fellows**

Factors	Mean±SD			F	P
	Residents	Registrar	Fellow		
Personal interest in the specialty	3.27±0.69	3.42±0.78	3.91±0.28	4.856	0.010
Local availability of the program	2.71±0.83	2.71±0.95	3.0±0.60	0.636	0.532
Income	2.69±0.80	2.71±0.76	2.16±0.72	2.344	0.102
Past physician's satisfaction	2.89±0.75	2.86±0.90	3.00±0.74	0.115	0.891
Practice location	2.89±0.75	2.43±0.98	3.08±0.79	1.623	0.204
Lack of competition	1.71±1.13	1.29±0.49	1.58±0.67	0.561	0.573
Potential to join a private hospital	2.79±0.81	2.00±1.15	2.08±0.51	6.085	0.003
Interaction with physicians in other specialties	2.50±0.73	2.00±0.82	2.50±0.80	1.447	0.241
Patient's prognosis	3.36±0.72	2.57±0.53	3.00±0.43	5.348	0.007
Lifestyle	3.12±0.98	3.14±0.69	2.92±0.79	0.249	0.780
Opportunities for research/academic job	2.65±0.95	2.14±0.69	2.58±0.67	1.008	0.369
Call/round frequency	2.48±1.04	2.29±0.76	2.83±0.72	0.847	0.433
Friends/family/colleagues advice	2.26±0.97	1.29±0.49	2.08±0.90	3.493	0.035
Facilities	2.76±0.72	2.14±0.90	2.83±0.58	2.479	0.090
Institutional request for certain subspecialty	2.41±1.04	1.43±1.27	2.33±0.98	2.763	0.069

Likert score - Strongly disagree: 0, Disagree: 1, Neutral: 2, Agree: 3, Strongly agree: 4. SD: Standard deviation

Table 2 illustrates the most prominent factors that influence urology physicians to select their subspecialty. Personal interest in the specialty (88.2%), followed by the patient prognosis and lifestyle (84.7% and 78.8%, respectively), was the most protruding factor that could influence physicians' choices. On the other hand, lack of competition and friends' advice (17.6% and 35.3%, respectively) were the least factors selected by physicians to affect their choices.

Graph 1 presents the satisfaction with the training programs. By combining strongly agree and agree, it appears that most of the fellows and registrars showed a high level of satisfaction (83.3% and 71.4%, respectively), while nearly half of the residents (51.6%) are satisfied. About 28.2% of the participants have a desire of endourology, followed by infertility and pediatric urology (23.5% and 20%, respectively). The least desired subspecialty was both transplant and voiding dysfunction and urodynamics (1.2%) [Graph 2].

**DISCUSSION**

Subspecialization is becoming a trend among urology physicians globally. Welk *et al.* reported that among 258 graduated Canadian urology residents, between 1998 and 2009, 72% of them pursued and completed fellowship programs.<sup>[5]</sup> Another report presented by the American Urological Association (AUA) in 2018 reported that almost 51% of the U.S. country urology residents either planned to join or already matched to the fellowship program, while in the non-U.S. country residents, the percentage reaches to approximately 85, and they concluded that either female or younger urologists are more likely to have completed a fellowship training program.<sup>[6,7]</sup> In our study, 96.5% of the participants were planning to join fellowship programs

**Table 2: Most prominent factors that influence urology surgeons to select their subspecialty**

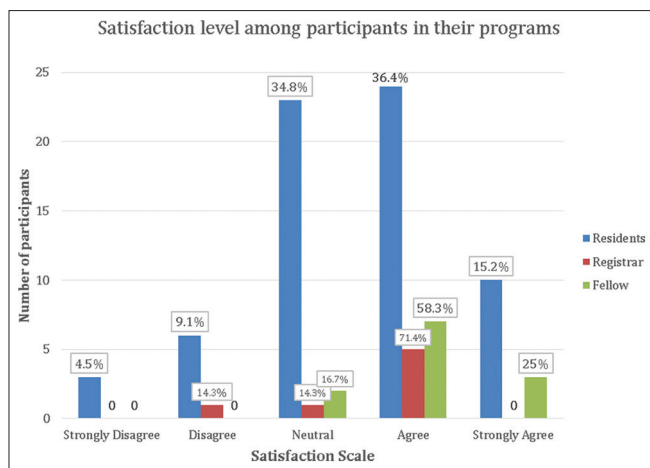
Percentage of most prominent factors in selecting subspecialties sorted in descending order

