https://doi.org/10.37939/jrmc.v27i2.2238

Residents' Perception Of Surgical Theatre Educational Environment At Public Hospitals Of Rawalpindi - A Steem Survey

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Abstract

Objective: To evaluate the surgical theatre learning environment of surgical residents in public hospitals of Rawalpindi (Pakistan) and to identify factors influencing their perception of this environment.
Methods: A cross-sectional survey using the surgical theatre educational environment measure (STEEM) 40-item inventory to measure theatre learning environment perception of surgery and allied residents in public sector hospitals of Rawalpindi. The internal reliability of the inventory was assessed using the Cronbach α coefficient. P≤ 0.05 was considered significant.
Results: 107 respondents were included in the study. The mean score of the survey was 133.7± 20.2. No significant differences in perception were found among residents at different stages and gender, except in the learning subscale of the inventory for both gender and residents and the teaching and training subscale among residents at different levels. The inventory showed a high internal consistency with a Cronbach α of 0.851.
Conclusion: Surgical training and education have still a long way to go in the public sector. Much-needed collaborations with education specialists and senior surgeons are required. Interval collection of feedback and perceptions of the educational environment is also necessary.
Keywords: Educational Environments, Residents, STEEM

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Cite this Article: Bhatti, H. W., Khan, A., Ijaz, O., Farooqui, M. R., Rauf, F., & Malik, N. A. (2023). Residents' Perception Of Surgical Theatre Educational Environment At Public Hospitals Of Rawalpindi - A Steem Survey. *Journal of Rawalpindi Medical College*, *27*(2). https://doi.org/10.37939/jrmc.v27i2.2238.
Received January 30, 2023; accepted May 03, 2023; published online June 24, 2023

1. Introduction

Surgical training in Pakistan is a structured program of 4 years for general surgery and 5 years for its allied fields under the supervision of the College of Physicians and Surgeons Pakistan. The educational environment is a unique and important tool, which affects the satisfaction, achievement, and success of any medical knowledge.[1]
A positive and encouraging working environment is associated with improved performances of the surgical team.[2] Vital component of surgical training is having exposure to the operation theatre for hands-on experience, which is to instil professional competency in this intricate field via both theoretical and practical knowledge.
The learning environment of any institute has a cardinal role in achieving these goals.[3,4] The ideal model is the one having supervised exposure along with feedback sessions so that any learning difficulties could be addressed.[5] Load of surgical diseases in Pakistan is rapidly increasing and demands highly skilled healthcare providers. Teaching hospitals are performing a key role in this but it's of utmost importance that education and curriculum should be such that it satisfies local and global needs.[6]
There is a general agreement that the learning environment remains opportunistic and unstructured due to which learning is sub-standard [7,8]. So quality insurance remains of absolute importance for better learning.

Numerous studies have been conducted for this purpose[9] but there has to be some measurement tool and surgical theatre educational environment measure (STEEM)provides us with that.
The objective of the present study is to evaluate the surgical theatre learning environment of surgical residents in public hospitals of Rawalpindi (Pakistan) and to identify factors influencing their perception of this environment.
The study also evaluated associations of surgical theatre learning and environment perception with different stages of the residency program.

2. Materials & Methods

A cross-sectional survey using the surgical theatre educational environment measure (STEEM)[9] 40-item inventory to measure theatre learning environment perception of surgery and allied residents in public sector hospitals of Rawalpindi. It consists of 4 subscales.

1. Trainees' perceptions of their trainer and training (Q1-13)
2. Trainees' perceptions of learning opportunities (Q14-24)
3. Trainees' perceptions of the atmosphere in the operating theatre (Q25-32)
4. Trainees' Perceptions of Supervision, workload, and Support (Q33-40)

Each Question was scored on a Likert scale, i-e, 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree. The minimum score of the questionnaire was 40 and the possible maximum score was 200. Items with negative responses (8, 14, 19, 22, 23, 26, 27, 28, 30, 31, 33, 34, 35, 36, 37,28, 40) were scored in reverse order. SPSS v25.0 was used for data analysis. Respondents' perception was compared across gender using independent sample t-test and resident level using ANOVA test. The internal reliability of the inventory was assessed using the Cronbach α coefficient. P≤ 0.05 was considered significant.

