

The burden of neurosurgical emergencies in a tertiary hospital and the need to attract more trainees into Neurosurgery

Original Article

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ABSTRACT

Background: Neurosurgical coverage for hospital emergencies in sub-Saharan Africa has been a controversy considering the limited number of neurosurgeons and the need to institute prompt and appropriate management to reduce morbidity and mortality.

Aim / Objective: The aim of this study is to evaluate the adequacy of available manpower for emergency neurosurgical care, compare it with available manpower in other surgical specialties and suggest ways of maintaining or improving available services.

Methodology: A retrospective study of consecutive cases presenting at the Accident and Emergency Unit of our Teaching Hospital, over a twenty-four [24] month period, August 2008 to July 2010, was done. Data was collected from the records of those treated in the Unit within the period and analysis was done by simple proportion and percentages.

Results: A total of 4,363 cases were treated within the study period in the Accident and Emergency Unit, out of which 2591 were males and the rest were females, giving a male:female ratio of 3:2. The requests for specialist consultations were 4277 for this population of cases, viz. Obstetrics and Gynaecology 227(5.3%), Internal Medicine 1751(40.9%), and Surgery 2299(53.8%). A breakdown of consultations to the Department of Surgery showed that Paediatric Surgery had the least 19 (0.8 %), whereas Neurosurgery received the highest 633 representing 27.5% of total consults in Surgery or 14.8% of emergency consultations to all specialties of the Hospital put together.

Conclusion: Many cases presenting to the Accident and Emergency Unit require neurosurgical care, but the available neurosurgical manpower on ground is so thin that they are overworked. There is a very strong need to reduce the burden of work on these specialists, by increasing the number of available doctors in the service and improving on the remunerations for the available manpower, in order to attract more trainees to the specialty and ensure good quality of service.

Keywords: Emergencies, neurosurgery, overwork, remuneration, trainees

INTRODUCTION

Our Centre is one of the two public tertiary health facilities that provide neurosurgical services in one of Nigeria's six geopolitical zones, the South-East. It is located in a sub-urban commercial town and most of the neurosurgical diseases we treat are traumatic,

presenting first to the Accident and Emergency Unit.¹

Neurosurgical trauma coverage for hospital emergencies have been a growing controversy for several years. Many hospital departments find it difficult to get coverage for specialty services in the Emergency Room

as well as to find neurosurgeons for the referral of emergency problems.² Neurosurgeons have a duty to provide an efficient service that is safe, and currently, this is looking increasingly impossible to achieve.^{2,3,4}

In the debate on emergency calls, several circumstances have been identified as contributing to the problems associated with neurosurgical emergency call coverage. First, the number of neurosurgeons is limited, and so, the constant coverage of all hospitals is not feasible. In Nigeria, the neurosurgeon:patient ratio was reported just 4 years ago as 1:10 million.⁵ Second, there is need to institute prompt and appropriate clinical management protocols under emergency situations in order to reduce morbidity and mortality as delays contribute towards an adverse neurological outcome.⁶ Third, neurosurgeons have increasingly expected hospital compensation for the exchange of their time and to cover non-reimbursed emergency services.²

In this study, we undertook to evaluate the distribution of cases that present on emergency calls amongst the doctors in Neurosurgery Unit in order to compare the burden of patient load at each point in time with that of doctors in the other surgical specialties, with a view to advocating for modifications, if there is the need.

STUDY SETTING

Most new emergency cases that present to our Centre are usually attended to at the Accident and Emergency Unit, and so, all the specialties attend to their emergency cases at the Unit. The surgical specialties in our Centre include: three Urology (Urol) Units with five consultants (four of whom are professors), three senior registrars and three junior residents; then, there are two Orthopaedic (Ortho) Surgery Units with five consultants (one professor), two senior

registrars and two junior registrars; one Paediatric Surgery (Paed Surg) Unit with three consultants (two professors), two senior registrars and one junior registrar; and two General Surgery (Gen Surg) Units with four consultants (one professor), four senior registrars and two registrars.

Our lone Cardiothoracic Unit (CTS) has one consultant, one senior registrar and one junior registrar; just like the Neurosurgery (Neurosurg) Unit with one consultant, one senior registrar and one junior registrar. Others include an Otorhinolaryngology (ENT) Unit with two consultants (one professor) and one registrar; and then, a Plastic Surgery Unit with two consultants, one senior registrar and one registrar.

This study evaluates the emergency care doctor:patient ratio among the separate surgical specialties in our institution in order to determine the relative inadequacy, or otherwise, of neurosurgical services in emergency care compared to the other surgical units and suggest some ways of improving on the current situation.

METHODOLOGY

This is a retrospective study of consecutive cases presenting at the Accident and Emergency Unit of a Nigerian Teaching Hospital, over a two-year period, August 2008 to July 2010. Records of cases attended to within this period were retrieved and data collected. The total population of cases, gender distribution and various specialties invited by the Emergency Room doctor to review the cases were extracted, and data analysis was done by simple proportion and percentages.

