

Current State of Neurosurgery Training in Pakistan, Results of a Nationwide Questionnaire Based Survey: Interdepartmental Variations Preclude Standardization

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ABSTRACT

Objective: To observe inter departmental variation in the availability of resources and academic activities; within various neurosurgery programs of Pakistan.

Material and Methods: This is a proforma based survey of Neurosurgery trainees and young neurosurgeons of Pakistan looking at the academic infrastructure and output of their programs. The proforma was filled by 36 respondents from 11 neurosurgery centers of the countries. All centers are accredited for neurosurgery training in Pakistan.

Results: Out of 36 respondents, 30 were completing fellowship training (FCPS) and 6 were induced for Master in Surgery (MS) program. About 80% participants used Youman's text book of neurosurgery as reference book. Only 40% candidates had access to more than one indexed neurosurgery journals. Structured academic sessions (journal clubs, neuroradiology meeting, and neuropathology meeting) were lacking in majority of training institutes. 95% trainees had no microsurgical laboratory. Modern neurosurgical tools (frameless neuronavigation system, neuroendoscopy) were in use at few centers only.

Conclusion: Neurosurgery training in Pakistan is not uniform and wide variations exist between centers. We recommend exchange programs between centers at national and international levels to allow the trainees to gain first hand exposures to facilities not available in their own center.

INTRODUCTION

Neurosurgery is one of the younger surgical specialties.¹ It is however, one of the most dynamic specialties with major changes observed in the past few years.² In Pakistan, neurosurgery began almost six decades ago and neurosurgical training was evolved tremendously since then.³ Maintaining high standards in neurosurgical training has been a topic of debate, especially in developing countries like Pakistan.^{4,5} The present study was undertaken to observe inter departmental variation in the availability of resources and academic activities within various neurosurgery programs of Pakistan; in an attempt to highlight defi-

ciencies and make recommendations for improvement.

METHODS

This was a proforma based survey of Neurosurgery Trainees and Young Neurosurgeons of Pakistan. The proforma was filled by 36 respondents from eleven neurosurgery centers of the countries. All centers are accredited for neurosurgery training in Pakistan. Some forms were also filled through telephonic contact with trainees. The data was later analyzed using Statistical Package for Social Sciences (SPSS) version 13.0 (Chicago, IL, USA).

RESULTS

Out of 36 respondents, 33 (92%) were male and 3 (8%) were female trainees. Eighty three percent (n = 30) of respondents were doing their training requirement for fellowship program (FCPS) offered by College of Physicians and Surgeons of Pakistan (CPSP). Rest (n = 6) was working in different centers to get Masters of Surgery (MS) qualification in neurosurgery from their respective universities. The mean age of trainees was 31 years (range 24 – 36 years) and the mean year of training was 3.8 years.

Table 1: Gender distribution.

Sex	Number	%
Male	33	92%
Female	3	8%
Total	36	

Table 2: Deficiencies / Limitations Neurosurgery Training.

Lack of Endoscopic Surgical Exposed	14	40%
Lack of Neuronavigation Technology	20	70%
Lack of Cadaveric Dissection	8	20%
Lack of Internet Facility	15	40%
Lack of Basic Science Technology	11	30%
No Journal Club Meeting	15	40%
Lack of Morbidity and Mortality Meeting	11	30%
Lack of Neuroradiology Meeting	7	20%
Lack of Neorupathology Meeting	15	40%
Lack of Interdepartmental Meeting	7	20%
No Scientific Publication	31	85%
Lack of \Paper Presentation	24	65%
Lack of Training Evaluation (2 Years)	18	50%

Eighty percent (n = 29) of respondents had more than one neurosurgery textbooks in the department. Most frequently consulted textbook was Youman’s Textbook of Neurosurgery. Other common texts were Schmidek and Sweet, and Greenberg’s handbook of neurosurgery. Majority of centers 28 (80%) had access to at least one neurosurgery journal. But only 65 (40%) had subscription of more than one international

indexed journal. Most frequently read journal was Pakistan Journal of Neurological Surgery (JNS). Another deficiency noted in majority of neurosurgical centers 75 (40%) was non availability of internet facility.

There was no uniform pattern of academic sessions in different centers. 30% programs were not conducting any basic sciences teaching sessions. 40% centers had no regular journal club meetings and literature reviews. Similar deficiencies were noted in morbidity and mortality (M&M) meetings, neuro radiology and neuro pathology sessions. Twenty Nine 80% respondents reported attending inter departmental and city wide meetings. Twenty one (85%) of respondents had no scientific publications in national or international journals; 12 (35%) respondents reported delivering presentations at national and international neurosurgery meetings and 18 (50%) respondents reported less than two yearly evaluation of their training program.

Cadaveric dissection laboratories were another neglected aspect in 95% centers. We also looked into availability of different modern surgical tools in neurosurgical armamentarium of participating centers. Majority of trainees 26 (70%) had no exposure to frameless or frame guided navigational technology in routine neurosurgical procedures. Only 22 (60%) respondents reported exposure to endoscopic surgeries.

DISCUSSION

Neurosurgery in Pakistan began with the arrival of **Omar Vali Jooma** at the Jinnah Postgraduate Medical Centre in Karachi in September 1951.³ Five years later, **Brigadier G. D. Qazi** joined him as Pakistan’s second neurosurgeon when he established Pakistan’s second neurosurgery centre at the Combined Military Hospital, Lahore. Pakistan’s third neurosurgeon was **Prof. Bashir Ahmad** who arrived here in 1963 and established a neurosurgery centre at Nishtar Medical College and Hospital Multan, where he practiced for four years before shifting to King Edward Medical College and associated Lahore General Hospital in 1966. **This was to mark a new era for neurosurgery in province of Punjab**, Pakistan’s largest and most populous province. **Lahore General Hospital**, in years to come was to become **one of the busiest neurosurgery centers in the world**. **Late Prof. Iftikhar Ali Raja and Late Prof. Javed Majid Mian** were other two most eminent neurosurgeons of Punjab, who had marvelous contribution for improving the research

culture and training of young neurosurgeons / PGR in Pakistan.

