Original Article

Assessment of the Educational Environment of Plastic Surgery Training Programs in Iran using the PHEEM Questionnaire: A Cross-sectional Study

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ABSTRACT

Background: Clinical educational environments play a substantial role in the teaching of medical residents and fellows. In order to improve the quality of clinical education, its status should be evaluated. Therefore, we aimed to inquire about the educational environment of Plastic Surgery fellows in two teaching hospitals in Tehran, Iran using the Postgraduate Hospital Educational Environment Measure (PHEEM).

Method: In this descriptive cross-sectional study, Plastic Surgery fellows studying in two teaching hospitals in Tehran, Iran, in 2022 were included. The Persian version of the PHEEM questionnaire was applied for assessing the clinical educational environment. The collected data were analyzed by SPSS software version 22.

Results: Twenty six Plastic Surgery fellows were studied, 15.4% of whom were women (n=4) and 84.6% were men (n=22). The mean total score of the PHEEM questionnaire was 89.68±26.02. The highest mean score was in the teaching dimension (35.08), while the lowest mean score was in the social support dimension (25.42).

Conclusion: Most dissatisfaction among Plastic Surgery fellows were in the field of social support. It is necessary to adopt proper educational policies to improve the supportive resources for Plastic Surgery fellows.

KEYWORDS
Graduate medical education; Plastic surgery; Training program; Internship and residency

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INTRODUCTION

Education is a fundamental driver of development in every country and plays a complex role in sociopolitical and economic growth. The qualitative improvement of educational programs is thus crucial for boosting society's progression. In recent years, serious steps have been taken to optimize the education of medical students, especially in advanced courses [1]. The importance of improving the quality of the learning environment at post-graduate levels has been widely

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recognized in universities of medical sciences in the last decade. Many experts regard the educational environment as an effective factor in clinical learning [2]. The environment has a significant impact on the quality of learning of medical trainees and their future success [3]. The effect of the environment on the quality of students' learning is reported [4].

Various definitions have been provided for the assessment of the quality of education. What is certain is that the learning environment not only includes the physical dimension but also comprises psychological and social dimensions. This is especially important for medical training programs that are directly related to public health [5, 6]. Bloom defines the learning environment as conditions, forces, and external stimuli that challenge the individual. These forces may be physical, social, or mental [7]. The learning environment is one of the key factors that determine educational achievements, satisfaction, and future success [8]. Also, evidence points to the effect of the educational environment on the quality of life among medical trainees. Therefore, understanding the drawbacks of training programs is essential for enhancing the quality of education [9]. The evaluation of clinical training from the point of view of medical residents has revealed that the learning environment of teaching hospitals needs to be rectified [10].

Different tools can be used for the assessment of educational environments. Postgraduate Hospital Educational Environment Measure (PHEEM) questionnaire was designed specifically for evaluating residents' perceptions of the teaching environment of medical centers. This tool has been previously used for assessing the educational environment of medical residents and fellows studying in different fields [11, 12].

Among the sub-specialized fields of medicine, Plastic Surgery has been of great interest since it aids in the management of severe traumas as well as the reconstruction of cosmetic defects. Therefore, the education of graduates in this field is crucial for improving the psychological health of society. So far, no study has investigated whether the quality of education has been affected by the increased number of admitted patients. Therefore, we aimed to determine the learning environment of Plastic Surgery fellows in two main teaching hospitals in Tehran, Iran, in 2022.

MATERIALS AND METHODS

Study design and participants

The current research was a descriptive cross-sectional study. The study population consisted of all the Plastic Surgery fellows studying in the first, second, and third year in two teaching hospitals in Tehran, Iran in 2022. The two teaching hospitals included in the present research are considered the first two choices for studying Plastic Surgery fellowship among Iranian physicians and have always been in competition both in terms of education and treatment. At the time of this study, there were 15 Plastic Surgery fellows in hospital A and 11 fellows in hospital B, and all of them were included.

Data collection

The questionnaire used for data acquisition was comprised of two parts. The first part included demographic information (gender and academic year) and the second part was the Persian version of PHEEM [13]. The PHEEM questionnaire was first developed by Roff et al. [14] to evaluate the teaching environment of residents studying in Scottish hospitals. The validity of this questionnaire was dubious until it was evaluated and confirmed by several groups of researchers [15, 16]. The PHEEM questionnaire is comprised of 40 questions in three dimensions of role autonomy (13 questions), teaching (15 questions), and social support (12 questions). The answers were graded as completely agree (4 points), agree (3 points), not sure (2 points), disagree (1 point), and completely disagree (0 points). The maximum achievable score is 160 and the minimum score is zero. For each question, a score of higher than 2 is considered favorable and a score of lower than 2 is considered unfavorable. A total score of higher than 80 implies an acceptable learning environment.

