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Specialty Preferences and Influential Factors among Medical Students in Sudan2021-2022

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Abstract: *A country's healthcare system is strongly influenced by the career choices and specializations of its physicians. This is even more important in many sub-Saharan African countries, where there are acute and chronic shortages of medical professionals. This study aims to discern the predilections of final medical students regarding career specialization and the underlying factors that contribute to these preferences. A descriptive cross-sectional study was carried out between November 2021 and May 2022. The study included 218 participants, drawn from Alzaiem Alazhari University, National Ribat University, and National University.In terms of specialty preferences, it is observed that female participants exhibit a preference for obstetrics, while their male counterparts demonstrate a higher inclination towards surgery. Specifically, 20.6% of female participants chose obstetrics and gynecology compared to 6.5% of males. Conversely, 26.1% of males and 16% of all females opted for surgery as their primary choice. In the domain of internal medicine, 15.9% of females and 21.7% of males expressed interest. Pediatrics garnered the attention of 13% of female participants, while only 2.2% of males favored this option. Statistically significant factors influencing the selection of surgery and other specialties include Appraisal of own skills and aptitude" (P-value=0.019) and "Desire to provide community service" (P-value=0.0), which also pertains to internal medicine. For those opting for obstetrics and gynecology, the reasons included "Appraisal of own skills and aptitude" (P-value=0.019) and "Acceptable hours of practice" (P-value=0.971). Pediatrics was predominantly chosen based on "Appraisal of own skills and aptitude" (P-value=0.019).Evident gender disparities are observed in specialty preferences, with males showing a pronounced inclination towards surgical and internal medicine fields. While females also express interest, the percentage is notably higher among males in comparison to the total participants of each gender. The primary reasons for selecting specific specialties are rooted in "Appraisal of own skills and aptitude" and the appeal of "Acceptable hours of practice." Furthermore, an urban practice setting is favored over a rural one.*

KEY WORDS: medical specialty, preferences, medical students, Sudan.

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INTRODUCTION

A country's health care service is largely affected by the career choice and specializations of its medical practitioners. This is even more important in many sub-Saharan African countries where acute and chronic shortages of skilled health personnel subsist (1)(2) .
Previous research has shown that there are differences between the professional preferences of medical students and the ultimate choice for further medical education. (3-4) This is related on the one hand to gender, but on the other hand also to the image students have of the medical profession and to the availability of training places (5-6).

Medical students learn about many different areas of medicine, including those designated as specialties. At the end of medical school, doctors choose the specialty in which they will have more education and eventually practice. Education in each specialty takes three to seven years of a residency after medical school. Some medical specialties have subspecialties that require even more education and training (7).

Knowledge of specialty preferences of medical students is essential for understanding future workforce and health care requirements. Knowledge of the underlying reasons for medical career choices that can lead to better continuity in medical career planning, As better matches of preference and actual specialty may prevent the early termination of a medical career. These insights could pave the way to providing better information and counseling for medical students and young doctors, them towards careers that serve both their aspirations and those of society. Medical careers have changed during recent years. Threats to physicians' autonomy, their ability to manage their daily interactions with patients, and their time, and to their ability to provide high-quality care are most strongly associated with changes in career satisfaction (8).

The role of rural clinical service during undergraduate medical training has been studied in order to provide solutions to retention of rural doctors. It was found to play a positive role in attracting medical doctors to rural practice (9). Medical school tuition fees are expensive in most countries, compelling students and their families to take loans. Debt incurred as a result of these expenses and whether it influences future career options and location of practice has been questioned. A study from the United States (US) suggests that this may be true (10).

So it is crucial to understand the factors that influence students' selection of their future careers as certain decisions and policy changes can improve their distribution in the medical.No study has explored the career preferences of medical students in Sudan and the factors influence their choice of specialization, and factors that determine the location of their practice. This study should provide data for professional bodies, Training institution and government to formulate policies to insure a good mix of medical personnel of today and tomorrow. Workforce, especially with the

rising imbalance in the health manpower over different specialties and the resulting shortage in some areas and crowding and tough competition in others.

The decisions that medical graduates make regarding their future careers are of paramount importance because of their role in shaping the prospects for the healthcare system and in ensuring an adequate medical workforce in a given specialty. Nowadays we find that many doctors tend to work abroad. Understanding gender differences and the factors influencing medical student preference can help policymakers design educational programs and hiring plans that ensure a balanced flow of physicians in diverse specialties and can fill the gap created by physician immigration.

