

A survey on the clinical performance evaluation of operating room interns from the perspective of professors, educators and peer students of Tehran universities of medical sciences within 2017-2018

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ABSTRACT

Introduction: Teaching and learning are vital aspects of working in a clinical environment, which leads to the development of knowledge, skills and attitudes. Evaluation has been considered as the essential step in teaching processes, which is a fundamental element in each educating program. This can guide the teaching process from a static mode to dynamic one. The present study aimed at determining the clinical evaluation status of surgery students based on their teachers', professors' and students' view of this major in medical sciences universities of Tehran city in 2019. **Methodology:** This research included 106 students, 21 coaches and 13 professors of this major. Sampling was done through census method and using made questionnaire including 2 parts of demographic information and clinical evaluation status questionnaire, which entailed 6 dimensions (evaluation conditions, evaluation contents, evaluation process, evaluation methods, scoring methods and evaluation outcomes) of Likert's 5 points scale response type. **Results:** In the current research, the clinical evaluation status of students was in a good level based on professors' and coaches' view, but it was weak according to students. **Discussion and conclusions:** According to the results of the study, students were greatly affected by the scores and average marks. In fact, the valuation system was based on scores. Thus, it was expected that responsible individuals vividly investigate the evaluation methods of surgery students and try to ask students comments when re-evaluating and improving the evaluation methods.

Keywords: clinical evaluation, instructor, student, Professor.

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Introduction

Leading to the development of knowledge, skills and attitudes, both education and learning are the critical aspects of working in a clinical environment ^[1]. The purpose underlying operating room discipline is to train OR experts who can efficiently act as a surgical team member. Certainly, the competent practice of OR experts becomes evident once they are thoroughly trained in clinical skills. During the course of their education, interns should acquire theoretical knowledge along with practical proficiency in a real clinical setting i.e. they need to associate

their theoretical knowledge with applied skills in such a clinical environment^[2]. Operating room is a complex system whose staff organize its technology and patients to achieve optimal results in a physical atmosphere^[3]. Operating room is considered as a perilous place for patients. Some post-operative risks that patients are likely to be exposed to are allied to competency of operating room staff^[4]. Definitely, if OR staff receive necessary trainings esp. in clinical practices, they can perform effectually. During the course of their education, interns should attain sufficient ability to function professionally in a real setting in addition to the theoretical learning; clinical education is in fact complementary to the theoretical education^[5]. Unlike theoretical education environments, the clinical education settings are not scheduled and predictable; instead, they involve numerous variables in the areas of psychomotor knowledge and attitude^[6]. In their encounter with such clinical setting during clinical training, interns are required to gain adequate clinical skills and experiences while dealing with the patients and their problems in the hospital^[7]. In other words, clinical education should prompt students to play a more effective clinical role^[5], aiming at improving the quality of education so as to train competent students in various clinical settings^[8]. Performance valuation and assessment are necessitated at any stage of education particularly clinical. As an integral part of any educational program, evaluation of clinical educational setting is essentially the systematic process of collecting, analyzing and interpreting information. Regarding purpose and subject, performance evaluation is one of the prominent assessment of interns as an important aspect of educational activity processes which allows the identification of weaknesses and strengths based on the observed outcomes in order to take appropriate actions for the reformation and evolution of educational system by reinforcing the positive aspects and eliminating the negative ones^[9, 10]; this facilitates the achievement of educational objectives that will ultimately result in providing higher quality care services^[11]. Therefore, what should be of great interest is the provision of an environment with healthy elements, that is present in the clinical educational setting, whose assessment gives valuable information on the quality and quantity of clinical education setting^[12]. More than a half of the total performance evaluation of medical interns is related to their clinical assessment^[13]. Several studies have shown that the considerable impact of constant clinical evaluations and pertaining interventions on the improvement of training process cannot be overlooked^[9]. That is because educational process comprehensively identifies, describes, evaluates, influences and benefits all educational aspects and is an apt tool for modifying the goals, plans and methods of teaching. As one of the key activities in educational technology, evaluation is a necessary process without which educational goals cannot be accomplished^[14]. The purpose of evaluation should rely on providing comprehensive and profound standpoints. Such aspects as educational materials, teaching strategies, learning activities, assessment methods and learning outcomes should be addressed in evaluation. In its ideal sense,

