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Choice of Future Location of Surgical Practice: A Survey of Surgical Trainees in Nigeria and Implications for Timely Access to Surgical Care

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Abstract

Background There is inequity and maldistribution of the surgical workforce in Nigeria. Most specialists practice in second- and third-level hospitals often located in urban or semi-urban areas. A knowledge of the proposed choice of practice location of surgical trainees and the factors that influence the choice could provide insight into future surgical coverage and help in planning and policy-making.

Methods This is a cross-sectional survey of surgical trainees attending the mandatory integrated revision and update course of the West African College of Surgeons. Anonymous structured questionnaires were self-administered to 200 trainees, of which 143 completed the questionnaires.

Results The response rate was 71.5%. One hundred and six (74.1%) trainees preferred to work in a tertiary hospital on completion of training, 13 (9.1%) were in a Private Hospital, and 16 (11.2%) were undecided. Nearly all tertiary hospitals are in urban or semi-urban towns. The commonest factors influencing choice of practice location were proximity to family 19 (13.3%), proximity to hometown 11 (7.6%), availability of working facilities 10 (6.9%), income 7 (4.9%) and underserved areas 7 (4.9%). Of 122 (85.3%) trainees who agreed to work for some period each year (ranging from 1 week to 6 months) in a rural setting, 42 (29.3%) would do it without additional financial incentive.

Conclusion The choice of most surgical trainees not to work in a rural setting as specialists would exacerbate the ongoing surgical workforce maldistribution and inequity in Nigeria. However, the willingness of 85.3% to provide periodic rural surgical coverage could be leveraged in planning of initiatives to address the maldistribution.

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Introduction

The Lancet Commission on Global Surgery in 2013 brought together experts in clinical surgery and anaesthesia, researchers, economists and policy-makers to address the state of surgery worldwide and to make concrete recommendations for its improvement [1]. The initial report of the Lancet Commission on Global Surgery, *Global Surgery 2030*, revealed that surgical and anaesthesia care in many low- and middle-income countries had been largely neglected and that about 5 billion people lack access to safe, affordable surgical and anaesthesia care when needed [1]. The report also highlighted that 143 million additional procedures are needed worldwide to meet the gap between

available and necessary procedures. In western sub-Saharan Africa, the minimum estimated annual unmet surgical need is 18,909,507 surgical cases [2]. The commission recommended a target of 5000 procedures annually per 100,000 population as a measure of met needs for surgical and anaesthesia care. To achieve this, it was recommended that surgical workforce doubled within 15 years with a focus on safety, quality and equity.

Although the exact surgeon to population density in Nigeria is not known, as in many regions of the world, there is inequity and maldistribution of the surgical workforce skewed towards urban and wealthier areas creating an ongoing surgical workforce emergency worsened by an ongoing brain drain among healthcare professionals [3, 4]. Most specialists practice in second- and third-level hospitals often located in urban or semi-urban areas, leaving large swathes of the mostly rural parts of the country without trained surgeons. This clearly deters and prohibits timely access to safe and affordable surgical care. The long-term implication of this trend is that even if there is an increase in surgical workforce, the geographical maldistribution will result in persistence of problems with accessing surgical care.

A knowledge of the proposed choice of practice location of surgical trainees and the factors that influence their choices may provide insight into future surgical coverage and help in planning and policy-making. This is particularly important, timely and relevant as many countries including Nigeria are in the process of developing National Surgical Obstetric and Anaesthesia Plans.

Materials and methods

In 2015, a qualitative cross-sectional survey of surgical trainees attending the mandatory integrated revision and update course of the West African College of Surgeons was carried out. Anonymous structured questionnaires were self-administered to 200 trainees, of which 143 completed and returned the questionnaires. Participation was voluntary.

The information requested included sex, specialty and level of training, current training institution and employment status, intended location of practice, reason for choice of location, previous exposure to rural practice, willingness to take up a permanent rural employment and willingness to undertake a temporary rural employment with or without an incentive. Institutions of practice were classed as Teaching Hospitals (university hospitals training medical students), Federal Medical Centres (second-level multispecialty hospitals owned by the federal government) and State Specialist Hospitals (second-level multispecialty hospitals owned by the state government). There were 2 designated levels of training: registrars and senior registrars. The registrars were resident doctors who were yet to pass the part 1 fellowship examination of the West African College of Surgeons or the National Postgraduate Medical College, while the senior registrars were those who had already passed the part 1 fellowship examination and were committed to specific surgical specialties. Locations of practice were categorized into urban, semi-urban or rural based on population density and infrastructure with emphasis on availability of basic facilities and systems such as water supply, electricity, telecommunications, airports, economic institutions and social infrastructure such as schools, hospitals, recreation facilities and public safety.

