

# A survey of undergraduate anesthesia rotation in medical colleges of Pakistan

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## Abstract

**Background:** Student perceptions of specialties influence career choice decisions. It is important to expose undergraduates to the scope of rewarding careers in specialties like anesthesia by ensuring a good quality educational experience during anesthesia rotation. Our objective was to survey the curriculum structure and placement of the anesthesia undergraduate rotation in all the medical colleges of Pakistan recognized by the Pakistan Medical and Dental Council.

**Materials and Methods:** A standardized survey questionnaire was distributed by direct contact, postal mail or e mail to one identified anesthetist in all recognized medical colleges with enrolment of 100 or more students. The response rate was 75%. We received responses by hand, email and postal mail.

**Results:** We received responses from 15 out of 20 anesthetists contacted. 11 reported undergraduate anesthesia rotation while 4 reported absence of this rotation in their undergraduate curriculum. The rotation placement, duration and curriculum showed a wide variation and lack of standardization.

**Conclusion:** Our survey indicates that the inclusion of anesthesia rotation in undergraduate medical education is not mandatory and standardized. The rotation duration, placement and curriculum need to be standardized to enhance the quality of the experience and promote the scope of the specialty for rewarding careers.

**Key words:** Anesthesia, rotation curriculum, undergraduate medical education

**Key Message:** Anesthetists should play a more active and academically visible role in undergraduate medical education.

## Introduction

Student perceptions of a specialty, influence their career choices and attitudes.<sup>[1,2]</sup> Perceptions may be changed significantly by exposure to the specialty and the quality of educational experience.<sup>[3,4]</sup> This is important for enhancing recruitment in specialties with shortage of manpower such as anesthesiology in Pakistan. In a survey of the effect of anesthesia clerkship on students perception of the specialty and its influence on their career choice in 2010, we found a

significant change in both after their anesthesia rotation.<sup>[5]</sup> However; it was a single-center survey, where the rotation has been in place since 1985 with a structured curriculum subject to regular review and revision and involvement of a large number of anesthesia faculty in didactic as well as informal teaching. The two other major teaching institutions of the city approached, did not have a formal undergraduate anesthesia rotation at that time. As the need for anesthesia rotation in undergraduate medical education is gaining recognition in the developed as well as developing world,<sup>[6-8]</sup> we decided to perform a national survey of the status of anesthesia undergraduate rotation in all recognized medical colleges of Pakistan. Our objective was to perform a survey of presence, placement, duration, and curriculum of anesthesia rotation in medical colleges recognized by the Medical and Dental Council. We also surveyed the participation of anesthesia faculty in undergraduate teaching outside the rotation.

## Materials and Methods

This was a cross-sectional prospective survey. Only those anesthetists working in medical colleges recognized

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by the Medical and Dental Council were included in this survey.

Anesthetists in medical colleges not recognized by the Medical and Dental Council were excluded from this survey.

We prepared a questionnaire concerning the administrative structure, duration and placement of undergraduate anesthesiology rotation, contents of the rotation curriculum, and evaluation methods. We also included questions of teaching involvement of anesthetists in other areas of the undergraduate curriculum.

We identified 20 public and private medical colleges recognized by the Medical and Dental Council, with an enrolment of hundred medical students or more. We then distributed the standardized questionnaire and informed consent form to one anesthetist from each identified medical college, mainly by person to person contact, in a conference of anesthesiology and a Continuing Medical Education (CME) workshop for university faculty. We also posted or emailed the questionnaire and consent forms to anesthetists not contacted in these events, after telephone contact; and received the responses by hand, e-mail, or postal mail.

**Data analysis**

All statistical analysis was performed using Statistical Packages for Social Science version 19 (SPSS Inc., Chicago, IL). Median and interquartile range were computed for duration of rotation while frequency and percentage were computed for qualitative reply.

