



Original Research Article

Anaesthesiology - As a Career in the View of New Post Graduate Students Pursuing This Subject

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ABSTRACT

Background: This survey evaluated the factors influencing the choice of anaesthesiology as a career among the students who just joined the postgraduate anaesthesiology curriculum. We also determined the effect of undergraduate anaesthesiology exposure on the choice of the same for post-graduation.

Methods: A questionnaire-based anonymous cross-sectional survey was conducted on 60 students who had just joined the postgraduate anaesthesiology curriculum under the West Bengal University of Health Sciences, Kolkata, India. A semi-structured questionnaire elicited information on demographic characteristics, speciality preference, reasons to choose this subject, anaesthesiology exposure at undergraduate level and future career plan.

Results: Only 28% (n=60) of the respondents chose anaesthesiology as the subject of first preference. General medicine and paediatrics were the two most preferred subjects. Personal interest (47%) and involvement in critical care (41%) mostly influenced the students who chose anaesthesiology as first preference. Exposure to this discipline at undergraduate level was poor. Not a single student attended any anaesthesiology lecture class. Only 43% (n=60) students read a textbook and 65% (n=60) students had posting in anaesthesiology department during rotational internship. The students with Anaesthesiology posting during internship had a significantly positive influence on the choice of this subject (p = 0.018). The most preferred career plan was pursuing higher study in anaesthesiology (29%) followed by the plan to join medical education service (27%).

Conclusions: Improved anaesthesiology exposure at undergraduate level and increased undergraduate student's awareness regarding the wide spectrum of this subject can make them interested towards this speciality.

Keywords: anaesthesiology, career choice, post graduate student.

INTRODUCTION

Anaesthesiology is one of the most advanced specialties of modern medicine. The role of the anaesthesiologists is no

longer confined within the operating room. They are involved in various activities like perioperative patient management, critical care, management of trauma victims, patient

resuscitation and control of pain. They are also involved in undergraduate and postgraduate teaching as well as research and administration.

Despite vast extent of this subject, a very small number of undergraduate medical students show interest to opt for anaesthesiology at the postgraduate level. [1-6] On the contrary, Turner G et al found an encouraging result. [7] He noticed that the percentage of students choosing anaesthesiology increased from 5 to 12% between 1974 and 2002. Working hours, working conditions, career and promotion prospects have a positive influence. [7] In other studies, the choice of a subject for postgraduation was found to be influenced by several factors like personal interest, [5] earning potential, [4,5] need for specialised skill, [3,5,6] academic and research opportunities [4] and life style factors. [4,8]

Only a few studies have been conducted on the postgraduate anaesthesiology students or practising anaesthesiologist to find out the factors influencing their choice. A study on the members of Australian Society of Anaesthetists revealed that greater proportion of women chose anaesthesiology because of controllable hours and part-time work schedule. [9] In 2006-2007, a study on the practising anaesthesiologists in India found that enthusiasm or commitment and financial prospect were the top two reasons to choose anaesthesiology as a career. [10] Tyagi A and colleagues revealed that intellectual challenge and earning potential were the two most motivating factors among post graduate anaesthesiology students in India. [11] Familial influence and presence of a role model were not important determining factors in majority of the students.

The influential factors are found to have a large spatial and geographical variation. Detailed analysis of the undergraduate anaesthesiology exposure and

its potential effect was not done previously in any Indian study. Previous studies yielded varied result of the effect of undergraduate anaesthesia exposure on the career choice. [1,8,9,12,13] Therefore, we conducted this study to identify the factors influencing the choice of anaesthesiology as a career among first year post graduate students who have just joined the postgraduate course. We also aimed to determine the potential effect of exposure of this subject at undergraduate level on the choice of the same for post-graduation.