Data were analysed using the Statistical Package for Social Sciences version 23 software (SPSS, Chicago, IL). Unless otherwise stated, p value of <0.05 was considered significant.

Results

There were a total of 143 respondents, 135 (94.4%) males and 8 (5.6%) females, aged 28–44 years (mean 33 years). One hundred and seven (74.8%) residents were training in Teaching Hospitals, 30 (21.0%) in Federal Medical Centres and 4 (2.8%) in State Specialist Hospitals. One hundred and twenty (83.9%) were registrars and 23 (16.1%) were senior registrars. The most desired specialty was general surgery (51, 35.7%) followed by orthopaedics (28, 19.6%) and urology (22, 15.4%). The least desired specialty was cardiothoracic surgery (1, 0.7%) (Table 1). Twenty-one respondents (14.7%) had permanent jobs at their institutions of training, 9 (6.3%) of whom were fully employed in a Teaching Hospital and 7 (4.9%) in a Federal Medical Centre. However, only 11 (7.7%) intended to remain at these facilities on completion of training and 6 of these were employed at Federal Medical Centres. A total of 94 (65.7%) residents intended to practice in Teaching Hospitals on completion of training, 13 (9.1%) in Private Hospitals, 12 (8.4%) in Federal Medical Centres and 2 (1.4%) in General Hospitals (Table 1). Those undecided about type of hospital practice were 22 (14.7) of which 17 were registrars. One hundred and twenty-four (86.7%) thought surgical conditions are a problem in rural settings, but only 39 (27.3%) had an idea about the epidemiology of surgical diseases in rural settings. Although 66(46.2%) residents had given thought to working in a rural setting, and 125 (87.4%) were convinced that their skills are needed and would be helpful in a rural community, 90 (62.9%) intended practicing in major urban cities, 4 (2.8%) in semi-urban towns and 2 (1.4%) outside the country. Forty-seven (32.9%) were undecided (Fig. 1). No respondent selected a rural practice as their preference. The commonest reasons

Table 1 Sociodemographic characteristics of respondents

	n = 143
	n {%}
Age range	
<20 years	0
20–30 years	19 {13.3%}
31–40 years	121 {84.6%}
>40 years	3 {2.1%}
Sex	
Male	135 {94.4%}
Female	8 {6.6%}
Level of training	
Registrars	120 {83.9%}
Senior registrars	23 {16.1%}
House officers	0 {0}
Place of current training	
Federal Medical Centre	30 {21.0%}
State Specialist Hospital	4 {2.8%}
Teaching Hospital	107 {74.8%}
None	2 {1.4%}
Permanent work positions	
Yes	122 {58.3%}
No	21 {14.7%}
Proposed specialty	
Surgery	
Cardiothoracic surgery	1 {0.7%]
General surgery	51 {35.7%}
Neurosurgery	14 {9.8%}
Paediatric surgery	8 [5.6%}
Plastic surgery	8 [5.6%}
Urology	22 {15.4%}
Paediatrics	2 {1.4%}
Orthopaedics and trauma	28 {19.6%}
Undecided	9 {6.3%}
Proposed Hospital for practice after residency	
Teaching Hospital	94 {65.7%}
Federal Medical Centre	12 {8.4%}
General Hospital	2 {1.4%}
Private Hospital	13 {9.1%}
Others	22 {15.4}
Proposed location for future practice	
Urban area	90 {62.9%}
Rural area	0 {0}
Suburban	4 {2.8%}
Outside Nigeria	2 {1.4%}
Undecided	47 {32. 9%}

for proposed location were proximity to home, family, friends and hometown (37, 25.9%), availability of job

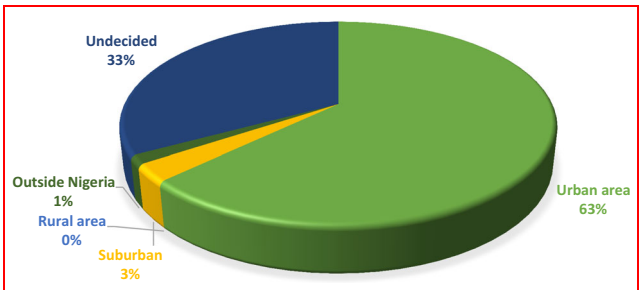

Fig. 1 Proposed location of future practice

Table 2 Reason for choice of location of future practice

Reason for choice of location of future practice	*n* = 143
Availability of job opportunities	16 {11.2%}
Payment plan and financing	7 {4.9%}
Proximity to home, family, friends or hometown	37 {25.9%}
Personal preference	11 {0.7%}
Exposure to international collaboration	1 {0.7%}
Underserved areas	7 {4.9%]
Conduciveness of working environment	7 {4.9%}
Undecided	57 {39.9%}

