Original Article

Integrating student feedback: A comprehensive approach to quality improvement in medical education using EFQM with an emphasis on enablers

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Abstract

Background & Objective: Evaluating the quality of educational services from the perspective of students—the primary stakeholders—is essential for enhancing university performance. This study aimed to assess the quality of educational services based on the European Foundation for Quality Management (EFQM) excellence model.

Materials & Methods: This cross-sectional study was conducted from March to June 2023. The statistical population included all students of a medical sciences university, selected through stratified random sampling based on school affiliation. The data collection tool utilized was a standardized EFQM questionnaire developed by the five criteria of the EFQM model. The validity and reliability of the questionnaire were confirmed. Data were analyzed using descriptive and inferential statistics, including independent t-tests and ANOVA.

Results: Among 327 students, 58.4% were female. No significant differences were observed in the educational effectiveness components between male and female students. The comparison across schools indicated significant differences in the components of faculty, learning-teaching processes, student engagement, and leadership and management ($p < 0.05$). However, no significant difference was observed in the educational program component. Semester 6 or lower students reported significantly higher scores ($p < 0.05$) for the faculty, learning-teaching process, and student engagement components than those in higher semesters. The overall quality of educational services was rated as moderate (mean = 3.4 ± 0.7 on a 5-point scale; moderate range: 2.5-3.9).

Conclusion: The quality of educational services was perceived as moderate from the students' perspective. To improve quality, it is recommended that university administrators focus on criteria with lower scores and implement targeted quality improvement programs.

Keywords: evaluation, educational services, EFQM, students

Introduction

In the current era of globalization and internationalization of higher education, academic institutions are in a competitive environment. Thus, the need to implement quality assurance systems is even more necessary [1]. Service quality, one of the key factors of success and sustainability of any organization, including higher education, has become of undeniable importance. However, as a dynamic and purposeful system, higher education faces new challenges and must evolve in both quantitative and qualitative dimensions. The quality of higher education is a multidimensional concept influenced by various factors, including the faculty status, the university system, its mission, and the conditions and standards of academic disciplines [2]. This issue is particularly significant in the field of medical sciences, as the quality of education directly impacts public health. Research has shown that enhancing the quality of medical education is crucial for improving healthcare services [4, 5]. In this setting, the quality of educational services from the student's point of view, as the main customers of universities, becomes a very important question. Student satisfaction was seen as an important component of higher education services' quality, as Teeroovengadum et al. pointed out [6]. There have been many studies on this topic all around the world. Alves and Raposo [7], for example, showed that

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the success of higher education institutions is related to student satisfaction with the quality of the university services.

Several studies have also been conducted in Iran. For example, Tofighi et al. evaluated the quality of educational services provided by the Tehran University of Medical Sciences from students' point of view. They identified a large discrepancy between students' expectations and perceptions [8]. Over the past years, numerous models have been used to assess educational service quality. In this case, one such model is the European Foundation for Quality Management (EFQM) excellence model. This model offers a systematic approach to evaluate and enhance organizational performance and has been applied in several countries, including Iran [9]. The eight main criteria of the EFQM model are divided into enablers and results [10]. With this model, the quality of educational services is assessed holistically and systemically. Qalavandi et al. [11] demonstrated that the EFQM model, when applied to higher education in Iran, could enhance the quality of educational services at Urmia University. The evaluation system for the effectiveness of education at the University of Medical Sciences is based on an eight-domain model divided into two groups: Enablers and Results. The Enablers consist of five domains, while the Results comprise three domains. In this study, our emphasis has been on the Enablers domain, and we have examined these five domains to assess the effectiveness of education.

