



## Education and demographic patterns of foreign trained medical graduates sitting the Medical and Dental Council of Nigeria Licensing Examination

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### Abstract

**Context:** Foreign medical graduates (FMGs) represent a growing proportion but constant group of candidates sitting the Medical and Dental Council of Nigeria (MDCN) licensing examination. An understanding of their demographic distribution and medical training background is essential for designing targeted preparatory course and policy interventions for FMGs.

**Materials and Methods:** A descriptive cross-sectional study was conducted in 2024 among FMGs preparing for the MDCN licensing examination. Data on sociodemographic characteristics and undergraduate medical education were analysed using descriptive statistics.

**Results:** One hundred and twenty-five respondents were recruited. The mean age was  $27.6 \pm 3.5$  years, with majority of the respondents being females (60.8%). Respondents trained mainly in China (36; 28.8%), Sudan (26; 20.8%), and Ukraine (23; 18.4%) with a significant association between the regional origin of the graduates and the choice of country of medical training ( $P = <.001$ ). Most of them spent six years in medical school (76; 60.8%). Although 119 respondents (94.4%) reported clinical rotations, only 60 (48.0%) had exposure to tropical medicine and 43 (34.4%) had research exposure during their

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undergraduate training with a significant association between research exposure and their country of training ( $P < .001$ ).

**Conclusion:** FMGs preparing for the MDCN licensing examination have heterogeneous educational backgrounds with important gaps in tropical medicine and research exposure. Structured bridging and preparatory programmes may enhance

readiness for medical practice in Nigeria.

**Keywords:** Foreign medical graduates; Medical licensure; Medical education; MDCN; Nigeria.

## Introduction

In every country worldwide, there are practicing medical doctors who were trained in other countries and Nigeria is not exempt.<sup>1</sup> Upon return to Nigeria, the foreign medical graduates are required to sit and pass the MDCN licensing examination before license to practice in Nigeria, and sometimes the primary licensing body for these graduates to practice in different parts of the world. The examinations hold twice a year at different centres across Nigeria.<sup>2</sup> Any candidate for the examination must have completed medical/ dental school and yet to do an internship in Nigeria. The registration examination consists of two components: Multiple-Choice Questions, and an Oral Examination in the form of objective structured clinical examination (OSCE). The Multiple-Choice paper and OSCE covers questions in Internal Medicine, General Surgery, Paediatrics and Child Health, Obstetrics and Gynaecology and Public Health.<sup>3</sup> The Court of Examiners defines the standard required to pass the examinations, but usually a candidate must obtain a minimum of 50% in both sections.<sup>3</sup> Whereas their knowledge and clinical experience are being examined in comparison to that expected of same medical undergraduate who experience training in Nigeria, variations in curriculum from the different medical training centres in respect to the country of training, disease epidemiology, and clinical exposure may influence preparedness and performance of graduates in these examinations.<sup>3,4</sup> The aim of this study is to determine the sociodemographic and educational characteristics of FMGs preparing for the MDCN licensing examination and the apparent regional preferences in the choice of country of training.

## Materials and Methods

**Study Design:** This was a descriptive cross-sectional questionnaire-based study conducted in August 2024.

**Study Population:** The study was conducted among foreign-trained medical graduates preparing

for the MDCN licensing examination which held in September, 2024.

**Study Location:** Participants were recruited from candidates attending preparatory activities on virtual platforms across Nigeria prior to the September, 2024 MDCN licensing examination. The examination is usually conducted by the MDCN at designated centres for graduates of foreign medical schools seeking licensure to practice medicine in Nigeria. Consent was taken from the study participants and the study was conducted in accordance with the ethical principles outlined in the World Medical Association Declaration of Helsinki.<sup>5</sup>

**Study Instrument:** A self-administered questionnaire through Google Forms<sup>®</sup> were administered to the participants. The questionnaire assessed demographics, country and duration of medical training, clinical exposure, tropical medicine exposure, and research experience.

## Sample Size determination

Sample size determination for a cross-sectional descriptive study was done.

$$n = ((z_{\alpha})^2 \times p \times q) / d^2$$

n = desired sample size

Z $\alpha$  = the standard normal deviate (Z-score) corresponding to the chosen confidence level.

