

RESEARCH

Open Access



# Factors influencing the choice of pediatric resident: program directors perspective in Saudi Arabia: a cross-sectional study

Abdulrahman Alhaqbani<sup>1,2</sup>, Sulaiman Alayed<sup>1,2</sup>, Khaled Almutairi<sup>1,2</sup>, Rayan Alotaibi<sup>1,2</sup>, Fahad Aljuraibah<sup>1,2,3</sup>, Khaled Alsager<sup>1,2,3</sup> and Hamad Alkhalaf<sup>1,2,3\*</sup>

## Abstract

**Background** Pediatrics is one of the most important medical specialties in the Kingdom of Saudi Arabia (KSA) since it serves a large population. Therefore, the pediatrics residency program is considered one of the most important and competitive programs. Obtaining acceptance in Saudi programs depends mainly on the Saudi Commission for Health Specialties (SCFHS) score, then the applicant enrolls to do the interviews with the training centers in the accepted region. This study aimed to evaluate the factors used by pediatric program directors (PD) in accepting applicants in their pediatric residency program in KSA.

**Methods** In this cross-sectional study, an online questionnaire consisting of 49 items was distributed among 76 current and former pediatric PDs in KSA. Participants were selected via non-probability convenience sampling. Data were collected and analyzed using the Social Sciences Statistical Package (SPSS version 26).

**Results** Of the sample of PD studied, males represented 77.6%, while females represented 22.4%. Most of the PDs were over 50 years old. Most of them were former pediatric PDs (71.1%). The current study found that the Saudi Medical Licensing Exam was the most important factor [3.87 (0.89)] followed by services and electives [3.86 (0.65)], research [3.84 (0.83)], interview [3.77 (0.89)], GPA [3.50 (0.62)], and letter of recommendation [3.39 (0.76)].

**Conclusions** For those interested in pediatrics residency programs in KSA, this study recommends that seeking a high Saudi Medical Licensing Exam (SMLE) score, taking pediatric elective rotations during internship, and acquiring excellent basic knowledge in research were the most important aspects of pediatrics residency selection from the pediatrics PD's perspective.

**Keywords** Pediatric program, Program directors, Residents, Influencing factors, Saudi Arabia

\*Correspondence:

Hamad Alkhalaf  
Khalafha@ngha.med.sa

<sup>1</sup>King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia

<sup>2</sup>King Abdullah International Medical Research Center, King Abdulaziz Medical City, Riyadh, Saudi Arabia

<sup>3</sup>Department of Pediatrics, Ministry of the National Guard - Health affairs, Riyadh, Saudi Arabia



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

## Background

Pediatrics is one of the most important medical specialties in the Kingdom of Saudi Arabia (KSA) since it serves a large population. In 2021, the General Authority of Statistics estimated the number of children in the KSA to be approximately 8.5 million, which represents 25% of the total population [1]. Due to the high demand, the Pediatric Residency Program is considered one of the most competitive and demanding programs. Globally, pediatrics was one of the top three specialties in the number of applicants in the United States in the last 6 years [2]. In addition, in KSA there were more than 1000 residents enrolled in the pediatric program in 2017 [3]. Pediatrics contains approximately 13 subspecialties in which residents train during their residency [4]. The Pediatric Residency Program in KSA is supervised by the Saudi Commission for Health Specialties (SCFHS) and there are approximately 40 approved centers in KSA [5].

The application process consists of two phases that begin by ranking the desired specialties with the desired cities through the SCFHS system. Acceptance is based on the SCFHS score, which consists of 50% on the Saudi Medical Licensing Exam (SMLE) score, 30% on the grade point average (GPA), and 20% on the portfolio points (divided between research activity, post-graduate academic degree, community volunteering activities, strong interest in the specialty, being currently in a job as a health practitioner and having an experience of six months in the chosen specialty). After being accepted in the program, the applicant needs to do interviews in all the training centers within the accepted region [6–8].

The scope of this study is pointed toward the interview phase in which the applicant is to be interviewed by a committee consisting of consultants mostly chaired by the program directors (PDs). There are multiple aspects of residency enrollment, for instance: GPA in medical school, performance during rotation in the field, research publications, interview performance, letters of recommendation, and much more. At the local level, there were few studies in plastic surgery, urology, and emergency medicine that discussed the perspective of PD, and there were varying results [6–8].

