

Quality Assessment of the Library Services at the AJA University of Medical Sciences Libraries Using LibQUAL Model

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Abstract

Introduction: Academic and research libraries are currently trying to define new criteria that describe their services they are moving towards more outcome-based assessment instead of relying merely on input, output, or resource metrics. The purpose of the present study is to evaluate the quality of services provided by the libraries of AJA University of Medical Sciences using the LibQUAL model.

Methods: This study is a survey research, for which data were collected through the LibQUAL questionnaire. This questionnaire (in Persian) was used in a study conducted by Ghaffari and Korani in 2011, with Cronbach's alpha of 0.95. Reliability and validity had to be assessed again after minor changes were made in the questionnaire by the researchers. Validity and reliability of the questionnaire were confirmed and Cronbach's alpha for the questionnaire was determined to be 0.85. The statistical tests applied in this research included paired samples t-test and the one-way analysis of variance (ANOVA). Using the stratified random sampling method and Cochran's formula, 261 students were selected from lists of students in each department in the academic year 2013-2014. A total of 190, 53, and 12 users from the medical school library, library of nursing school, and library of dentistry school respectively participated in this study. Statistics indices were calculated using the SPSS 16.0 software. P values less than 0.05 were considered to be statistically significant.

Results: The results showed that there were statistically significant differences between the mean of users' maximum expectations levels and the services actually received in libraries, based on a comprehensive evaluation of the libraries in AJA University of Medical Sciences ($P < 0.001$). In the dimension of 'library as a place', the mean of services received is higher than the mean of the users' minimum expectations in all three libraries. P-values between the mean of services received and the minimum expectations in the medical school library, the library of the school of nursing, and the library of the school of dentistry were less than 0.001, 0.009, and 0.008 respectively.

Conclusions: The mean of services received in the three libraries of AJA University of Medical Sciences was approximately equal to the users' minimum expectations and the quality of services in these libraries is acceptable.

Keywords: LibQUAL, Model, Quality Assessment, Library, AJA University of Medical Sciences

1. Introduction

Academic libraries as services institutes play a central role in education and research and are considered to be influencing factors for the development of countries. Thus, optimization of their services is necessary for the development of the country. To improve the services of libraries, it is necessary to measure the level of services provided to those who visit libraries and their minimum and maximum expectations. This helps to not only understand the current situation but also plan for improving services and making required changes based on the realities of the situation (1). Given the advances in technology, regular increase in information, and changes and enhancements in

information transfer formats, the expectations of library visitors are constantly changing and usually increasing (2). Managers, administrators, and librarians should know whether or not they can set the service quality improvement trend to match the trend of increasing level of expectations. On the other hand, libraries often impose exorbitant costs on the parent institution for financing information sources and managing the library and buildings. Thus, top managers in the parent institution should know whether or not their efforts are cost-effective and whether or not they could meet the needs of the users (3, 4). The accountability and efficacy of library services are important for both the authorities of the parent organization

and the libraries' administrators; measuring them can provide better understanding of library services in the future. However, measuring the quality of services requires a proper tool (5).

The Servqual model also called the gap analysis model developed by Parasuraman and Zeithaml is one of the models used for measuring the quality of services provided by service organizations (3). After the model was introduced, many studies were conducted to localize the application of this model for certain organizations. Among other studies, the studies conducted by the association of research libraries (ARL) led to the development of a new model named LibQUAL (5, 6). This model was specifically designed for measuring the quality of services provided by libraries. The results of all these studies indicate this model's strong ability to measure the quality of services. The LibQUAL model used for measuring the quality of library services has been recognized as a standard instrument by many scientific societies and libraries. Moreover, continuous modifications and comprehensiveness make it a very useful way to measure the quality of libraries' services (1).