At 95%, Z $\alpha$  = 0.05 and this equals 1.96

p = the proportion of students who failed the licensing exams in Ghana = 58.5% (0.585)

q = variability of proportion of the outcome variable = 100 – 58.5 = 41.5% (0.415)

d = margin of error desired was set at 0.05.

$$n = ((1.96)^2 \times 0.585 \times 0.415) / [0.05]^2$$

$$n = (3.8146 \times 0.585 \times 0.415) / 0.0025$$

$$n = 373.05 = 373$$

Adding 10% for non-respondents = 373/0.9 = 415 students. A design effect of 1.5 was applied to bring the sample size to 623 students.

Since the total number of students is less than 10,000 the correction formula was applied

$$NF = n / ((1+n)/N)$$

Where NF is corrected sample size, n is the estimated sample size, and N is the size of population from which sample is to be selected. Therefore,  $NF = 623 / ((1+623)/155) = 124.1$  is approximately 125 students.

### Sampling technique

Convenience (non-probability) sampling technique was employed. The descriptive statistics of socio-demographics variables, country, duration and pattern of medical training were expressed as means and standard deviations for quantitative data and as frequencies, and percentages for categorical data. Results were presented in tables and charts. Tests for associations using the Chi-square test (Likelihood ratio and Fisher's exact test where applicable) was carried out for some of the categorical variables. The data were analysed using the statistical software IBM SPSS (version 25). The significance level was set at  $P < 0.05$ .

### Results

A total of 125 FMGs participated in the study with complete responses. The respondents had a mean age of  $27.6 \pm 3.5$  years with a female preponderance 76 (60.8%) compared to the males 49 (39.2%) and a male: female ratio of 1:1.55. [Table 1]. Although the respondents hailed from all six geopolitical zones of Nigeria, most of them were from the northern part of Nigeria 77 (61.6%). The North-West zone had the highest representation 41 (32.8%), followed by the South-West Zone 21; (16.8%). The South-East had the least representation, 11 (8.8%) followed by the South-South zone 16 (12.8%). [Figure 1] There was no significant association between the gender of the respondents and the geopolitical regions they hailed from ( $\chi^2 = 4.558$ ;  $P = .478$ ). [Table II]. Most of the graduates trained in China 36 (28.8%), followed by Sudan 26 (20.8%), and Ukraine 23 (18.4%). [Table III]

There were regional variations in the countries preferred for medical training among Nigerian foreign medical graduates. Graduates who trained in China originated from regions across all six geopolitical zones of the country, with the highest numbers from the North-West 15 (12.0) and North-East zones 6 (4.8). Respondents who trained in

Table 1: Sociodemographic characteristics of respondents (N = 125)

| Variable    | Category                     | Frequency (n)  | Percentage (%) |
|-------------|------------------------------|----------------|----------------|
| Age (years) | Mean $\pm$ SD                | $27.6 \pm 3.5$ | —              |
| Gender      | Female                       | 76             | 60.8           |
|             | Male                         | 49             | 39.2           |
| Religion    | Christianity                 | 53             | 42.4           |
|             | Islam                        | 71             | 56.8           |
|             | African Traditional Religion | 1              | 0.8            |

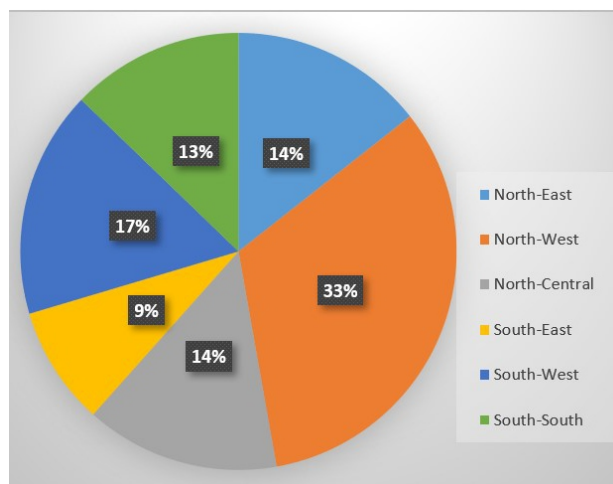


Figure 1: Geopolitical zone distribution of respondents (N = 125)

