

## Specializing in Neurosurgery – perception of medical students' and significant factors influencing



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### Information about the article

**Received:** Jan. 26, 2017

**Revised:** Apr. 3, 2017

**Accepted:** May 2, 2017

**Published online:** July 10, 2017

DOI: <http://dx.doi.org/10.29387/ms.2017.5.1.2-5>

## Abstract

### Background

Neurosurgery is an important area of Medical Science. Nervous system is connected with different other systems of the body – plays a vital role in integration. Unfortunately relatively less number of students willing to join in the field. Hence the present study was undertaken to find out the determinants for the choice of Neurosurgery for the future career specialization.

### Methods

The present questionnaire based study was done in Manipal College of Medical Sciences, Pokhara in Nepal. 269 students answered the questionnaire completely and correctly, giving an overall response rate of 79.58%.

### Results

There are several factors found vital for medical students for neurosurgery. Routine work (25.28%), diversity of work (19.66%) was most significant followed by team work, long relation with patients (12.92%), communication skills (6.74%) etc.

### Conclusion

We found several factors played crucial role for the choice of Neurosurgery. Students should attend Neurosurgery clinics to get interest in the subject. Different practical oriented aspects like neurophysiological procedures and interventional neurology they need to read more.

### Key words

Career choice, medical student, Nepal, Neurosurgery

## Background



Neuroscience is an important area of Medical Science. Nervous system, which is connected with different other systems of the body – plays a vital role in integration. Although it is an interesting subject, Neurophobia [1] among students, i.e., perception that neurology is a difficult and complicated subject to understand is a common problem that keep away from this specialty [2]. Medical student's choice for career specialization depends on several factors. Guidance is required for deciding medical specialization fields. During medical school, medical students develop interest in one or more specialty careers based on their knowledge [3].

Literatures suggest that, in India even after 62 years of establishment of Neurological Society of India [4] and later, the Indian Academy of Neurology, doctor: patient ratio is quite unsatisfactory [5]. In Nepal there are also a very less number of Neurosurgeons. In this present study, we assessed the student's motivational factors which help them to choose the neurosurgery specialty in future. Different other crucial factors include the characteristics of the medical college, lifestyle preferences, prestige, drawbacks, job opportunities, expected earnings, longitudinal care, preclinical and clinical familiarity, and role models [6-8]. Medical curriculum in Nepal is divided into basic sciences and clinical sciences. Basic Science subjects are taught in first two years and Clinical subjects throughout the last five semesters (two and half years) of this professional course [9-11]. Tribhuvan University (TU), Kathmandu University (KU), BP Koirala Institute of Health Sciences (BPKIHS) and NAMS (National Academy of Medical Sciences) are the institutions conducting postgraduate degree programs. TU is the pioneer institution for starting postgraduate courses in Institute of Medicine [12].

Different research work carried out in US medical student population and data is lacking from other countries [6, 13]. Hence the present study was undertaken to find out the determinants for the choice of neurosurgery for the future career specialization [13, 14].

## Material and Methods

### Study design, participants

The present research work was carried out in Manipal College of Medical Sciences, Pokhara in Nepal.

### Response Rate

269 answered the questionnaire completely and correctly, giving an overall response rate of 79.58%.

### Questionnaire design

Questionnaire based on demographic details, important motives, factors related to career choice like awareness and fascination etc.

### Validity of the Questionnaire

Questionnaire validation tests showed that the Alpha Cronbach was 0.70.

### Data collection

Questionnaires were distributed amongst medical students of Basic Sciences and instructed to answer each question honestly and after understanding it correctly.

### Inclusion criteria

All the first year students of Basic Sciences willing to participate voluntarily were included in the study.

### Exclusion criteria

Students who are absent, or incorrectly /incompletely questionnaire were excluded.

### Sample size calculation

From a pilot study of 30 students it is estimated that for 99% confidence interval and, significance level  $\alpha = 1\%$ ,  $P = 70\%$ ,  $Q = 30\%$ , allowable error = 10%, required sample size was 218.  $P =$  percentage of students opted their post graduation in Clinical subjects [15].

### Outcome variable

Specialization subjects (Neurology, Surgery, Neurosurgery etc.) were used as a dependent variable.

### Explanatory variables

Sociodemographic and other associating factors like age, gender, nationality etc. were also considered in the preference of one's career.