This instrument is widely used; by 2005, data regarding users' expectations and their perception of services received had been gathered from about 340,000 users in more than 500 organizations. Besides the United States, Canada, Australia, England, Ireland, and Scotland, the LibQUAL instrument has been also used in several languages in many other countries (2). In a study conducted by Nicula and Laseter (5), six specialized libraries related to professional military science education were investigated using the LibQUAL model. Military officers and postgraduate students participated in this study. The results of the study show that the level of services received in terms of all dimensions is higher than the minimum expectations of users. While the personal control dimension received the highest score, the effect of services was considered to be the weakest dimension. Services of these libraries were generally assessed as good (5). Probst also implemented the LibQUAL model in the Penn state library. The results of this study reported general satisfaction with the quality of this library's services and satisfaction of users' expectations in all dimensions. This library's services, in comparison with other research libraries, are of much higher quality. While the quality level of the information control dimension received the highest score, the dimensions of the provision of resources and services through the library website, the maintenance and development of equipment, and the level of print and electronic resources, were somehow weak compared to other dimensions (7, 8).

A study conducted by Ghafari and Korani investigated the quality of services of libraries in Kermanshah Univer-

sity of Medical Sciences. The study was based on a sample of 195 users of the libraries at Kermanshah University of Medical Sciences. The results of the study indicated that the mean of overall services of the libraries at Kermanshah University of Medical Sciences was positive with respect to the adequacy gap of services. It means that the libraries could meet the minimum expectations of their users. However, the superiority gap of services received a negative score, meaning that there is still a large gap between the current level of services and meeting user expectations at the desired level of services. In addition, in the dimension of affect services, unlike in two other dimensions, the libraries could provide minimum acceptable services for users in an adequate way (9). In a study conducted by Mardani and Moghaddam, the quality of services of libraries in Tehran University of Medical Sciences from the point of view of users and librarians was assessed using the LibQUAL scale. The study population consisted of 231 users and 30 librarians of the libraries of Tehran University of Medical Sciences. The results of the study showed that the assessment of quality of current library services by users was lower than that by the librarians and there was a bigger difference in the subscale of information control. Also, there was a large gap between the services of the libraries under consideration and user expectations about the most desired level of services. Librarians had a proper understanding and perception of their users' expectations and there was only a narrow gap between users' expectations and librarians' perception of their needs and expectations (10).

The quality of libraries in the AJA University of Medical Sciences established more than 20 years ago has not yet been assessed. Their status in terms of user viewpoints and expectations, which is needed for future decision-making and planning based on realities, is not clear. Top managers in parent organizations may use the results of the current study for planning the investments necessary to improve the level of the libraries' services and to spend the budget more efficiently and effectively. Using the results of the current study, university management, library administrators, and librarians may get a better understanding of user expectations and their viewpoint about services in order to optimize the libraries' services. Finally, users may enjoy better services resulting from planning and investments based on realities and needs. Thus, given the importance of the issue, the current study aims to investigate the level of services perceived by users as well as the minimum and maximum levels of expectations of users in every library in Aja University of Medical Sciences using the LibQUAL model. By identifying current gaps regarding the desired service delivery, necessary suggestions for closing the gaps can be provided.

2. Methods

This study was conducted by taking a survey of all students 797 in all—in the academic year 2013-2014 at the AJA University of Medical Sciences. Using the stratified random sampling method and Cochran formula, 261 students were selected from the list of students in each faculty. Then, 198, 58, and 14 questionnaires were distributed among students in the medical school library (medical and paramedical students), the library in the school of nursing, and the library in the school of dentistry respectively. Of these, 190, 53, and 12 questionnaires respectively were returned (255 returned questionnaires in all). The library service quality assessment questionnaire (the LibQUAL scale) was used to investigate the desired questions and gather data. The LibQUAL questionnaire consists of 22 items pertaining to three dimensions 'user's perception of services', 'library as a place', and 'information control'. Respondents rated each item on a nine-point Likert scale, in which Point 1 represents lowest satisfaction and Point 9 represents highest satisfaction with the services. This questionnaire was used in a study conducted in Persian by Ghafari and Korani (9) in 2011, with Cronbach's alpha of 0.95. The reliability and validity were assessed again after minor changes were made in the questionnaire by the researchers. The Cronbach's alpha coefficient was calculated to ensure the reliability of the study; reliability of the scales was deemed to be acceptable as Cronbach's alpha for the questionnaire was 0.85. The validity of the questionnaire was assured as it has been used in local and international studies and has also been validated by three experts in three fields medical education, health information technology, and librarianship. All students of AJA University of Medical Sciences in the academic year 2013 - 2014 were considered for the study.