opportunities (16, 11.2%) and personal preference (11, 7.7%). Seven (4.9%) respondents each chose their intended location because of financial incentives, conducive working environment and because the region was underserved. One respondent cited exposure to international collaboration while 57 respondents cited no specific reason (Table 2).

On further interrogation, 46 (32.2%) respondents were willing to consider full-time rural practice while 97 (67.8%) would not commit to a full-time rural practice. Of the 97 respondents who were not willing to commit to rural practice, incentives that could influence their decision include, better income (76.3%), world class practice setting (89.6%), opportunities for international collaboration (91.8%), educational opportunities for children (92.7%) and safety and security (89.6%). 5.2% of the respondents said no incentive can change their decision. Forty-four (59.4%) of the 97 respondents could be influenced to commit to rural surgical with a 25–50% increment in income, 55 (74.3%) could be influenced by a 51–75% increment while 64 (86.5%) of them could be influenced by a 76–100% increment (Fig. 2).

When respondents were asked whether they would be willing to commit to rural surgical practice for some specific duration annually, 122 (85.3%) were willing to practice for some period each year in a rural community. Of those who gave specific durations for the rural surgical

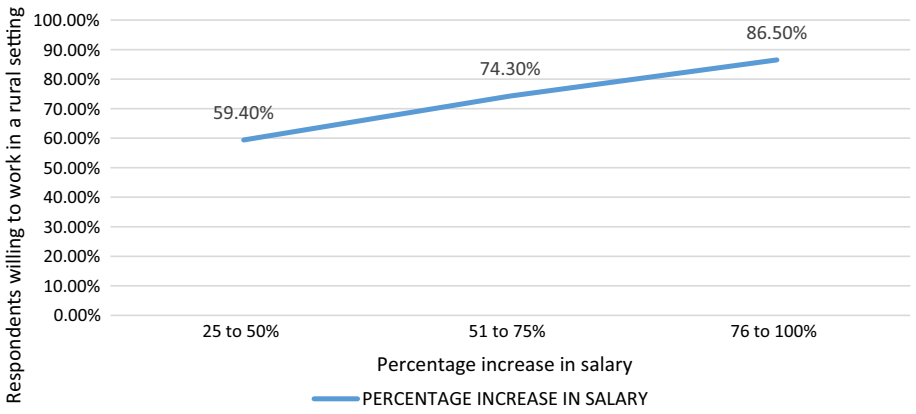

Fig. 2 Percentage increase in salary and willingness to work in a rural setting

Table 3 Factors associated with choice of future practice in a rural setting

Variable	$n = 46$		
	Yes, n {%}	X^2	p
Orientation by trainers about working in the rural setting	5 {45.5%}	1.44	0.837
Previous rural posting	34	3.24	0.779
Length of rural immersion		28.76	0.885
Level of rural immersion and impact			
Medical student	25 [35.7%]		
House officer	1 [20.0%]	11.52	0.715
Medical officer	0 [0]		
Registrar	4 [33.3%]		
Senior registrar	0 [0]		
Unspecified	16		

practice, 77 (53.9%) residents were willing to spend between 1 and 3 months each year, 11 (7.7%) were willing to spend 4 to 6 months each year, and 10 (7.0%) were willing to spend less than 4 weeks each year practicing in a rural community. While 42 (29.4%) will offer these rural surgical services without additional income, 78 (54.4%) will not do it without additional financial incentive aside from regular income. Although 112 (78.3%) residents would consider setting up a private practice, only 30 (21.0%) will consider doing this in a rural community.

Ninety-three (65%) respondents had done a posting in a rural setting lasting 1 week to 1 year, 70 (49.0%) of them as medical students. There was no statistically significant correlation between orientation by trainers about rural practice, a previous rural immersion, length of the exposure and level of medical training during the immersion and willingness to practice in a rural setting [(p values: 0.837, 0.779, 0.885 and 0.715, respectively) (Table 3)].

