PERCEPTION OF NEUROSURGICAL RESIDENTS ABOUT LEARNING IN OPERATION THEATRE IN TERTIARY CARE HOSPITALS

Sohail Amir[1], Brekhna Jamil[2], Usman Mehboob[3], Shahid Ayub[4]

Correspondence

[2]Brekhna Jamil, Director/ Associate Professor, Institute of Health Professions Education and Research, Khyber Medical University Peshawar
: +92-320-5910000
: brekhna.jamil@kmu.edu.pk
[1]Assistant Professor, Department of Neurosurgery, Hayatabad Medical Complex, MTI, Peshawar
[3]Associate Professor Institute of Health Professions Education and Research, Khyber Medical University Peshawar
[4]Professor & HOD, Department of Neurosurgery, Hayatabad Medical Complex, Peshawar

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ABSTRACT

OBJECTIVES

To explore Neurosurgical postgraduate residents perceptions of their learning environment in operating rooms.

METHODOLOGY

From March 2022 to August 2022, this cross-sectional study was be carried out in the Department of Neurosurgery Hayatabad Medical Complex, Peshawar, Lady Reading Hospital Peshawar, and Ayub Teaching Hospital Abbottabad. The STEEM survey examined how surgical theatres were perceived as educational environments. After receiving informed consent, a printed questionnaire was provided to 32 surgical residents. SPSS 24 was used to conduct descriptive and inferential data analyses.

RESULTS

Thirty-one (31) of the 32 surgical residents that were surveyed (or 98.3%) answered. Residents' average age was 29.27 years (2.37); 27 were male, and 05 were female. Most residents were in their third (34.4%) and fourth (21.3%) years of residency. 147.66 (18.57) was the overall mean score. Participants' age and gender did not affect the mean scores; nevertheless, responses were statistically more favorable for residents in their first or fifth year of residency. Fifty-three locals responded favorably or positively overall.

CONCLUSION

Overall, residents had positive opinions of their training, their supervisors, the opportunities for learning in the operating room, the environment, and the monitoring they received.

KEYWORDS: *Perception, Neurosurgical Residents, Learning Environment, Operation Theatre Learning*

INTRODUCTION

Students in Neurosurgery programs worldwide must be in the operating room with their patients, but little is known about this aspect of medical education.[1] Most of the operating room literature is normative, written from the surgeon's standpoint as a teacher. On the other hand, this paper presents the student's perspective as a learner.[2,3] The learning environment is a context in which postgraduate resident teaching, training and learning occur. Learning in all domains, i.e., knowledge, skill, and attitude, is critical in achieving competency in their respective professions in training institutes.[4] Operation theatres (OT) or operating rooms (OR) are the essential places students can be exposed to and learn important surgical skills.[5,6] High patient load and extended working hours, postgraduate Neurosurgical residents labour in a stressful environment. The number of patients has grown as a result of increased trauma. This increased workload poses a direct and indirect threat to patient safety and negatively impacts their ability to learn.[7,8] For evaluating diverse learning environments of under- and postgraduates, scoring systems consisting of questionnaires have been employed, such as DREEM, OREEM, PHEEM, ATEEM, STEEM, and others.[9,10] Each instrument has advantages and disadvantages and has been tried in various local and regional circumstances.[11,12] Many studies evaluate educational environments available internationally, but there has been relatively little work done in Pakistan. Despite being a high-pressure, over-stressed specialty sector, there is relatively little literature on surgical floors. This gap enlightened the idea of studying Neurosurgical residents in Khyber-Pakhtunkhwa. This study aims to evaluate how postgraduate neurosurgical residents feel about their learning environment in an operating room and compare those perceptions across residents of different ages, genders, and residency years. The study will aid in identifying the learning environment's flaws and limitations for Neurosurgery resident KPK. The teaching and training techniques

may be modified based on the findings of this study, depending on their impression and level of satisfaction.