evaluation need to be followed on the basis of the curriculum so as to reach consistent return on a number of available resources^[15]. Evaluation is done for the sake of determining whether interns are competent enough to fulfill the intended training course and its objective. The significance of evaluation is to the extent where the heart of education lies, with its ultimate goal in ensuring the quality of cares for the patients^[16]. Challenges to clinical evaluation is evident and should be assessed and controlled to safeguard the achievement of its goals. Each internship course terminates in the evaluation of interns' performance by the clinical educators and professors or by other nurses in cooperation with the aforesaid clinical educators and professors supervising the students in the process of their clinical internship. The multiplicity of factors affecting evaluation is indicative of its complexity and difficulty in assuring its authenticity and accuracy. Thus, it is not surprising that the clinical performance of interns is not often accurately evaluated^[17]. According to the Nursing and Midwifery Council (NMC) of England (2008), clinical evaluation is supported by the educators or those who are engaged in the teaching and learning process of students because it is one of the few ways to guarantee that graduates are competent and qualified enough for the clinical work and educational purposes^[18]. Since educators hold the main role of judgment on interns' clinical achievements, they find it challenging to judge whether their decision on the performance evaluation of students is factual of their real clinical practice. What is more important is that educators per se cannot evaluate all the aspects of ones' behavioral and individual skills. It is, hence, presumed that the insight derived from several perspectives are more reliable and sharing the observed information will have a positive impact on one's progress with more accurate, valid and reliable information provided. This process allots to a comprehensive understanding of students' skills and abilities through gathering information from various viewpoints^[9, 19, 20]. Mousavi *et al.* found that the best solution to eliminate the challenges to the evaluation is its fulfillment by various persons present during the internship process, through which single-rater error is minimized^[21]. Kheradmand *et al.* states that the evaluation outcomes are helpful for curriculum developers, planners and professors in improving teaching methods, resulting in better decision making^[22]. Besides, what magnifies the importance of the present study is that some graduates lack sufficient practical skills and expertise in clinical setting despite their strong theoretical knowledge^[23]. Consequently, the present study intended to survey the clinical performance evaluation of operating room interns from the perspective of professors, educators and peer students.

Material and Methods

The present cross-sectional study intended to survey the clinical evaluation of OR interns from the perspective of professors, educators and peer students of Tehran universities of medical sciences in 2018. To this end, it targeted 106 B.S. graduates in

operating room field as well as 21 educators and 13 professors in the same discipline selected from universities of medical sciences in Tehran including Iran, Shahid Beheshti, AJA, Baqiyatallah and Shahed universities of medical sciences based on census sampling method. The inclusion criteria comprised tendency to participate in the study, students of the 7th or 8th semesters who accomplished the specialized credits and were being trained as an intern, educators who were responsible for training the interns based on the clinical curriculum titles in the operating room and professors who were experts in the field of operating room in the intended universities. Once necessary permissions were granted by the research committee of university, the school of Paramedicine and the authorities of selected universities and affiliated hospitals, the researchers visited the intended universities and the ORs of medical teaching hospitals, affiliated to the aforesaid universities of medical sciences, three times a week to provide the subjects with research questionnaires. To ensure the accuracy and quality of the observed data, the respondents were briefed in person. That is, they were thoroughly informed of the research purpose and significance, with their consent reached to participate in the study; next, the consented participants received the questionnaires to complete; the completed questionnaires were gathered by the researchers on the same day.

Data collection tools encompassed a researcher-made questionnaire with two sections: the 1st section covered the demography of subjects such as their education, work history, teaching experience, clinical work history, students' university of education, service university of educators and professors, age and sex; the 2nd section included a 61-item clinical assessment questionnaire with 6 topics. Forty-eight items remained once the questionnaire's validity was determined by 11 professors. Regarding the topics, 8 items were allotted to clinical evaluation conditions, 8 to clinical evaluation content, 3 to evaluation process, 11 to evaluation methods, 8 to scoring methods and 10 to evaluation outcomes. For scoring, the 48-item clinical assessment questionnaire was rated based on the 5-point Likert Scale from 5 to 1 assigned respectively to Always, Often, Sometimes, Rarely and Never. The minimum score was 48 while the maximum equaled 240. The range of scores was 192. In order to have three class of data, the range (192) was divided by three equaled 64. Accordingly, the score range varied from 48 to 48+64 for the first group (poor), from 112 to 112+64 for the second group (moderate) and from 176 to 240 for the third group (good). As such, the clinical competence of subjects was divided into three groups with the same interval.