Discussion

Health workforce forms one of the six core components of health systems as described by the World Health Organization (WHO) framework [5]. Although health worker density is the most commonly reported workforce indicator internationally, it does not take into account issues related to accessibility, equity, quality and efficiency. Maldistribution in the supply, deployment and composition of human resource for health leads to inequities in the effective provision of health services. Based on the analytical framework for health workforce imbalance, one of the typologies for monitoring the distribution of health workers is geographical representation [5]. The current lack of access to safe and affordable surgical care by significant proportion of individuals living in certain geographical regions calls for lasting solutions to stem the worsening tide which has been compounded by a steady and consistent brain drain from low- and middle-income countries to

high-income countries. The future trend revealed by the proposed location of practice of residents in this present report indicates that urgent interventions have to be implemented if the vision of universal access to safe, surgical and anaesthesia care when needed will be realized.

Poor motivation and retention schemes, individual factors, organizational environment, high workload, poor living and working conditions, low salaries, lack of professional growth and recognition, and lack of incentives are factors known to mitigate against rural medical practice [4, 6, 7].

The relevance of availability of job opportunities in choosing a location of practice is clear because most of the hospitals in rural regions are poorly equipped. Furthermore, while rural hospitals may not have the capacity to employ a full-time surgeon, a newly trained surgeon would also find such a facility unfulfilling due to lack of infrastructure to match skills as well as lack of specific track for career and professional development and progression.

The WHO recommendations for improved retention of healthcare practitioners in remote and rural areas has 4 categories of intervention including education, regulatory (such as compulsory service and subsidized education for return of service), financial incentives for rural workers in remote and rural areas and professional and personal support for rural health workers in remote and rural areas [8]. Financial incentives have been identified as an important strategy to recruit and retain health workers in remote and rural areas [9]. A systematic review suggested that participants under financial incentive programmes are less likely to remain at the site of original placement, though more likely than non-participants to work in underserved areas in the long run [10]. Zambia has used a package of measures including rural hardship allowance as a retention measure for full-time rural practice [11]. This has only been marginally successful [11]. The impact of financial incentive on choice of practice location was not profound in our survey. This may be because in Nigeria, there is no significant financial incentive from the government for practicing in rural locations.

One report from Nepal [12] found that rural location of secondary education and rural location of rearing were predictors of choice of rural location of practice. This finding strengthens the WHO retention recommendation on education which encourages formulation of admission policies to enrol students with a rural background in education programmes for health disciplines. The current undergraduate medical curriculum in Nigeria includes a period of compulsory rural exposure for clinical students while the West African College of Surgeons have also mandated a period of compulsory rural posting for candidates preparing for their part 1 examinations. However, such rural posting is often seen by the trainees as an opportunity to improve their general surgery skills and may not encourage full-time rural practice. This survey revealed that a previous exposure to rural practice and an awareness of the burden of surgical diseases in rural areas did not positively impact a rural choice of practice location.

Although 32.2% may consider rural practice, respondents not willing to consider rural practice changed their stance with the introduction of financial incentives. Increasing the value of the additional income resulted in an increase in the acceptability of rural practice. Other incentives found to be essential for increasing interest in rural surgical practice such as world class practice setting, opportunities for international collaboration which will enhance professional growth and development, educational opportunities for children and safety and security were similar to findings in other reports [13]. The introduction of periodic rural surgical coverage resulted in a marked increase in willing respondents to 85.3% with more than half of the respondents willing get involved only if financial incentive is available.

Compulsory service programmes are useful for staffing and strengthening workforce and have been used to improve healthcare coverage in underserved regions [13–15]. They have been described as an instrument of social justice and an exercise in health equity, in that they enable governments to direct or augment health services to geographical areas that are not well served and in communities that are not favoured by market forces and health worker preferences [13]. Objections to these programmes exist and reasons include cost, poor rural facilities, lack of basic infrastructure and amenities and inability to use learned skills [13]. Some have stated that the practice is unfair and encroaches on rights to be employed anywhere thus reducing motivation and productivity with poor provision of quality health care [9]. Challenges in designing and managing an effective programme and high turnover are other problems. Limiting the duration of compulsory service to a periodic short-term programme with addition of financial incentive may allow some of these challenges to be addressed and will improve retention due to the high number of surgeons willing to commit to such a scheme.

To reduce urban–rural maldistribution of the surgical workforce, an annual periodic rural surgical coverage with financial incentive is an option that can be explored by policy-makers. This can be incorporated into the employment contract of new surgeons. With the ongoing process of developing a national surgical plan, this option can be better explored with baseline data as well as facts and figures on available workforce and rural–urban infrastructure.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed consent Informed consent was obtained from all individual participants, and participation was voluntary.

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