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Evaluating Factors Affecting Residency Education from the Perspective of Professors and Pediatric Residents: A Cross-Sectional Study

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Abstract

Background: Specialized and sub-specialized medical education, considering the special role of residents in the educational and medical system of universities, is of key importance in the higher education system of Iran. The aim of the present study was to investigate the factors affecting the quality of residency education from the perspective of professors and pediatric residents.

Materials and Methods: In this cross-sectional study, sample size consists of pediatric residents and faculty members who were working in the pediatric wards of training hospitals affiliated with Mashhad University of Medical Sciences, Mashhad, Iran in 2020. The individuals have been selected through convenience sampling. The samples then filled a researcher made questionnaire (about the quality of Resident Education in clinical fields), and the obtained data were analyzed using SPSS software version 16.0.

Results: A total of 10 faculty members and 35 pediatric residents participated in this study. Findings showed that professors assigned higher mean scores to the effect of individual and environmental factors on the residency education as compared to pediatric residents ($P<0.05$). The results showed a significant difference between professors and residents in terms of the mean scores given to the educational quality in items 14 and 13 and items 18 to 23. In other words, professors had more positive attitude towards quality of clinical education than pediatric residents ($P <0.05$).

Conclusion: Faculty members and pediatric residents did not have the same views on the quality of residency education and professors had more positive assessment of the effect of individual and environmental factors on the clinical field as compared to pediatric residents.

Key Words: Education, Pediatrician, Pediatric residents, Professors, Quality.

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1- INTRODUCTION

Specialized and sub-specialized medical education, considering the special role of residents in the educational and medical system of universities and also the very important role of graduates in the public health system, is of paramount importance in the higher education system, therefore, improving the quality of residency education is a serious concern for the executive officials and experts (1). On the other hand, medical residents are one of the key pillars in promoting and improving the performance of the educational and healthcare system and they have the duty to provide constant therapeutic services to patients referring to medical education centers (2). According to majority of medical students, residents play an important role in clinical education and provide about one third of their practical training (3, 4).

The valid residency education reference, The Accreditation Council for Graduate Medical Education (ACGME), considers education as one of the essential competencies for residents and shows the need to evaluate the skill training of residents while training students, other residents, nurses and other medical staff (5-7). One of the important priorities of medical universities is to plan to empower residents' education considering their prolonged presence in educational and medical centers (8, 9). Medical residents are involved in both patient education and treatment fields. Problems such as overcrowding of emergency departments, lack of resources and other therapeutic problems affect education directly or indirectly (10). Also, results of previous relevant studies in the United States and Australia, generally referred to individual factors including motivation and interest in the field, job fatigue, age, income level, interpersonal relationships between faculty and residents, as well as workplace factors such as educational facilities, ward overcrowding, medical and welfare facilities, etc. as effective factors on residency training (11-13). Therefore, there is a need to guide the residency education in such a way that to meet the medical needs of the society, but also to realize educational goals specified for residents in each specialized field with the guidance and assistance of faculty members. To this end, the first step is to evaluate the current situation and opinion poll the residents and faculty members regarding the quality of education and the factors affecting it (14). The aim of the present study was to investigate the factors affecting the quality of residency education from the perspective of professors and pediatric residents.

2- MATERIALS AND METHODS

2-1. Method

This cross-sectional study was performed in the Pediatric wards of educational hospital affiliated to Mashhad University of Medical Sciences (Imam Reza, Ghaem, Dr. Sheikh and Akbar Hospitals), during 2020. The study method was approved by the Pediatric Research Council. There was also no need to write the person's name on the questionnaire. Census sampling was used and all pediatric residents and faculty members of the Pediatrics department of Mashhad University of Medical Sciences who were active in the Pediatrics department during the study period, were eligible to enter the study. Reluctance to participate in the study or incomplete completion of questionnaires was considered as exclusion criteria.

2-2. Measuring tool

Data collection was carried out using a researcher-made questionnaire. The questionnaire consisted of two parts (participants' demographic information and a 23-item survey questions scored based on a 5-point Likert scale (strongly agree to

strongly disagree). These 23 items were classified into three general categories as follows: **a**. Environmental factors: Items No. 6, 8, 19 and 21, **b**. Patient-related items: Items No. 1, 4, 5, 12, and 20, and **c**. Person-related factors: Items No. 2, 3, 8, 9, 10, 11, 13, 14, 15, 16, 17, 22, and 23. The validity of this questionnaire was determined by five expert faculty members (three pediatric faculty members, one nursing faculty member, and one medical education specialist), and its reliability was also determined by eight people (five pediatric residents and three faculty members) (Cronbach's alpha = 91%).