METHODOLOGY

A cross-sectional study was carried out at the Department of Neurosurgery, Hayatabad Medical Complex, Peshawar**,** Lady Reading Hospital, Peshawar**,** Ayub Teaching Hospital, Abbottabad**,** and Northwest General Hospital Peshawar. The duration of this study was four months. For sample size calculation, the following formula was used, i.e., n= N*X/(X+N-1) where X=Za/(2)2*p*1(1-p)/(MOE)2 (Za/2 is the critical value of Normal distribution at a/2 for example; confidence level of 95%, a is 0.05 and the critical value is 1.96), MOE is the margin of error, p is the proportion, and N is the population size. A simple purposive sampling technique was used. All the postgraduate Residents of the Neurosurgery department were included in the study. The Surgical Theatre Educational Environment Measure (STEEM) is a 40-item questionnaire with a five-point Likert scale (strongly agree=5, agree=4, uncertain=3, disagree=2, severely disagree=1) that has been previously validated and can be used to assess the perception of a resident about learning in the operation theatre.[13] The scale is further divided into four subscales. Subscale 1: trainees perceptions of their trainer and training (questions 1-13); subscale 2: trainees perceptions of learning opportunities (questions 14-24); subscale 3: trainees' perceptions of the operating room atmosphere (questions 25-32); subscale 4: trainees perceptions of supervision, workload, and support (questions 33-40). According to the Likert scale, the maximum score will be 200, and the minimum will be 40. A score equal to or greater than 120 will be considered favorable. After one week, the proformas were collected. SPSS 24 was used to analyze the data. Negative responses were reverse coded on a few items (8, 14, 19, 22, 23, 26, 27, 28, 30, 31, 33, 34, 35, 36, 37,28, 40) to maintain the positive score. Cronbach's alpha coefficient was used to assess the instrument's reliability. Mean, standard deviation, and frequencies were used to characterize the descriptive statistics. Inferential statistics such as the student's t-test/ANOVA were used to see if there were any significant differences in the mean scores depending on the surgical residents age, gender, and degree of training. The Spearman correlation was also assessed to see if there was any correlation between the questionnaire's various subscales.

RESULT

Table 1: Trainee Perception of the Trainer and Training

Questions		Mean	SD
1.	I get well in training	03.25	0.972
2.	Trainer surgical skills are good	03.42	01.109
3.	Trainer Discuss the technique before the surgical approach	04.62	
4.	The trainer is enthusiastic about teaching	03.54	01.987
5.	The trainer takes an interest in my progress	03.94	0.9452
6.	I understand what my trainer tries to teach me	04.45	
7.	The trainer gives sufficient time to teach me surgical skills	03.23	01.201
8.	Before surgery, my trainer teaches me about the surgical plan	02.83	01.148
9.	My trainer discussed the part of the surgery I performed	02.95	01.087
10.	The surgeries performed are too difficult to understand	03.76	01.206
11.	The trainer's criticism is constructive	03.64	0.719
12.	The trainer gives me feedback	03.48	0.987
13.	my trainer's expectation is high	04.13	

Table 2: Trainee Perception of Learning Opportunities

Questions		Mean	SD
1.	The operation theatre table is less	04.45	0.668
2.	More numbers of trainer	03.56	01.034
3.	The number of OT days per week is less	03.56	01.034
4.	less number of cases performed	03.98	0.983
5.	I get enough opportunities to assist	02.56	01.432
6.	Senior faculty take my opportunity to operate	04.15	0.685
7.	The number of the emergency procedure is sufficient	03.57	01.987
8.	I get enough opportunity to perform in an emergency	03.15	0.985
9.	The variety of elective cases gives me a proper exposure	03.15	0.998
10.	The variety of emergency cases gives me a proper exposure	04.15	0.805
11.	My trainer is always in a hurry to let me operate	02.54	01.564

Table 3: Trainee Perception of the Operating Room Atmosphere

Questions		Mean	SD
1.	The operation theatre environment is pleasant	03.45	
2.	The operation theatre environment is pleasant	04.15	0.805
3.	In the operation theatre, I don't like being interrupted in front of the staff	04.45	0.764
4.	The nursing disliked me, as I took more time in surgery compared to the senior faculty	03.15	01.0345
5.	The anaesthetist dislike me due to the long surgery time	03.34	01.201
6.	I feel discriminated against in theatre because of my gender	03.43	01.308
7.	I feel part of a team in theatre	04.15	0.805
8.	The refreshment time during theatre is sufficient	02.45	01.564

Table 4: Trainee Perception of Supervision, Workload and Support

Questions		Mean	SD
1.	I am very much busy going to a theatre	04.45	0.764
2.	I am tired most of the time	03.67	0.963
3.	I am stressed during OT timings	03.56	01.184
4.	I am asked to do case-independent, which I couldn't do	03.78	01.283
5.	When I am in the theatre, no one to covey my ward duty	02.56	01.087
6.	Theatre time is too long	02.98	01.845
7.	The level of supervision is adequate for my level	03.45	0.852
8.	Refreshment during theatre time is sufficient	03.43	0.986

Note: Reverse coded responses. The responses were color coded. Green for most favorable responses and red for less positive responses needing actions to improve their impression.

