

## NEUROSURGERY IN NIGERIA - AN EVALUATION OF THE PERCEPTION OF HEALTH PERSONNEL IN A NEW CENTRE AND A COMPARISON OF THE NIGERIAN SITUATION WITH THAT OF OTHER AFRICAN STATES.

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### ABSTRACT

**Background:** Neurosurgery has become endangered species in Nigeria. We have only 15 practising neurosurgeons for our population of 150million, giving a ratio of one neurosurgeon to 10million Nigerians. Of the 26 accredited medical schools, only 6 offer neurosurgery. This study is a preliminary evaluation of the perceptions about neurosurgery before the commencement of neurosurgical services in a tertiary health institution, and a comparison with the situation in other African countries.

**Methodology:** A questionnaire designed after the 5-point Likert rating scale was distributed to doctors, nurses, final-year medical/nursing students, paramedics and administrative staff of the 350-bed health institution. The completed questionnaires that were returned, were collated and data analysis done.

**Results:** Out of 200 questionnaires distributed, 164 were completed and returned. Most of the respondents were females 59.1%, and most were in the 20-30 year age group, 57.3%; more than 96% stated that they have heard of neurosurgery previously, but rated the available services in Nigeria as inadequate 50.6%, and quality of services as fair 39.6% or poor 36.6%, respectively. In their opinion, political and administrative lapses rather than funding are responsible for the poor state of affairs, culminating in unavailability of adequate manpower and facilities. Health policy changes and provision of facilities with manpower training were suggested by 78% of respondents as the solution to the problem. Most, however agree that neurosurgery has good prospects 78%, in the institution.

**Conclusion:** Neurosurgical service in Nigeria is grossly inadequate both in availability and quality, and these have resulted from bad government policies. It is therefore of utmost necessity that services and training be urgently provided in this specialty, at least in the tertiary institutions in Nigeria.

**Key Words:** Africa; Neurosurgeons; Population; Ratio; World.

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### INTRODUCTION

Modern neurosurgery began in Africa in 1939, pioneered by Rowland Krynauw of South Africa<sup>1</sup>. In Nigeria, Latunde Odeku, Africa's first black neurosurgeon, introduced neurosurgery in the University College Hospital Ibadan in 1962<sup>1</sup>. Since then, only a few other centres have been set up in Lagos, Enugu, Sokoto, Ife, Port Harcourt, Ilorin, Jos and Abuja. At least, three of these have closed shop now as specialists vacated the country under stifling political and economic conditions, emigrating abroad in search of actualization and job satisfaction. Conversely, a second centre has been established in Lagos, and a new one each in Zaria and Benin. In 2006, 44 years after 1962, a new centre was

established in a tertiary health institution, in the South East zone of Nigeria.

The country's population of 150million is split into 36 states, grouped unevenly into 6 zones. The new centre has a catchment area spread over 3 of the zones South East, South South and North Central with about a third of the country's population. The only other centre in this zone is an accredited private neurosurgical hospital, making our new centre the only government tertiary health institution with these services serving about a third of the nation's population. There are about 21 neurosurgeons living in Nigeria presently, but only 15 of them practice actively, for the nation's 150million population, an appalling ratio of 1 neurosurgeon to 10million persons (10,000,000).

In the past 18 years, only 6 of Nigeria's 26 accredited medical schools have graduated doctors with basic neurosurgical exposure, and only 3 of these are accredited to train specialists in this rare field<sup>2</sup>. It is no

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surprise then that most medical graduates in these past years had no practical neurosurgical exposure.

Prior to the commencement of services in our new centre in the first quarter of 2006, we decided to evaluate the perceptions and opinions of the health personnel in the centre about neurosurgery, and we then compared the status of the specialty in Nigeria with what is obtained in other parts of Africa. Our centre is a 350-bed tertiary health institution, with accreditation for training in different specialties.

After 12 months of this study, a repeat evaluation is scheduled, to assess with objectivity, the impact of the new practice in the centre.