However, the studies conducted to implement the EFQM model for evaluating the quality of educational services in Iranian medical universities have not been fully realized. The studies have mostly been conducted in large and central universities, while smaller and underprivileged institutions are less attended. As a prominent university in the country's southeastern region, Zabol University of Medical Sciences plays a vital role in training healthcare and medical professionals. Due to its geographical location and certain regional conditions, evaluating the quality of educational services at this university is quite important. There has been no study, to date, on the perspectives of students of this institution using the EFQM model. It is important to conduct this study for the following reasons: to identify the strengths and weaknesses of educational services from students' perspective; to identify the gap between the current and ideal states of educational service quality; to provide practical solutions to improve educational services; to allow comparison with other medical universities in the country; and to support decision making at the strategic level to improve educational quality. Considering these points and the emphasis by Frenk et al. on the necessity to transform medical education to enhance health systems [12], the primary aim of this study is to identify the quality gap in educational services from the perspective of medical students at the mentioned university, based on the EFQM model, in 2024. Evaluating educational programs is critical for enhancing their effectiveness and relevance. For instance, Mohabati et al. utilized the CIPP model to assess and improve Field Practicum 4 for Health Services Management students at this university [13]. Similarly, this study employs the EFQM model to evaluate the quality of educational services. This study's findings could help university administrators and planners take effective steps to enhance educational service quality and raise student satisfaction. This study also can be used as a model for other medical universities in the country to assess and improve the quality of their educational services.

Materials & Methods

Design and setting(s)

In this cross-sectional study, students at Zabol University of Medical Sciences were evaluated from March to June 2022, provided they had completed at least one semester. The university includes five schools: Medicine, Pharmacy, Public Health, Nursing and Midwifery, and Paramedical, offering 15 fields.

Participants and sampling

The university serves a diverse student body, with approximately 1672 students enrolled across undergraduate and graduate programs during the study period. The sample size required for this study was determined based on data obtained from the study of Mohammadi and Vakili [14] by considering SD = 0.9, degree of precision 0.1 (d = 0.1), and $\alpha = 0.05$. The sample size reached 312 students using the formula proposed for cross-sectional studies. To achieve an anticipated response rate of 90%, the sample size was increased to 345 students. The questionnaires were administered electronically, with 327 fully completed questionnaires included in the analysis, resulting in a 95% response rate. Sampling was done using stratified sampling techniques based on the number of students in each school.

Tools/Instruments

The data collection tool was a standardized questionnaire that included demographic questions such as gender, age, academic level, and school. Additionally, the standardized EFQM questionnaire was used to evaluate educational effectiveness. The EFQM questionnaire consists of 43 questions organized into five domains: the Faculty Domain (Questions 1-12), the Learning-Teaching Process (Questions 13-23), the Student Domain (Questions 24-29), the Educational Program (Questions 30-38), and Leadership and Management (Questions 39-43).This questionnaire was localized and evaluated for validity and reliability. Feedback and input were gathered from a team of academic and educational experts during the preparation and refinement of the questionnaire. The initial version was developed by the researcher and improved based on individual and group feedback to enhance the quality of the questions. The questionnaire was distributed to nine faculty members in healthcare management, educational management, and medical education to confirm content validity. The Content Validity Index [15] was calculated based on the ratings provided by the expert panel, with each item scored on a 5-point Likert scale for relevance. The overall CVI for the questionnaire was determined to be 0.88, which exceeds the widely accepted threshold of 0.79. This indicates a high level of agreement among the experts regarding the relevance of the items, confirming that the questionnaire effectively measures the intended constructs. Similarly, the Content Validity Ratio (CVR) was computed to assess the necessity of each item. The overall CVR was found to be 0.81, which surpasses the critical value of 0.74 for a panel of 7 experts, as per Lawshe's standard table. This confirms that the included items are essential and suitable for assessing the quality of educational services. These results demonstrate the robustness of the content validation process and provide strong evidence for the reliability and validity of the questionnaire used in this study. The reliability of the EFQM questionnaire was previously confirmed in an Iranian context by Ghorbani et al. [16], reporting a Cronbach's alpha of 0.895.

Data collection methods

Data collection was done electronically for ease of accessibility and anonymity. The questionnaire was distributed to the students through a secure online platform, and they were allowed two weeks to complete it. Respondents were given clear instructions on the process, and participation was voluntary. Data were screened for completeness and consistency on an a priori basis for analysis. Data sets with missing or incomplete responses were excluded to maintain data integrity. The questionnaire was in electronic format, which helped in efficient data aggregation and reduced errors due to manual entry. By following this systematic approach to data collection, the reliability and validity of the findings were guaranteed, laying a solid ground for the study's conclusions.