To the best of our knowledge, there are no such studies in the pediatric field. The purpose of this study was to pinpoint the most important factors in the curriculum vitae (CV) of the applicants and their relative importance from the perspective of pediatric PD to accept new pediatric residents into the program, which will be helpful for future applicants interested in pediatrics.

## Materials and methods

### Study design, setting and population

This is a cross-sectional study of online surveys. Currently, there are about 40 pediatric program centers

in KSA that are divided according to regions: 11 in the Central Region, 15 in the Western Region, 11 in the Eastern Region, and 3 in the Southern Region. This research included current and former pediatric PDs in the approved centers by SCFHS. PDs of other specialties were excluded from the study.

### Sample size and sampling technique

Considering a total of 40 pediatric program centers in KSA with 40 current directors, the 40 current directors and about 60 accessible former directors were approached and asked to participate in the study. The final sample that was included in the study was 76 PDs (22 current PDs and 54 former PDs) yielding a 76% total response rate and 55% for the current PDs. The study participants were selected using a non-probability convenience sample where data was collected through an online questionnaire filled by PD who agreed to join the study.

### Data collection methods, instrument used and measurements

Data were collected using an electronic online questionnaire that was sent to PD of the SCFHS pediatric programs. The questionnaire consisted of 49 items aimed at assessing the most important qualities of pediatric residency program applicants from the perspective of pediatric PD, which was the main outcome variable. The questionnaire started with 6 questions regarding demographic data such as gender of the PD, current or former PD, duration of work as a PD, and the place where the PD worked. The next part included 43 items on a 5-Likert agreement scale regarding the assessment of the PDs' degree of agreement to the qualifications of pediatric residents, ranging from one for 'strongly disagree' to five for 'strongly agree'. Thirty items were subdivided into six domains/subcategories and 13 items covered miscellaneous points. The domains included GPA domain (seven items), SMLE domain (three items), research domain (seven items), the interview domain (three items), service and electives domain (*working as a service resident and/or had an elective rotation in pediatrics during the internship*) (six items), letter of recommendation (LOR) domain (four items). For the sake of comparison of different domains among different groups and overall mean was calculated for each domain by dividing the sum of the means of domain items by the number of items in the domain.

### Data management and analysis plan

The Social Sciences Statistical Package (SPSS version 26) was used for data entry and analysis. Frequency and percentage were used for categorical data such as gender and subspecialty/general. Mean and standard deviation for

numerical data such as score of the important qualities and age. For quantitative data, independent sample t test and one-way ANOVA were used for normally distributed data, while Mann-Whitney U test and Kruskal-Wallis test were used for skewed data to test for significant differences between the different categories on the Likert scale. The test was considered significant if the *p*-value was less than 0.05.

## Results

The results were divided into several sections: sociodemographic data, the overall ranking of the influencing factors for selection, the ranking of the influencing factors based on the PDs' demographic data, the details of each domain, and other miscellaneous factors.

### Sociodemographic data of the participants

A total of 76 participants were involved in this study; 59 (77.6%) were males and 17 (22.4%) were female respondents. 29 (38.2%) of the participants were over 50 years of age. Additionally, 54 (71.1%) were former pediatric PDs, while only 22 (28.9%) were currently working as PDs. Most of the respondents had been working for 2–4 years as PDs and most of them were working in the central region. Moreover, most of the directors were employed in the Ministry of Health 23 (30.3%), followed by 22 (28.9%) in Military Institutions, 17 (22.4%) in University

Hospitals and only 7 (9.2%) worked in the private sector. (Table 1)

### Overall ranking of the influencing factors for selection

The SMLE score was the most important factor [mean (SD): 3.87 (0.89)] followed by services and electives [3.86 (0.65)], research [3.84 (0.83)], interview [3.77 (0.89)], GPA [3.50 (0.62)], and LOR [3.39 (0.76)]. (Tables 2 and 3).

### The influencing factors of selection per domains

This study found that obtaining a high GPA [3.88 (0.97)] and gaining awards or honors [3.83 (1.06)] were the factors of highest rating used by PDs in the the GPA domain. Furthermore, in the SMLE domain, having a high SMLE score [3.83 (1.03)] and having a high pediatric SMLE score [4.07 (0.93)] were the most influential factors. Regarding the research domain, PDs considered having a good basic knowledge in research [3.96 (0.84)] and a publication in pediatrics [3.92 (1.00)] to be higher than the other factors. Compared to other factors in the interview domain, dressing well [3.99 (1.09)] was the highest rated. Furthermore, taking pediatric elective rotations during the internship [4.16 (0.95)] and having a good reputation and performance [4.39 (0.87)] had the highest mean in the service and elective domain. Last, the quality of language and content of the recommendation letter [3.57 (0.99)] were the most valued factors in the LOR domain. Other factors of each domain showed low to intermediate levels of importance. (Table 2)