3. Results

107 respondents were included in the study. The mean score of the survey was 133.7± 20.2. No significant differences in perception were found among residents at different stages and gender, except in the learning subscale of the inventory for both gender and residents and the teaching and training subscale among residents at different levels. The inventory showed a high internal consistency with a Cronbach α of 0. 851 for all 40 items.

Table-1 Characteristics of participants

Characteristics	N = 107
Gender	
Male	48 (44.9%)
Female	59 (55.1%)
Resident level	
R2	28 (26.1%)
R3	32 (29.9%)
R4	31 (28.9%)
R5	16 (14.9%)

Table-2: Mean score of overall and subscale of Steem survey

Subscale	Mean±SD
• ***Trainees' perceptions of their trainer and training***	40.4 ± 11.2
1. My trainer has a pleasant personality	3.9 ± 0.8
2. I get on well with my trainer	3.3 ± 0.9
3. My trainer is enthusiastic about teaching	3.1 ± 0.5
4. My trainer has a genuine interest in my progress	3.4 ± 0.3
5. I understand what my trainer is trying to teach me	3.1± 0.3
6. My trainer's surgical skills are very good	3.8 ±0.4
7. My trainer gives me time to practice surgical skills in theatre	2.9 ± 1.0
8. My trainer immediately takes the instruments away when I do not perform well	3.0 ± 0.2
9. Before the operation my trainer discusses the surgical technique planned	2.5 ± 1.1
10. Before the operation my trainer discusses what part of the procedure, I will perform	2.3 ± 0.9
11. My trainer expects my surgical skills to be as good as his/hers	2.8 ± 0.9
12. My trainer gives me feedback on my performance	3.3 ± 0.9
13. My trainer's criticism is constructive	3.2 ± 1.1
• ***Trainees' perceptions of learning opportunities***	42.3 ± 13.4
14. On this unit the type of operations performed are too complex for my level	3.2 ± 1.2
15. The elective operating list has the right case mix to suit my training	3.1 ± 0.7
16. There are far too many cases on the elective list to allow me to operate	4..0 ± 0.7
17. I get enough opportunities to assist	3.6± 1.2
18. There are enough theatre sessions per week for me to gain the appropriate experience	3.1± 0.6
19. More senior trainees take my opportunities to operate	3.5 ± 0.2
20. The number of emergency procedures is sufficient for me to gain the right operative experience	2.9 ± 0.4
21. The variety of emergency cases gives me the appropriate exposure	3.4 ± 1.0
22. My trainer is in too much of a rush during emergency cases to let me operate	3.0 ± 0.2

23. I miss out on the operative experience because of restrictions on working hours	3.3 ± 0.6
24. I have the opportunity to develop the skills required at my stage	3.1 ± 1.1
• ***Trainees' perceptions of the atmosphere in the operating theatre***	29.9 ± 8.8
25. In theatre I don't like being corrected in front of medical students, nurses and residents	3.7 ± 1.3
26. . The nursing staff dislike it when I operate as the operation takes longer	3.0 ± 1.2
27. The anaesthetists put pressure on my trainer to operate himself to reduce anaesthetic time	2.9 ± 1.0
28. The atmosphere in the theatre is pleasant	3.0 ± 1.3
29. The theatre staff are friendly	3.1 ± 0.7
30. I feel discriminated against in theatre because of my sex	4.0± 0.9
31. I feel discriminated against in theatre because of my race	3.5 ± 0.7
32. I feel part of a team in theatre	4.1 ± 0.8
• ***Trainees' Perceptions of supervision, workload, and support***	27.8 ± 9.2
33. I am too busy doing other work to go to the theatre	3.2 ± 0.7
34. I am often too tired to get the most out of theatre teaching	3.1 ± 0.1
35. I am so stressed in theatre that I do not learn as much as I could	3.9 ± 0.9
36. I am asked to perform operations alone that I do not feel competent at	4.0 ± 1.3
37. When I am in the theatre, there is nobody to cover the ward	2.0 ± 0.3
38. I get bleeped during operations	1.9 ±0.3
39. The level of supervision in theatre is adequate for my level	3.2 ± 0.7
40. Theatre sessions are too long	3.1 ± 0.5
• ***Total score***	133.7± 20.2