Data analysis

The data was analyzed by IBM SPSS Statistics for Windows, Version 22.0. IBM Corp., Armonk, NY. Descriptive statistic tools including frequency and percentage or mean and standard deviation (SD) were utilized to describe the data. Furthermore, independent sample t-test and one-way analysis of variance (ANOVA) were used to compare the mean

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of quantitative variables in different groups. Post-hoc analysis was also performed to find patterns after the study was completed.

Ethical considerations

This study was approved by the research ethics committee of Shahid Beheshti University of Medical Sciences with the ethical code IR.SBMU.SME.REC.1401.030.

RESULTS

Twenty Plastic Surgery fellows were included, 15.4% of whom were women (n=4) and 84.6% were men (n=22). Fifteen individuals were studying in hospital A and 11 were studying in hospital B. In terms of the fellowship year, 10 people (38.5%) were in the first year, 9 people (34.6%) were in the second year, and 7 people (26.9%) were in the third year. The mean score of each dimension of the PHEEM questionnaire is listed in Table 1. The mean total score of the PHEEM questionnaire was 89.68±26.02, which was in the desirable range. The mean score of the perception of role teaching was higher than the autonomy and social support dimensions (35.08±11.14).

As shown in Table 2, the mean overall score of the fellows studying in hospital B was higher than in hospital A. In hospital B the mean scores of autonomy, teaching, and social support were 65.21±14.40, 67.87±15.00, and 56.25±10.66 respectively, which was higher than in hospital A.

As shown in Table 3, perception of role teaching had the highest mean score (58.46±18.57), while perception of role social support had the lowest mean score (52.96±13.69). Also, in all dimensions, the first-year fellows had a higher mean score than the second and third-year fellows.

ANOVA and post-hoc tests were used to determine whether the fellowship year had an effect on the PHEEM scores. As shown in Table 4, the higher the fellowship year, the lower the score. Especially, the difference in the perception of role social support in the third-year fellows compared to the first-year fellows was very significant.

DISCUSSION

This study investigated the learning environment of Plastic Surgery fellows in two major teaching hospitals in Tehran, Iran using the PHEEM questionnaire. The findings of the study showed that the most dissatisfaction of the fellows was in the social support dimension, and the results were more

Table 1: Minimum, maximum, and mean of scores obtained in each dimension of the PHEEM questionnaire

Variable	Minimum	Maximum	Mean	SD
Perception of role autonomy	4	50	29.15	9.805
Perception of role teaching	13	60	35.08	11.146
Perception of role social support	11	37	25.42	6.574
Overall score	28	147	89.65	26.025
Perception of role autonomy (%)	7.7	96.2	56.065	18.8555
Perception of role teaching (%)	21.7	100	58.462	18.5767
Perception of role social support (%)	22.9	77.1	52.965	13.6953
Overall percentage	17.5	91.9	56.034	16.2653

Table 2: The mean scores of the questionnaire dimensions based on teaching hospitals

	Hospital	Sample	Mean	SD	SE
Perception of role autonomy (%)	A	15	49.359	19.3085	4.9854
	B	11	65.210	14.4027	4.3426
Perception of role teaching (%)	A	15	51.556	18.2951	4.7238
	B	11	67.879	15.0017	4.5232
Perception of role social support (%)	A	15	50.556	15.4598	3.9917
	B	11	56.250	10.6637	3.2152
Overall percentage	A	15	50.542	17.0442	4.4008
	B	11	63.523	12.1555	3.6650

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Table 3: The mean score of the questionnaire dimensions based on fellowship years

Variable		Sample	Mean	SD	SE
Perception of role autonomy (%)	1	10	62.500	17.2304	5.4487
	2	9	56.197	14.0916	4.6972
	3	7	46.703	24.4948	9.2581
	Total	26	56.065	18.8555	3.6979
Perception of role teaching (%)	1	10	68.333	15.2550	4.8241
	2	9	56.111	16.6875	5.5625
	3	7	47.381	20.0891	7.5930
	Total	26	58.462	18.5767	3.6432
Perception of role social support (%)	1	10	60.833	11.1890	3.5383
	2	9	51.157	8.5968	2.8656
	3	7	44.048	17.1555	6.4842
	Total	26	52.965	13.6953	2.6859
Overall percentage	1	10	64.188	13.1433	4.1563
	2	9	64.653	12.5705	4.1902
	3	7	46.161	20.1279	7.6076
	Total	26	56.034	16.2653	3.1899