### Miscellaneous factors such as gender, age, marital status and other factors

Several factors had a high mean, such as the level of English proficiency [3.88 (0.82)], having the intention to serve back in a peripheral region that is still in need of qualified pediatricians [3.76 (0.96)], and having many community services and volunteer activities [3.62 (0.88)]. Other factors showed lower means. (Table 4)

In line with the findings presented in Table 4; Fig. 1 displays the agreement rates for male and female PDs regarding the different items. Male PDs reported highest agreement to candidate's English language proficiency (72.9%) and his intention to serve back in peripheral areas (62.7%). However, female PDs gave their highest agreement ratings for gender equality in the program (70.6%) followed by English language proficiency, intending to serve back in peripheral regions and community and volunteering services (64.7% for each). Females were more than males to prefer applicants from the same region (58.5% vs. 42.4%) and single applicants (35.3% vs. 22%), they were also more to accept applicants with chronic conditions (35.3% vs. 28.8%).

**Table 1** Socio-demographic data of the participants (*n* = 76)

Variable	Categories	Frequency	Percent
Gender	Male	59	77.6
	Female	17	22.4
Age (in years)	30–35	1	1.3
	35–40	8	10.5
	40–45	17	22.4
	45–50	21	27.6
	> 50	29	38.2
Do you currently hold a position of Pediatric PD?	Yes	22	28.9
	No, I am former program director	54	71.1
How many years have you been working as a PD?	0–2 years	21	27.6
	2–4 years	30	39.5
	4–6 years	15	19.7
	6–8 years	5	6.6
	> 8 years	5	6.6
Where do/ did you work as a PD?	Southern	1	1.3
	Central	49	64.5
	Eastern	15	19.7
	Western	11	14.5
What was the hospital setting?	Ministry of Health	23	30.3
	Military institution	22	28.9
	University hospital	17	22.4
	Private sector	7	9.2
	Others	7	9.2

**Table 2** The importance of detailed factors used by pediatric PDs in accepting applicants in pediatric residency programs

Variable	Mean	SD
<b>Grade Point Average (GPA)</b>	3.50	0.62
1. The grade point average (GPA) influences my decision of accepting a candidate (Assuming the candidate passed the minimum requirement by your center).	3.88	0.97
2. Being in the dean's honorary list improves the candidate's chance of getting accepted in my program.	3.76	1.08
3. Gaining awards or honors improves the candidate's chance of getting accepted in my program.	3.83	1.06
4. The reputation of the medical school where the applicants graduated from improve their chance of getting accepted in my program.	3.76	1.02
5. Stream 1 students (medicine is their first college degree) have a better chance of getting accepted in my program.	3.41	1.05
6. Stream 2 students (medicine is not their first college degree) have a better chance of getting accepted in my program.	2.72	0.90
7. Failing during medical school influences the candidate's chance of getting accepted in my program.	3.13	1.18
<b>Saudi Medical License Exam (SMLE)</b>	3.87	0.89
1. Having a high SMLE score will improve the candidate's chance of getting accepted in my program.	3.83	1.03
2. Having a high pediatric SMLE score will improve the candidate's chance of getting accepted in my program.	4.07	0.93
3. Passing international licensing examinations, such as the United States Medical Licensing Examination (USMLE), will improve the candidate's chance of getting accepted in my program.	3.72	1.10
<b>Research</b>	3.84	0.83
1. Having a good basic knowledge in research improves the candidate's chance of getting accepted in my program.	3.96	0.84
2. Having a good quantity of publications improves the candidate's chance of getting accepted in my program (Regardless if they are in Pediatrics or not).	3.70	1.01
3. Having a good quality (In terms of proper design, well execution, and writing quality) of publication improves the candidate's chance of getting accepted in my program.	3.74	0.99
4. Having a publication in high impact factor journals improves the candidate's chance of getting accepted in my program.	3.79	1.09
5. Having a publication in pediatrics in particular improves the candidate's chance of getting accepted in my program.	3.92	1.00
6. Presenting posters or oral presentations in medical conferences improves the candidate's chance of getting accepted in my program.	3.87	0.89
7. Being the first author in a publication improves the candidate's chance of getting accepted in my program.	3.91	1.02
<b>Interview</b>	3.77	0.89
1. The Interview carry the same weight as the SMLE score and the GPA.	3.37	1.41
2. I prefer candidates who are well dressed during the interview.	3.99	1.09
3. The candidate's level of knowledge in pediatrics during the interview improves their chance of getting accepted in my program.	3.96	1.05
<b>Services and Electives</b>	3.86	0.65
1. Taking pediatric elective rotations during internship improves the candidate's chance of getting accepted in my program.	4.16	0.95
2. Working as a "service resident" improves the candidate's chance of getting accepted in my program.	3.67	1.05
3. Working/taking pediatric electives in my department improves the candidate's chance of getting accepted in my program.	4.09	0.97
4. Having a good reputation and performance (during rotations or between staff) improves the candidate's chance of getting accepted in my program	4.39	0.87
5. Taking electives abroad improves candidate's chance of getting accepted in my program.	3.28	0.99
6. Working or taking electives with a distinguished Pediatric Physician improves candidate's chance of getting accepted in my program.	3.57	0.91
<b>Letter of Recommendation (LOR)</b>	3.39	0.76
1. Having a recommendation letter from a distinguished physician improves the candidate's chance of getting accepted in my program.	3.49	0.96
2. Having a good quantity of recommendations improves the candidate's chance of getting accepted in my program.	3.04	0.99
3. Having recommendations from pediatricians improves the candidate's chance of getting accepted in my program	3.47	0.96
4. The quality of language and content of the recommendation letter influences the candidate's chance of getting accepted in my program.	3.57	0.99