RESULTS

A total of 4,363 cases were attended to within the study period in the Accident and Emergency Unit. Out of the number, 2591 were males and 1772 were females, giving a

male:female ratio of 1.5:1. There were 4277 requests for specialist consultations for this population of patients, and out of these, 227(5.3%) were for Obstetrics and Gynaecology, 1751(40.9%) for Internal Medicine, and 2299(53.8%) for Surgery (Table 1).

Table 1. Distribution of Requests for Specialist Consultation for all Departments

Departments	No. of Consults	%
Obstetrics & Gynaecology	227	5.3
Medicine	1751	40.9
Surgery	2299	53.8
Total	4277	100

A breakdown of the specialist consultation requests made from the Accident and Emergency to the Department of Surgery alone showed that Paediatric Surgery had the least 19 (0.8 %). On the other hand, Neurosurgery received the highest number of 633, representing 27.5% of total consults in Surgery or 14.8% for emergency consultations to all specialties of the Teaching Hospital, put together (see table 2).

Otorhinolaryngology (ENT) had 55 (2.4%), Cardiothoracic Surgery (CTS) 87 (3.8%), Urology (Urol) 196 (8.5%), Plastic Surgery 389 (16.9%), General Surgery (Gen Surg) 457 (19.9%) and Orthopaedics (Ortho) 463 (20.1%), consult requests.

DISCUSSION

More males were seen in this study, with a male:female ratio of 1.5:1 that correlated with the ratio of 1.7:1 reported by Mai-Phan *et al* and in keeping with other published reports.^{7,8} There has been a documentation that patients in the lower socio-economic position or of the female gender are less likely than affluent groups or males to access secondary and tertiary medical care, and our

Centre is a tertiary health facility.⁹ Also, the preponderance of males could most likely result from the fact that trauma was the main reason for presentation at our Accident and Emergency Unit, and the male gender is a documented risk factor for trauma, worldwide.

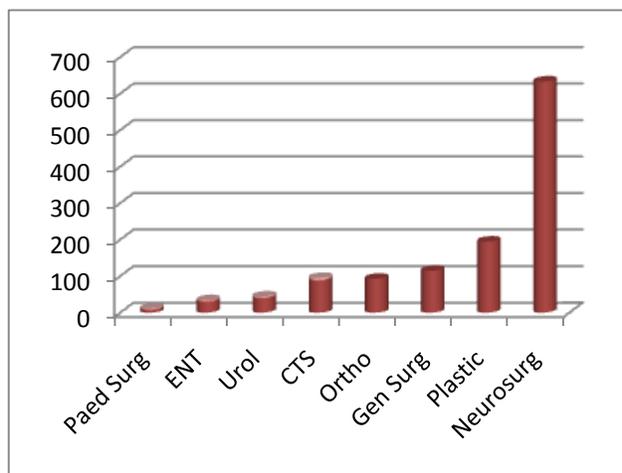
Table 2. Distribution of Consultation Requests for Surgery and the Consultant:Patient and Resident:Patient ratios

Specialty	No. of Consultants / Ratio to Patients	No. of Residents / Ratio to Patients	No. of Patients	% Surgical Patients
Paediatric Surgery	3 / 1:6.3	3 / 1:6.3	19	0.8
Otorhino-laryngology	2 / 1:27.5	1 / 1:55	55	2.4
Cardiothoracic Surgery	1 / 1:87	2 / 1:43.5	87	3.8
Urology	5 / 1:39.2	6 / 1:32.7	196	8.5
Plastic Surgery	2 / 1:194.5	2 / 1:194.5	389	16.9
General Surgery	4 / 1:114.3	6 / 1:76.2	457	19.9
Orthopaedics	5 / 1:92.6	4 / 1:115.8	463	20.1
Neurosurgery	1 / 1:633	2 / 1:316.5	633	27.5%

Surgery received the highest number of specialist consultations and this may also be related to the peculiarities of our environment where bad road networks are the norm in this town of commerce and motorcycles.¹⁰ Amongst all the surgical Units, Neurosurgery got the highest number of consults, a total of 633, representing 27.5% of total surgical consults or 14.8% of total requests for emergency consultation to all specialties put together. This agreed with some published reports which have shown that neurotrauma accounted for majority of patients admitted into hospitals with acute surgical conditions.^{6,8,11}

In further evaluating these emergency surgical consults, the three Urology teams had a total of 196 (8.5%) cases, translating to a mean 65.3 cases per team, 39.2 cases per consultant and 32.7 cases per resident in Urology, within the study period. In the single Paediatric Surgery Unit, with 19 (0.8 %) cases, the distribution was 6.3 cases per consultant, and 6.3 cases per resident; Cardiothoracic Surgery with 87 (3.8%) cases implied that there were 87 cases for the consultant and 43.5 cases per resident, and Plastic Surgery with 389 (16.9%) cases translated to 194.5 per consultant and 194.5 per resident.

