

Assessment of Environment of Pediatric Surgery Residents of Pakistan using PHEEM

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Abstract

Introduction: Different countries have their own residency programs in order to train new residents in the field of medicine. Some of these programs are very efficient while some have room to improve, especially in developing countries. These residency programs can play an important role in producing great consultants in the future. So it is very important to evaluate the residency program of a country so as to make sure their residents receive quality training.

Materials and Methods: A cross-sectional survey was conducted in Pakistan using PHEEM questionnaire; for assessment of educational environment of pediatric surgery post graduate residents (PGR's) of Pakistan. A questionnaire was sent to all 95 pediatric surgery residents via E-mail in February 2017 and SPSS 20 was used to analyze data.

Results: The response rate from pediatric surgery PGR's was 48.4% (n= 45). The mean age of participants was 29.69 ± 2.71 years. Most of the participants were male (76%) and in 5th year of residency (39.13%). The high scored items (mean >2.5) were only 3: question 9, 17 and 26. The mean PHEEM total score was found to be 63.06 ± 16.77 . When categorized into global scales, most of the residents (84.4%) labeled educational environment into level 2. Mean PHEEM score was found significantly higher among female and those residing in province 'Sindh'.

Conclusion: We conclude that although educational environment depends upon and varies with many factors; overall it is not reported to be satisfactory by pediatric surgery PGR's across our country. Authorities urgently need to look into the matter and take serious actions in order to improve the quality of our future consultants.

Keywords

- Pediatric Surgery
- Educational Environment
- Residents
- Pakistan
- PHEEM

Introduction

A high Quality educational environment in a teaching hospital is a fundamental right of a junior doctor, being trained in that hospital.¹ Teaching hospitals are the specialized healthcare institutions which are meant to train new residents in different fields of medicine and surgery along with patient's exposure. A good teaching hospital provides comfortable environment to residents along with supervision, team work, research and social support.²

The residency programs can play an important role in producing great consultants in the future.³ So it is very important to evaluate the residency program of a country in order to make sure of the quality training of its residents. Many steps are being taken continuously, to have a check on these programs and pinpoint their weaknesses. Different inventories and systems exist for evaluating the educational environment for residents which mainly focus on the satisfaction of trainees towards their training program.⁴ Postgraduate hospital education environment measure (PHEEM) is a 40 item questionnaire which was developed in UK for evaluation of perception of residents in different dimensions of the clinical learning environment.⁵ Other systems to assess the educational environment developed include: DREEM for medical students, ATEEM for anesthesia and STEEM for surgical residents in operation theatre etc.⁶⁻⁸

Pediatric surgery has two structured training programs in Pakistan: FCPS (Fellow of collage of physicians & surgeon) & M.S (Master of surgery). Both are 5 years training programs which include an initial 1 to 2 years rotation in General surgery

& other specialties & the remaining period is spent in the pediatric surgery department. This study is planned since there is no available data on how the Pakistani pediatric surgery trainees perceive the educational environment in the hospital and the process of obtaining their skills. The main objective of this study was to determine the quality of educational environment of pediatric surgery PGR's in Pakistan using PHEEM.

Materials and Methods

This cross-sectional survey was conducted at the Pediatric Surgery Department of Rawalpindi Medical University, Rawalpindi. Approval from institutional IRB (Institutional Review Board) was obtained and the duration of survey was 3 months from February 2017 to April 2017. Appropriate permission for using PHEEM in this study was obtained from authors.¹¹ Anonymity of participants was maintained. First part of the questionnaire contained biodata while the next part incorporated the main PHEEM tool. It includes 40 questions which are answered using a 5 point Likert scale from strongly agree to strongly disagree (0-4). The maximum score can be 160 and is further divided in subscales based on score: 0-40 = very poor, 41-80= have so many problems, 81-120= more positive than negatives but there is room for improvement and 121-160= awesome. Higher PHEEM score means the environment is better. There are three subscales of PHEEM: teaching, self-determination and social support. The questionnaire was sent to all 95 PGR's of pediatric surgery in Pakistan via email and at the same time a text message was sent asking them to fulfill the questionnaire. Also the same request & questionnaire was sent to a whats App group of pediatric surgery PGR's. One PGR at

each center was contacted and requested to get the filled forms from all colleagues in their center. If no response was observed from the PGR a reminder email was sent. If still there was no response from the PGR after 1 week, they were pursued no more. SPSS 20 was used to analyze the collected data. Mean \pm SD was calculated for age and PHEEM scores. Frequency and percentages were calculated for qualitative variables. Student's t-test was used for comparison between PHEEM scores.