MATERIALS AND METHODS

This questionnaire-based anonymous cross-sectional survey was conducted on the students of seven medical colleges who had just joined the postgraduate anaesthesiology curriculum under the West Bengal University of Health Sciences, Kolkata, India. Approval was taken from the Institutional Ethical Committee. Written informed consent was obtained from each student. A semi-structured printed questionnaire was given to each student personally by the members of the research team on the day of joining to the department of Anaesthesiology. The content of the questionnaire and the closed ended responses were designed after a thorough internet search on indexed articles of similar academic interest followed by an expert clinical guess to adjust the responses accordingly. Since the primary investigators and the respondents belong to the same clinical speciality, a detailed content and face validity of the questionnaire was not performed. The first part of the questionnaire elicited information on demographic characteristics like age, sex and type of the postgraduate course pursued. Second part of the questionnaire was related to the speciality preference. The participants were asked to mention the subject of their first preference and the reasons to choose

anaesthesiology for post-graduation. The third part of the questionnaire was on the anaesthesiology exposure at undergraduate level like attendance in lecture classes, reading text books, anaesthesia posting during internship and performing certain procedures like endotracheal intubation and hands-on demonstration of cardiopulmonary resuscitation (CPR). Last part of the questionnaire was on the future career planning of the participants. Students wrote or marked their responses on the questionnaire sheet. The responses of each student were received in sealed envelopes by the members of the research team personally. The identity and survey information of each respondent were kept confidential. The respondents were categorised into two groups, Group 1 and Group 2. Group 1 included the students who opted for anaesthesiology as the subject of first choice. Group 2 consisted of the students who did not choose anaesthesiology as the first preference, rather had to opt for this subject because they did not get the subject of primary choice.

Statistical Analysis: After data collection, questionnaires were manually sorted out and coded. Data were entered into a Microsoft Excel Spreadsheet and were analysed using SPSS (version 20.0). Categorical data were expressed in percentages. Numerical data were expressed in mean \pm standard deviation. Odds ratio was calculated with 95% confidence interval. Categorical data were analysed using the Pearson's Chi square test. Comparison of parametric data was done by Student's unpaired t test. All

tests were 2 tailed. A P value of < 0.05 was considered statistically significant.

RESULTS

Sixty postgraduate students pursuing anaesthesiology participated in the study. Response rate was 100%. Seventeen (28%) students chose anaesthesiology as the subject of first preference and 43 (72%) students opted for this subject as they failed to get the subject of their primary choice. Therefore, Group 1 and Group 2 consisted of 17 and 43 students respectively. The demographic profile of the two groups is shown in Table 1.

Effects of exposure to anaesthesiology at the undergraduate level: Table 2 shows the degree of anaesthesiology exposure at undergraduate level and their effect on the choice of the subject as first preference. Not a single student attended any anaesthesiology lecture class. Only 26 (43%) students read a textbook written by an Indian author. Reading a textbook did not have any significant influence on the choice of anaesthesiology ($p = 0.429$). Thirty nine (65%) students had posting in anaesthesiology department during rotational internship. Significantly greater number of students in Group 1 had anaesthesiology posting compared to those in Group 2 (88.2% vs 55.2%, $p = 0.018$). Greater number of intubation was performed by the students in Group 1 at undergraduate level, although the difference was not statistically significant (41.2% in Group 1 vs 18.6% in Group 2, $p = 0.064$).

Table 1: Demographic profile

Characteristics	Total number of students (n = 60)	Group 1 (n = 17)	Group 2 (n = 43)
Age (yr) (mean \pm SD)	27.88 \pm 2.83	27.35 \pm 2.23	28.09 \pm 3.04
Sex (M:F)	39:21	11:6	28:15
Post-graduation course being pursued (MD:DA)	42:18	10:7	32:11

Table 2: Effect of various factors at undergraduate level influencing the choice of anaesthesiology

