

Cross-sectional Study

Factors affecting medical student's decision in choosing a future career specialty: A cross-sectional study

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ABSTRACT

Background: Diversity in the specialties is essential to provide optimal health care. Future career specialties chosen by the students had great significance for balanced doctor's distribution in different specialties, as it determines the composition of the physician workforce. Therefore, there has been a deeper interest in the issues of career preference among medical students. We aimed to determine and assess the factors perceived to be significantly attractive when choosing a future specialty.

Materials and methods: A cross-sectional-based study was conducted among undergraduate medical students from all of the medical schools in Jordan from April to September 2021. The data was collected using a structured online questionnaire through social media platforms and completed by 1556 students. The questionnaire consisted of three sections. The first section included the sociodemographic data of the participants, while the other two sections included questions about future specialty and the factors that influence the student's choice. Informed consent was taken from the participants.

Results: Of the participants, (64%) were female. The mean age of the students was 20.9 years. Regarding the future specialty, 664 students (42.7%) preferred surgery as future specialty (females = 364, males = 300). While 505 students (32.5%) preferred specialty in medicine (females = 365, males = 140). Moreover, 349 students had no decision until now regarding their future specialty (females = 238, males = 111). Generally, the surgical specialty was the most preferred specialty, while the basic science specialty was the least preferred. Specialty in medicine and surgery was the most preferred specialty among females and males respectively.

Conclusion: Surgery in general was the most popular specialty among medical students. Other common choices were neurosurgery, internal medicine, and pediatrics. The more attractive factors were the appeal of being in the specialty, the influence on patient's lives, the potential for patient interactions and the high income. While the least attractive factor was having a long-term relationship with the patients.

1. Introduction

In every country, the quality of health care is partly dependent on the number of available physicians in each specialty. Diversity in the specialties is essential to provide optimal health care [1]. Future career specialties chosen by the students had great significance for balanced doctor's distribution in different specialties, as it determines the composition of the physician workforce [2–4]. Therefore, recently there has been a deeper interest in the issues of career preference among medical students [5].

During their journey in medical school, medical students are exposed

to a wide range of medical specialties [2]. The process of medical socialization and interaction with other students, health professionals and patients helps the individual to construct the professional identity and turn from the undifferentiated multi-potent stem doctors to the fully differentiated specialist [6,7].

Nevertheless, choosing a medical specialty is one of the most important thoughts in the undergraduate student's mind [8]. Some studies suggest that medical school entrants and medical school applicants usually have a strong preference for particular medical specialties before graduation [2]. However, it can be a confusing and complex experience as there are many reasons and factors that affect one's

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decision [9,10]. These factors can be classified into two major groups: intrinsic factors related to the student, and extrinsic factors related to the specialty [2]. Examples of these factors are gender, interest in the field, the availability of residency program, family or friends' advice, interest in research and teaching, perceived benefits, time of work and the possibility of private practice [11].

Published data about students showed that surgery, internal medicine, pediatrics, obstetrics and gynecology are the most commonly reported choices by medical students. Females preferred the specialties where they can find a lifestyle suitable for their families. While males had a tendency for high-paying specialties [18]. Moreover, some studies that males are more likely to study and work abroad compared to females [12].

In Jordan, there are six medical schools now [1]. The first medical school was established in 1972 in the Jordanian University (JU). The six years medical education program in Jordanian universities is divided into 3 preclinical years and 3 clinical years. In the preclinical years, the general sciences and the basic biomedical sciences are covered [13]. While in the clinical years, clinical clerkships of the clinical specialties of surgery, medicine, pediatric, and obstetrics and gynecology are introduced along with selected subspecialties. The six years program is equivalent to 256 credit hours, with each costing an average of 100\$ [14]. Despite this excellent curriculum, there is little understanding of how the students make the carrier preferences and how the specialties are perceived. Therefore, in our study, we aim to determine and assess the factors perceived to be significantly attractive when choosing a future specialty.

2. Material and methods

2.1. Study design

Registration and ethics: The present study was designed in accordance with the ethical principles of the Declaration of Helsinki. Unique Identifying number: researchregistry7417 (https://www.researchregistry.com/browse-the-registry?fbclid=IwAR0sFuWDOtNgzf08Yqf3NJz9gHqYEEaMDfo_USaCI4t1Jw984vKIH_Vqa04#home/registrationdetails/61a68fb8d8197e001ea90fc9/)

Ethical approval: The study protocol and design were approved by the institutional board review at King Abdullah University Hospital (810-11-120).