### Aims of Study

To ascertain:

- Level of awareness of neurosurgery among health personnel;
- Possible hindrances to a smooth commencement of services;
- Suggestions on overcoming the hindrances;
- Necessity of including neurosurgery in the comprehensive teaching scheme for trainees of the tertiary institution;
- Compare the status of neurosurgery in Nigeria with that of other African states.

### PROCEDURE

A questionnaire, designed for the most part with the 5-point Likert rating scale module was distributed to doctors, nurses, final-year medical/nursing students, paramedics and administrative staff of the 350-bed tertiary health institution. The completed questionnaires returned, were collated and data analysis done. An evaluation of the Nigerian situation and a comparison with published literature was subsequently done.

### RESULTS

Of the 200 questionnaires distributed, 164 were completed and returned, an 82% response. Most of the respondents, 57.3% were aged 20-30years, with more females 59.2% than males 36.6%, whereas 4.2% did not respond. Students constituted 32.9%, nurses 28.7%, doctors 26.8%, administrators 3.66%, paramedics 2.44%, and 2.44% did not respond. Majority of the respondents, 37.8%, have been in their careers for 5years or less, while others ranged from >5 - 10years 36%, >10 - 15years 8.54%, >15 - 20years 9.76%, to >20years 6.71%. About 96% have heard of neurosurgery prior to the study, and 95.1% of them knew the correct meaning of the specialty, stating their first contact with neurosurgery as class lecture 51.8%, personal reading 29.9%, mass media 9.15%, public lecture 1.83%, and other sources 5.49%. The specialty was rated as very necessary by 84.8%, necessary 12.8%, unnecessary 0.61% and

1.83% were indifferent. About 89% were aware of other centres in Nigeria that offer neurosurgical services and 6.71% were unaware; they then rated outcome from care as very good 15.9%, good 43.9%, fair 31.7%, poor 6.71% and very poor 1.83%, and this rating was based on observed facts 53.7%, personal experience 20.1%, presumption 9.15%, hearsay 9.15% and mass media reports 5.49%, while 3.05% did not respond. Availability of services in Nigeria was rated very adequate by 1.83%, adequate 4.88%, average 14%, inadequate 50.6% and very inadequate 26.8%, whereas quality of services was rated very good by 1.83%, good 26.2%, average 39.6%, poor 36.6%, very poor 7.32%, and 0.61% did not respond. In evaluating the hindrances envisaged against the project in the institution, unavailability of equipment/facilities was rated top most by 62.8%, followed by lack of manpower 18.3%, enabling policies 11%, funds 6.10% and power supply 1.22%. Despite this, 84.8% still recommended the establishment of services very strongly, 12.8% strongly, 1.22% would probably recommend and 0.61% stated that the project was unnecessary. The future of the specialty in the centre was rated very good 31.7%, good 46.3%, fair 15.2%, poor 3.66%, very poor 1.22%, and 1.83% did not respond.

Table 1: Worldwide Neurosurgeon to Population Ratio (1998) (*El Khamlichi*)

Continent	Ratio
Africa	1 : 1,200,000
Europe	1 : 121,000
North America	1 : 81,000
World	1 : 230,000

Table 2. Neurosurgeon to Population ratios of different African Regions (June 2005) *El Khamlichi*

Region	Population	Neurosurgeons	Ratio
North Africa	135million	485	1:338,000
Rep. South Africa	40million	103	1:400,000
East/Central Africa	140million	32	1:4,500,000
West Africa	265million	38	1:6,500,000
Others (14countries)	46million	0	0

Table 3: National Population and number of Neurosurgeons in 5 of Africa's top 6 Neurosurgical countries.

Country	Neurosurgeons	National Population
Nigeria	15	150,000,000
Egypt	200	78,000,000
Rep.South Africa	186	44,000,000
Morocco	115	33,000,000
Tunisia	30	10,000,000

Figure 1: Showing the population of 5 leading African countries in millions.

