A 360-Degree Evaluation of Faculty Members' Teaching Effectiveness in Larestan Medical Sciences School during Covid -19 Pandemic: A Pilot Study

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Abstract

Background: Faculty members are the main pillars of universities, and their performance has a vital role in the efficiency of universities. In the current era of the Covid-19 pandemic, students' traditional evaluation method is not sufficient, and 360-degree evaluation is recommended, or multi-rater feedback is a means of providing evaluation from various stakeholders. The aim of this study was to compare the evaluation of faculty members' teaching effectiveness in Larestan Medical School by 360 degrees and the evaluation done by the students in 2020 during the Covid-19 pandemic.

Methods: This descriptive-analytic study compared the 360 degree evaluation and the students' ratings on faculty members' performance at Larestan University of Medical Sciences during 2020 -2021. The statistical population consisted of all full-time professors (N=28) selected by census method and students (N=280) chosen by random cluster sampling. The materials used were six valid and reliable questionnaires filled out by students, an expert in evaluation, heads of departments, deputies, peers, and self-assessment of faculty members. Data were analyzed through SPSS software (version 23) using the Friedman test ($P<0.001$).

Results: The results showed a significant difference between the 360-degree evaluation and students' ratings ($P=0.05$). According to the students' attitudes, there was a significant difference between the mean scores of the faculty members' communication skills and instructional skills ($P<0.001$). In addition, according to the head of departments, peers, an expert in the evaluation and self-assessment of faculty members, there was a positive and significant correlation between these two evaluations. However, there was no correlation between the heads of departments' views and those of the deputies for education ($P<0.001$).

Conclusion: Given the views of different participants in this study and the dimensions of assessment of faculty members, it seems that 360-degree assessment is more realistic and fair to be done in universities. In general, it is suggested that professors, in order to better understand their strengths and weaknesses, should pay more attention to all stakeholders' views in 360-degree evaluation to improve the quantity and quality of education.

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Introduction

Teacher evaluation aims to consider a professional development process in academic settings.[1] Different methods are used to evaluate the teacher, one of which being the use of the students' views. Although there is a lot of disagreement about the students' opinions in evaluating the faculty members, this method has been widely used in many educational institutions. The results are used for faculty feedback and management decisions for promotion.[2, 3] Thus, the evaluation methods used for the effectiveness of teaching by faculty members are among the essential factors in creating challenges and sometimes faculty members' dissatisfaction.[3-6]

Many studies have also shown that communication skills and teacher interaction may influence the students' ratings of professors. Some researchers have expressed concern about the evaluation of professors by students. They believe that, due to the interaction of irrelevant factors, the results obtained are unrealistic. Therefore, any judgment based on these results is unfair, and these evaluations do not ultimately lead to quality improvement. Moreover, they might lead to a catastrophic academic phenomenon in higher education.[5-7]

Although e-learning has been used for many years and the prevalence of Covid-19 in a different way has facilitated virtual learning, the current situation has caused anxiety for both faculty members and students when attending the classrooms and universities. Many educational institutions during this period made an attempt to use technology in teaching and learning to adapt their training to new and critical conditions.[8-10] The consequences of the e-learning synchronous and asynchronous educational movement have raised significant concerns about the students' traditional evaluation of the instructors in many institutions. In this situation, educators are evaluated in classes that are fundamentally different from their scheduled classes. Thus, it may be unfair to do these evaluations in an environment that is primarily beyond their control. Although it has been recommended that the proper management and use of student evaluations should be postponed, we must find a solution to improve the evaluation method in the new situation, so that in addition to the students' opinions, we can also consider the opinions of other people who are in contact with faculty members.[11-13]

Doug Lederman reviewed the evaluation of teaching in the Covid-19 pandemic. In his study, he describes the problems encountered by teachers and students during this period and the change of teaching classes from face-to-face teaching to virtual and online classes. A questionnaire was introduced by him on the dimensions of effort, skill, and responsiveness of the teacher, contribution of education, and quality of the course. He expresses the opinions and experiences of peers and the challenges of the evaluation of the teachers.[14] Golsha et al. conducted a cross-sectional study on faculty members and students of the medical school of Golestan University of Medical Sciences to compare the results of self-assessment and students' evaluation of the educational performance of the faculty members. This study showed little agreement between the students' opinions on teachers' educational performance and faculty members' self-evaluation of the teachers' performance, and this agreement decreases significantly over time.[15] In a qualitative study, Kamali et al. extracted two main themes entitled characteristics of the education system including three groups (characteristics of influential people in evaluation, characteristics of the courses, and field characteristics) and the characteristics of the faculty members' evaluation system including four groups (evaluation methods, evaluation tools, evaluation process, and the use of evaluation results). All of these may alter the outcome of the faculty evaluation system.[4]