A cross-sectional study was conducted in Jordan 2021 in the period from April to September. The data was collected using an online structured questionnaire using the google survey platform (Google LLC, Mountain View, California, USA) and distributed through social media channels. The objective of the study was explained to the participants and written informed consent was received online before the respondents began to fill the questionnaire. Contact information of the primary researchers was given to the participants for any questions to be answered.

2.2. Study population

The respondents were undergraduate medical students from all Jordanian medical schools regardless of their study year.

2.3. Survey

The questionnaire consists of close-ended questions covering three sections. The first section included sociodemographic parameters such as age, gender, marital status, and academic level. The second section included questions related to the preferred specialty and the time of choosing the specialty. The last section encompassed sixteen factors which the participants rank them to be less attractive, more attractive, or no influence when choosing a future specialty.

2.4. Statistical analysis

In line with the study objectives, the data was obtained from 1556 undergraduate medical students in Jordan. The obtained data were entered into the Microsoft Office Excel software program to be organized, coded, and checked for errors. Then data analysis was carried out using the Statistical Package of Social Sciences (SPSS) program version 25. Means and Standard Deviation (SD) were used for numerical (continuous) data, while percentages and frequencies were used for categorical data.

Factor analysis utilizing Varimax rotation was undertaken to analyze the factors influencing students' choice of their preferred future specialty. The analysis explained 42.9% of the overall variance, with Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value of 0.759, and a significant Bartlett's test of sphericity with a p-value < 0.001. After inspecting the resulting factor loadings, and comparing with respective parallel analysis, six-factor domains were retained. Table 4 shows factor classification and loading.

This work has been reported in line with the STROCSS criteria [15].

3. Result

3.1. Sociodemographic characteristics

The study recruited 1556 students (representing 10% of the entire medical student population at the time of the study). Of them, 995 (64%) were female, and 561 (36%) were male students. The majority (99.5%) of the participants were single, while (0.5%) were married. The mean age of the students was 20.9 years with the minimum and the maximum age recorded were 17, and 28 years respectively. 20.1% of the participants were first year students, 22.6% were second year students, 11.8% were third year students, 12.5% were fourth year students, 13.6% were fifth year students, and 19.4% were sixth year students. When asked about the current average rank, 645 (41.5%) reported to have excellent rank, 593 (38.1%) to have a very good rank, 294 (18.9%) to have a good rank, and 24 (1.5%) to have weak rank. In general, female students had a better rank than male students did (Table 1 and Fig. 1).

3.2. Perceptions and attitude of the students toward a future career specialty

Regarding the future specialty, more than half of the students (52.8%) had decided on the future specialty during the clinical years of the university. 23.5% had a decision about their future specialty before getting into medical school.

664 (42.7%) students preferred future specialty in surgery. 364 of these students were females, and 300 were males. While 505 (32.5%) students preferred specialty in medicine with 365 of them were females and 140 were males. 30 (1.3%) students preferred a basic science

Table 1

This table shows the sociodemographic characteristic of the participants.

		N	N %
Gender	Female	995	63.9%
	Male	561	36.1%
Marital status	Single	1548	99.5%
	Married	8	0.5%
Academic year	First year	313	20.1%
	Second year	351	22.6%
	Third year	184	11.8%
	Fourth year	194	12.5%
	Fifth year	212	13.6%
	Sixth year	302	19.4%
Average academic performance rank	Weak	24	1.5%
	Good	294	18.9%
	Very good	593	38.1%
	Excellent	645	41.5%