Results

For this study, total proforma sent were 95 while we received response from 46 PGR's, thus getting a response rate of 48.4%. The mean age of participants was 29.69 ± 2.71 years (range: 27-39 years). Most of the participants were male (76%) and in 5th year of residency (39.13%). All the demographic details and training related factors of the participants are given in **Table 1**.

Table 1: Demographic details and training related factors of responders

Age (mean \pm SD)	27.87 \pm 2.89 years
Gender	
Male	35 (76.1%)
Female	11 (23.9%)
Year of residency	
2 nd year	9 (19.6%)
3 rd year	5 (10.9%)
4 th year	14 (30.4%)
5 th year	18 (39.1%)
Marital status	
Single	16 (34.8%)
Married	30 (65.2%)
Province	
Punjab	29 (63%)
Sindh	3 (6.5%)
KPK	14 (30.4%)
Institute	
Private	3 (6.5%)
Public	43 (93.5%)
Time to reach hospital	\
<15 min	12 (26.1%)
min 15-30	21 (45.7%)
30min-1 hour	10 (21.7%)
>1 hour	3 (6.5%)
Duty hours	
in 3 calls 1	12 (26.1%)
in 4 calls 1	14 (30.4%)
in 5 calls 1	20 (43.5%)

Time duration	
<6 months	13 (28.3%)
months-1 year	15 (32.6%)
1-2 year	5 (10.9%)
>2 years	13 (28.3%)
Smoking	
Yes	14 (30.4%)
No	32 (69.6%)
Emergency	
We do not entertain emergency patients	2 (4.3%)
We entertain emergency patients but no resident in Emergency	27 (58.7%)
We have a separate emergency room for pediatric surgery	17 (37.0%)
Hospital type	
General hospital	23 (50.0%)
Children's Hospital	23 (50.0%)
Do you have library in ward	
Yes	5 (10.9%)
No	41 (89.1%)
Do you have routine journal club in your ward?	
Yes	20 (43.5%)
No	26 (56.5%)

Mean \pm SD was calculated for each question, subscales of PHEEM and the total score were calculated. The high scored items (mean >2.5) were only three: question 9 (There is an informative junior doctors handbook), question 17 (My duty hours are defined and are according to international standards) and question 26 (There are adequate

catering facilities when I am on call). It was found that the lowest mean score was for question 13 which stated "There is sex discrimination in this post" and question 15 which stated "My clinical teachers are enthusiastic". The mean PHEEM total score was found as 63.06 ± 16.77 . All these data are given in **Table 2**.

Table 2: Questions asked from participants in this study

		Mean	Std. Deviation
1	I have a contract of employment that provides information about hours of work	2.36	1.25
2	My clinical teachers set clear expectations	1.65	0.60
3	I have protected educational time in this post	1.69	0.83
4	I had an informative induction programme	1.78	0.89
5	I have the appropriate level of responsibility in this post	1.23	0.43
6	I have good clinical supervision at all time	1.30	0.75
7	There is racism in this post	1.23	1.47
8	I have to perform inappropriate tasks	1.00	0.63
9	There is an informative junior doctors handbook	2.58	0.80
10	My clinical teachers have good communication skills	1.58	1.00
11	I am called inappropriately by attendants/ staff nurses	1.10	1.19
12	I am able to participate actively in educational events	1.10	0.60
13	There is sex discrimination in this post	0.80	0.61
14	There are clear clinical protocols in this post	1.43	0.86
15	My clinical teachers are enthusiastic	0.80	0.68
16	I have good collaboration with other doctors in my grade	0.84	0.63
17	My duty hours are defined and are according to international standards	3.06	1.08
18	I have the opportunity to provide continuity of care	1.52	0.93
19	I have suitable access to career advice	2.02	1.22
20	This hospital has good quality accommodation for Junior Doctors, especially when on call	1.97	1.49
21	There is access to an educational programme relevant to my Needs	1.58	0.85
22	I get regular feedback from senior colleagues	1.73	0.95
23	My clinical teachers are well organized	1.58	1.04
24	I feel physically safe within the hospital environment	1.56	1.14
25	There is a no-blame culture in this post	1.84	1.05
26	There are adequate catering facilities when I am on call	2.60	1.21
27	I have enough clinical learning opportunities for my needs	1.34	0.94
28	My clinical teachers have good teaching skills	1.19	1.04
29	I feel part of a team working here	1.04	1.13
30	I have opportunities to acquire the appropriate practical procedures for my grade	1.23	0.99
31	My clinical teachers are accessible	1.02	0.88
32	My workload in this job is fine	2.10	1.07
33	Senior staff utilize learning opportunities effectively	1.43	0.91
34	The training in this post makes me feel ready to be a Senior House Officer/Specialist Registrar/Consultant	1.30	1.29
35	My clinical teachers have good mentoring skills	1.54	1.08
36	I get a lot of enjoyment out of my present job	1.67	1.03
37	My clinical teachers encourage me to be an independent learner	1.36	1.06
38	There are good counseling opportunities for junior doctors who fail to complete their training satisfactorily	2.30	1.05
39	The clinical teachers provide me with good feedback on my strengths and weaknesses	1.93	1.06
40	My clinical teachers promote an atmosphere of mutual respect	1.45	1.18
	SUB SCALE		
	Autonomy	23.26	7.26
	Teaching	21.36	5.39
	Social Support	19.00	6.62
	Total	63.06	16.77