Table-3 Mean score of Steem and subscales across gender and resident level

Steem survey score	Gender		P-Value	Resident level				P-Value
	Male	Female		R2	R3	R4	R5	
Total	129.9 ±20.1	132.1 ±15.7	0.078	126.9±16.5	126.7±18.7	129.4± 20.6	135.2±12.1	0.088
Teaching & training	39.9 ± 10.7	40.1 ± 10.2	0.102	37.5 ± 10.1	41.3± 9.7	40.9± 9.5	41.8 ± 11.2	0.046
Learning opportunity	40.7 ± 12.4	41.6 ± 11.2	0.043	41.4 ± 9.1	39.3± 12.2	40.2±10.7	42.3± 8.5	0.033
Atmosphere	25.5 ± 9.8	28.3 ± 7.5	0.121	29.5 ± 6.8	27.7 ± 9.6	28.4 ± 7.9	26.7± 9.3	0.711
Supervision, workload & support	29.3± 10.2	29.1 ± 8.5	0.209	27.5 ± 5.5	28.2 ± 9.9	26.4 ± 10.1	29.0± 8.9	0.658

5. Discussion

Cronbach's score of >0.6 shows data to be relevant and valid tool assessment. Our value of Cronbach alpha analysis for internal consistency was 0.851 for Q1-40 (40 items) which shows that the surgical theatre educational environment measure (STEEM) is a suitable and reliable tool for the measurement of the educational environment thus agreeing with fellow researchers.[14,17]

Our study's Cronbach score showed same almost the same value as that of Binsaleh S (0.8651) [16] but was lower as compared to Mahoney[3] which showed a value of 0.91 in a study conducted at an Australasian surgical theatre.

Our values for gender do not show a significant difference in perception of male and female residents of an educational environment which was in accordance to study in Canada[10], Olumide[11] and Talat N[12] however was different to studies of Kanashiro J [13], Soomro SH[14], Mona[15] which showed a difference in learning on basis of gender in their surgical setups with males getting relatively more surgical exposure as compared to females. Further, it showed resemblance to other studies of Talat N[12], and Kanashiro J[13] in parameters that residents in R4 and R5 levels have slightly better and improved teaching and training along with supervision, workload and support as compared to junior residents, but it opposed previous research work of Binsaleh S[16] in this regard which showed equal opportunity in different stages of residency. Question

9,10,37 showed the lowest perception with means of 2.5, 2.3, and 2.0 respectively and require improvements while question 22 showed some relevance where our mean was 3.0 ± 0.2 and the study of Ramsi EA[17] showed a mean of 2.0.

In Pakistan generally, there is a very high inflow of patients in public surgical hospitals. Talking specifically about public institutes in Rawalpindi we get a high turnover of patients in both emergency and elective lists but overall the analysis values and perception of trainees about their training was satisfactory to previous work in Canada by Jeanie.[13] This is concerning since after getting adequate exposure to surgical cases the residents should be able to perform well and learn both theoretically and practically with hands-on experience. The field requiring special attention is Questions 7,9,10 which shows that the trainer does not properly give time to his trainees in theatre to hone their skills, he does not discuss the surgical technique with the resident and also not explains to him which part of the procedure he will perform most of the time. These could be due to excessive workload on elective and emergency lists that the trainer doesn't have ample time to properly educate his trainee. But overall, this has to be addressed because surgery is a delicate art and healthcare professionals pursuing this should have a good insight about the procedure they are going to perform so education of trainers on how to train their trainees to have good surgical skills and manage load of patients along with training of residents is important.

This study was limited to the public hospitals of Rawalpindi and could not be generalized. A deeper understanding is required from other public hospitals via STEEM parameters so that if such issues are reported at other institutes and are occurring nationally proper solutions are sought. This will lead to better training and proper supervision by trainers. Interval collection of data should be made so that any deficiency or factor influencing training can be identified and corrected

5. Conclusion

Surgical training and education have still a long way to go in the public sector. Much-needed collaborations with education specialists and senior surgeons are required. Interval collection of feedback and perceptions of the educational environment is also necessary.

CONFLICTS OF INTEREST- None

Financial support: None to report.
Potential competing interests: None to report
Contributions:
O.I, H.W.B - Conception of study
A.K, M.R.F - Experimentation/Study conduction
A.K - Analysis/Interpretation/Discussion
M.R.F, H.W.B, F.R - Manuscript Writing
O.I, F.R, N.A.M - Critical Review
N.A.M - Facilitation and Material analysis

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