Data analysis

Questionnaire responses were scored on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with a maximum total score of 215 (43 items × 5). The global mean score was calculated by averaging all 43-item responses across the 327 students and expressed on the 5-point scale (divided by 43). For interpretation, scores were categorized as follows: 1.0–2.4 (poor), 2.5–3.9 (moderate), and 4.0–5.0 [17], based on percentage thresholds aligned with educational quality standards (20–48%, 50–78%, 80–100% of the maximum, respectively). The Kolmogorov-Smirnov test was used to assess the normality of the data. The results are presented as mean ± standard deviation for quantitative data and frequency (percent) for qualitative data. Independent samples t-test was used to compare educational effectiveness components among variables with two groups, and a one-way analysis of variance [18] test was used for variables with more than two groups. Data were analyzed using IBM SPSS version 25 (IBM Corp, Armonk, NY, USA), and in all analyses, two-sided p-values < 0.05 were considered statistically significant. The Kolmogorov-Smirnov test was applied to explore the normality of data. The results are presented as mean ± standard deviation for quantitative data and frequency (percent) for qualitative data. Independent samples t-test was used to compare educational effectiveness components among variables with two groups, and a one-way analysis of variance [18] test was used for variables with more than two groups. Data were analyzed using IBM SPSS version 25 (IBM Corp, Armonk, NY, USA). In all analyses, p-values of less than 0.05 were considered statistically significant.

Results

The overall quality of educational services was evaluated based on all 43 items of the EFQM questionnaire involving 327 students at Zabol University of Medical Sciences. The demographic characteristics of the

participating students, including gender, school, and academic semester, are presented in **Table 1**. This assessment yielded a global mean score of 3.4 ± 0.7 (on a 5-point scale), which is categorized as moderate according to the criteria outlined in the Data Analysis subsection of the Materials and Methods section. This key finding reflects the university-wide educational quality from the students' perspective.

Table 1. Demographic characteristics of the students studied (n = 327)

Variable	Frequency	Percent
Gender		
Female	191	58.4
Male	136	41.6
School		
Medicine	72	22.0
Pharmacy	49	15.0
Public Health	69	21.1
Nursing and Midwifery	58	17.7
Paramedical Sciences	79	24.2
Academic Semester		
Semester 6 or lower	190	58.4
Higher than semester 6	137	41.6

Note: The Chi-square test was used to compare participants based on categorical demographic variables

Detailed results for each component, broken down by school and semester, are presented below as additional analyses. Gender comparisons, secondary to the study's primary objective, are summarized: no significant differences were found between female (n = 191) and male (n = 136) students across the five EFQM components. The results are as follows: Faculty: 36.7 ± 9.0 vs. 37.1 ± 8.2, t = -0.39, p = 0.698; Learning and Teaching Process: 33.6 ± 8.0 vs. 34.0 ± 7.7, t = -0.40, p = 0.689; Student: 17.0 ± 4.9 vs. 17.2 ± 4.6, t = -0.24, p = 0.811; Educational Program: 28.3 ± 7.1 vs. 28.6 ± 6.7, t = -0.30, p = 0.766; Leadership and Management: 17.0 ± 5.2 vs. 17.3 ± 4.6, t = -0.49, p = 0.622.

Table 2 compares the components of educational effectiveness across schools and presents the overall mean scores for Zabol University of Medical Sciences (n = 327). The total EFQM score across all 43 items was 146.2 ± 30.1 (out of 215), supporting the university-wide quality assessment as the primary outcome. Significant differences were observed in the faculty, learning and teaching process, student, and leadership/management components ($p < 0.05$) but not in the educational program component (p = 0.207). Additionally, the components of educational effectiveness were compared based on academic semesters (Table 3). Students in semester 6 or lower scored significantly higher in the faculty component (37.8 ± 8.9 vs. 35.5 ± 8.2, p = 0.021), the learning and teaching process (34.6 ± 8.6 vs. 32.6 ± 6.7, p = 0.027), and the student component (17.5 ± 5.4 vs. 16.5 ± 3.8, p = 0.033) compared to those in higher semesters. However, no significant differences were found in the educational program component (28.9 ± 7.2 vs. 27.7 ± 6.4, p = 0.160) or the leadership and management component (17.6 ± 5.3 vs. 16.5 ± 4.3, p = 0.063).