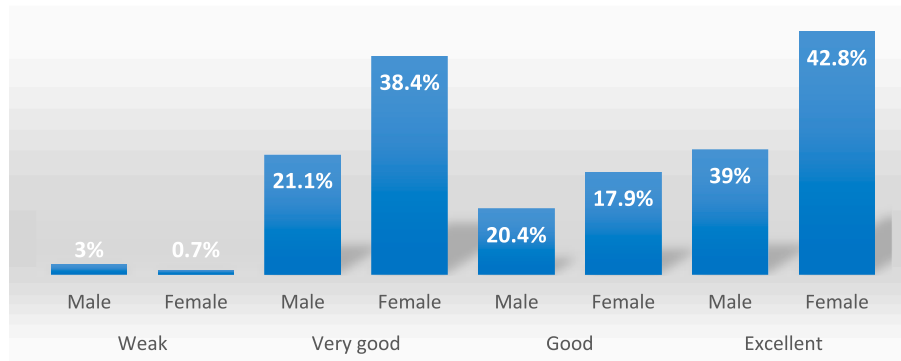


Fig. 1. This figure compares the average rank of female and male students.

specialty (e.g., anatomy, histology, microbiology, and physiology). Moreover, 349 (22.4%) students had no decision until now regarding their future specialty with 238 of them being female students and 111 are male students. While 8 (0.5%) students preferred to be a general physician without any specialty with 7 of these students being females and 1 being male.

Generally, the surgical specialty was the most preferred specialty, while the basic science specialty was the least preferred specialty. Specialty in medicine was the most preferred among female students, while specialty in surgery was the most preferred among male students. Being a general physician without specialty was the least preferred by both female and male students (Table 2 and Fig. 2).

When addressing each specialty alone, the most commonly chosen specialty was general surgery (n = 191 students), followed by internal medicine (n = 167), neurosurgery (n = 134), pediatrics (n = 128), and dermatology (n = 101). While the least popular specialty was forensic medicine (n = 6). (Fig. 3).

Factors affecting the decision of the preferred future specialty are shown in Table 3.

3.3. Practice of the students toward teaching

When asked about teaching medical students in the university, 396 students want to teach basic science in the future. While 1052 students want to teach clinical specialties in the future.

4. Discussion

Our study showed that 22.4% of medical students did not decide on their future specialty. Awad Ali Mohamed Ahmed Alawad et al. and

Ossai et al. reported lower results with 10.4% and 11.6% respectively [2, 16]. While Rawan Al-Fouzan et al. reported that more than half of the students (62.8%) had not decided on a future specialty yet [9]. A possible explanation is the higher number of first, second and third students' level in our study, which had not studied the four major specialties (medicine, surgery, obstetrics and gynecology, and pediatrics) and hence they are unable to decide yet. This was supported by a study in which a statically significant association was found concluding that students during their clinical phase of study were more likely to decide their future specialty compared to the basic science phase of studying [9].

In our study, surgical specialties were the most preferred followed by internal medical specialties and basic science specialties. Being a general physician was the least preferred by our students. A study in Saudi Arabia showed similar results [17]. While a study among 6th year medical students in Jordan showed that more than half of the preferred medical specialties [1]. In addition, another study in Saudi Arabia reported that Internal medicine specialties were the most preferred [5]. No statistically significant association was found between the type of gender and preference toward a certain specialty. However, in our study males were more likely to choose a specialty in surgical branches while females were more likely to choose a specialty in internal medicine. Studies in Malaysia, Nigeria and Syria reported similar results [7,12,15]. A study in Jordan showed that the most chosen specialty by male students was surgery [14]. However, a study in Saudi Arabia reported that more than half of the female students preferred surgical specialties [17]. While studies in Gambia and Jordan showed that females prefer obstetrics and Gynecology, pediatrics and surgery [6,14]. Despite the huge workload associated with surgical specialties, it has a high preference among medical students. A possible explanation for this is the high

Table 2
General distribution of the students into specialty fields and timing of specialty choices.

		Gender						p (X ²)
		Female		Male		Total		
		N	N %	N	N %	N	N %	
Preferred future specialty	Basic science specialty	21	2.1%	9	1.6%	30	1.9%	<0.001* (44.3)
	General physician	7	0.7%	1	0.2%	8	0.5%	
	Medical specialty	365	36.7%	140	25.0%	505	32.5%	
	Surgical specialty	364	36.6%	300	53.5%	664	42.7%	
	No decision yet	238	23.9%	111	19.8%	349	22.4%	
When did you make your specialty choices?	Before getting into medical school	245	24.6%	120	21.4%	365	23.5%	0.27 (3.9)
	During my basic years of study	157	15.8%	89	15.9%	246	15.8%	
	During my clinical years of study	352	35.4%	224	39.9%	576	37.0%	
	I have not made my decision regarding future specialty	241	24.2%	128	22.8%	369	23.7%	
Do you want to teach basic science to medical students?	Yes	255	25.6%	141	25.1%	396	25.4%	0.83 (0.046)
	No	740	74.4%	420	74.9%	1160	74.6%	
Do you want to teach clinical science to medical students?	Yes	656	65.9%	396	70.6%	1052	67.6%	0.059 (3.6)
	No	339	34.1%	165	29.4%	504	32.4%	