Table 5: Mean and Standard Deviation of Subscales

SUB-SCALE	Mean	SD
Trainees perceptions of their trainer and training	47.95	8.23
Trainees perceptions of learning opportunities	40.96	5.34
Trainees perceptions of the atmosphere in the operating theatre	27.95	4.98
Trainees perceptions of supervision, workload and Support	30.16	3.98

DISCUSSION

Approaches that shift responsibility for learning are becoming more relevant as medical education shifts to a learner-centred model. Residency certification heavily depends on how residents feel about their surroundings. It is a reliable indicator of how satisfied folks are. A successful learning experience and outcome are positively correlated with the trainee's evaluations of the learning environment.[13] Through this study, we could determine how our citizens felt about the educational environment. The STEEM Questionnaire was employed for this investigation. Nearly all researchers show that the STEEM questionnaire is reliable, accurate, and practical for evaluating the postgraduate surgical trainees operating room educational environment (EE).In a prior investigation carried out in Pakistan.[14] This survey has already undergone validation. Moreover, we computed this survey's dependability was measured using the Cronbach alpha coefficient, which revealed extremely high reliability (0.908). Individual subscale reliability analyses ranged from average to high (0.602 to 0.871), demonstrating the strong reliability of the STEEM instrument. We calculated the average STEEM score for each of the 40 things, and we discovered a range of scores, from a high of 4.62 (item no. 2) to a minimum of 2.45 (item no. 8), with a mean value of 3.69 0.48 for all of the items. This illustrates an overall favorable opinion of each evaluated item. Among all 40 STEEM items, Soomro et al. assessed minimum and highest mean scores and discovered 2.5 and 4.52, respectively. The STEEM mean total score in our study was 147.66/200, which was close to earlier results in the literature. Cassar et al. discovered it at 148.7/200. This reflects the overall favourable outcome of our residents. Al-Qahtani et al., on the other hand, found a mean score of 110/200 overall.[15,16] The STEEM mean total score in our study was 147.66/200, which was close to earlier results in the literature. Cassar et al. discovered it at 148.7/200. This is also indicative of an overall positive attitude of our residents regarding their learning environment in an operation theatre. On the other hand, Al-Qahtani discovered that the overall mean score was 110/200. In another study from Pakistan, Soomro also found a good perception of the STEEM mean score (136/200). Nagraj from the United Kingdom likewise received a comparable grade (139/200) in their study.[17,18] In the current study, there were six female respondents and 26 male respondents. A study from Saudi Arabia revealed an equal number of men and females, with 45 males and 46 females, while the gender distribution was comparable to that of the Cassar study, which had 20 males and six females. In this study, the STEEM scores for each subscale were further categorized by gender, and it was shown that the scores for boys and girls did not differ statistically significantly, like Cassar, who reported the difference in mean subscale scores was likewise non-significant. However, Al-Qahtani et al.[15]discovered a statistically significant gender difference, with males scoring higher than females. Similarly, we split the data by participant age and saw no statistically significant difference in mean scores. This survey assisted us in determining how our residents felt about the learning environment and experiences offered to them, particularly in the operating room. It encouraged us in several areas while also pointing out areas that needed development. This will enhance our ability to practice and learn.

LIMITATIONS

This cross-sectional study was conducted in a single hospital with the least number of participants. The results cannot be applied to other centres nationwide or internationally where there are various resident training techniques. A multicentric study conducted nationally or internationally will provide a general impression of the learning environment for Neurosurgical residents in the operating rooms.

CONCLUSION

Overall, residents had positive opinions of their training, their supervisors, the opportunities for learning in the operating room, the environment, and the monitoring they received. We are attempting to allay some of their concerns over the surgical technique briefing before the operation, and operation lists are being amended to account for the length of procedures if residents undergo surgeries without adequate supervision. Similarly, we have suitably assigned trainees to different operating rooms so that each resident can have hands-on, supervised experience by their level of training.

CONFLICT OF INTEREST: None

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CONTRIBUTORS

1. ***Sohail Amir*** *- Concept & Design; Data Analysis/Interpretation*
2. ***Brekhna Jamil*** *- Critical Revision; Supervision*
3. ***Usman Mehboob*** *- Data Acquisition; Drafting Manuscript; Supervision*
4. ***Shahid Ayub*** *- Drafting Manuscript; Final Approval*