Exposure to various factors at undergraduate level	Total number (%) of students (n=60)	Group 1 (n=17)	Group 2 (n=43)	Odds ratio	95% confidence interval		χ^2 analysis P value
					Lower limit	Upper limit	
Attended anaesthesiology lecture classes	0 (0%)	0 (0%)	0 (0%)	–	–	–	–
Read textbook in undergraduate course	26 (43%)	6 (35.3%)	20 (46.5%)	0.627	0.197	2.004	0.429
Had anaesthesiology posting in internship	39 (65%)	15 (88.2%)	24 (55.2%)	5.93	1.207	29.217	0.018
Performed intubation	15 (25%)	7 (41.2%)	8 (18.6%)	3.06	0.89	10.52	0.064
Had hands-on demonstration of CPR	20 (33%)	6 (35.3%)	14 (32.6%)	1.130	0.350	3.683	0.839

Table 3: Relationship between anaesthesiology posting in internship and learning of clinical skills

Learning of clinical skills	Anaesthesiology posting in internship		Odds ratio	95% confidence interval		χ^2 analysis P value
	Yes (65%) (n=39)	No (35%) (n=21)		Lower limit	Upper limit	
Performed intubation	14 (35.9%)	1 (4.8%)	11.2	1.355	92.591	0.008
Had hands-on demonstration of CPR	14 (35.9%)	6 (28.6%)	1.4	0.443	4.425	0.566

Table 3 shows the relationship between anaesthesiology posting in internship and learning of clinical skills. The students who had posting in the Anaesthesiology department during internship performed significantly greater number of endotracheal intubation ($p = 0.008$). However, anaesthesiology posting during rotational internship was not found to be associated with significantly higher number of hands on demonstration of cardiopulmonary resuscitation ($p = 0.566$).

Speciality preference: 10 students (24%, $n = 42$) pursuing degree course and 7 students (39%, $n = 18$) pursuing diploma course choose the speciality as first preference. No significant association has been found between course pursued and the choice of speciality as first preference ($p = 0.235$).

Figure 1 shows the subjects of first preference of the students in Group 2. General medicine (35%) and paediatrics (28%) were the two most preferred subjects. On the other hand, surgical specialities like gynaecology & obstetrics (14%), orthopaedics (7%) and general surgery (2%) were relatively less preferred by the students.

Reasons to choose anaesthesiology: Figure 2 depicts the reasons given by the students that influenced them to choose

anaesthesiology for postgraduate study. Personal interest (47%) and involvement in critical care (41%) mostly influenced the students in Group 1. On the other hand, a student in Group 2 was mostly influenced by wide clinical spectrum (16%) and good future prospect (26%) of the subject. However, we did not find any statistically significant difference between two groups in respect to individual reasons to choose anaesthesiology.

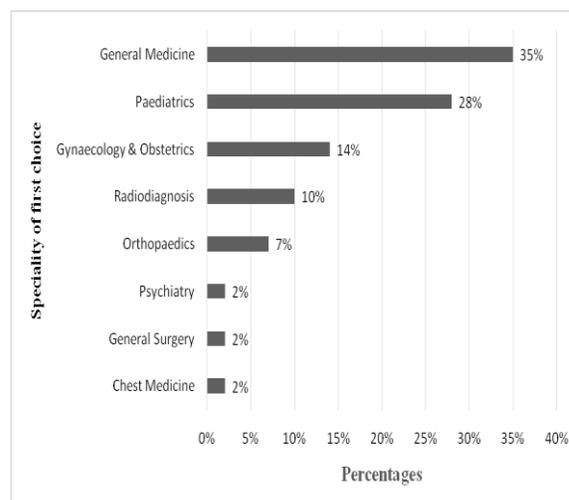


Figure 1: Speciality of first choice (%)