Factors	Strongly agree + agree, n (%)
Personal interest in the specialty	75 (88.2)
Patient's prognosis	72 (84.7)
Lifestyle	67 (78.8)
Past physician's satisfaction	59 (69.4)
Practice location	58 (68.2)
Facilities	53 (62.4)
Income	49 (57.6)
Opportunities for research/academic job	48 (56.5)
Potential to join a private hospital	46 (54.1)
Call/round frequency	41 (48.2)
Local availability of the program	54 (45.9)
Interaction with physicians in other specialties	38 (44.7)
Institutional request for certain sub specialty	38 (44.7)
Friends/family/colleagues advice	30 (35.3)
Lack of competition	15 (17.6)

with a mean age of 29 + 3.2 years and 1.2% of the female participation.

In the current study, four factors were found to have a significant association that influence urology physician choice, potential to join a private hospital, patient's prognosis, personal interest in the specialty, and friends/family/colleagues advice. Moreover, the most common factor chosen by residents was patient's prognosis with a mean ± SD of 3.36 ± 0.72, which might be secondary to their direct contact with patients, as they spend more time with them, while the least common factor chosen by them was the lack of competition with a mean ± SD of 1.71 ± 1.13.

As for registrars and fellows, the most common factors chosen by them were personal interest in the specialty with a mean ± SD of 3.42 ± 0.78 and 3.91 ± 0.28, respectively, which we believe is secondary to their previous exposure



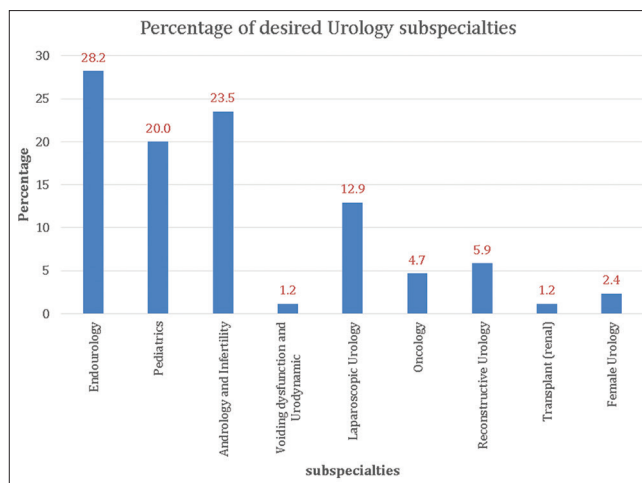
**Graph 1:** The satisfaction level among the participants

to multiple subspecialties, while the least common factor chosen by fellows was lack of competition with a mean  $\pm$  SD of  $1.58 \pm 0.67$ , and the least common factors chosen by registrars were lack of competition and friends/colleagues/family advice.

The study conducted in the United States by Freilich reported that among urology residents and recent urologic residency graduates, intellectual appeal, mentors, the desire for an additional point of view for surgical training, and the desire to pursue a career in academics were the most common factors influencing proceeding to fellowship programs.<sup>[4]</sup>

On the other hand, a 2018 AUA report presented the family/lifestyle/call schedule as the most considered factors among the U.S. and non-U.S. country residents with malpractice climate to be the least considered among all.<sup>[7]</sup> Similar reports from Canada<sup>[7-9]</sup> and the UK<sup>[10]</sup> revealed that residents selected the same factors, with nearly 83% of their choice followed by geographic location and academic settings, while the least chosen was also malpractice climate.