2-3. Data Analyses

Demographic data were presented in the form of frequency, mean and standard deviation. Chi-square and Fisher tests were used to compare qualitative variables. ANOVA and Pearson correlation tests were used to compare quantitative variables between different demographic groups. P-value less than 0.05 were statistically significant.

3- RESULTS

A total of 10 faculty members (22.2%), and 35 pediatric residents (77.2%) participated in the present study. **Table.1** shows the mean and standard deviation of the scores of individual, environmental and patient-related factors in the two groups of professors and pediatric residents. The results showed a significant difference between the scores given by professors and pediatric residents to the effect of individual factors on the quality of residency education ($P<0.05$). That is, individual factors were more effective on the residency education from the perspective of professors than pediatric residents. Findings also showed environmental factors were more effective on the residency education from the perspective of professors than pediatric residents ($P=0.014$). On the other hand, the results showed no significant difference between the two groups in terms of scores given to the effect of patient-related factors on the residency education ($P=0.821$). Pediatric professors and residents mentioned that the environmental factors had the same effect on the residency education.

Table-1: The mean of the scores of individual, environmental and patient-related factors in the two groups of professors and pediatric residents.

Factors affecting the quality of education	Professors	Pediatric residents	t-test	df	P-value
	Mean (SD)	Mean (SD)			
Individual	2.49 (0.70)	2.02 (0.47)	2.50	43	0.016
Environmental	2.27 (0.78)	1.75 (0.50)	2.57	43	0.014
Patient-related	2.34 (0.050)	2.30 (0.53)	0.228	43	0.821

SD: Standard deviation, df: Degree of freedom.

Table.2 shows the mean and standard deviation of the opinions of professors and pediatric residents regarding the quality of the residency education by separately for each item. The results of the independent t-test show a significant difference between the views of professors and pediatric residents in terms of their attitudes toward the quality of the residency education in the items "Performing the procedure under the direct supervision of the faculty increases the quality of education", "Prolonged presence of faculty with residents during working shifts increases the quality of education", "Consulting with other specialties about the patient increases the quality of education", "Having enough staff in the pediatric ward increases the

quality of education", "Better interpersonal communication between professors and residents increases the quality of education", and "Feedback from professors and other residents increases the quality of education" (P<0.05); so that the average scores given to above items by the pediatric professors were higher than the pediatric residents. There was also a significant difference between the views of pediatric professors and pediatric residents on the items "Professors who have executive responsibilities at the university reduce the quality of education" and "The higher the income of pediatricians, the greater the interest and education among the residents will be" (P<0.05); so that given to above items by the pediatric professors were higher than the pediatric residents. In the rest of the items, there was no significant difference between pediatric professors and pediatric residents regarding their attitude towards the quality of residency education (P>0.05).

Table-2: The mean and standard deviation of the opinions of professors and pediatric residents regarding the quality of the residency education by items.