### Ranking of the influencing factors based on the PDs' demographic data

In this study, male PDs ranked the SMLE score [3.88 (0.89)] and research activity [3.88 (0.86)] as the most important factors, whereas female PDs preferred the interview process [4.14 (0.64)]. Furthermore, junior PDs ( $\leq 45$  years) ranked services and electives [3.92 (0.67)] as the most important factor. On the other hand, senior PDs

(>45 years) ranked the SMLE score [3.91 (0.89)] as the most important factor. Research experience [3.95 (0.66)] was the most important factor for current PDs, whereas former PDs preferred the SMLE score [3.86 (0.91)]. Furthermore, in terms of the importance of factors based on the region of PD, the PDs of the central region believe that the SMLE score is the most important factor [3.95 (0.79)]. On the other hand, Western Region PDs consider

**Table 3** Ranking of personal factors used by pediatric program directors in accepting applicants in pediatric residency programs based on importance

Variable	Saudi Medical License Exam (SMLE) Mean (SD)	Services and Electives Mean (SD)	Research Mean (SD)	Interview Mean (SD)	Grade point average (GPA) Mean (SD)	Letter of recommendation (LOR) Mean (SD)	Other Mean (SD)
<b>Overall</b>	3.87 (0.89)	3.86 (0.65)	3.84 (0.83)	3.77 (0.89)	3.50 (0.62)	3.39 (0.76)	2.94 (0.54)
<b>Gender</b>							
Male	3.88 (0.89)	3.82 (0.66)	3.88 (0.86)	3.67 (0.92)	3.50 (0.65)	3.28 (0.76)	2.94 (0.57)
Female	3.84 (0.91)	3.98 (0.63)	3.71 (0.71)	4.14 (0.64)	3.50 (0.52)	3.79 (0.63)	2.94 (0.44)
Pvalue	0.806	0.220	0.388	0.071	0.975 <sup>t</sup>	0.014	0.807
<b>Age (in years)</b>							
≤ 45	3.81 (0.89)	3.92 (0.67)	3.91 (0.82)	3.82 (0.87)	3.50 (0.48)	3.68 (0.69)	2.88 (0.44)
> 45	3.91 (0.89)	3.83 (0.65)	3.81 (0.84)	3.75 (0.90)	3.50 (0.68)	3.24 (0.76)	2.96 (0.59)
Pvalue	0.600	0.262	0.557	0.803	1.000 <sup>t</sup>	0.005	0.392
<b>Region</b>							
Southern	3.67 (-)	4.33 (-)	5.00 (-)	5.00 (-)	3.14 (-)	3.25 (-)	2.46 (-)
Central	3.95 (0.79)	3.90 (0.58)	3.94 (0.76)	3.75 (0.84)	3.55 (0.67)	3.47 (0.79)	2.86 (0.57)
Eastern	3.64 (1.13)	3.68 (0.92)	3.50 (0.99)	3.78 (1.02)	3.34 (0.58)	3.23 (0.82)	3.16 (0.39)
Western	3.85 (0.98)	3.89 (0.54)	3.73 (0.77)	3.76 (0.94)	3.52 (0.43)	3.27 (0.61)	2.99 (0.56)
Pvalue	0.913 <sup>k</sup>	0.589 <sup>k</sup>	0.158 <sup>k</sup>	0.399 <sup>k</sup>	0.656 <sup>a</sup>	0.520 <sup>k</sup>	0.116 <sup>k</sup>
<b>Position of Pediatric program director</b>							
Current director	3.91 (0.84)	3.89 (0.47)	3.95 (0.66)	3.80 (0.73)	3.67 (0.49)	3.61 (0.73)	3.09 (0.52)
Former director	3.86 (0.91)	3.85 (0.72)	3.80 (0.89)	3.76 (0.95)	3.43 (0.66)	3.30 (0.76)	2.87 (0.54)
Pvalue	0.968	0.681	0.671	0.790	0.129 <sup>t</sup>	0.135	0.117