### Ethical committee approval

Ethical Committee approval was taken.

### Data management and statistical analysis

Descriptive statistics and testing of hypothesis were used in this study for the analysis. We used Statistical Package for the Social Sciences (SPSS) for Windows Version 20.0 (SPSS Inc; Chicago, IL, USA). Association between different variables examined by Chi-square test.  $P < 0.05$  considered as statistically significant.

## Results

Table 1 represents drawbacks in Neurosurgery. Poor quality of life and excessive clinical activities were most prominent



in males, where as amongst females workload also got almost equal importance.

There are several factors found vital for medical students for neurosurgery. Routine work (25.28%), diversity of work (19.66%) was most significant followed by team work, long relation with patients (12.92%), communication skills (6.74%) etc. (table - 2)

	Poor quality of life	Exclusive hospital based career	Workload	Competition	Excess clinical activities	Total
<b>Male</b>	48(26.96)	35(19.66)	29(16.29)	13(7.3)	53(29.77)	178
<b>Female</b>	20(21.97)	15(16.48)	20(21.97)	12(13.18)	24(26.37)	91
<b>P value</b>	*0.04					

\*P<0.05 statistically significant

	Male	Female
<b>Communication skills</b>	12(6.74)	10(10.98)
<b>Long relation with patients</b>	23(12.92)	9(9.89)
<b>Simple complaints</b>	9(5.05)	5(5.49)
<b>Routine work</b>	45(25.28)	16(17.58)
<b>Diversity of work</b>	35(19.66)	25(27.47)
<b>Physical work</b>	17(9.55)	9(9.89)
<b>Team work</b>	31(17.41)	15(16.48)
<b>Stressful work</b>	6(3.37)	2(2.19)
<b>Total</b>	178	91
<b>P value</b>	0.03	

\*P<0.05 statistically significant

## Discussion

Medical profession has several disadvantages which lead to burnout and anxiety of medical students [1-8].

In the present study students had pointed out several aspects like Poor quality of life, exclusive hospital based career, workload, competition, excess clinical activities etc. Several other studies showed that work – life balance is impaired; it was more in females (35.3%) than in males (32.7%) [9].

Research works in Neurosurgical field suggested that some major stressors included in this area were patient care, communication, workload, management and supervision, organizational and personal circumstances [2].

This study revealed that Poor quality of life; Excess clinical activities are the major determinants of choice of career in neurosurgical field. Students need much guidance in this context. This is well known that Medical students make their specialty career choices quite early [1-5].

Hence, neurosurgery is at a disadvantage, because of very less exposure. The neurosurgery exposure is required more,

in the curriculum and in CME programs is not always sufficient reported by 30-60% of students in a study. Early exposure to the subject can improve the scenario [16].

## Conclusion

From the study, this is obvious that, there are several factors responsible for the choice of neurosurgery. Students should attend neurology out-patient clinics to get interest in the subject. Different practical oriented aspects like neurophysiological procedures and interventional neurology they need to read more. Students need to interact with clinically oriented videos of neurosurgery to know more about the subject.

This can be achieved by various constructive steps like inclusion of factors concerned with the choice of medical career in the selection events of medical schools and post-graduate training. Longitudinal research based on career selection, fascination, drawbacks should be done for the development of future medical doctors must be spread among the budding doctors. The findings of this research will provide ample career guidance for future medical professionals to help them to fill the gap in neurosurgery..

## Limitations & future scope of the study

The main drawback is this is a cross-sectional study. Multicentric institutional based similar studies should be carried out.

## Competing interests

The authors do not have any conflict of interest arising from the study.

## Authors' contribution

BR and IB designed the questionnaire, interpreted the data, drafted the manuscript, and revised it. BR conceived of the study with IB, and BS acquired & interpreted the data and revised the manuscript. BS took part in data analysis, interpreted the data, and revised the manuscript.

## Acknowledgments

The authors are thankful to all the participants and Dr. B. M. Nagpal, Dean of Manipal College of Medical Sciences (MCOMS) and Research Ethical committee of MCOMS for permission to do this research work. Special thanks to Mrs. Bithi Roy & Mrs. Bhaswati Saha for helping with data entry and their valuable suggestions, support and encouragement throughout this project.



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