Since then, neurosurgery in Pakistan in general and neurosurgical training in particular has evolved tremendously. Today, there are an estimated 42 neurosurgery centers, 1500 neurosurgery beds and 150 qualified practicing neurosurgeons in Pakistan.³ There are two lateral neurosurgery licensing bodies with separate training formats in Pakistan. The more popular of these is the College of Physicians and Surgeons run Fellowship program at the end of which the trainee is awarded the FCPS diploma, and the other is the University based Master of Surgery program at the end of which the trainee is awarded MS degree. On average, these programs require five to six years of supervised neurosurgery training, at the end of which the trainee is licensed to practice as an independent consultant. The two programs together contribute from four to eight neurosurgeons to the list every year. Both of these programs have rigid guidelines to insure that the training is monitored and fulfils certain requirements. However, the requirements focus primarily on the basic fundamentals of neurosurgery rather than attempting to achieve high standards of training. Therefore, even a center with only modest faculty and equipment, and no research infrastructure, can still qualify to train neurosurgeons. This is perhaps appropriate as at present there is an acute shortage of both neurosurgeons, as well as resources.

The present study is an attempt to highlight the large variations in the standard of training at different centers of Pakistan. This is a questionnaire based study, structured over the responses of a handful of randomly selected neurosurgery trainees and young neurosurgeons. Therefore, despite representations from all four provinces, perhaps it cannot be extrapolated to represent the current state of neurosurgery training in the entire country. However, the results also cannot be ignored as they show gross differences in the working of departments, availability of resources and exposure of trainees, which would directly affect the standard of product of these programs. The most disturbing results of the current study are the lack of on call internet access to almost 40% of respondents, less than two yearly program evaluation of more than half the programs and the fact that more than one third of trainees reported not having regular morbidity and mortality meetings at their center, a mandatory meeting in any center interested in evaluation and improvement of its standards of care. Also of concern are the figures that more than 90% of the respondents reported

no access to cadaveric or skills laboratories, almost 85% respondents reported not having a publication to their credit and 65% reported not having presented at national or international level yet in their careers.

Some of the deficiencies of our training programs, such as absence of neuronavigation facilities, endoscopy and cadaveric laboratories may be attributed to the lack of resources which is a common problem for institutions on Pakistan. However, several deficiencies, such as regular morbidity meetings, journal clubs, conduction and presentation of research, multi-specialty meetings as well as rotations, and even the availability of internet do not require large resource allocations or drastic changes in the system and can be implemented easily. Similarly, regular program evaluation requires establishment of a system of (internal or external) audit and self improvement, which also does not require extravagant funding or time.

Pakistan's first neurosurgery research paper was published in 1979, in which I. H. Bhatti reported a preliminary study looking at platelet adhesiveness in spontaneous subarachnoid hemorrhage, the final results of which were never published.⁶ In a recent review of publications, it was concluded that no level 1 or 2 evidence has been contributed by neurosurgeons in Pakistan in the last six years.⁷ Publications have been few in number, comprising mainly of case reports and case series; and come from just a few authors situated at select centers.⁷ To this day, Pakistan does not have a scientific peer reviewed, journal, indexed with Pubmed, dedicated to neurosciences research. Although there are how four Pakistani medical journals indexed with National Library of Medicine (NLM), the Journal of Pakistan Medical Association and the Journal of College of Physicians and Surgeons Pakistan have been the oldest and most popular with neurosurgery community. Two neurosurgery journals, **Pakistan Journal of Neurological Sciences** and **Pakistan Journal of Neurological Surgery** (Official journal of Pakistan Society of Neurosurgeons and Department of Neurosurgery / PGMI, Lahore General Hospital) deal primarily with neurosciences research but both are in their initial stages and as yet are not indexed with NLM. Both the MS and FCPS programs require completion of a research project and submission of thesis for eligibility of license. Currently the Pakistan Society of Neurosurgeons holds regular annual meetings as well as the Neurotrauma Conference every alternate year, which invites paper presentations well in advance and encourages trainees and young neurosurgeons through free travelling and lodging arrangements, gold

medals and awards for best presentations. The Young Neurosurgeons Forum also awards best research papers every year. International organizations like ACNS and WFNS similarly encourage participation of young neurosurgeons in their conferences, especially from developing countries through travelling fellowships. Yet, almost 65% of senior neurosurgery trainees (mean year in training 3.8) reported not having made any national or international presentations. It is clear that despite of all the efforts, a research culture is still lacking. Improvement of neurosurgical publications in Pakistan critically depends upon the involvement of trainees and fresh graduates. Workload is also not an excuse for these shortcomings as the busiest neurosurgery centers in the world produce the maximum number of research papers.

CONCLUSIONS

We recognize the limitations of healthcare system in Pakistan which precludes high standards of training at various centers. However, several deficiencies observed in the current study can be corrected by simple measures, such as promoting research, organization of morbidity and mortality meetings, journal clubs, inter-departmental meetings, etc. For other deficiencies, we recommend exchange programs between centers to allow trainees to gain first hand exposures to facilities not available in their center of training.

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