METHOD

This study followed cross sectional community based descriptive observational study. The study was confined to Alzaem Alazhari University, National University and National Ribat University at Khartoum, Sudan. Targeting The final year medical students of the three universities. The study was conducted in total population= 723 Level of confidence= 95% Margin of error=5% By using computerized software sample size calculator (RaoSoft), the sample size= 252. All data were analyzed using the statistical program of social science (SPSS) version 27, descriptive frequency analysis was made for all variables which were demonstrated as frequency tables and figures and the significance level in statistic when P value less than 0.05 considered significant.

An online self-administered questionnaire was distributed.
The study was revised and ethically approved by the ethical committee of faculty of Medicine, Alzaiem Alazhari University. We took a formal consent (verbal) from each participant, and the privacy issues were highly considered. Participant had the right to dismiss at any time. Inclusion criteria is Final Students of the three universities. Exclusion criteria Students who refuse the consent or Not final years students The total populations were divided into 3 subgroups (strata) according the medical school, then simple random sampling from each subgroup: 1. Alzaiem Alazhari university, the final medical students represent 27% of the total population, sample size= 68. 2. National Ribat University, the final medical students represent 39.7% of the total population, sample size= 100 3. National University, the final medical students, represent 33.3% of the total population, sample size = 84.

RESULTS

Specialization choice:

In all selected universities, over 126 of female participants, About(20.6%) of all participants had an orientation to obstetrics and gynecology, While (6.5%) of 92 male participants only selected obstetrics and gynecology. On other hand (26.1%) of male participants selected surgery as first choice and (16%) of overall females participants selected surgery as the first choice, And(15.9%) of females participants had an orientation to the internal medicine, While (21.7%) of male participants oriented towards the internal medicine. (13%) of overall female participants selected pediatrics, While (2.2%) of male participants selected this choice.

In general, Male had an orientation to surgical and internal medicine fields and less orientation to pediatrics and obstetrics and gynecology fields. Female have less orientation to surgical and internal medicine fields compare to male, but they select these fields as first choice by percentage not highly differences compared to male participants, but they select obstetrics and gynecology and pediatrics better in percentage than male participants.

The other fields as (family medicine, psychiatrics, anesthesia, public health, radiology, pathology, academic medicine) both gender shows no interest in these fields. About (22.2%) 13 of female participants and (22,8%) of male participants not decided what their choice and 1.6% of female participants drop medical school. (Table 2)
Both table 2 and 3shows shows a preference for clinical specialties versus non-clinical specialties. ENT, Basic science, Pathology, Academic medicine, Radiology, Psychiatric are poorly selected as first and second specialization

Factors affecting choice of specialization:

Eighteen (18) factors were analyzed by bivariate analysis for the four major specialties selected of internal medicine, Surgery, Obstetrics & Gynaecology, Pediatrics and orthopedics. (16) For the analysis below all students who had ‘Not-decided’ on a career choice or who intended to leave medicine ‘Non-medical’ were excluded.

The factors that were significant for selecting surgery as a career over the other four specialty choices were the “Appraisal of own skills and aptitude “ (P-value=0.019) ,” Desire to provide community service” (P-value=0.0) . Internal medicine were the same factor as surgery (P-value=0.019, 0.0 respectively).

Those who selected obstetrics and gynecology as a career selected the following factors as being influential to their choice of career "Appraisal of own skills and aptitude" (P-value=0.019) and "Acceptable hours of practice" (P-value=0.971). Pediatric were selected because of "Appraisal of own skills and aptitude "(P-value=0.019).

Ease of entry into residency training program, Ease of raising a family, Family influence/pressure, Gender distribution in specialty, Health promotion and prevention opportunities, Illness in family member, Illness in self, Intellectual challenge in specialty, Job opportunities/job security, Length of residency, Peer pressure (by fellow students/friends), Perceived prestige of specialty, Role model were not found to be significant factors from the list of 18 variables(Table 4).
Location of the practice:

Bivariate analysis was carried out for the location of the practice and the factors that affecting the practice. The students who selected "Non-medical" was excluded from the analysis (n=2).
In all selected university, over 216 participants, (84.3%) had intention to practice after internship in urban, While 15.7%% of students had intention to practice after internship in rural (Table 5).Over students (75.5%) of students had intention to go aboard for further training and(24.5%) of the students had intention to stay in Sudan for obtaining further 18 training(Table 6). Also (84.3%) of students had Intention to spend majority of working life after specialist training aboard, while (15.7%) of students had intention to stay in Sudan. (Table7).