Figure 1. Histogram showing the number of cases treated by each Consultant in the separate surgical Units at the Emergency Room

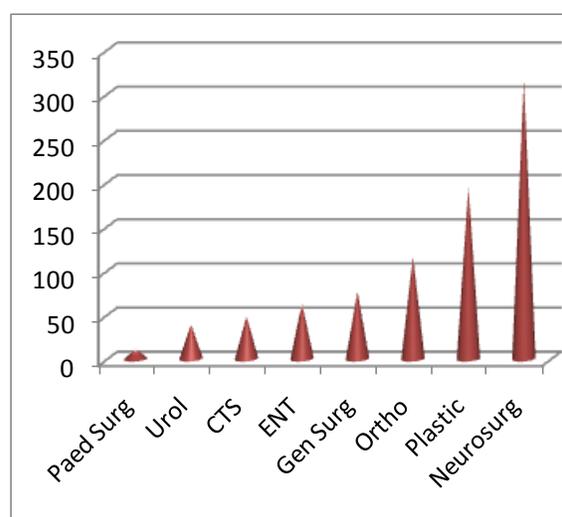


- i] Paed Surg - Paediatric Surgery
- ii] ENT - Otorhinolaryngology
- iii] Urol - Urology
- iv] CTS - Cardiothoracic Surgery
- v] Ortho - Orthopaedics
- vi] Gen Surg - General Surgery
- vii] Plastic - Plastic Surgery
- viii] Neurosurg - Neurosurgery

In Otorhinolaryngology (ENT), there were a total of 55 (2.4%) cases translating to 27.5 per consultant and 55 per resident; whereas General Surgery with 457 (19.9%) cases meant

that there were 114.3 per consultant and 76.2 per resident. With Orthopaedic Surgery's 463 (20.1%) cases, it was 92.6 cases per consultant and 115.8 per resident, and in Neurosurgery with 633 (27.5%) cases, the lone consultant attended to all 633 cases and the residents got an average 316.5 each (Figures 1 and 2).

Figure 2. Histogram showing the number of patients treated by each Resident in the separate surgical specialties at the Emergency Room



Majority of Neurosurgery consults were for various degrees of head injury: 565 (89.2%) which agrees with both local and international reports.^{11,12} And, at the consultant:patient ratio of 1:633 and resident:patient ratio of 1:316 in the Emergency Room alone, the available manpower falls far below the ratios for other specialties in our Centre. It also falls below the internationally recognized minimum requirement for 'safe neurosurgery'.⁴

Comparing the ratios amongst all the surgical Units in our Centre, it revealed that for each case treated in the Emergency Room by one paediatric surgeon, the neurosurgeon would have treated 100 cases (ratio 1:100), and for one by the ENT consultant the neurosurgeon

attended to 23 cases (ratio 1:23). For each case treated by one consultant in Urology, CTS, Orthopaedics, General Surgery and Plastic Surgery, respectively, their counterpart in Neurosurgery attended to 16, 7, 7, 6 and 3 cases, respectively (Figure 1).

In terms of care, therefore, neurosurgical manpower, remains overtly sub-optimal compared to other Units, and in order to attain the consultant:patient ratio already achieved by the others, more neurosurgeons would need to be trained as a matter of urgency and necessity. To further enhance this, there is need to encourage more residents to enroll in the specialty, or in the time being, have every resident rotate through this specialty in order that they become more helpful in rendering emergency neurosurgical services wherever the need arises.

Since neurosurgical manpower has remained perennially low, it behooves every Centre with neurosurgical services to avail, at least, all her surgical trainees of this rare exposure. This is because in the far flung health facilities around the vast country such trainees may become the closest neurosurgical hands available in emergency situations. And such skills acquired during their 3-month postings could be far-reaching in reducing mortalities and long-term morbidities.

The argument has been adduced that the lack of adequate incentives makes the attendant extra workload in Neurosurgery an uninspiring option to resident trainees; this may not be far from the truth when considered against the backdrop of the available poor neurosurgical infrastructure. Several Neurosurgery residents have been known to withdraw from training very early in their careers when they suddenly discover the workload ahead and the paltry remuneration that goes with it. Many of the resident trainees in our Centre interviewed by

the Residency Training Committee in our Department have adduced this disparity as their major reason for objecting to train in Neurosurgery, and sometimes wishing to avoid the 3-month rotation.

With the situation the way it has remained and the rise in emergency admissions being reported in some studies currently, enormous strain would most likely be placed on the available lean resources for neurosurgical services.^{13,14,15,16} Going by these reports, it could be extrapolated that this rising trend most likely erode the quality of care available for the unfortunate Nigerian citizens presenting daily in our hospitals, in dire need of neurosurgical care. Now may be the time to act.

CONCLUSION

A significant proportion of cases presenting to the Accident and Emergency Unit require neurosurgical care, which for the most are inadequate. An urgent need has arisen to train more neurosurgeons and improve facilities for neurosurgical services in order to reduce the scandalous workload that is making the specialty increasingly unattractive to young trainees. An improvement in the remuneration of those in the rare specialty of Neurosurgery should be a major policy issue if Nigeria hopes to get more surgical residents interested in enrolling for the requisite difficult and lengthy training.

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