360-degree assessment has been widely used in medical education institutions to evaluate the students and deputies, but this method has not been used to evaluate the university professors. A few researchers have developed 360-degree evaluations to assess the teachers.[16-18] Berger et al. conducted a 360-degree evaluation for performance improvement of anesthesiology residents in the George Washington Medical Center; performance improvement in all core competencies revealed a trend toward better scoring of residents who had early exposure to 360-degree evaluation than those who were later exposed.[18]

360-degree evaluation is a powerful tool for providing feedback to professors because, based on cognitive theory, recognizing weaknesses according to the opinions of different people can motivate the individual to be prepared for change.[19, 20]

This research is essential because of the sudden and widespread shift to online learning that started in the Covid-19 pandemic; this has never happened before, especially in medical sciences education. In a situation where interaction reduces, educational institutions think of ways to make teacher evaluation more valid and reliable. The length of the Covid-19 pandemic may create new learning and assessment styles for future teachers and students. This study aimed to compare the evaluation of Larestan Medical School faculty members through 360 degrees evaluation and that done by the students only.

Methods

This descriptive-analytic study was carried out to compare 360-degree evaluation and students' ratings on faculty members' performance in Larestan University of Medical Sciences during 2020-2021.

An evaluation committee was designed to determine the evaluators in 360 degrees and their importance in evaluating this program. Student evaluation was considered as the traditional evaluation done by undergraduate nursing and health students; also, we used the 360-degree evaluation consisting of the evaluation done by the head of the department, deputies of education, peers, self-assessment, the evaluation committee in charge, and an expert in teaching and learning.

We selected a census sample of all full-time professors: 28 male (n=14) and female (n=14) and 280 male and female students selected by cluster random sampling method; they were selected from each faculty member's classes to evaluate their teaching and communication skills. The inclusion criterion was students who attended the classes presented by the professors; also, the exclusion criteria were the guest students and the student's unwillingness to participate in the study.

Instrument

Performance Assessment Indicators

The data collection tools in this study were six researcher-made questionnaires, including that for students (15 items), the evaluation committee (7 items), the evaluation expert (13 items), peers (13 items), head of department (24 items), the deputy for educational affairs (9 items), and the professors' self-assessment (11 items), using four-point Likert scales (very good, good, fair, poor). The validity of the questionnaie was approved by a group of medical education experts; also, their reliability was confirmed using Cronbach's alpha test: heads of departments (82%), peers (75%), students (85%), the evaluation expert)72%), deputy of education (78%), and self-assessment of faculty members 78) %). Data collection lasted for three months. The questionnaire was shared with the participants via the SAMA system and an assessment system in the university.

Data Analysis

To analyze the data, we used descriptive and inferential statistics. Data were presented as mean and standard deviation, tables, and percentages. SPSS software version 23 was used to analyze the data, and the significance level was 0.05. The normal distribution of continuous data was assessed using the Kolmogorov–Smirnov test, which proved to be normal.

Ethical Consideration

As to the ethical considerations, faculty members were informed about the research and assured that their responses were confidential and would only be used for research purposes; they also signed a consent form for their responses in this project. Also, the students were assured of their voluntary participation and the right to withdraw at any time. The ethics committee of Shiraz University of Medical Sciences approved with the code of IR.SUMS.REC.1399.152 18309.

Results

The students who participated in this study consisted of 45% (14) male and 55% (14) female. The professors and managers (28 persons) consisted of 14 male and 14 female professors with an average teaching experience of 12.31 years.