Intention of practice after internship		Odd ratio	95% Confidence Interval
Urban	182 (84.3%)	2.5	(79.6-88.9)
Rural	34 (15.7%)	2.5	(11.6-19.9)
Total	216 (100.0%)	.0	.

Table (5) shows the intention of practice after internship.

Intention for obtain further training		Odd ratio	95% Confidence Interval
Abroad	163 (75.5%)	3.0	(69.9-81.0)
Sudan	53 (24.5%)	3.0	(19.4-29.6)
Total	216 (100.0%)	.0	..

Tables (6) shows the intention for further training.

Safety and security issues were found to be more important in female and male students. Quality of work facilities is more important in male than female, but we consider it as major factor for both gender. Registration and Accreditation procedure also had high selected in male and female. Remuneration and Rural lifestyle had no significant effect on the location of the practice

Regarding factors affecting location of the practice the most important factors were safety and security issue (90.5%),quality of work facility (73.6%) and opportunity for own contiuoing education (66.7%)

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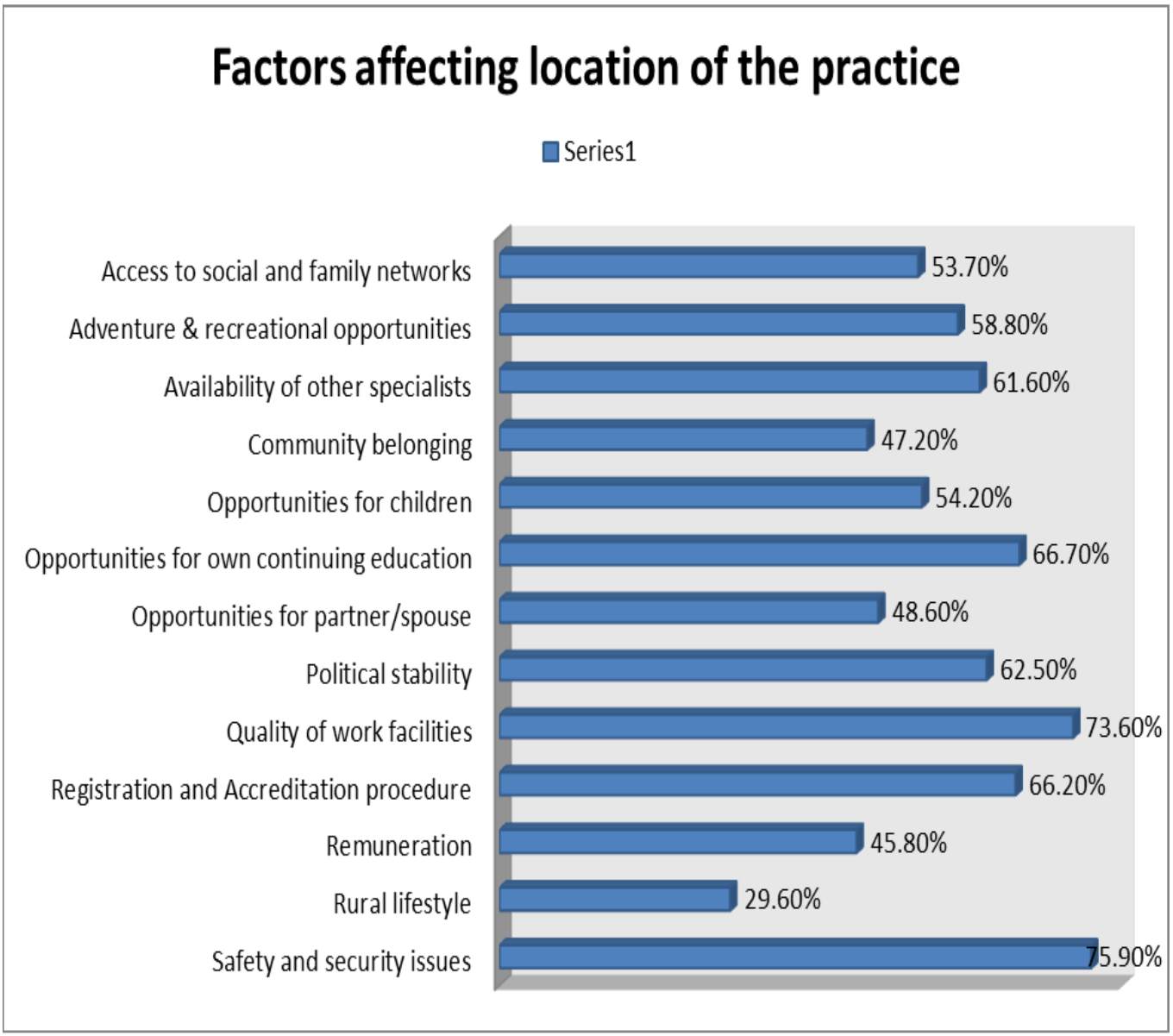