Table II: Relationship between the Regional origin and the gender of the respondents (N=125)

| Geopolitical Region | Gender       |            | $\chi^2$ (Fisher's exact test) | P-value |
|---------------------|--------------|------------|--------------------------------|---------|
|                     | Female n (%) | Male n (%) |                                |         |
| North-East          | 9 (7.2)      | 9 (7.2)    | 4.558                          | .478    |
| North-West          | 27 (21.6)    | 14 (11.2)  |                                |         |
| North-Central       | 12 (9.6)     | 6 (4.8)    |                                |         |
| South-East          | 4 (3.2)      | 7 (5.6)    |                                |         |
| South-West          | 14 (11.2)    | 7 (5.6)    |                                |         |
| South-South         | 10 (8.0)     | 6 (4.8)    |                                |         |

Table III: Medical education background of respondents \*Others include Egypt, Gambia, Ghana, Iran, and Dominica

| Variable                     | Category       | Frequency (n) | Percentage (%) |
|------------------------------|----------------|---------------|----------------|
| Country of medical training  | China          | 36            | 28.8           |
|                              | Sudan          | 26            | 20.8           |
|                              | Ukraine        | 23            | 18.4           |
|                              | Russia         | 8             | 6.4            |
|                              | Philippines    | 8             | 6.4            |
|                              | Uganda         | 11            | 8.8            |
|                              | Belarus        | 4             | 3.2            |
|                              | Georgia        | 4             | 3.2            |
|                              | Others*        | 5             | 4.0            |
|                              |                |               |                |
| Duration of medical training | 4–5 years      | 27            | 21.6           |
|                              | 6 years        | 76            | 60.8           |
|                              | $\geq 7$ years | 22            | 17.6           |

Table IV: Country of medical training by geopolitical zone of origin (N = 125)

| Country of medical training | North-East n(%) | North-West n(%) | North-Central n(%) | South-East n(%) | South-West n(%) | South-South n(%) | $\chi^2$ (Likelihood-ratio Chi-square) | P-value |
|-----------------------------|-----------------|-----------------|--------------------|-----------------|-----------------|------------------|----------------------------------------|---------|
| Belarus                     | 0 (0)           | 0 (0)           | 0 (0)              | 2 (1.6)         | 1 (0.8)         | 1 (0.8)          | 132.772                                | < .001  |
| China                       | 6(4.8)          | 15(12.0)        | 5 (4.0)            | 3 (2.4)         | 4 (3.2)         | 3 (2.4)          |                                        |         |
| Dominica                    | 0 (0)           | 0 (0)           | 0 (0)              | 0 (0)           | 0 (0)           | 1 (0.8)          |                                        |         |
| Egypt                       | 0 (0)           | 1 (0.8)         | 0 (0)              | 0 (0)           | 0 (0)           | 0 (0)            |                                        |         |
| Gambia                      | 0 (0)           | 0 (0)           | 0 (0)              | 0 (0)           | 0 (0)           | 1 (0.8)          |                                        |         |
| Georgia                     | 1(0.8)          | 0 (0)           | 3(2.4)             | 0 (0)           | 0 (0)           | 0 (0)            |                                        |         |
| Ghana                       | 0 (0)           | 0 (0)           | 0 (0)              | 0 (0)           | 1 (0.8)         | 0 (0)            |                                        |         |
| Iran                        | 0 (0)           | 1 (0.8)         | 0 (0)              | 0 (0)           | 0 (0)           | 0 (0)            |                                        |         |
| Philippines                 | 0 (0)           | 0 (0)           | 2 (1.6)            | 1 (0.8)         | 2 (1.6)         | 3 (2.4)          |                                        |         |
| Russia                      | 0 (0)           | 0 (0)           | 1 (0.8)            | 0 (0)           | 3 (2.4)         | 4 (3.2)          |                                        |         |
| Sudan                       | 7(5.6)          | 17(13.6)        | 2 (1.6)            | 0 (0)           | 0 (0)           | 0 (0)            |                                        |         |
| Uganda                      | 3(2.4)          | 7 (5.6)         | 0 (0)              | 0 (0)           | 1 (0.8)         | 0 (0)            |                                        |         |
| Ukraine                     | 1(0.8)          | 0 (0)           | 5 (4.0)            | 5 (4.0)         | 9 (7.2)         | 3 (2.4)          |                                        |         |