**Results**

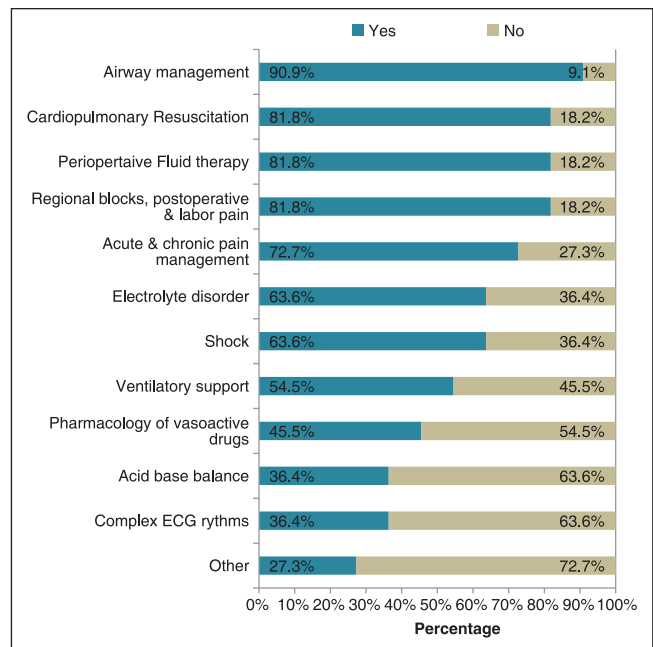
We received responses from 15 out of 20 anesthetists contacted from the identified medical colleges. The response rate was 75%. Eleven out of 15 (73.3%) respondents reported anesthesia rotation for undergraduates [Table 1]. Respondents from four colleges reported that they do not have an undergraduate anesthesia rotation. As per information obtained we found that there is an inconsistency in placing

undergraduates during their rotation in anesthesiology. In four colleges it is placed in fourth year of Bachelor of Medicine and Bachelor of Surgery (MBBS), in three colleges it is placed in fifth year, and in one college it is placed in third year. In one college this rotation is repeated thrice; in third, fourth, and final years and in one college it is repeated twice; in fourth and fifth year. (Table 1) The duration of anesthesia rotation varies from 1 to 3 weeks. (Table 1) Out of the 11 anesthesia rotation programs, nine have dedicated rotation curriculum coordinators, who are responsible for implementing the administrative and educational aspects of the program, including or placements, lectures, and tutorials. Two programs do not have specific rotation coordinators.

We found variability in curriculum being practiced in different medical colleges. Seven out of 11 colleges have a written as well as informal rotation curriculum. The informal curriculum refers to the skills and knowledge imparted without being explicitly spelt out in the written curriculum. Four colleges have an informal curriculum only, that is, there is no explicitly written curriculum; but undergraduates are exposed to the routine role and technical skills of an anesthetists during their rotation. Airway management is taught in 90.9% of the 11 undergraduate anesthesia rotations; while cardiopulmonary resuscitation, preoperative fluid therapy, regional blocks, and labor pain management are taught in 81.8% rotations [Figure 1]. Acute and chronic pain management is a part of the curriculum in 72.7% rotations. Teaching of electrolyte disorders and shock is included in 63.6% rotations, whereas artificial ventilation is taught in 54.5% anesthesia rotations. Less than 50%

**Table 1: Participants Information regarding rotation**

Participants Information	n	Percentage
Anaesthesia Rotation in MBBS Program (n=15)		
Yes	11	73.3
No	4	26.7
Rotation Placement (n=11)		
Final Year	3	27.3
Fourth Year	6	54.5
Third Year	2	18.2
Duration of Rotation	11	Median (Q3-Q1) 2 (1-3) Weeks



**Figure 1:** Anaesthesia rotation curriculum content (n=11)

respondents reported teaching of trauma, anaphylaxis, vasoactive drugs pharmacology, acid base disturbances, arrhythmia management, and burns management. Instructions on specific topics is mostly given through lectures and informal operating room (OR) teaching. In two colleges, interactive tutorials are also utilized for teaching while two colleges used problem-based learning as well as tutorials for teaching. Only two colleges have reported use of all four modalities. Only one college has continuous evaluation as well as end of rotation written test, objective structured clinical examination (OSCE), and viva voce as a method of assessment. One college has a written test and continuous evaluation. Two colleges have written test only, two have continuous evaluation only, and two have viva voce only. Three colleges have no assessment at end of anesthesia rotation.