The results showed there was no significant difference between the mean ratings of 360-degree evaluation overall and traditional evaluation (student rating) (P=0.27) (Table 1)

The results showed an inverse correlation between the level of evaluation of the head of departments and deputies in rating the professors (r=-0.413, P=0.021). It was also shown that there was a positive and significant correlation between the evaluation of deputied and peer professors (r=0.549, P=0.001). We also found thatthere was a significant relationship between the evaluation of experts in teaching and learning with that of the experts in the evaluation committee (r=0.400, P=0.026). The same was true between the professors' self-evaluation and that done by deputies (r=0.418, P=0.019), and between professors' self-evaluation and the peers' evaluation of professors (r=0.796, P=0.001) (Table 2).

There was no significant difference between the mean ratings of male and female professors in both 360-degree evaluations (t=1.513, P=0.141) and student evaluation (t=0.127, P=0.900) (Table 3).

Evaluation of the students and 360-degree rating of professors according to the department showed that between the evaluation values of professors in the two departments of health and nursing in both 360-degree evaluation (t=0.583, P=0.564) and student evaluation (t=1.229, P=0.229), there was no significant difference (Table 4).

Comparison of the mean self-assessment of professors and 360-degree of professors showed that there was no significant difference between the values of self-assessment and 360-degree assessment of professors (t=1.746, P=0.086). Therefore, the null hypothesis is confirmed, and the research hypothesis is rejected.

Table 1: The relationship between the students' rating and 360-degree evaluation of professors

Variables	Number	Mean±SD	Correlation coefficient	P
Student rating	31	18.43.0±.77	0.21	0.27
360 degree	31	18.870±.83		

SD: Standard Deviation

Table 2: Correlation coefficient matrix of the total score obtained between the evaluators' views

		1	2	3	4	5	6
Correlation coefficient person	Evaluation committee	1					
	Head of Department	0.057	1				
		0.762					
	Deputies	-0.032	-0.413	1			
		0.864	0.021				
	Peer	0.178	-0.326	0.549	1		
		0.337	0.074	0.001			
	Expert in education	0.400	0.139	-0.03	0.151	1	
		0.026	0.455	0.875	0.418		
	Self-assessment	0.147	-0.176	0.418	0.796	0.189	1
		0.430	0.343	0.019	0.001	0.308	
		31	31	31	31	31	31

Table 3: Comparison of the mean evaluation rating of female and male raters

Gender	Female	Male	*t*	P
	Mean±SD	Mean±SD		
Student evaluation	18.50±0.770	18.46±0.684	0.127	0.900
360-degree evaluation	00 . 1±67 . 18	19.12±0.501	1.513	0.141

SD: Standard Deviation

Table 4: Comparison of the mean evaluation rating of students and 360-degree of faculty members in different schools

Variable	Health	Nursing	*t*	P
	Mean±SD	Mean±SD		
Student evaluation	18.30±0.884	18.61±0.684	1.229	0.229
360-degree evaluation	18.98±0.574	18.80±0.991	0.583	0.564

SD: Standard Deviation

Table 5: The relationship between the students' rating of teachers' teaching and communication skills

Variables	Number	Mean±SD	Correlation coefficient	P
Communication skills	31	18.47±0.759	0.984	0.001
Teaching skills	31	18.41±0.788		

SD: Standard Deviation

The highest mean score agreed by students belonged to the instructional skills of the teachers (2.85±0.74). The highest mean score of communication skills was given by the head of the departments (4.35±0.53). Also, the highest mean score of performance given by peers belonged to the instructional skills of teachers (3.19±0.59). The degree of correlation between different evaluators in the 360-degree evaluation of professors with each other is shown in Table 5.

Discussion

This study compared the 360-degree evaluation and traditional teacher evaluation by the students during the Covid-19 pandemic. Based on the findings, there was no significant difference between the students' rating and 360-degree evaluation. This results indicates that the average 360-degree feedback evaluation is close to Student rating. These results are in the same line with those of other studies such as that condicted by Motlagh et al. They carried out a comprehensive study and showed little agreement between the students' rating of the faculty members' teaching performance and the self-assessment of teachers' performance.[21] However, some researchers indicated that the teacher's evaluation by the student did not have the necessary validity. It was not responsible for evaluating the teacher, so other methods should be used as a complement in this regard.[21-24] Waddell and colleagues' study highlighted some aspects of assessment in the field of music.[25]