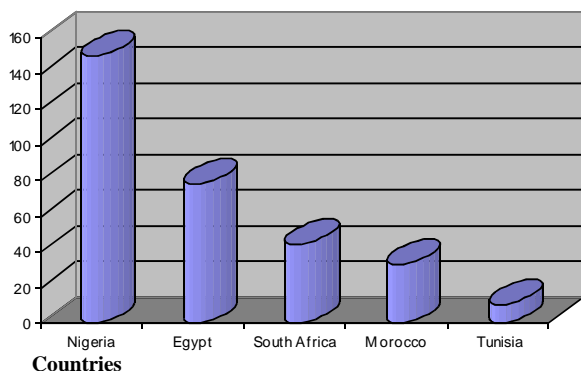


Figure 2. Showing the Number of Neurosurgeons (real Numbers) in the Same 5 African Countries Shown in Fig 1.

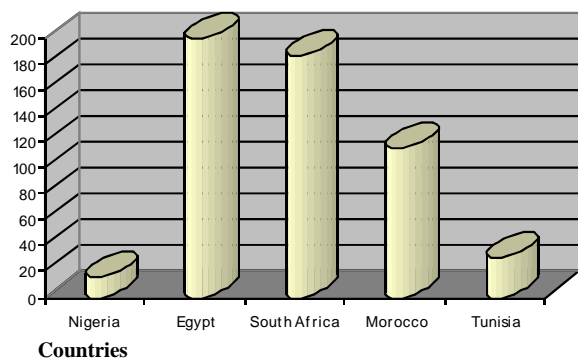
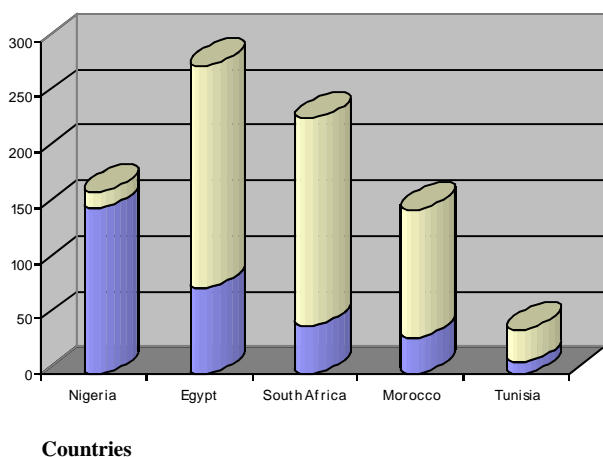


Figure 3. Merging figures 1&2 to show the disparities in neurosurgeon:population ratios of the 5 African countries; Nigeria's is one-fiftieth that of South Africa.



### Figure Legends

Figure 1. Population of 5 leading African neurosurgical nations, Nigeria with 150million population is the most populated, whereas Tunisia is the least with 10million.

Figure 2. Showing the number of Neurosurgeons in the same African nations in Figure 1; Egypt has the highest number, whereas Nigeria has the least.

Figure 3. Merging Figures 1 and 2 to show the disparities in Neurosurgeon:Population ratios of the 5 African nations; Nigeria's ratio is one-fiftieth of South Africa's.

### DISCUSSION

The young age (20-30years) of most of the respondents (57.3%) is a reflection of the opinions and future of Nigeria's next generation of health professionals; and the dominance of females probably adds to the suspicion that in the South East zone of Nigeria where this centre is situated and where there is minimal national government presence since the end of Nigeria's civil war in 1970, the male population is increasingly opting out of school, preferring trades and private enterprises.