Table 2. Comparison of educational effectiveness components across schools and overall at Zabol University of Medical Sciences

Component	Medicine (n = 72)	Pharmacy (n = 49)	Public Health (n = 69)	Nursing & Midwifery (n = 58)	Paramedical (n = 79)	Overall (n = 327)	Sig.
Total EFQM score	157.5 ± 28.6	141.0 ± 25.7	155.7 ± 32.8	132.8 ± 25.8	148.5 ± 31.0	146.2 ± 30.1	F = 7.42, p < 0.001
Faculty	38.6 ± 7.6	35.6 ± 8.7	39.2 ± 8.4	31.8 ± 7.6	37.6 ± 9.2	36.8 ± 8.3	F = 7.85, p < 0.001
Learning and teaching process	35.5 ± 7.6	30.8 ± 5.8	37.1 ± 8.0	29.6 ± 7.3	34.2 ± 7.8	33.8 ± 7.3	F = 9.12, p < 0.001
Student	18.9 ± 4.4	15.2 ± 3.5	18.8 ± 5.8	15.5 ± 4.2	16.3 ± 4.4	17.1 ± 4.5	F = 8.63, p < 0.001
Educational program	29.3 ± 6.8	28.2 ± 7.1	28.8 ± 7.5	26.6 ± 6.1	28.8 ± 6.8	28.4 ± 6.9	F = 1.48, p = 0.207
Leadership and management	18.2 ± 4.9	16.2 ± 4.2	17.8 ± 6.0	15.3 ± 3.7	17.6 ± 4.9	17.2 ± 4.7	F = 3.87, p = 0.005

Note: One-way ANOVA test was used to compare participants based on quantitative variables across five schools.
Abbreviations: n, number of participants; SD, standard deviation; F, F-statistic; Sig, statistical significance; p, p-value; EFQM, European foundation for quality management.

Table 3. Educational effectiveness components based on academic semester from the perspective of students at Zabol University of Medical Sciences

Component	Semester 6 or lower (n = 190)	Higher than semester 6 (n = 137)	Sig.
Faculty	37.8 ± 8.9	35.5 ± 8.2	t = 2.31, p = 0.021
Learning and teaching process	34.6 ± 8.6	32.6 ± 6.7	t = 2.22, p = 0.027
Student	17.5 ± 5.4	16.5 ± 3.8	t = 2.14, p = 0.033
Educational program	28.9 ± 7.2	27.7 ± 6.4	t = 1.41, p = 0.160
Leadership and management	17.6 ± 5.3	16.5 ± 4.3	t = 1.87, p = 0.063

Note: The independent t-test was used to compare participants based on quantitative variables across two semester groups.
Abbreviations: n, number of participants; SD, standard deviation; t, t-statistic; Sig, statistical significance; p, p-value.

Discussion

The primary objective of this study was to evaluate the effectiveness of educational services at Zabol University of Medical Sciences using the EFQM model, with a particular focus on student perspectives. By analyzing key components such as faculty, the learning and teaching process, educational programs, leadership, and management, we aimed to identify strengths, weaknesses, and opportunities for improvement in educational service delivery.

The findings were further examined across demographic and contextual factors, including gender, academic semester, and school, providing a comprehensive understanding of the factors influencing educational quality. The overall scores for the EFQM components at Zabol University of Medical Sciences offer valuable insights into specific strengths and areas that require improvement.