Table V: Clinical, tropical medicine, and research exposure during medical training

| Exposure domain            | Response                                | Frequency (n) | Percentage (%) |
|----------------------------|-----------------------------------------|---------------|----------------|
| Clinical rotations         | Yes                                     | 119           | 94.4           |
|                            | No                                      | 7             | 5.6            |
| Type of clinical exposure  | Both clinical rotations and simulations | 97            | 77.6           |
|                            | Clinical rotations only                 | 22            | 17.6           |
|                            | Simulations only                        | 6             | 4.8            |
| Tropical medicine exposure | Yes                                     | 60            | 48.0           |
|                            | No                                      | 65            | 52.0           |
| Research exposure          | Yes                                     | 43            | 34.4           |
|                            | No                                      | 82            | 65.6           |

Table VI: The relationship between the country of training and exposure to research (N=125)

| Country of training | Exposure to research during medical training |           | $\chi^2$ (Fisher's exact test) | P-value |
|---------------------|----------------------------------------------|-----------|--------------------------------|---------|
|                     | NO n (%)                                     | YES n (%) |                                |         |
| Belarus             | 4 (3.2)                                      | 0 (0.0)   | 30.763                         | < .001  |
| China               | 31 (24.8)                                    | 5 (4.0)   |                                |         |
| Dominican Republic  | 1 (0.8)                                      | 0 (0.0)   |                                |         |
| Egypt               | 0 (0.0)                                      | 1 (0.8)   |                                |         |
| Gambia              | 0 (0.0)                                      | 1 (0.8)   |                                |         |
| Georgia             | 4 (3.2)                                      | 0 (0.0)   |                                |         |
| Ghana               | 0 (0.0)                                      | 1 (0.8)   |                                |         |
| Iran                | 1 (0.8)                                      | 0 (0.0)   |                                |         |
| Philippines         | 1 (0.8)                                      | 7 (5.6)   |                                |         |
| Russia              | 6 (4.8)                                      | 2 (1.6)   |                                |         |
| Sudan               | 16 (12.8)                                    | 10 (8.0)  |                                |         |
| Uganda              | 4 (3.2)                                      | 7 (5.6)   |                                |         |
| Ukraine             | 14 (11.2)                                    | 9 (7.2)   |                                |         |

Sudan were predominantly from northern Nigeria, particularly the North-West 17 (13.6) and North-East zones 7 (5.6) with minimal representation from southern zones. Graduates who trained in Ukraine were majorly from the southern geopolitical zones, especially the South-West 9 (7.2) and South-East zones 5 (4.0). There was a significant association between the regional origin of the graduates and the

choice of country of medical training ( $\chi^2 = 132.772$ ;  $df = 60$ ;  $P = < .001$ ). [Table IV]

Most of the respondents spent six years in medical school 76 (60.8%). [Table II] Most of the respondents had clinical rotations during the course of their training 119 (94.4%); only 6 (4.8%) had simulation alone. Sixty (48.0%) of the respondents had exposure to tropical medicine, and 43 (34.4%) of the FMGs were exposed to research during their undergraduate medical training. [Table V] Although this was low exposure, there was a significant association between their research exposure and the country in which they trained ( $\chi^2 = 30.763$ ;  $P < .001$ ) with graduates who trained in Sudan reporting the highest number of graduates with exposure to medical research [10 (8.0%)] followed by those who trained in Ukraine [9 (7.2%)]. However, in terms of proportion, the highest proportion of exposure was reported by 7 of 8 graduates from the Philippines (87.5%) and 7 of 11 from Uganda (63.6%), compared with 9 of 23 from Ukraine (39.1%), 10 of 26 from Sudan (38.5%) and 5 of 36 from China (13.9%). [Table VI]

## Discussion

This study highlights the diverse educational backgrounds of FMGs preparing for the MDCN licensing examination. The female preponderance is in contrast to male to female ratios of 1.2:1 and 1.7:1 reported in Ghana and Romania respectively.<sup>1,6</sup> Most of the respondents were from the Northern part of the country which may be due to the relative fewer medical schools in the Northern part of Nigeria than the Southern part. This finding plausibly corroborates reports of the Northern part of Nigeria having a lower number of accredited medical schools as well as a lower number of registered doctors in the MDCN database when compared with the southern part of the country.<sup>7,8</sup> It has also been reported that State governments in Northern Nigeria sponsor the foreign medical training of FMGs from the region, as a way of addressing the apparent paucity of medical doctors in the region.<sup>9,10,11</sup> An important finding in this study was the

significant association between the respondents' geopolitical zone of origin and their country of medical training. Graduates from zones in northern part of Nigeria were more likely to have received their medical education in country like Sudan, China and Uganda, whereas those from the southern part of Nigeria trained in Ukraine, Russia and some Asian countries. These regional differences may reflect variations in state-sponsored foreign schemes, socioeconomic factors, cultural and religious preference, geographical proximity and historical partnerships between Nigerian states and host countries.<sup>12,13</sup> An understanding of these patterns may assist policy makers in designing region-specific orientation and bridging programmes for foreign-trained medical graduates returning to practice in Nigeria.