With the majority of these young respondents being in their chosen courses for 5years or less, chances are high that they would more correctly and directly reflect the current opinions about the specialty, having not known the earlier years in Nigeria when the general health and social situations of the country were better. More worrisome, however, is the case of students, paramedics, nurses and young doctors who first heard of neurosurgery from other sources 46.3%, rather than the classroom, for the entire period of their training and career, indicating a total lack of formal exposure to the specialty. Even their class lectures seem to have completely erased the mention of neurosurgery. In that context, it may have been surprising that 96.3% of respondents have heard of the specialty prior to this study, and 95.1% could correctly describe the meaning; but this could well be a measure of the impact of the informal sources of information and knowledge in this age of internet and cable network. It is also a pointer to the necessity of re-appraising the teaching scheme of pre-clinical and clinical students to include core neuro-anatomy and neuro-physiology courses as prelude to the teaching of neurosurgery. With only 1.83% rating of the availability and quality of neurosurgical services, as very adequate, and 4.88% and 26.2% rating of both as adequate respectively, based on personal experiences (20.1%) and observed facts (53.7%), it becomes a matter of national interest that the introduction of neurosurgery in more health institutions be strongly addressed. It even becomes more glaring when it is realized that 89% of the respondents are aware of the availability of such services in other parts of Nigeria and most of them (97.6%) rated the specialty as very necessary (84.8%) and necessary (12.8%) to national health. Their rating of the availability and quality as dismal, therefore, could not entirely have been without objectivity as they seem to be well informed. The fact that outcome from treatment in neurosurgery is rated fair by 31.7% or good 43.9%, but very good by only 15.9%, did not negatively affect their

recommendation for the commencement of services in the new institution. About 85% strongly recommend the project, and even as much as 78% rate the future of neurosurgery as very good (31.7%) and good (46.3%). The implication of this is that the respondents, who in real terms are health care providers seem to be very aware of the value and scope of neurosurgery, and more sadly, the consequences of the poor state of facilities and quality of services on ground, though still positive (93.3%) about the commencement of such services. In other words, their poor rating of services could not have been due to negative opinions about the specialty but rather due to the evident infrastructural failure and collapse in Nigeria's mono-cultural and quasi-socialist economy where training institutes and public facilities, are all but concentrated solely in the schedule of the national government. Until the recent passage into law of the bill that allows for the establishment of private universities which is presently in its formative stage, such higher institutions were an exclusive preserve of the government, and thus, the buck of the infrastructural collapse logically stops at the desk of the government.

Infrastructural collapse in Nigeria is a direct offshoot of bad government policies which reached its peak in the military era of the last two-decades, within which period most of Nigeria's best professionals, including neurosurgeons, were so economically and socially emasculated, that they all virtually emigrated to the Gulf, the Americas and Europe in large numbers, in search of greener pastures and job satisfaction in the infamous parlance called "Brain Drain"; leaving the nation behind.

Amazingly, with the country earning a lot of revenue annually, as the world's 8<sup>th</sup> highest exporter of crude oil - earnings in 2005 were US\$37.7billion, and for 2006, projections were more than US\$41billion<sup>3</sup> - funds which unfortunately get corruptly squandered by successive governments - only 6.1% of the respondents opine that funds would be the greatest hindrance to the new specialty in our tertiary health institution, while 62.8% choose the unavailability of equipment and facilities, and a further 18.3% think of manpower shortage. The indictment is unequivocal.

Adelola Adeyoye, recently remarked that the most pressing problem facing neurological surgery in Africa is manpower development which he noted is inadequate in quantity, disproportionate in its distribution and ineffective because of the lack of tools of the trade and dearth of sophisticated technology for diagnosis and therapy<sup>4</sup>. The opinions of our respondents appear to completely corroborate Adeyoye's report.

Within the past 20years that it took Nigeria's neurosurgical services to degenerate so abysmally,

one leading teaching hospital located in the same zone as our own centre and which previously had three active consultant neurosurgeons including a foremost professor in 1989, had lost all three surgeons to emigration, and the teaching of, training in and treatment by, neurosurgery had stopped since then.

The African situation is generally appalling with a ratio of 1 neurosurgeon to 1.2million citizens according to the survey by El Khamlichi, compared to ratios of 1:121,000 in Europe and 1:81,000 in North America, respectively; with an overall ratio worldwide of 1:230,000<sup>5</sup> (table 1). This notwithstanding, Nigeria's 1:10million ratio is far worse than the foregoing appalling statistics. Table 2 illustrates a breakdown of the ratios culled from the report of the proceedings of the 13<sup>th</sup> World Congress of Neurological Surgeons in Marrakesh, Morocco, and table 3 illustrates the ratios in 5 of Africa's top 6 countries, in terms of neurosurgical manpower<sup>6</sup>.