The Faculty component scored highest (36.8 ± 8.3), suggesting that students perceive teaching staff as a relative strength, possibly due to their qualifications or engagement. However, significant school variation (31.8–39.2, $p < 0.001$) indicates uneven quality. The Learning and Teaching Process (33.8 ± 7.3) also rated moderately high, reflecting adequate instructional methods, yet lower scores in Nursing and Midwifery (29.6 ± 7.3) and Pharmacy (30.8 ± 5.8) suggest a need for pedagogical enhancements in these schools. The Student component had the lowest relative score (17.1 ± 4.5), particularly among higher-semester students (16.5 ± 3.8 vs. 17.5 ± 5.4, p = 0.033).

This suggests potential gaps in student support or engagement as academic demands increase. The Educational Program (28.4 ± 6.9) was consistent across schools (p = 0.207), indicating a stable curriculum, though its moderate rating suggests room for alignment with current healthcare needs. Finally, Leadership and Management (17.2 ± 4.7) varied significantly by school (15.3–18.2, p = 0.005), pointing to inconsistent administrative effectiveness that may benefit from standardized training. These findings underscore the need for targeted interventions across components to elevate overall educational quality.

A notable finding was that there were no major discrepancies between male and female students' evaluations of educational effectiveness. It is consistent with several domestic studies (e.g., Enayati Novinfar et al. [19] and Mohammadi and Vakili [14] that also found no gender differences in satisfaction with educational services. This also is in line with international research. Some studies, for instance, Khoo et al. on Malaysia, indicate possible links between such an outcome and equitable access to resources and learning opportunities [20]. Our findings suggest that a relatively balanced educational environment is provided for both genders at Zabol University. However, contrasting results exist. For instance, Ghavimi et al. reported high dissatisfaction among female students [15].

In contrast, according to the context, Keberiaei and Rudbari [21] and Aghamirzaei et al. [22] found higher satisfaction among male or female students. These discrepancies point to the role of cultural, social, and organizational factors, as mentioned by El Ansari and Stock [23]. Zabol University's ability to maintain gender equity is commendable, but Wiers-Jenssen et al. [24] stress that its ability to maintain gender equity is only a continuous reassessment that can ensure quality across all demographics.

Significant variations in student evaluations of service quality were found among different schools. Faculty and learning teaching process were rated more favorably by Public Health and Medicine students, whereas Nursing and Midwifery students gave lower scores. This is in line with international research, such as Butt and Rehman's study in Pakistan [25], which also found school-level disparities in satisfaction.

According to Qalavandi et al. [11], these differences may be due to structural and managerial differences between schools. Moreover, Mohammadi and Vakili [14] and Khoo et al. [20] also mentioned that student needs and expectations differ in different disciplines. The factors that affect satisfaction are also other factors such as teaching quality, facilities, welfare services, and access to research resources, according to Aghamirzaei et al. [22], Teeroovengadum et al. [6], and Odukoya et al. [26]. Quality improvement programs should be tailored to each school's needs and consider global trends in education, such as fostering positive organizational climates and internationalizing.

Results of the study revealed significant differences in students' perceptions of educational effectiveness across academic semesters (Table 4). Students in semester 6 or lower reported higher ratings for faculty ($p = 0.021$), the learning and teaching process ($p = 0.027$), and student-related aspects ($p = 0.033$), while those in higher semesters expressed greater dissatisfaction. This is consistent with the findings of Liu [27] and Zhao [28] that declining satisfaction was due to growing academic pressure, worries about future employment, and academic fatigue.

Studies such as Gholizadeh et al. [29] and Carmoe et al. [30] indicate that higher-semester students have higher expectations of educational services. Such changes would target interventions for these evolving demands: improving career counselling, reducing classroom stress, and updating the curriculum. On the other hand, some studies, such as Mgaiwa. [31], have not revealed any significant differences between satisfaction in different academic years, indicating that the factors of methodology or context may be responsible for the obtained results. The study's educational program component was evaluated the same by students across schools, suggesting that it was generally implemented in the same way.

Satisfaction with this component was moderate, and there was room for improvement. This fits with international research. For example, Kim [32] and De-Juan-Vigaray [33] broadly agree that the curriculum content and course structure are critical factors affecting student satisfaction. Thanh Thuy et al. [34] found that program quality directly affects student loyalty, though our study focused on effectiveness (Educational Program: 28.4 ± 6.9), not loyalty, limiting direct comparison. According to the present study, the findings of Abdollahzadeh et al. in Iran showed low to moderate student satisfaction with the educational programs [35]. Course content, updates to match labour market needs, and teaching methods are the priority areas for universities to focus on to achieve the goals outlined in the 2009 Master's Program Guidelines [36].