t: independent t-test, a: one way ANOVA, k: Kruskal-Wallis's test while other p values calculated using Mann-Whitney U test,  $p < 0.05$

**Table 4** Miscellaneous factors

Variable	Mean	SD
1-Having many community services and volunteering activities improves the candidate's chance of getting accepted in my program.	3.62	0.88
2-The level of English proficiency improves the candidate's chance of getting accepted in my program.	3.88	0.82
3-Having an intention of serving back in a peripheral region improves the candidate's chance of getting accepted in my program.	3.76	0.96
4-I prefer more male residents in my program.	2.75	1.30
5-I prefer more female residents in my program.	2.32	0.99
6-I am interested in the equality of gender distribution (50/50) in my program.	3.09	1.45
7-I prefer more married residents in my program.	2.39	1.06
8-I prefer more single residents in my program.	2.83	1.18
9-Applicants who live in the same region as the program setting have a better chance of getting accepted in my program.	3.20	1.35
10-Having a unique hobby improves the candidate's chance of getting accepted in my program.	2.70	0.98
11-Having a chronic medical condition influences the candidate's chance of getting accepted in my program.	2.82	1.10
12-Being active in social media improves the candidate's chance of getting accepted in my program.	2.28	1.07
13-The content of the personal social media account of the candidates influences their chance of getting accepted in my program.	2.54	1.21

services and electives as the first one in importance [3.89 (0.54)] and eastern region PDs think that the interview is the most significant factor [3.78 (1.02)]. (Table 3)

## Discussion

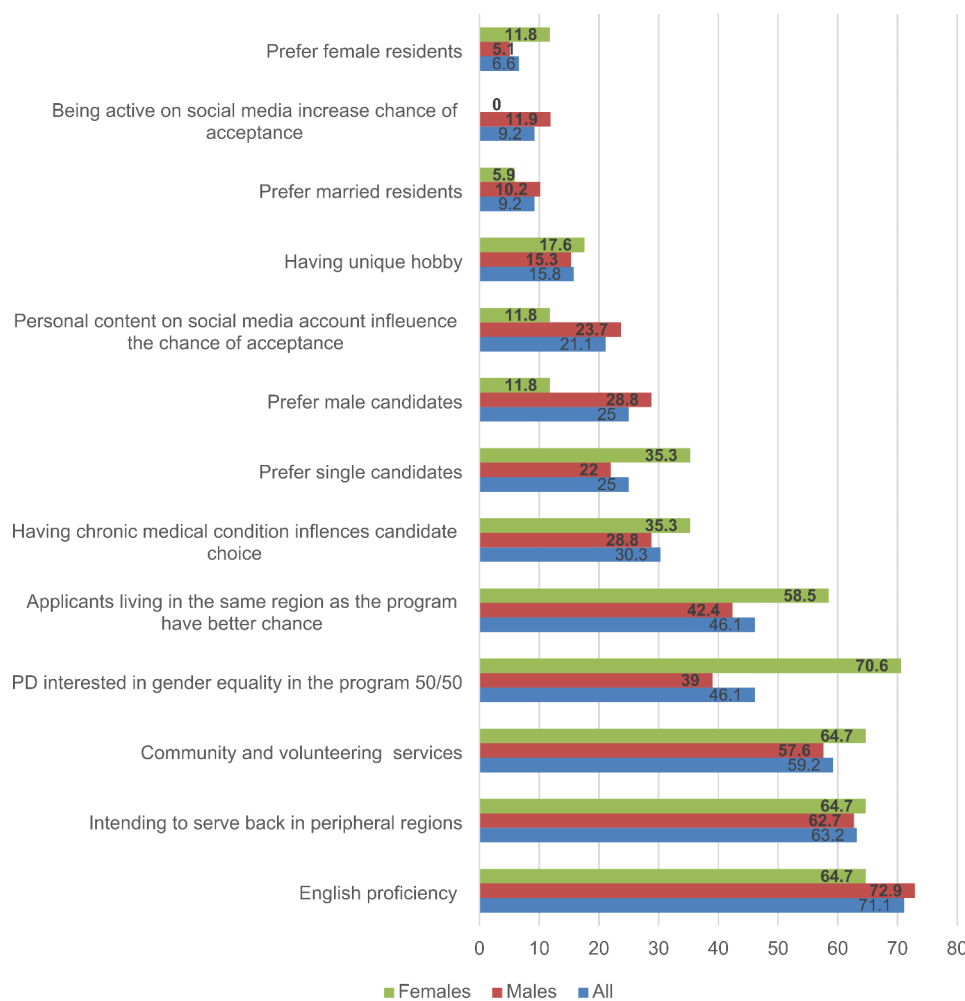
The present study evaluated the factors used by former and current pediatric PDs in accepting applicants for Pediatric Residency Programs in KSA to provide comprehensive guidance for undergraduate medical students and medical interns.