When categorized into global scales, most of the residents (84.4%) labeled educational environment

into level 2 **Figure 1**.

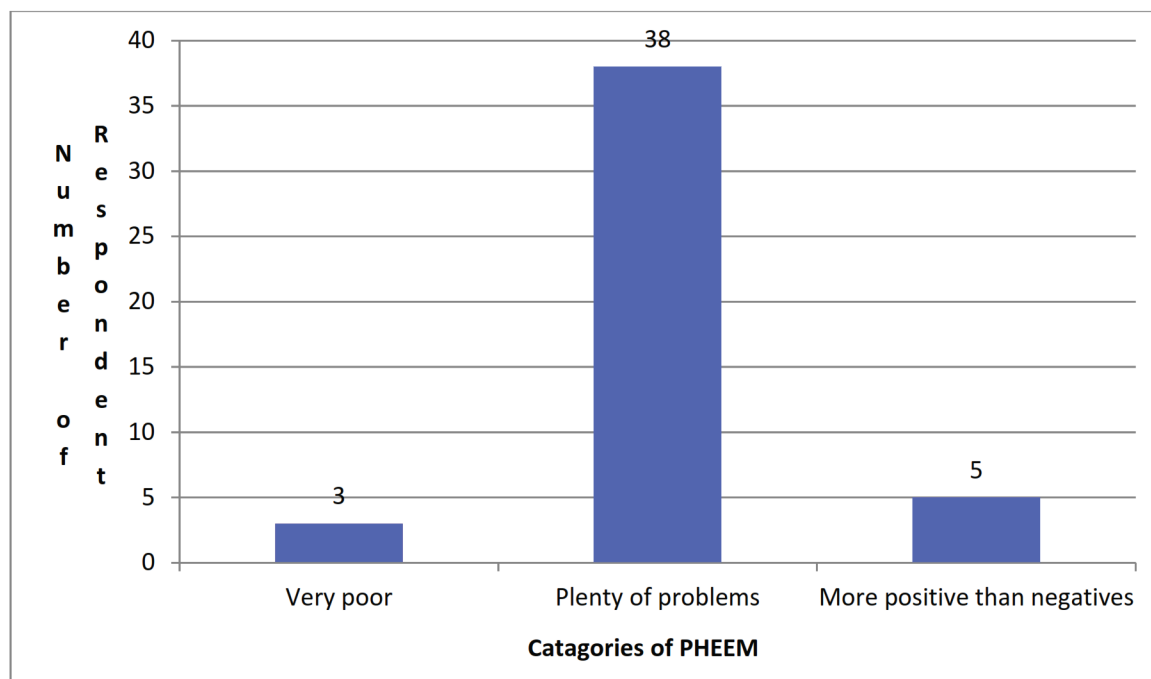


Figure1: Categories of PHEEM

Mean PHEEM score was assessed for demographic factors and hospital related factors. It was found significantly higher among Female, those residing in province 'Sindh', working in public hospitals, having more time to reach hospital, spending more

time after house job and start of post-graduation training, having no emergency department cover, non-smokers and working in children's hospitals. It is summarized in **Table 3**.