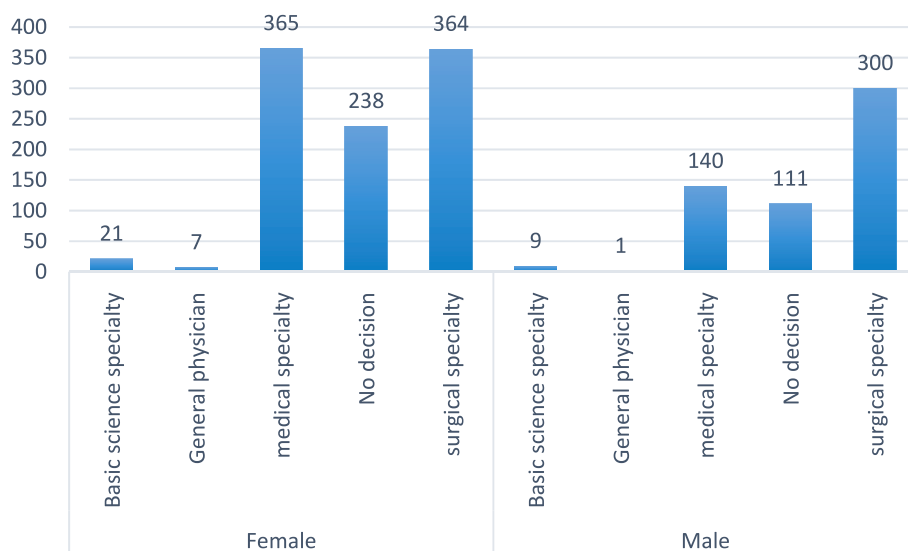


Fig. 2. This figure shows the preferred future specialty in relation to the gender.

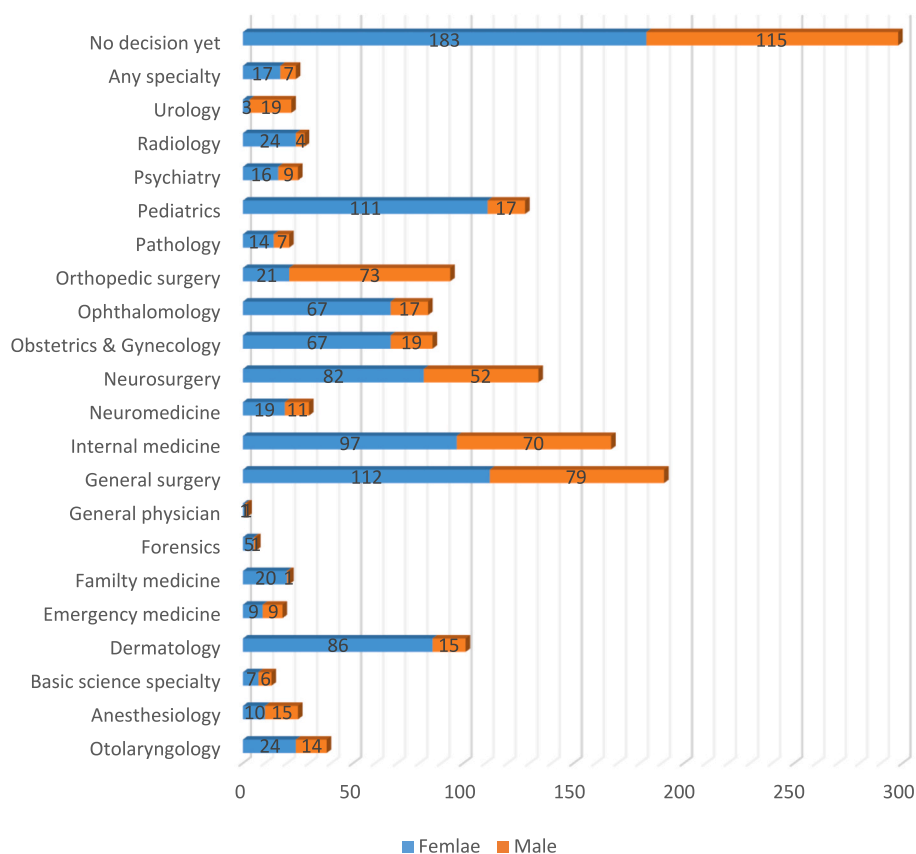


Fig. 3. shows the specific future specialty chosen by the students.

income associated with most surgical specialties.