Even in Africa, the situation in Egypt with 200 neurosurgeons for its population of 78million, South Africa with 186 for 44million, Algeria with 130 for its 33million and Morocco with 115 for 33million, makes a mockery of the Nigerian reality<sup>7,8</sup>. Egypt, it is worth noting, leads the African record with 21 departments for the training of neurosurgeons, with magnetic resonance imaging, and eight radio-surgery centres - four with gamma knife and four with linear accelerator techniques - whereas, Nigeria has only three magnetic resonance imaging centres and no single centre for radiosurgery<sup>9</sup>.

The World Health Organization recommends that each nation dedicates at least 5% of its annual budget to health, but it could still be more. It also states that the ideal ratio for every population should be 1 neurosurgeon to 100,000 population. In Nigeria, budgetary allocations to health had ranged from 2.55% in 1996, 2.96% in 1997, 2.99% in 1998, 1.95% in 1999 to 2.5% in 2000 in flagrant disregard for the prescriptions of the world body<sup>10</sup>. Per capita public spending for health is less than US\$5 and is even as low as US\$2 in some parts of Nigeria far below the US\$34 recommended by WHO for low income countries. The report stated that the reduction in health spending in the late 1980s was due to the Structural Adjustment Programme (SAP) of the military government, which de-emphasized spending on health and social services<sup>10</sup>. Quoting the World Bank, the Alexander's report noted that most of Nigeria's population live under extremely poor conditions with failed government promises on deploying measures to improve conditions; and that 80% of the country's oil/natural gas revenues accrue to just 1% of the population, while 99% of the population receive 20% of the revenues<sup>3</sup>. An accompanying report stated also that the available government owned hospitals remain in a terribly

dilapidated state, most states and federal roads remain a nightmare to traverse and the cost of doing business remains unacceptably high<sup>3</sup>. This finding, amongst other observations, possibly attests to the root cause of failed neurosurgical services in Nigeria over the years.

Currently, with her ratio of 1:237,000, South Africa appears to have the best outlook in terms of service delivery. For Nigeria to attain this ratio, we would need about 620 more neurosurgeons in the next few years. With 3 training centres accredited for neurosurgery, each would need to produce at least 200 neurosurgeons to meet this target. Now, if each of the centres produces 4 neurosurgeons per year (for the past 2 years, the mean is 1 - 2 neurosurgeons per year for all 3 put together), then it would take the next 50 fellowship examinations or at least, 25 years to reach that goal. But if we increase the training centres to 10, then it may take 15 years. May be, a tall order, but luring home the Nigerian neurosurgeons in diaspora - and they are quite sizeable - could fortify the ambition of establishing more and well equipped training centres.

Can there be a better future for neurosurgery in Nigeria? Perhaps, yes, if the appropriate steps are taken, most importantly - political will, with a resolute focus. Majority of the respondents, 78.1% suggested the training of manpower, provision of facilities and formulation of enabling policies, as the way forward. Adeloje opined that of all the options open to us for the development of manpower in neurological surgery in Africa; the most productive has been the local training of Africa neurosurgeons<sup>9</sup>. This policy has worked profitably in several other countries like Egypt, Morocco, Algeria and South Africa. There is no reason why Nigeria should not adopt this prescription, and also remunerate these rare specialists better.

## CONCLUSION

Neurosurgical services and manpower in Nigeria are scandalously sub-optimal, and bad government policies seem to be the major cause of the poor state of this very important but rare specialty.

Training of manpower, provision of facilities and formulation of enabling policies remain an urgent call if any positive impact would be made in this rare and endangered specialty.

Vigorous incorporation of neurosurgical courses in the medical schools and residency training

programme of institutions should be a long term plan to reverse this unhealthy state of Nigerian neurosurgery.

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