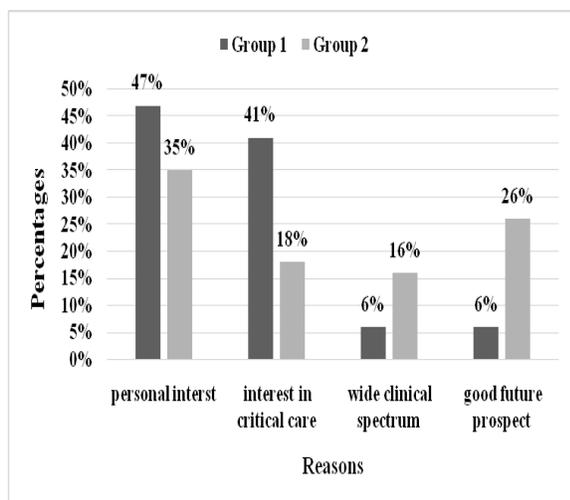


Figure 2: Reasons to choose anaesthesiology

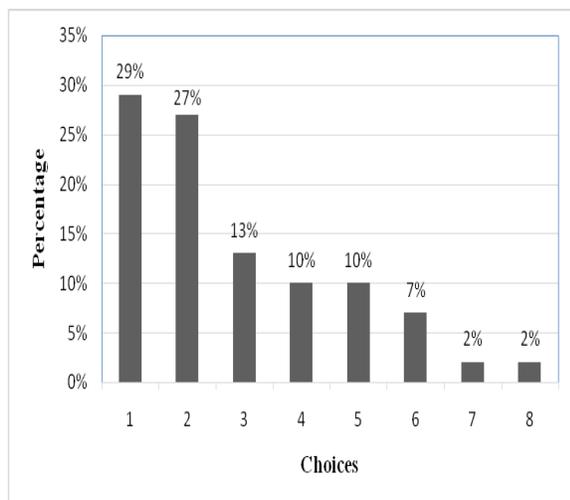


Figure 3: Future planning 1 = to pursue higher study in anaesthesiology, 2 = joining medical education service, 3 = joining critical care unit, 4 = joining health service, 5 = to prepare for entrance examination to get the subject of first choice, 6 = opting for private practise, 7 = joining corporate sector, 8 = not yet decided

DISCUSSION

An anaesthesiologist's working field has expanded to a great extent over the last few decades. But, there is shortage of trained anaesthesiologists in low and lower middle income countries to provide this widespread anaesthesia services. [14] Suggestions were made to increase the number of post-graduation seats in anaesthesiology and to attract more students to choose this speciality. [15] The choice of a subject is a complex matter and is usually

influenced by several factors like individual's perception about the subject, economic consideration, and influence of friends and family members. Studies on speciality preference are helpful to identify the positive and negative influential factors. It also helps in providing valuable information regarding healthcare workforce and thus in formulating future educational programmes. [6]

Total 60 postgraduate students pursuing anaesthesiology under the West Bengal University of Health Sciences participated in this study. The response rate was 100% because the questionnaire was given and collected back personally by the members of the research team.

Speciality preference: Only 17 (28%) students selected anaesthesiology as the subject of first choice. Student's noninterest towards this speciality was also evident in previous studies. [1-5,16] The alarming finding in our study is that although the participants were not undergraduate students, rather they were the students who have already opted for this speciality and the choice for anaesthesiology was still very poor among them.

One encouraging finding is that a large portion (39%) of the diploma students opted for this speciality as first choice. Some seats in preclinical and paraclinical subjects usually remain available along with the seats in diploma in anaesthesiology during counselling for postgraduate entrance. So, here students preferred diploma in this discipline over the degrees in preclinical and paraclinical subjects.

Reasons to choose anaesthesiology: Personal interest, involvement in critical care, wide clinical spectrum and good future prospect were the four important reasons to choose the speciality among the participants in this study. Intellectual content of the speciality and future employment opportunities were considered as the

motivating factors in previous studies also. [6,11,12] One interesting finding is that earning potential is considered as an important influential factor despite poor payment of the anaesthesiologists in low and middle income countries. [14] Influence of the family was found to have little or no effect on the speciality choice as evident in our study and in previous studies. [10,11] This may reflect the changing trend of the society towards less parental influence on career choice.