### The main study findings

In the current study, except for the miscellaneous factors, all overall domains' ratings of importance fell at an above average level of importance according to PDs' perspectives. The most important domains were the SMLE score, followed by Services and Electives, Research and Interview domains.

### Interpretation of the main findings

The first and most important factor in the current study was the SMLE score which was unique to this study in contrast to the emergency medicine (EM) PDs study in which the SMLE score ranked 9th and the Urology PDs study in which the SMLE score ranked 6th. This could be attributed to the SMLE score accounting for 50% of the total SCFHS score. In EM study, the most important factors were performance in the interview, EM electives,



**Fig. 1** Agreement rates of different items for all, male and female PDs

oral or poster presentation on events [8]. In the Urology PDs study, the most influential factors were performance during rotation at the respondent's center, publications in Urology, Urology electives [7]. The second and third most important factors in the current study were slightly similar to the results of the other studies in terms of importance which signifies how electives and research activities can influence the choice of applicants since they have been in the top three of importance across different specialties [7, 8].

When comparing some aspects of different domains this study tackled, the results found that candidate's academic performance was an important eligibility factor from PDs' perspective. This is noticed in the rating of candidate GPA in the GPA domain and the high pediatric SMLE score in the SMLE domain. This was in accordance with a similar Canadian study examining anesthesia PD perspectives regarding candidate selection [9]. The PDs in our study further emphasized the importance of academic knowledge prior to acceptance in the Interview

domain where they valued candidates showing good pediatric knowledge during the interview.

The interview domain ranked fourth in this study, but was the domain of highest rated by female PDs. A study in the United States assessing importance selection criteria for pediatric emergency highlighted the interview as the most important aspect for choice than the candidate academic prior academic performance [10]. This difference may be because the Interview are needed to reveal personality traits and personal characteristics that suit the medical specialty the applicant applies for. PDs may believe that emergency department physicians should have certain personality traits [11] different from those dealing with pediatric patients in the wards or outpatient clinics that could only be revealed during the interview. This is further emphasized by the results of the EM study [8] that showed that the most important factor was the performance in the interview. In addition, Ross and Leichner [12] in a study published in 1984 reported that personal interviews were highlighted as an important factor for the selection of psychiatrists residents.

The current study findings also showed that the most important aspect in the Interview domain was dressing well. In contrast, the urology study showed that “appearance during the interview” ranked 15th [7]. How physicians dress had been previously studied as an important factor for building trust and gaining the patients’ confidence [13].

With Services and Electives ranking the second most important aspect considered by PDs. This finding should be clearly communicated to prospective candidates to encourage them to participate in elective pediatric activities prior to application to improve their chance of acceptance. In line with this point, having a good reputation and performance during rotation ranked the first and most important factor for candidate selection across all domains. This was in line with the findings of the urology study which ranked it as the most important aspect [7] and the pediatric emergency study conducted in the United States [10]. This fact should be highlighted to all prospective applicants to consider that PDs from different specialties believe that previous good reputation of the applicant is an important selection criteria.