A helpful framework for improving educational programs could be Teeroovengadum et al.'s hierarchical model of service quality evaluation [6].

There was a significant difference in leadership and management components across schools. The component was rated more favourably by students of Medicine and Paramedical Sciences and less favourably by those of Nursing and Midwifery. This is likely due to variations in leadership styles and management strategies, as noted by Bryman [37] and Spendlove [38]. Some schools may have received higher scores because of the importance of distributed and participative leadership in higher education, as noted by Bolden et al. [39].

Rossi and Sengupta [36] pointed out at the national level that strategic changes occurred at various academic levels. Tajvar et al. indicated that there were few chances for students' feedback in Iranian universities, which could be one of the reasons for leadership gaps [40]. Adapting best practices from higher-performing schools, as suggested by Heystek and Emekako [41], might improve leadership and management, especially in lower-scoring schools.

This study has some limitations as it only focuses on the effectiveness of educational services at Zabol University of Medical Sciences. Self-reported data should lead to response bias, and it only focuses on one institution. Furthermore, the cross-sectional design is only a snapshot of student perceptions and does not consider changes over time. For these reasons, the results provide important directions for future research.

To increase the scope and include longitudinal designs and the addition of qualitative and quantitative methods, the insights can be deeper and more generalizable. Additionally, this can aid in understanding and evidence-based improvement in medical education by exploring the relationship between EFQM enabler domains and result domains and targeted interventions.

Conclusion

The aim of this study was to assess the quality of educational services at Zabol University of Medical Sciences by applying the EFQM model, using students' perceptions in relation to their schools and academic levels.

The findings also indicated huge variations in satisfaction among different groups, notably lower and higher semester students, who reported higher satisfaction in areas such as the performance of faculty and teaching processes. Moreover, variance in how different schools perceived leadership and administrative quality revealed differences in administrative effectiveness. Interestingly, there were no significant differences between the evaluations of educational programs across schools, although overall satisfaction with such programs was moderate, which indicates a need for improvement.

These results underscore important educational policy and practice considerations, especially in medical education. Key recommendations include regularly updating curricula to align with labour market needs, training administrators to improve their leadership and management skills, establishing systematic feedback mechanisms to incorporate student input, promoting interdisciplinary learning opportunities, and providing targeted support for higher-semester students as they navigate their growth and development. Implementing these strategies could enhance the quality of educational services at Zabol University of Medical Sciences and increase student satisfaction in medical education.

Ethical considerations

This study aimed to prioritize ethical principles and protect and dignify all participants. All participants provided informed consent before the study and were informed about its purpose and their right to withdraw at any stage. Anonymized data was secured and kept confidential from unauthorized access.

The Ethics Committee of Zabol University of Medical Sciences approved the study protocol (IR.ZBMU.REC.1401.150). Transparency and accountability were upheld throughout the research process, with findings reported accurately and honestly.

Artificial intelligence utilization for article writing

This manuscript was not prepared using artificial intelligence (AI) tools. The authors conducted all aspects of the research process, including data analysis, interpretation of findings, and manuscript writing, by themselves. This approach ensures that the work remains original and adheres to ethical principles.

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Conflict of interest statement

The authors declare that this study does not involve potential conflicts of interest. The authors have no financial, personal, or professional interests that could have influenced the research or its findings.

Author contributions

FM and SPH contributed to all study aspects, including conceptualization, data collection, analysis, result interpretation, and manuscript writing. The statistical consultant was SHS, who gave essential advice on methodology, data analysis and interpretation of the results. The final version of the manuscript has been reviewed and approved by all authors for submission.

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Data availability statement

The data used to derive this study's research findings are available upon reasonable request. Interested parties can contact the corresponding author to gain access to the data, which will be made available by ethical guidelines and institutional policies.

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