The validity of the questionnaire was obtained through content validity and expert judgment of 11 faculty members and university experts in clinical evaluation of OR interns. Its reliability was estimated based on test-retest. To this end, the questionnaire was given to 26 raters including 10 OR interns, 8 educators and 8 professors to complete. Within a one-week interval, the same questionnaire was recompleted by the same

raters with its Cronbach Alpha valued 0.946. It is worth noting that the intended raters for reliability estimation were other than the research participants/subjects to avoid bias. The observed correlation between the responses was measured in two stages by pilot subjects; the overall correlation coefficient >0.9 confirmed the reliability of the questionnaire. The responses were analyzed in SPSS₂₂ once scored. Descriptive statistics was used to organize, summarize and classify the raw scores, frequency distribution, mean, median and SD. Independent t-test was applied in inferential statistics due to the non-normal data distribution.

Results

Once data analyzed, it was witnessed that the age range of interns was 20-25 years, with 34 of whom (%32.1) aged 20-21, 64 (%60.4) aged 22-23 and 8 (%7.5) aged 24-25 years having a mean age of 22.06 ± 1 . Moreover, the age range of educators varied from 28 to 50 years, with 9 of whom (%42.9) aged 28-35, 10 (%47.6) aged 36-46 and 2 (%9.5) aged ≥ 45 years having a mean age of 37.33 ± 6.22 . Finally, the age of professors ranged 28-57 years, with 3 of whom (%23.1) aged 28-35, 3 (%23.1) aged 36-45 and 7 (%53.8) were older than 45 years of age having a mean age of 44.92 ± 9.91 . Besides, 41 and 65 of interns were respectively male (%38.7) and female (%61.3); of educators, 6 (%28.6) were male and 15 (%71.4) were female; 7 professors were male (%53.8) and 6 were female (%46.2).

The 'clinical evaluation status' of the OR interns was assessed based on the perspective of students, educators and professors. Table (1) has presented the mean and SD of clinical evaluation of the OR subjects from the perspective of students, educators and professors. As displayed, the minimum mean score was related to evaluation process while the maximum was allied to scoring methods subscale amongst students. For educators, the minimum and maximum mean value was associated with evaluation process and evaluation outcome respectively. From the perspective of professors, the scale of evaluation process and subscale of scoring methods exhibited the minimum and maximum mean score respectively.

Table 1: Mean and SD of clinical evaluation of the intended OR interns based on the perspectives of students, educators and professors

		No.	Min.	Max.	Mean	SD
Students	Clinical Evaluation Conditions	106	9	33	21.16	4.02
	Evaluation Content	106	11	34	22.70	5.02
	Evaluation Process	106	3	13	8.38	2.28
	Evaluation Methods	106	13	47	27.40	6.11
	Scoring Methods	106	15	32	25.44	3.73
	Evaluation Outcomes	106	10	42	28.42	6.80
	Clinical Evaluation Status	106	75	189	133.51	20.09

Educators	Clinical Evaluation Conditions					5.07
		21	18	38	26.09	
	Evaluation Content	21	20	39	28.90	4.98
	Evaluation Process	21	6	14	9.62	2.15
	Evaluation Methods	21	19	42	35.38	5.95
	Scoring Methods	21	23	40	30.24	4.35
	Evaluation Outcome	21	27	50	37.86	5.63
	Clinical Evaluation Status	21	120	218	168.09	22.07

Professors	Clinical Evaluation Conditions					5.61
		13	20	36	27.77	
	Evaluation Content	13	21	39	30.85	6.41
	Evaluation Process	13	7	15	11.00	2.34
	Evaluation Methods	13	26	49	36.85	6.69
	Scoring Methods	13	23	40	32.85	5.29
	Evaluation Outcome	13	20	50	37.61	8.43
	Clinical Evaluation Status	13	131	224	176.92	31.88

Table 2: Frequency distribution of intended subjects based on the perspectives of students, educators and professors

	Clinical Evaluation	No.	Percentage
Students	Poor	11	10.4
	Moderate	94	88.7
	Good	1	0.9
	Total	106	100.0
Educators	Moderate	14	66.7
	Good	7	33.3
	Total	21	100.0
Professors	Moderate	6	46.2
	Good	7	53.8
	Total	13	100.0

T-test was used to assess the clinical evaluation status of OR interns based on the perspective of the professors in Tehran universities of medical sciences. It was subsequently indicated that according to professors, OR interns had a clinical evaluation status of more than average, indicating a good clinical status. The results of one-sample test for the clinical evaluation status of OR interns based on professors' perspectives have been displayed in Table (3).

Table 3: One-sample test for the clinical evaluation status of OR interns based on professors' perspectives

Variable	T	DF	P-value	MD
Clinical Evaluation	3.724	12	0.003	32.92

T-test was used to assess the clinical evaluation status of OR interns based on the perspective of the educators in Tehran universities of medical sciences. It was subsequently indicated that to educators, OR interns had a clinical evaluation status of

more than average, indicating a good clinical status. The results of one-sample test for the clinical evaluation status of OR interns based on educators' perspectives have been displayed in Table (4).