Coming after the candidate’s GPA, winning awards or honors was one of the most influential factors in the GPA domain, but the ED study did not show the same significance and ranked it 13th out of 15 in the importance list [8].

Having good research knowledge was one of the most important domains valued by PDs in our study, having good basic knowledge in research and previously published research were the most influential aspects of the choice among applicants. This was correlated with previous studies in the United States [10, 14] that reported that candidates with good research potential were important factors to assess candidates. This was also similar to the study conducted on plastic surgery PDs in KSA showing that ‘showing evidence of knowledge in the basics of medical research’ was the third most important factor [6]. Good knowledge and research skills are important for advancement in the medical career. It helps physicians develop and apply better management procedures and updated management options for their patients [14].

Such finding highlights the importance of improving the candidate’s research skills prior to their clinical involvement. Improving research skills of applicants should start in their undergraduate stage where medical curriculum ought to continuously be updated to improve students’ research skills and publication skills.

Regarding the LOR, it can have a great impact on the acceptance of the applicant, especially if it was from a well-known author to the PDs, because many PDs believe that they can predict the performance of the applicant based on the LOR [15]. The current study showed that a well-written LOR with good quality language is one

of the important aspects for selection. It has been previously recommended with well written reference by previous studies as an important aspect for candidate selection [9, 10]. In the ER study, the language of the recommendation ranked 4th out of 6, which does not show high significance [8]. This study also showed that least important aspect perceived across all domains was having multiple recommendations. It was not considered a very important factor that could improve the chances of the applicant.

In this study, there are some interesting results of directors’ preferences regarding applicants’ traits and social life. A higher number of PDs believe in equal gender distribution resembling the ER and plastic surgery studies that concluded that gender has no role in the applicant’s acceptance. Although the exact reason was not collected in the survey, the most likely explanation is due to logistical reasons, for example: the availability of on-call rooms and lounges. Furthermore, the applicant’s English language proficiency and serving back in a peripheral region showed a remarkably high rank among other factors, shedding some light on the importance of these factor to be further evaluated. Finally, the applicant’s presence on social media platforms is one of the factors evaluated by the PDs, which showed a low mean for both the content of social media accounts and being active. This result is almost consistent with the ER study, where the social media account was at the bottom of the priority list as one of the least crucial factors [6, 8].

Looking from another perspective by assessing the significant differences in the importance of factors based on the demographic data of the PDs. Regarding the gender of the PDs, there was no significant difference across all factors except for the LOR, in which the female PDs believed it to be more important than male PDs. There was also a significant difference in the importance of LOR between junior PDs who preferred it more than senior PDs. No significant differences were found in the importance of the remaining factors between the current and previous PD. To our best knowledge, there are no studies that have studied the association between the PDs’ demographic characteristics (such as age and gender) the reported factors, making the findings mentioned above unique to this study.

### **Strengths and limitations**

Despite the important findings reported by this study, it still has a few limitations. Firstly, despite the high number of participants compared to other studies, the majority were former PDs which can be postulated that they are not fully updated about the latest regulations related to the application process or the continuous change of the selection criteria. Also, other members of the Pediatric Program, not only PDs, could have been involved in the

study to gain a more comprehensive image. Secondly, the geographic distribution of the PDs was not equal, e.g. the Southern Region was represented by only one participant. Finally, using of online survey and nonrandom sampling method limit the generalizability of the study findings.

## Conclusions

SMLE score, services and electives, and research potential were the most important factors considered by Pediatric PDs for selection of candidates. Variability of the opinions and the points of selection that could vary by personal or demographic factors call for constructing a unified standardized form for valid selection criteria to guide PDs, ultimately contributing to improving the pediatric residency selection process in KSA and ensuring that the best candidates become future pediatricians. Policies should also be improved to help prospective candidates to join elective activities. These findings can help prospective applicants to improve their qualifications and training experience as well as to self-analyze their points of strengths and weaknesses to expand their chance of acceptance. Further in depths qualitative studies are needed to understand the PDs' views, perspectives and experiences and factors standing behind their perceptions and choices. Similar studies are needed for other specialties with an emphasis on including comparison of the factors based on the PDs demographic and personal characteristics.

## Abbreviations

CV	Curriculum vitae
EM	Emergency medicine
GPA	Grade point average
KSA	Kingdom of Saudi Arabia
LOR	Letter of recommendation
PDs	Program directors
SCFHS	Saudi Commission for Health Specialties
SMLE	Saudi Medical Licensing Exam

## Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12909-024-05926-w>.