Based on the results, there was a positive and statistically significant relationship between the evaluations of different levels of 360-degree evaluation, which indicates the reliability of the results. Therefore, inter-rater reliability for the faculty members by 360-degree evaluation was generally high. It is indicative of the accuracy and repeatability of the results. In this line, Yank et al.'s study revealed strong correlations between 360-degree evaluation and small-scale OSCE and DOPS scores; it was suggested that both methods were measuring the same quality.[26] Also, the reliability of 360-degree evaluation studies has

been proven in numerous other studies.[26-29] There was only a negative difference between the head of the department and the deputies, and vice versa, which may be due to the difference in views and indicators of department heads in teacher evaluation. This may be due to the same questions from two independent officials, the group's deputy director of education and the group director. Another study by Morrison et al. emphasized the importance of standardization and psychometrics of evaluation questionnaires in 360-degree evaluation.[30]

Slight differences of opinion between the evaluators indicate that different aspects and dimensions of the instruments have been measured in 360-degree evaluation. Donnon et al., in a systematic review, refers to the differences in 360-degree evaluation rates by different evaluators.[29] Due to these results, it is important to provide constructive feedback to the teacher at the end of the evaluation to pave the way for a positive and beneficial change to improve his/her teaching quality. Other studies also confirm the value of providing constructive feedback. According to the cognitive theory, where the evaluated person feels a difference between self-evaluation and the evaluation of others, cognitive inconsistency is created that prompts them to change.[31, 32]

In virtual education, the interaction between the teacher and student is reduced; also, based on the present study's f in the of students' point of view, there was a significant difference between the dimensions of evaluation in communication and teaching skills in students' points of view. This result is due to the challenges of communication skills in e-learning confirmed, as by other studies.[33] Considering the great significance of the quality of communication skills in teacher evaluation, it is obvious that this part of faculty members' behaviors is of crucial importance. Thus, it is suggested that communication skills should be monitored and developed through the training courses continuously and systematically.[34]

Currently, faculty members' evaluation system is generally focused on the students' evaluation. However, this has its own benefits; however, becaus the results are not reliable, teacher evaluation should be peeformed continuously during their courses, and also the outcomes should never be used for constructing subsequent administrative decisions.[4, 7]

In general, the results of research on performance evaluation of faculty members of Larestan Medical Sciences School revealed that teachers' performance on communication and teaching skills was desirable. However, we recommend appropriate programs to reform and improve this skill by the feedback of the evaluation committee. Because students are not aware of their teachers' performance, other colleagues and stakeholders should also be involved in such evaluations.

One of the strengths of this research is that 360-degree evaluation has not been done as we did in evaluating professors. Therefore, it can be concluded that although the student's evaluation of the professor can be an essential component, it is not a complete mechanism and process for evaluating the role of faculty members in the educational system. Online learning during the Covid-19 pandemic illustrates the importance of readiness of educational institutions to plan and implement learning.

For further studies, the question is how the results of the 360-degree evaluation should be analyzed and how the professors should be ranked. As mentioned in the present study, in implementating the 360-degree evaluation and explaining the evaluation indicators, it is necessary to specify the evaluation levels and indicators and weigh the items in the questionnaire by further studies.

This study had some limitations. One of the problems with this method is that it has high operating costs; also, the results cannot be analyzed quickly. In the case of studies, if the 360-degree assessment is applied using specialized technologies, such as online surveys, it reduces problems such as high cost, problem in analysis, and time-consuming questionnaires. The cross-sectional study in small faculties does not authorize the inference of causality. Contributors in this study were enrolled using census and convenience sampling methods, limiting the generalizability of the results to other groups. Accordingly, random sampling methods are suggested to be used in future research to have a more varied group of participants and carefully recognize the differences among the subsections.

Conclusion

360-degree assessment has been widely used in medical education institutions to evaluate the students and assistants. Still, this method has not been used in evaluating professors since it is recommended that this method should be used in medical sciences. Evaluation tools should be used to evaluate the teachers to improve the educational quality of education. 360-degree evaluation is a powerful tool for providing feedback to professors. Based on cognitive dissonance theory, recognizing weaknesses based on different people's opinions can motivate the individual to recognize the problems and get prepared for change.

Conflict of interest: None declared.

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