Table 4: One-sample test for the clinical evaluation status of OR interns based on educators' perspectives

Variable	T	DF	P-value	MD
Clinical Evaluation	5.003	20	<0.001	24.09

T-test was used to assess the clinical evaluation status of OR interns based on the perspective of the students in Tehran universities of medical sciences. It was subsequently indicated that to students, OR interns had a clinical evaluation status lower than average, indicating a poor clinical status. The results of one-sample test for the clinical evaluation status of OR interns based on students' perspectives have been displayed in Table (5).

Table 5: One-sample test for the clinical evaluation status of OR interns based on students' perspectives

Variable	T	DF	P-value	MD
Clinical Evaluation	-5.375	105	<0.001	-10.49

Discussion

Regarding the purpose and subject, performance evaluation is one of the prominent assessment of interns as an important aspect of educational activity processes which allows the identification of weaknesses and strengths based on the observed outcomes in order to take appropriate actions for the reformation and evolution of educational system by reinforcing the positive aspects and eliminating the negative ones^[9, 10]. As a consequence, the present study intended to survey the clinical evaluation status of OR interns from the perspective of professors, educators and peer students of Tehran universities of medical sciences in 2018.

The results of the present study showed that scoring method was of the great interest to the professors and students while educators preferred evaluation outcomes. This reflects the fact that students were more influenced by scores and GPA because universities' ranking system is mainly based on scores; So, it is not surprising that students favored the scoring system. Likewise, the scoring system was valued by the professors as well since the majority of evaluation methods they had used and are using to rank students is through examination, written evaluation and scoring methods. Clinical educators, however, accentuated evaluation outcomes more than scoring methods due to the point that they underlined improving the learning and clinical skills of interns. The other reasons are that interns are practically assessed during their clinical work and educators expect their trainings to be result-oriented. Moreover, students' scores are not necessarily representative of their

knowledge, learnings, improved clinical skills, enhanced communication, professional ethics and clinical work.

Evaluation process exhibited the minimum mean score amongst the clinical evaluation variables of the intended OR subjects of the present study from the perspective of students, educators and professors. This finding is indicative of the poor evaluation process of OR interns in Tehran universities of medical sciences as approved by the students, educators and professors.

T-test was used to assess the clinical evaluation status of OR interns based on the perspective of students, educators and professors in Tehran universities of medical sciences. It was subsequently indicated that to students, OR interns had a clinical evaluation status lower than average, indicating a poor clinical status while to educators and professors, OR interns had a clinical evaluation status of more than average, indicating a good clinical status. In a study by Ebrahimi, Khaleghdoust and Mojabi, nursing students believed that clinical evaluation method was not capable of identifying their theoretical and practical knowledge perfectly^[24-26]. Tunbull *et al.* (2000) assumed that the current in-service evaluation methods were not sufficiently competent to evaluate the clinical performance of interns^[27]. Nevertheless, one of the evaluation applications is said to be ensuring students' aptitude in professional capabilities for performing their professional duties^[28]. Evaluation methods was at a good status according to the professors and educators of the present study, which was not consistent with the findings of Imanipour *et al.*^[29], indicating inappropriacy of evaluation methods based on the views of most professors. This difference may be contributed to the fact that Imanipour's *et al.* study was conducted in only one nursing faculty in Tehran in 2011 where the clinical evaluation of nursing students had been assessed. On the other hand, the educational and evaluation methods of students have greatly changed so far and clinical evaluation of OR interns differs from that of nursing students. Additionally, the study of Imanipour *et al.* was carried out in only one faculty while the present study was performed in all universities of medical sciences throughout Tehran.

Data analysis results of the present study demonstrated that OR interns held a different perspective from professors and educators about the clinical evaluation methods. This disagreement may be due to the fact that assessment tests developed and used for clinical performance of OR interns were not standard and accurately valid. When the supposed evaluation methods and test are not standard, they cannot accurately identify the extent of students' knowledge, learnings and defects to be referred to as a guide for solving educational problems.

Conclusion

With respect to the results of the present study implying that clinical evaluation methods had a poor and nonstandard quality from OR interns' views contradicting the views of professors and educators, authorities are expected to accurately assess the clinical evaluation methods of OR interns based on the

students' opinion so as to improve the evaluation methods for raising students' self-confidence, providing quality cares, reforming educational system and achieving educational goals.

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