Supplementary Material 1

## Acknowledgements

We would like to thank all the program directors for participating in our study.

## Author contributions

AA generated the research idea. All authors participated in modifying the survey and writing the proposal and the manuscript. HA was responsible for data collection. AA, SA were responsible for the data analysis. All authors have read and approved the final version of the manuscript.

## Funding

None.

## Data availability

The datasets generated and/or analyzed during the current study are not publicly available but are available from the corresponding author on reasonable request.

## Declarations

### Ethics approval and consent to participate

The study was approved by the institutional review board (IRB) of KAIMRC (King Abdullah International Medical Research Center), and the institutional review board (IRB) number was (IRB/2169/22). Informed consent was obtained from all the participants.

### Consent for publication

Not Applicable.

### Competing interests

The authors declare no competing interests.

Received: 21 October 2023 / Accepted: 19 August 2024

Published online: 02 September 2024

## References

1. General Authority for Statistics. Population estimates in the midyear of 2021 Riyadh General Authority for Statistics; [cited 2024 February 20th]. [https://www.stats.gov.sa/sites/default/files/POP\\_SEM2021E.pdf](https://www.stats.gov.sa/sites/default/files/POP_SEM2021E.pdf)
2. Association of American Medical Colleges (AAMC), Statistics Washington ERAS. DC: Association of American Medical Colleges (AAMC); 2022 [cited 2024 February 20th]. <https://www.aamc.org/data-reports/data/eras-statistics-data>
3. AlSohime F. Research involvement and obstacles among trainees enrolled in a pediatric residency program in Saudi Arabia. *Int J Pediatr Adolesc Med.* 2018;5(3):88–91.
4. AlEnezi S, AlHarbi A. Saudi Board pediatric curriculum 2014 [cited 2024 February 20th]. [https://scfhs.org.sa/sites/default/files/2022-01/Pediatric\\_Curricula.pdf](https://scfhs.org.sa/sites/default/files/2022-01/Pediatric_Curricula.pdf)
5. Saudi Commission for Health Specialties (SCFHS). Training programs: applying to postgraduate programs 2022 [cited 2024 February 19th]. [https://scfhs.org.sa/en/training?id=29&dtid=43&title\\_op=contains&title\\_po\\_prog=&page=16](https://scfhs.org.sa/en/training?id=29&dtid=43&title_op=contains&title_po_prog=&page=16)
6. Mardan QNMS, Alamari NA, Alzahrani HM, Almarghoub MA, Al Saud NA, Alqahtani MS. The ideal applicant to the Saudi plastic surgery residency program. *Plast Reconstr Surg Global Open.* 2021;9(2).
7. Alyami FA, Almuhaideb MA, Alzahrani MA, Althunayan AM, Almannie RM. Survey of Saudi urology program directors: what do you look for in a candidate? *Urol Annals.* 2021;13(3):272.
8. Alhalimi AA, Almulhim KN. The ideal applicant to emergency medicine residency programs in Saudi Arabia; Program directors' view. *Front Emerg Med.* 2022;6(4):e50–e.
9. Niburski K, Buu N. Criteria for selection to anesthesia residency programs: a survey of Canadian anesthesia program directors. *Can Med Educ J.* 2021;12(4):89–97.
10. Poirier MP, Pruitt CW. Factors used by pediatric emergency medicine program directors to select their fellows. *Pediatr Emerg Care.* 2003;19(3):157–61.
11. Hunter MM, Patocka C. What are the personality types among emergency medicine physicians? *Cureus.* 2021;13(5):e14959.
12. Ross CA, Leichner P. Criteria for selecting residents: a reassessment. *Can J Psychiatry.* 1984;29(8):681–6.
13. Rehman SU, Nietert PJ, Cope DW, Kilpatrick AO. What to wear today? Effect of doctor's attire on the trust and confidence of patients. *Am J Med.* 2005;118(11):1279–86.
14. Benzoni HA, De Oliveira GS Jr, Jagannathan N, Suresh S. Selection of subspecialty fellows in anesthesia for pediatric anesthesia: a national survey of program directors in the United States. *Pediatr Anesth.* 2015;25(5):487–91.



15. Marwan Y, Waly F, Algarni N, Addar A, Saran N, Snell L. The role of letters of recommendation in the selection process of surgical residents in Canada: a national survey of program directors. *J Surg Educ.* 2017;74(4):762–7.

### **Publisher's note**

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.