In Australia, greater proportion of the female participants chose anaesthesiology because of controllable hours, and ability to work part-time. [9] Conversely, gender variation was not evident in an Indian study. [11] We also did not find any significant difference in the choice of this subject with respect to sex of the students ($p = 0.976$). It may be indicative of changing social norms in the developing countries.

Effect of anaesthesiology exposure at undergraduate level: We found a poor anaesthesiology exposure at undergraduate level in both theoretical and practical teaching aspects. The worrisome finding in our study was that not a single student attended any anaesthesiology lecture class at undergraduate level. Thus, measures should be taken to make the undergraduate classes more interesting. Only 43% students read a textbook of anaesthesiology written by an Indian author and we did not find any positive influential effect of it on the students ($p = 0.429$).

On the other hand, we found a positive association between anaesthesiology posting in internship and the choice of this subject as first preference ($p = 0.018$). In previous studies also, inclusion of anaesthesia and intensive care in undergraduate curriculum was found to significantly increase the number of students aspiring for anaesthesiology in post-graduation. [7] Short duration posting in

anaesthesiology department also can change the student's attitude about this speciality in a positive direction. [13,17]

We found that the students who had anaesthesiology posting in internship performed significantly more endotracheal intubation compared to those having no posting ($p = 0.008$). A previous study documented that learning advanced anaesthetic skills like anaesthesia induction make the students more interested towards this speciality, whereas, learning basic skill like intubation made no significant changes in speciality preference. [18] But, in this study, students in Group 1 performed more endotracheal intubation compared to the other group, although the difference was statistically insignificant ($p = 0.064$). So, it can be said that basic skill like endotracheal intubation may have some positive influence on the students as the scope of learning advance anaesthetic skill was quite limited at undergraduate level in the study population.

We did not find any significant association between anaesthesiology posting in internship and hands-on demonstration of CPR ($p = 0.566$). It may be indicative of the fact that CPR may be demonstrated in various other departments like medicine, paediatrics etc. Demonstration of CPR was not found to have any positive influence on the choice of anaesthesiology ($p = 0.839$). So, it can be emphasised that clinical skills which are predominantly learnt during posting in anaesthesiology department can attract the students towards this speciality.

In previous studies, the influence of a role model was found to be a positive factor affecting student's choice. [4,5,9,18] A positive correlation has been found between identification of a role model and acquisition of special anaesthetic skill like anaesthesia induction and satisfaction with theoretical and practical teaching. [18] On the contrary, studies in India and Sri Lanka, the positive

influence of a role model was not found. [10,11] In this study also none of the participant mentioned the influence of a role model. It may be the reflection of poor undergraduate anaesthesia exposure.

One encouraging finding in this study was that majority of the students choosing anaesthesiology as first preference cited personal interest as an important reason to prefer this discipline and anaesthesia posting during internship had a positive influence on them. This group of students was relatively less motivated by good economic opportunities. So, here passion for the subject superseded the economic reasons. Khan FA also suggested to address this issue and to make the undergraduate exposure more interesting so that students enter this discipline with some interest rather than monetary benefit alone. [12]

Future career plan: Over the last few decades, the domain of anaesthesiology has expanded to a great extent. There are various subspecialties like cardiac anaesthesia, neuroanaesthesia, paediatric anaesthesia, pain management and critical care which can be opted by the students for higher education. In our study, most of the students were interested in pursuing higher education in anaesthesiology. Vast, ever-expanding world of anaesthesiology is gradually becoming lucrative to the students. One interesting finding was that a large number of diploma students (39%) were also interested in higher study. Usually the students pursuing diploma courses can change the discipline and opt for degree in another subject. But, here the diploma students showed interest in higher study in this discipline. Students also mentioned that the wide clinical spectrum of the speciality was an important reason to choose this discipline.