With the current doctor to patient ratio at 1:10,000, Nigeria is yet to achieve this World Health Organization, WHO recommended ratio of 1:600.<sup>14</sup> Considering the rate at which doctors are being trained locally, significant improvements in this ratio continue to be more of a dream than a reality because of emigration. The consequence of this brain drain is the reduction of practicing doctors from 66,241 in 2024 to 55,000 in 2025.<sup>15</sup> The influx of FMGs is a useful addition to the numbers though the standardisation of the quality of training needs to be enforced by the MDCN. It is imperative that the MDCN examination is supervised and conducted with the highest standards that will be able to sift the clinical and competency skills of this large number of foreign trained doctors.

In addition, becoming a medical doctor is a venture which is attractive to young senior high school science graduates leading to intense competition for the few slots available in this populous country. Many graduates with excellent results either do not acquire slots for medicine and surgery in the universities in Nigeria or cannot afford the 'fee-paying' rates offered by the private institutions. They thus opt for medical training in countries outside Nigeria with subsequent increase in the numbers of FMGs returning to sit for the council examination annually.

Most respondents reported to have had clinical rotations, however, they had limited exposure to tropical medicine during training which was notable given Nigeria's disease burden and some were not

licensed to practice in the countries of their training. Low research exposure may further affect their practice of evidence-based medicine and postgraduate academic development. A similar collaborative study in Nigeria reported that 31 out of 80 medical and dental interns have never been in a research collaborative group.<sup>16</sup> These findings support the need for structured preparatory programmes tailored to local clinical realities of which the MDCN,<sup>17</sup> and some non-governmental academies have been involved in organizing remediation programmes. These programmes should give these graduates adequate ample exposure to the practice of medicine in the tropics in order to prepare them for practice in our tropical environment.

Despite the low research exposure generally reported, it is important to note the significant association between the country of training and the graduates' exposure to research. Graduates who trained in Sudan, Ukraine, Uganda and the Philippines reported higher numbers of respondents with research exposure. Respondents who trained in the Philippines and Uganda showed a higher proportion with research exposure. This suggests heterogeneity in the undergraduate curricula of the various countries. These differences may also affect future engagement in evidence-based practice as well as post-graduate academic development. It is worthwhile to note that during the study, the respondents' research exposure was assessed as a single yes/no item, hence we could not define the nature or timing of the research (example, a final-year project versus a research methods course).

This study provides one of the first descriptions of the demographics and educational characteristics of foreign-trained medical graduates preparing for the MDCN licensing examination. It also identifies the regional differences in the choice of countries for medical education as well as the deficiencies in tropical medicine and undergraduate research exposures.

### **Public Health Implications**

Foreign-trained medical graduates returning to Nigeria represent an important population of doctors who can help strengthen the country's health workforce amidst persistent shortages due to brain drain. However, the deficiencies in exposure

to tropical medicine and research seen in this study may affect their readiness for clinical practice. Structured programmes focusing on endemic tropical diseases, the Nigerian health system and research may improve integration into clinical practice in the Nigerian setting and enhance the quality of healthcare delivery

### Limitations

The study relied on self-reported data and reflects the experiences of candidates preparing for the MDCN examinations held in September, 2024, hence, findings may not be generalizable.

Research exposure was measured using a Yes/No question on whether the graduates were exposed to any research during their undergraduate medical training. The type of the research was not captured.

### Areas for Future Research

Future studies should evaluate the relationship between the educational background and the performance in the MDCN licensing examination. Prospective studies assessing the usefulness of bridging programmes and structured remedial courses on performance at both the MDCN examination and subsequent clinical performance would help to provide valuable information for policy development.

### Conclusions

Foreign medical graduates preparing for the MDCN licensing examination have different training backgrounds with identifiable educational gaps. Targeted bridging interventions may improve preparedness and integration into the Nigerian health system.

### Conflict of interest

The authors declare that they have no conflict of interest

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