Figure (1) shows factors affecting choice of location

DISCUSSION

The major' medical specialty chosen by the students were obstetrics and genecology, pediatrics, orthopedics, Internal medicine and surgery, These results are similar to those encountered by students in countries with low- and middle-income (11). In which the education system plays a role in this selection needs to be determined. A study carried out in United State suggest that a

medical career advisory service may help students choose their professional career based on their skills, interests and assistance with exploratory publications in different subject areas during the compulsory elective area. This could help expand career opportunities and direct students to appropriate careers (12).

Students cited job quality and pay as important factors in career choice, but the difference was not significant. Both have emerged as important factors in other studies (13). Academic medicine and basic sciences are poorly selected, even though these professions form the core of teaching in the medical education system. The choosing of family medicine as first career option was within minimum rate. It is becoming an important specialty worldwide in an effort to reduce the rural–urban misdistribution of doctors and to corporate with demographic changes in populations with increase in elderly population particularly in rural areas. Although touted as a solution to this problem, adoption in low- and high-income countries has been difficult (14).To retain rural supply of doctors, it has been found to be important to train students with a rural origin and site universities in rural areas. (14, 15, 16).

Studies conducted in different low- and high-income countries suggest a gender bias in the choice of specialization. Females have a tendency to select specialties such as Obstetrics & Gynaecology, Pediatrics Anesthesia and Radiology. Males have a tendency to select Surgery, Internal Medicine and Orthopedics. (17, 18) Similar results were obtained in this study, with the exception of obstetrics/gynecology, where more male students majored. The reasons why more men prefer this major may need further investigation, but in this study 'job vacancies' and 'perceived earning potential' were cited as the top reasons by male respondents. Although surgery was more likely to be chosen by men, some women chose it as a career option, with otorhinolaryngology and ophthalmology (both with surgical skills) being chosen more by women. This could mean that surgery as a male domain could be in decline. (17, 18, 19) After 23 performing the factorial analysis, it was found that none of the independent variables were significant for the selection of the subject. (20)

According to our Sudanese students study, The majority of students intend to practice after the internship in urban this will lead to out crowing of doctor in the city or state and lead to shortage of doctor in the rural aria and the need for doctors will increase, In the other hands the patient will out crowing in the state which may decrease the health care services and As well as the problem appears regarding high percentage of students that had orientation to go aboard instate of their countries. The choice by the Minister of Higher Education to permit students from rural areas to gain admission to a rural university through a commitment to serve the area for a specific number of years was a commendable decision that has the potential to maintain equilibrium.

CONCLUSION AND RECOMMENDATION

Gender differences exist in selection of specialty with male preference towards surgical and internal medicine specialties, as well as female but in highly percentage in male to female according to number of total participants of each gender. “Appraisal of own skills and aptitude “and,” Acceptable hours of practice” was the most important reason for selecting a particular specialty. Urban practice is preferred to rural practice. Misdistribution of doctors requires a solution it must involve medical students, their parents/guardians, universities, the communities involved and the government. Prospectively following this study, another study would provide valuable information as to how governance can affect careers of doctors.

The other fields as (family medicine, psychiatrics, anesthesia, public health, radiology, pathology, academic medicine) both gender shows no interest in these fields, further study may be done for why these specialties not preferred in both gender. Also we recommended to create course for students to know way better about these specialties and the difficulties and requirements for each one so students can easily decide which preference they wants and how to make it possible.

Recommendation: The misallocation of physicians requires a solution that involves medical students, their parents/guardians, universities, communities involved and government. Expected to follow this study, another study would provide valuable information on how governance can affect physicians' careers.

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