Relatively small sample size and inclusion of the students pursuing

anaesthesiology under a single university were the limitations of this study.

CONCLUSION

We would suggest better anaesthesiology exposure at undergraduate level in terms of regular attendance of the students in lecture classes, compulsory anaesthesia posting in internship and active participation of the students in practical sessions. Students should be made aware of the widespread domain of this subject which can attract them to opt for it in post-graduation.

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REFERENCES

1. Ohaeri JU, Akinyinka OO, Asuzu MC. The speciality choice of interns at Ibadan general hospitals. West Afr J Med 1993;12(2):78-81.
2. Famewo CE, Bodman RI. The choice of anesthesia as a career by undergraduates in a Saudi university. Middle East J Anaesthesiol 1985;8(2):179-85.
3. Faponle AF. Anaesthesia as a career – the influence of undergraduate education in a Nigerian Medical School. Niger Postgrad Med J 2002;9(1):11-2.
4. Onyeka TC, Ewuzie NP. Choice of Future Career amongst Medical Students in Enugu, Nigeria: Implications for Anaesthesia. Nigerian Journal of Surgery 2010;16:9-12.
5. Oku OO, Oku AO, Edentekhe T et al. Speciality choices among graduating

- medical students in University of Calabar, Nigeria: Implications for anesthesia practice. *Ain-Shams J Anesthesiol* 2014;7:485-90.
6. Khader Y, Al-Zoubi D, Amarin Z et al. Factors affecting medical students in formulating their specialty preferences in Jordan. *BMC Medical Education* 2008;8:32.doi:10.1186/1472-6920-8-32.
 7. Turner G, Goldacre MJ, Lambart T et al. Career choices for anaesthesia: national surveys of graduates of 1974-2002 from UK medical schools. *Br J Anaesth* 2005;95:332-8.
 8. Yang H, Wilson-Yang K, Raymer K. Recruitment in anaesthesia: results of two national surveys. *Can J Anaesth* 1994;41(7):621-7.
 9. Roberts LJ, Khursandi DC. Career choice influences in Australian anaesthetists. *AnaesthIntens Care* 2002;30(3):355-9.
 10. Thorat P, Shidhaye RV, Goel G et al. Career choice influences in Indian anaesthesiologists: A cross sectional survey. *Sri Lankan Journal of Anaesthesiology* 2012;20(1):43-8.
 11. Tyagi A, Kumar S, Sethi AK et al. Factors influencing career choice in anaesthesiology. *Indian J Anaesth* 2012; 56:342-7.
 12. Khan FA, Hamdani GA. Factors influencing the choice of anesthesia as a career in a developing country. *M E J Anesth* 2007;19(1):149-57.
 13. Khan FA, Minai FN, Siddiqui S. Anaesthesia as a career choice in a developing country; Effect of clinical clerkship. *J Pak Med Assoc* 2011;61: 1052-6.
 14. Dubowitz G, Detlefs S, McQueen KAK. Global Anesthesia Workforce Crisis: A Preliminary Survey Revealing Shortage Contributing to Undesirable Outcomes and Unsafe Practices. *World J Surg* 2010;34:438-44.
 15. Kotur PF. Short term courses in anaesthesiology. *Indian J Anaesth* 2006;50:7-8.
 16. Nwasor EO. Perception of final-year medical students about choice of anaesthesia as a speciality. *Niger J Med* 2010;19(2):208-13.
 17. Desalu I, Okeke CI, Olatosi JO et al. Medical Student's Perception of Undergraduate Training in Anaesthesia. *Nigerian Quarterly Journal of Hospital Medicine* 2006;16(3):106-8.
 18. Watts RW, Marley J, Worley P. Undergraduate Education in Anaesthesia: The Influence of Role Models on Skills Learnt and Career Choice. *Anaesth Intens Care* 1998;26: 201-3.

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