All respondents reported involvement in teaching of advanced cardiac life support (ACLS) and trauma courses. However, only four reported participating in teaching of anatomy, physiology, and pharmacology; outside anesthesia rotation. None of the corresponding faculty reported any involvement in longitudinal curricular themes like communication skills, evidence based medicine, pain, or ethics outside the rotation.

## Discussion

There is increasing awareness of anesthesia as an important educational experience for medical undergraduates.<sup>[6-8]</sup> It is the first opportunity for exposure to the diversity and scope of this specialty and of many rewarding careers in intensive care, pain management, and subspecialty anesthesia like cardiothoracic and pediatric anesthesia. The quality of educational experience is therefore important, especially in the underdeveloped countries where it is not one of the most preferred careers.<sup>[3]</sup>

According to our survey, 27% respondent colleges recognized by the Medical and Dental Council do not have this rotation in their undergraduate program. Where it exists; its objectives, curricular content, instruction methodology, assessment, placement, and duration is varied and lacks standardization.

Cardiopulmonary resuscitation, fluid therapy, and airway management form the core curriculum of the majority of anesthesia rotations [Figure 1] which is similar to core curricula of South East Asian, Australian, British, and Canadian undergraduate anesthesia rotations.<sup>[9]</sup> However, many rotations lack exposure of undergraduates to a number of areas of anesthesia practice relevant to undergraduate education. In our survey, we found only 72.7% anesthesia rotations incorporating acute and chronic pain management

as a curricular component. Trauma, burns, circulatory shock, sepsis, vasoactive drugs, arrhythmia recognition and management, anaphylaxis, and artificial ventilation are included in less than 65% of these rotations [Figure 1]. Exposure to these areas is important to understand the important role of anesthetists as team members and their interaction with patients, families, and colleagues.

Reliable and valid assessments are important to assess the outcome of any educational experience.<sup>[10,11]</sup> In our survey, we found that 75% of the assessments of anesthesia rotation are informal, without any documentation. The formal assessments also lack standardization for discrete components of knowledge, skills, and attitude. Faculty shortage and demands of clinical service may be a factor in inadequate structure and component of rotation. Wheeler *et al.*, have advocated a web-based approach for teaching and assessment of anesthesiology<sup>[12]</sup> which may serve to deliver a standardized curriculum for affiliated institutes with shortage of faculty.

Regular curriculum review and revision is an essential requirement for delivering an updated curriculum.<sup>[13]</sup> Medical colleges of Pakistan need to develop a standardized anesthesiology curriculum by consensus.

Anesthetists by and large are not participating in teaching outside the rotation, although they are well equipped to participate in teaching in many areas of basic sciences and longitudinal curricular themes.<sup>[6]</sup>

According to our survey, the rotation placement is also not standardized. It would be relevant as a part of the educational experience in surgery or emergency medicine, which are major areas of work for an anesthetist. The duration of the rotation needs to be standardized according to new curricular requirements.

## Conclusion

Our survey indicates that anesthesia rotation in the undergraduate curriculum is not mandatory in all the medical colleges recognized by the Pakistan Medical and Dental Council. There is a need to standardize the placement of rotation in the curricular map, its duration, and curriculum structure by consensus. It is important to create awareness of potentially rewarding careers by exposure of undergraduates to the diversity and scope of anesthesia practice. We also recommend that anesthetists should also play a more visible role in the spiral integrated undergraduate curriculum outside the rotation in teaching of longitudinal curricular themes such as pain, ethics, evidence-based medicine, and professionalism.

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