N.	Item	Professors	Pediatric residents	t-test	df	P-value
		Mean (SD)	Mean (SD)			
1	The more patients visited in one shift, the better the quality of education.	3.00 (1.56)	3.51 (1.44)	.977	43	.334
2	12-hour shifts provide better training than 8-hour shifts.	3.10 (1.37)	3.17 (1.29)	.152	3	.88
3	Reducing the number of shifts will increase the quality of training.	1.60 (.966)	1.54 (.741)	.201	43	.842
4	Treatment of some patients in the pediatric ward by specialists in other fields, will increase the quality of education.	2.20 (1.02)	2.31 (1.05)	.304	43	.762
5	Congestion reduces the quality of education.	1.50 (.850)	1.54 (.561)	.189	43	.851
6	The availability of diagnostic facilities (radiology and laboratory) increases the quality of education.	1.50 (.527)	1.49 (.562)	.072	43	.943
7	An appropriate training curriculum that is compatible with the night shift, increases the quality of training in the night shift.	2.10 (.994)	2.17 (.923)	.923	43	.833
8	Inclusive personal interest in the field of pediatrics, increases the quality of education.	1.80 (.789)	1.71 (.926)	.266	43	.792
9	Pediatric residents should have incentives to achieve their educational goals.	1.90 (.773)	1.91 (.951)	.044	43	.965
10	Educational rounds in the pediatric ward, meet the needs of assistants.	2.90 (1.10)	2.60 (1.14)	.738	43	.465
11	One training protocol for each shift, increases the quality of training.	1.70 (1.05)	2.09 (1.01)	1.05	43	.298
12	Patient care is more important than shift training.	2.30 (1.16)	2.26 (.817)	.133	43	.895
13	Performing the procedure under the direct supervision of faculty members, increases the quality of education.	2.70 (1.15)	1.60 (.651)	3.91	43	.001
14	Increasing the time of faculty members attending shifts with residents, increases the quality of education.	2.50 (1.26)	1.57 (.739)	2.95	43	.005
15	Senior residents can increase their training by training junior residents.	2.40 (.966)	1.91 (.818)	1.59	43	.119
16	Morning reporting after the shift, increases the quality of training.	2.40 (1.26)	1.97 (.923)	1.19	43	.241
17	Teaching theoretical and practical points to other colleagues, increases the quality of education.	2.20 (1.22)	1.94 (.938)	.713	43	.48
18	Professors who have executive responsibilities at the university, reduce the quality of education.	3.20 (1.22)	2.40 (1.06)	2.02	43	.049
19	The higher the income of the pediatrician, interest in education is increasing among residents.	2.70 (1.33)	1.97 (.891)	2.03	43	.049
20	Consulting with specialists in other fields about the patient increases the quality of education.	2.70 (1.25)	1.86 (.64)	2.89	43	.006
21	Having enough staff in the pediatric ward increases the quality of education.	3.10 (1.28)	1.83 (.74)	3.99	43	.001
22	Better interpersonal communication between faculty and residents enhances the quality of education.	3.10 (1.19)	1.71 (.86)	4.11	43	.001
23	Feedback from professors and other residents increases the quality of education.	3.10 (1.2)	1.69 (.631)	4.41	43	.001

SD: Standard deviation, df: Degree of freedom.

4- DISCUSSION

The main purpose of this study was to investigate the factors affecting residency education from the perspective of professors and pediatric residents. The results of the present study showed a significant difference between the attitudes of professors and pediatric residents towards the quality of the residency education, that is, compared to pediatric residents, professors had a more positive evaluation of the effect of individual and environmental factors on the quality of the residency education. It seems that this can be justified by the fact that professors are regarded as the main provider of residency education, therefore, normally, they give a higher score to their performance (15).

On the other hand, there are sometime drawbacks associated with this education realized only by the students but not by the professors (16). Results of the present study also showed a significant difference between the views of professors and pediatric residents regarding the items "Performing the procedure under the direct supervision of the faculty increases the quality of education", "Prolonged presence of faculty with residents during working shifts increases the quality of education", "Better interpersonal communication between professors and residents increases the quality of education", and "Feedback from professors and other residents increases the quality of education".

In this regard, Ahmadian stated in his research that less frequent interaction between the professor and the student can inadvertently be the source of inappropriate education for clinical students (17). The faculty members can provide the appropriate conditions for an accurate and objective assessment of the apprentices' abilities and provides appropriate feedback from both parties (18) by providing direct supervision, which contributes to the quality of education from the residents' point of view; however, the professors assigned lower scores to these items because the professors did not have enough time to train and accompany the residents (19). There was also a significant difference between the views of professors and pediatric residents in the items "Consulting with other specialties about the patient increases the quality of education", "Having enough staff in the pediatric ward increases the quality of education".

Physicians spend a relatively considerable amount of time consulting with each other and name counseling as an important and integral component of their performance (20). However, it should be noted that during the consultation between two physicians, the resident or attending physician should provide sufficient and correct information to the consultant specialist (21). Since consultation between physicians with different levels of expertise and skill about a particular patient or disease can provide excellent learning experiences for both consultees and consultant (22), which in turn contributes to the quality of the residency education. There was also a significant difference between the views of professors and pediatric residents on the items "Professors who have executive responsibilities at the university reduce the quality of education" and "The higher the income of pediatricians, the greater the interest and education among the residents will be" so that the average scores given to above items by the pediatric professors were higher than the pediatric residents.