Urology is considered to be one of the major surgical specialties with varieties of different subspecialties. The result of our study shows that endourology was found to be the most chosen by the residents (28.2%), followed by andrology and infertility (23.5%). The patient's prognosis in endourology is considered contentment with satisfactory results toward patients care with a positive outcome. However, transplant (renal) and voiding dysfunction and urodynamic were found to be the least wanted subspecialties. We believe that transplant (renal) is the least chosen because of the unfavorable outcome with high expenses of treatment modalities; also, different hospitals would use different modalities that they need to adjust



**Graph 2:** The percentage of desired urology subspecialties selected by the participants

to. The Tamhankar's study showed that endourology was the second most required subspecialty accounting 29.4% after minimally invasive urology, followed by oncology (28.2%).<sup>[11]</sup> Another report by the AUA in 2018 showed that among the U.S. residents, the most popular chosen subspecialty is oncology followed by reconstruction and endourology; meanwhile, Canadian residents reported to choose endourology as the most popular subspecialty, but the UK residents selected robotic surgery among all.<sup>[7]</sup> In addition, a previous workforce report in the UK, 2015, by British Association of Urological Surgeons suggested an overprovision of oncology and endourology subspecialties compared to reconstruction, functional, and female urology in terms of retirement planning, which can give us a hint on subspecialties that were popular previously.<sup>[10]</sup>

The percentage of female physicians in the medical field has increased from 15.4% in 1978 to 46.1% in 2013. From January to June 2017, athenahealth surveyed 18,000 physicians at 3500 practices on its network and determined that more than 60% of physicians under the age of 35 are female, while only <40% are male. In the next-highest age bracket (35–44 years of age), women are the dominant gender as well.<sup>[12]</sup> Despite this major improvement in the number of female physicians in the medical field, some medical specialties encounter a major difference between male and female physician number, where male being the dominant gender. In 1980, females accounted to be <2% of all urology residents, which reflects the obstacles of females joining urology training at that time due to urology being a male dominant specialty and specific specialty barriers. Recently, the number of females joining urology has grown up to 7.7% according to Halpern *et al.* study which includes female urologists from 1978 to 2013.<sup>[13]</sup> In addition, the AUA reported in their workforce statement in 2018 that

the percentage of female urologists continued to rise to 9.2% in 2018 from 8.8% in 2017, and most of them are <45 years in the age which suggesting that growing number of new females enters urology recently.<sup>[6]</sup> Another study conducted by Pruthi *et al.* in 2013 examined the current status of urology physicians in the U.S. and concluded that the female number has increased up to 1000 fold since 1981.<sup>[14]</sup> Meanwhile, in UK, the previous workforce report 2015 stated that 30% of the trainee are female and female consultant accounts only for 8%.<sup>[10]</sup> Only 1.2% of our study participants were female which raises the concern about reasons limiting females from joining the urology training programs in Saudi Arabia; most of the reasons that hinder females from joining the urology training program are cultural and religious. We also believe that most of urology male patients refuse to be examined by a female physician.

While the lack of local matching data in Saudi Arabia, the global trend in urology residency programs has a high matching rate among applicants. In 2019, the AUA issued its annual urology residency matching report which stated that among 270 senior medical students in the U.S applying for the urology residency program, 91% of them have been matched. Females' matching rate was almost similar to males with 83% and 86%, respectively.<sup>[15]</sup> Meanwhile, the Canadian Resident Matching Service R-1 matching data report 2019 stated that among 59 Canadian or American medical school applicants, 33 have been matched to urology program, with an estimated match rate of 60%.<sup>[16]</sup>

## CONCLUSION

Our study considered the first study locally to address the influencing factors among urology physicians for selecting their subspecialty program in Saudi Arabia. Subspecialization is now the trend among urology physicians with 96.5% of participants planning not to proceed for general urology. The most influencing factors among urology physicians for choosing their subspecialty are the patient's prognosis and personal interest in the specialty. Endourology and andrology/infertility are the most chosen subspecialty among urology residents. Female medical graduates should be encouraged to join urology residency programs and should be convinced that urology has various subspecialties concerning the female population and the national need of local female urologists.

## Limitations

This study is limited by its lower sample size, although our online questionnaire takes only 2–3 min, and we tried to reach candidates through several ways of official communication. The female contribution was lower than

expected due to the difficulty contacting them, as they are few in number in different regions in addition to cultural barriers. There are no local official data addressing matching rate or gender distribution in the urology residency program, and the literature lacks similar studies to compare with.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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