Regarding specific specialty choices, the most commonly chosen specialty was general surgery followed by internal medicine followed by neurosurgery. The least commonly chosen specialty was forensic medicine. Awad Ali Mohamed Ahmed Alawad et al., Kaliyadan et al. and Ossai et al. showed similar findings with general surgery being the most chosen specialty [2,5,16]. However, a study in Kuwait stated that pediatrics was the most commonly chosen specialty [9]. Another study in Turkey among first year medical students reported that cardiology,

pediatric and ophthalmology as the most preferred specialties [18].

Regarding dermatology, in our study, only 6.5% preferred dermatology as their future specialty. A Study in Kuwait reported that 3.47% had chosen dermatology as a future specialty [9]. Another study in Syria reported that 6% of the students preferred a future career in dermatology [19].

In our study, the more attractive factors were the appeal of being in the specialty, the influence on patient’s lives, the potential for patient interactions and the high income. The least attractive factor was having

Table 3

This table shows the factors affecting the decision of preferred future specialty among the students.

	No influence N (%)	Less attractive N (%)	More attractive N (%)
The free time away from work	345 (22.2%)	338 (21.7%)	873 (56.1%)
The appeal of being in this chosen specialty	63 (4%)	127 (8.2%)	1366 (87.8%)
The difficulty of getting into this specialty (highly competitive specialty)	508 (32.6%)	572 (36.8%)	476 (30.6%)
I will be more satisfied with my family life	243 (15.6%)	273 (17.5%)	1040 (66.8%)
Opportunities for a part time worker in this specialty	394 (25.3%)	434 (27.9%)	728 (46.8%)
The variety of patients (all ages, both genders)	443 (28.5%)	376 (24.2%)	737 (47.4%)
The length of residency years	530 (34.1%)	496 (31.9%)	530 (34.1%)
Opportunity to perform procedures	281 (18.1%)	345 (22.2%)	930 (59.8%)
Relies on clinical diagnostic skills	258 (16.6%)	278 (17.9%)	1020 (65.6%)
Portrayal of different specialties in media	710 (45.6%)	472 (30.3%)	374 (24%)
The likelihood that can influence patient's lives	160 (10.3%)	214 (13.8%)	1182 (76%)
Opportunities to do research in this field	325 (20.9%)	358 (23%)	873 (56.1%)
The high income	232 (14.9%)	327 (21%)	979 (64.1%)
The degree of stress	268 (17.2%)	776 (49.9%)	512 (32.9%)
Private sector opportunities	371 (23.8%)	231 (14.8%)	954 (61.3%)
I am looking for challenging special	408 (26.2%)	584 (37.5%)	564 (36.2%)
I would like to have a long-term relationship with my patients	799 (51.3%)	406 (26.1%)	351 (22.6%)
I had a personal experience that simulated my influence in this specialty	780 (50.1%)	325 (20.9%)	451 (29%)
I prefer to treat emergency cases	371 (23.8%)	672 (43.2%)	513 (33%)
I prefer to treat non-urgent cases	268 (17.2%)	776 (49.9%)	512 (32.9%)
I would like to see a narrow group of patients with specific problems	567 (36.4%)	591 (38%)	398 (25.6%)
I would like to treat patients in the ward	536 (34.4%)	374 (24%)	646 (41.5%)
I would like to focus on treating patients in clinics	528 (33.9%)	452 (29%)	576 (73%)
I don't want to have a direct interaction with patients	505 (32.5%)	769 (49.4%)	282 (18.1%)
I want to treat less complicated patients	484 (31.1%)	621 (39.9%)	451 (29%)