Table 4: The average difference of PHEEM questionnaire dimensions based on academic years

Variable	Residency year (I)	Residency year (J)	Mean difference (I-J)	SE
Perception of role autonomy (%)	1	2	6.3034	8.4941
		3	15.7969	9.1104
	2	1	-6.3034	8.4941
		3	9.4933	9.3165
	3	1	-15.7967	9.1104
		2	-9.4933	9.3165
Perception of role teaching (%)	1	2	12.2222	7.8675
		3	20.9524	8.4384
	2	1	-12.2222	7.8675
		3	8.7302	8.6293
	3	1	-20.9524	8.4384
		2	-8.7302	8.6293
Perception of role social support (%)	1	2	9.6759	5.6549
		3	16.7857	6.0651
	2	1	-9.6759	5.6579
		3	7.1098	6.2023
	3	1	-16.7857	6.0651
		2	-7.1098	6.2023
Overall percentage	1	2	9.5347	6.9416
		3	18.0268	7.4452
	2	1	-9.5347	6.9416
		3	8.4921	7.6136
	3	1	-18.0268	7.4452
		2	-8.4921	7.6136

favorable in the teaching and autonomy dimensions. We also observed that the higher the fellowship year, the lower the scores.

According to Khoshgoftar and colleagues [2], the PHEEM questionnaire is a reliable tool for evaluating the environment of academic centers where specialized and sub-specialized courses are presented. In our study, the overall average score was 89.68±26.02, which means that the educational environment was acceptable. The results of the

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study by Ezomike et al. [17] in Nigeria showed an overall score of 82.85, which is consistent with the results of our study. Among previous studies in Iran, Shakibi and colleagues [5] used this method to evaluate the educational environment of residents taking different programs. The scores obtained in the dimensions of autonomy, teaching, and social support were 25.77, 24.72, and 20.35, respectively, which are not considered desirable scores.

Similarly, Jalilian and colleagues [13] conducted research on 68 Iranian physicians studying laparoscopic surgery fellowship. The mean scores were 38.45 ± 6.92 in the autonomy dimension and 32.54 ± 5.39 in the social support dimension. But in the teaching dimension, the mean score was 45.81 ± 7.05, which shows that the fellows were satisfied with the teaching, but they were not satisfied with the welfare facilities and social support. Although the overall score was 116.08±17.43, which is considered very excellent since the assistants are still dissatisfied with the environment and social support, revisions of the educational environment seem necessary. Sandhu et al. [18] showed that the highest score was obtained for the teaching sub-scale, followed by autonomy, and social support, which is in line with our study. The results of the studies performed by Binsaleh et al. [10] and Khoja et al. [19] reported that the scores obtained in the autonomy and teaching dimensions were acceptable, but in terms of social support, dissatisfaction of the residents was evident. In the present study, the first-year fellows had a higher average score than the second and third-year fellows. In the study of Clapham and colleagues in England [20], lower-year residents gave higher points to the educational environment better than senior residents. In Saudi Arabia [21], similar findings were reported. However, other studies conducted in New Zealand [22] and Iran [13] have reported higher scores among senior residents. In terms of gender, the mean scores were lower among female participants than males. This has been stated in other surveys [13, 21], and might be due to the higher sensitivity of women to environmental and educational issues.

As reported in the majority of studies, both in Iran and abroad, medical residents and fellows are highly dissatisfied with social support and welfare facilities. Regardless of the physical environment, the educational environment includes psychological, emotional, cultural, social, economic, and even political dimensions. Given the rapid increase in the number of medical science branches, it is necessary to boost the quality of educational environments accordingly [2]. Meanwhile, it should be noted that in fields that have practical work, such as surgery, the scores given by residents tend to be lower. This can be justified by the fact that surgery residents and fellows tend to perform surgical procedures independently, while the training necessitates the presence of the professor and as a result, residents might feel a lack of independence and autonomy.

CONCLUSION

Proper educational policies should be adopted to improve the educational dimensions that are less favorable from the fellows' point of view. Training workshops should be held to aquatint medical faculty with new teaching methods. Improving social support and welfare facilities should be prioritized to provide medical trainees with a pleasant educational environment.

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CONFLICT OF INTEREST

The authors attest that they have no conflict of interest to disclose.

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