High workload of faculty members is one of the challenges of participating in continuing education programs, which can disrupt these programs (23). In this regard, it is stated that job responsibilities and, as a result, lack of opportunities to pay attention to the learning process, are among the negative consequences for such professors. One of the most important external factors affecting job motivation

among the faculty members of medical universities is "salary" (24) which, according to the results, can create interest and willingness in university professors to provide residency education. This finding is consistent with studies carried out by Mousavi and Movahedirad, and Cumber and Elive (2016) in the Hospitals of Fako, Cameroon (25, 26). Motivation and interest are the basic pillars of progress and success in the field of interest, including a particular field of study. Motivation can affect students' satisfaction with their education and success, and enhances their commitment to a profession related to their field of study. As the findings of the present study showed personal interest in the field of pediatrics, increases the quality of education (27).

Many studies have confirmed the existence of weakness and deficiency in clinical settings (28). The main problems of Iran's hospitals include shortage manpower or its inadequate distribution. It is noteworthy that a large number of studies acknowledged the inadequate and unfair distribution of human resources in hospitals (29). According to the results of the present study, having enough staff in the pediatric ward increases the quality of education can affect the quality of the residency education. The results showed that the availability diagnostic facilities (radiology and laboratory) is another effective factor in improving the quality of residency education from the perspective of professors and pediatric residents.

One of the most important educational opportunities available for that clinical professors is clinical education environments where students can be actively involved in their learning. It is necessary to examine the clinical education environment like other educational environments and identify its shortcomings both from the point of view of educational aids, or environment, most importantly, educational process (30). In his research, Saarikoski referred to the need to use appropriate and adequate tools and equipment in hospitals (31). Nematbakhsh et al. showed that one of the main priorities for promoting medical education from the perspective of professors is to increase educational facilities in hospitals (32). Findings of the present study showed that professors and pediatric residents were opposed to the effect of a large number of patients visited in one shift on the quality of residency education and agreed that the overcrowded ward reduces quality of education because the professor and student become busy solving patients' problems often due to the high volume of patients and ignore the education to a large extent.

After the implementation of the Health Transformation Plan, due to the increase in the number of patients referring to teaching hospitals, there was no standard number of patients for education, which had an impact on the residency education (33). The results also showed that residents were opposed to 12-hour shifts compared to 8-hour shifts as a solution to increase the quality of residency education. Maghsoudipour et al. also showed that 12-hour work shifts, compared to 8- hour shift led to a decrease in total sleep, and an increase in response time to stimuli due to the error of the subjects, which can indicate a decrease in mental performance during 12-hour shifts (34).

In this study, residents agreed the idea to increasing the number of shifts to improve the quality of residency education in the pediatric department of educational hospitals, and the majority agreed on an appropriate curriculum that is compliant with the night shift. Approximately, 75% of the participants in this study also believed that a training protocol for each shift increases the quality of education, which are consistent with the results of the study by Momeni et al. (10). Clinical round as the most prominent type of

clinical education, is one of clinical education programs conducted in parallel with the diagnostic, treatment and patient care processes in the wards of the educational hospital. Implementation of the clinical round and the level of learners' participation in this educational phenomenon can play an effective role in enhancing the learning process (35). In this study, 42% of the participants considered the clinical rounds in the pediatric ward to be proportional to the needs of the residents. Morning report is also one of the most practical methods of clinical education. Morning report is one of the best methods of clinical education that is applicable in almost all specialized fields (36). In their study, Parrino and Villanueva found that more than 85% of respondents considered the morning report to be a good environment for social interaction (37). Most of the participants in our study tended to hold a morning report after each shift. According to the results of various studies, one of the other factors that help to improve the quality of the residency education is to receive feedback from professors and residents. After receiving effective feedback, learners can improve their next tasks and increase their ability to judge their work (38-40).

5- CONCLUSION

Faculty members and pediatric residents did not have the same opinion regarding the factors affecting the quality of residency education, so that professors assigned higher scores to the effect of individual and environmental factors in improving the quality of residency education as compared to residents. The results also showed that, from the point of view of professors, prolonged presence of faculty with residents during working shifts increases the quality of education, lack of executive responsibilities, consulting with other specialties about the patient increases the quality of education, having enough staff in the pediatric ward increases the quality of education, better interpersonal communication between professors and residents and feedback from professors and other residents are among the important factors in improving the quality of residency education.

6- CONFLICT OF INTEREST: None.

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