a long-term relationship with the patients. A study in Saudi Arabia reported that the potential for patient interactions was the most influencing factor for choosing a specialty [5]. A study in Jordan reported that the intellectual content of the specialty and individual competencies were the most influential factors [14]. Similar findings were reported Abdulrahman et al. [11]. Rawan Al-Fouzan et al. reported that good treatment outcomes for patients were the most common reason for choosing a future specialty [9]. While Alshahrani et al. found that lifestyle was the most influential factor among Saudi medical students [17]. Moreover, several studies reported that on-call schedule and focus on urgent care and community health had more influence on female's specialty choice, while for male students' intellectual contents of the specialty, individual competencies and expected income had more influence [6,14]. In addition, only about 26% of the students chose "looking for a challenging specialty" as a factor that can influence their

choices. This is contradictor to what is found by Weissman et al. where two-thirds of the population under study chose this factor to be an influencer [4]. Moreover, challenges were also the main reason to select specialty according to Saudi study [5].

For the students who had dermatology as their future specialty. The free time away from work, the appeal of being in this specialty, part-time job opportunities, high income and private sector opportunities were the more attractive that influenced the students' choice.

5. Conclusion

Generally, a specialty in surgery was the most preferred among medical students. The most commonly chosen specialty was general surgery followed by neurosurgery. The least chosen specialty was forensic medicine. Females preferred internal medicine specialties while males preferred surgical specialties.

The most attractive factor reported in our study was the appeal of the specialty, while the least attractive factor was having long-term relationships with the patients.

6. Limitations

Using an online questionnaire was a limitation to our study. Even though the Internet offers a quick way of reaching many participants at no cost. However, using an online questionnaire can threaten the validity and generalizability of the study findings.

Ethical Approval

The study protocol and design were approved by the institutional board review at King Abdullah University Hospital (810-11-120).

Sources of funding

The authors did not receive any funds to complete this work.

Author contributions

Almu'atasim Khamees, Sajeda Awadi, and Sarah Al Sharie did the study design, data collection and data analysis.

Almu'atasim Khamees, Sajeda Awadi and Emad Alzu'bi did the data collection and manuscript editing.

Almu'atasim Khamees, Baha Aldin Faiyoumi, Lina Hailat and Bayan Al-Keder wrote the original draft of the manuscript.

Almu'atasim Khamees, Sajeda Awadi, Sarah Al Sharie, Baha Aldin Faiyoumi, Emad Alzu'bi, Lina Hailat and Bayan Al-Keder provided scientific input to the study.

Trial registry number

Name of the registry: Research Registry

Unique Identifying number or registration ID: researchregistry7417.

Hyperlink to your specific registration (must be publicly accessible and will be checked): <https://www.researchregistry.com/browse-the-registry#home/registrationdetails/61a68fb8d8197e001ea90fc9/>

Guarantor

Almu'atasim Khamees.

Consent

The objective of the study was explained to the participants and written informed consent was received online before the respondents began to fill the questionnaire. Contact information of the primary researchers was given to the participants for any questions to be answered.

Table 4

This table shows the factors that influence specialty choices according to factor analysis.

	Component						Communalities
	1	2	3	4	5	6	
Preference to deal with emergency cases	.669						.499
Looking for a challenging specialty	.574						.415
The difficulty of getting into this specialty	.562						.362
Acceptable on-call duty	.515						.482
Opportunity to perform procedures	.500						.434
Preference to deal with non-urgent cases	-.483						.543
Free time away from work		.684					.546
Opportunities for part time work		.677					.519
More satisfaction with family life		.657					.502
Length of residency years		.567					.354
Preference to deal with a narrow group of patients with specific problems			.665				.486
Minimizing direct interaction with patients			.638				.54
Preference to treat less complicated patients			.602				.471
Personal experience in the specialty			.448				.463
Following a role model in the specialty			.430				.419
The appeal of being in this chosen specialty				.604			.377
Variety of patients				.513			.35
The degree of stress				-.464			.529
likelihood of influencing patients' lives				.446			.325
Reliance on clinical diagnostic skills				.432			.346
Opportunities to do research				.336			.198
Having long term relationship with patients					.673		.475
Focus on treating patients in the clinic (outpatients)					.553		.457
Private sector opportunities						.659	.476
The high income						.655	.505

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article. The data of this research are available from the corresponding author upon a reasonable request.

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Declaration of competing interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.103305>.

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