Table 3: PHEEM score according to demographic details and hospital related factors

Factors	PHEEM score	p-value
Gender		
Male	60.17 ± 14.61	0.035
Female	72.27 ± 20.44	
Year of residence		
2.00	65.66 ± 15.59	0.131
3.00	49.80 ± 14.78	
4.00	69.21 ± 18.29	
5.00	60.66 ± 15.17	
Marital Status		
Single	57.43 ± 14.17	0.256
Married	66.07 ± 18.12	
Province		
Punjab	68.89 ± 10.55	0.000
Sindh	96.00 ± 0.00	
KPK	43.92 ± 3.70	
Institute		
Private	39.00 ± 0.00	0.009
Public	64.74 ± 16.03	
Time to reach hospital		
<15 min	52.25 ± 7.61	0.017
15-30 min	63.66 ± 21.07	
30min-1 hour	69.70 ± 6.88	
>1 hour	80.00 ± 16.77	
Duty hours		
1 in 3 calls	65.50 ± 24.23	0.377
1 in 4 calls	57.78 ± 14.47	
1 in 5 calls	65.30 ± 12.39	
Time duration		
<6 months	51.69 ± 12.69	0.000
6 months-1 year	57.46 ± 15.72	
1-2 year	79.20 ± 1.64	
>2 years	74.69 ± 13.04	
Emergency		
We do not entertain emergency patients	68.00 ± 0.00	0.037
We entertain emergency patients but no resident in Emergency	67.85 ± 15.83	
We have a separate emergency room for pediatric surgery	54.88 ± 16.45	
Smoking		
Yes	54.28 ± 13.65	0.017
No	66.90 ± 16.73	

Hospital type		
General hospital	57.69 ± 16.84	0.028
Children's Hospital	68.43 ± 15.21	
Do you have library in ward		
Yes	50.60 ± 15.88	0.078
No	64.58 ± 16.41	
Do you have routine journal club in your ward?		
Yes	65.55 ± 18.51	0.384
No	61.15 ± 15.40	

Discussion

Educational environment is a group of features that determine what it is like to be a learner within an institute. ⁹ It is an important measure which directs the success and propensity of an organization as well as a residency program. Residents have to strive in a competent environment along with all the other stress factors including their routine emergency and indoor duties and low pay structure, particularly in our country. In this stressful routine, they are also supposed to pass an examination at the end of their training. They have to get an extra time for their self study and to keep their knowledge up-to-date to cope with the evolving medical knowledge and the recent advances in their own field. This all can be done if an ambient and comfortable environment is available to them. So the educational environment of an institution, particularly for residents, is important for creating good future consultants. ¹⁰

PHEEM was created in the UK by Roff et al, in order to assess different features of the clinical learning environment for junior doctors. ¹¹ It evaluates three dimensions of the clinical learning environment; perception of autonomy, perception of teaching and perception of social support. ⁵

Overall mean PHEEM score calculated was 63.06 ± 16.77 which depicts environment having plenty of problems for PGR's. This is lower than most of the studies conducted all over the world as most of the previous studies have shown mean score ranging from 80-102. ¹²⁻¹⁴ However, this is the true picture which needs to be looked into and serious measures need to be taken for improvement of the situation.

Most of the residents labeled the education environment to be a "level 2" (84.4%) suggesting that the environment requires enhancements and improvements. Similar level was reported in a study conducted in Karachi Pakistan. ¹⁵ Maximum score was for autonomy subscale, followed by teaching and social support. Female residents, those working in public hospitals and specialized children's hospitals gave significantly higher total PHEEM score. While another study conducted in twin cities of Pakistan showed that private teaching hospital residents give high scores to perception of social support. ¹⁶ But in this study, as public sector hospital PGR's showed better environment, we may hypothesize that it is due to the increased learning opportunities because of the high load of patients.

The lowest mean score was calculated for question numbers 13 and 15, showing most of the residents had to face gender discrimination and they lack role modeling as they see their seniors less enthusiastic. In our study, female residents reported a better score than male residents, which may be due to more positive attitude of female gender generally. PHEEM can be used by stakeholders to assess the strengths and weaknesses of their residency program. Our study has few limitations; less participation was observed from 2 provinces of the country including Sindh and Balochistan. It is likely that if more PGR's had participated from these parts, it may have yield different results. PHEEM may also be modified further to suit the local context in line with our own requirements and guidelines. The modified tool may then be used to assess education environment in hospitals of Pakistan on regular basis.

Conclusion

We conclude that educational environment


although depends upon and varies with many factors; however, overall it is not reported to be satisfactory by pediatric surgery PGR's across the country. As training program in Pakistan is mainly regulated by College of Physician and Surgeons of Pakistan (CPSP), however it is not universal in our country and varies accordingly with the supervisor, faculty and infrastructure available in any particular department. Similarly educational environment is an important aspect of good training for the students, so authorities will have to address the problems and take serious actions in order to improve the quality of our future consultants.

Conflict of Interest

There is no conflict of interest.

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