In this study, ethical considerations were taken into account. Administrative approval was granted for conducting the study at the university and verbal consent was obtained from participants after providing adequate information about the aim of the study. Participants were assured that their participation was voluntary and their responses would be treated with confidentiality. Statistical indices were calculated using the SPSS 16.0 software. The paired samples t-test was used to compare the difference between the users' expectations and the level of services received and ANOVA was used to determine whether there are significant differences among the libraries. P-values less than 0.05 were considered to be statistically significant.

3. Results

Of 255 students, 246 (96.5%) respondents were male. Of the respondents, 80 (31.4%) were studying in medical school, 110 (43.1%) in paramedical school, 53 (20.8%) in nursing school, and 12 (4.7%) in the school of dentistry.

The means of 22 items at three levels minimum expectations, maximum expectations, and perceived services as well as difference between the maximum and minimum expectations of services received are shown in Table 1. The research questions have been investigated as follows.

First question: Are there statistically significant differences between the three levels—'users' maximum expectations of libraries' services', 'services received', and 'users' minimum expectations of libraries' services' in the libraries at the AJA University of Medical Sciences?

As Table 1 shows, in the evaluation of three dimensions of services of medical and dentistry libraries from the users' viewpoint, the mean of services received was higher than the mean of users' minimum expectations (3.59 and 3.69 respectively). The mean of services received in the library of the dentistry school (3.69) was higher than in the other libraries. In addition, in the school of nursing, the mean of services received was less than the users' minimum expectations (3.37). According to the results of the t-test (Table 2), there was no statistically significant difference between the mean of users' minimum expectations level and services received in libraries based on the total evaluation of libraries in AJA University of Medical Sciences ($P=0.1$). However, there were statistically significant differences between the mean of users' maximum expectations level and services received in libraries based on the total evaluation of libraries in AJA University of Medical Sciences ($P<0.001$). Table 2 clearly shows this difference.

Second question: Are there statistically significant differences between the users' minimum expectations, the level of services received, and the users' maximum expectations in the dimension of 'user's perception of service' in each library in AJA University of Medical Sciences?

As Table 1 shows, while the services received in the library of the school of nursing in the dimension of user's perception of service received the lowest mean score (3.29), the same dimension for the library of the school of dentistry received a higher mean score (3.55) than the two other libraries. According to the results of the t-test shown in Table 2 there was no statistically significant difference between the mean of users' minimum expectations level and perceived services within the dimension of 'user's perception of service' of libraries in AJA University of Medical Sciences. P values of the medical school library, the library of the school of nursing, and the library of the school of dentistry were 0.39, 0.14, and 0.55 respectively. However,

Table 1. The Mean and Standard Deviation of Services Dimensions and Total Evaluation in Libraries of AJA University of Medical Sciences^a

Dimensions of Services	Levels of Services	Libraries		
		Medical School	Nursing School	Dentistry school
Users' perception of services	Users' minimum expectations	3.42 ± 1.6	3.52 ± 1.3	3.35 ± 1.6
	Users' maximum expectations	7.07 ± 2.5	7.09 ± 2.5	7.04 ± 2.4
	Level of services received	3.32 ± 1.6	3.29 ± 1.5	3.55 ± 1.8
	The gap between the services received and the users' minimum expectations	-0.10	-0.23	0.2
	The gap between the services received and the users' maximum expectations	-3.75	-3.8	-3.49
Library as a place	Users' minimum expectations	3.31 ± 1.6	3.43 ± 1.3	3.29 ± 1.6
	Users' maximum expectations	6.99 ± 2.5	6.99 ± 2.5	7.02 ± 2.5
	Level of services received	3.90 ± 1.9	3.75 ± 1.9	4.01 ± 1.9
	The gap between the services received and the users' minimum expectations	0.60	0.32	0.72
	The gap between the services received and the users' maximum expectations	-3.08	-3.24	-3.01
Information control	Users' minimum expectations	3.34 ± 1.6	3.47 ± 1.3	3.38 ± 1.6
	Users' maximum expectations	7.44 ± 2.6	7.61 ± 2.7	7.99 ± 2.8
	Level of services received	3.43 ± 1.7	3.22 ± 1.5	3.61 ± 1.8
	The gap between the services received and the users' minimum expectations	0.09	-0.25	0.23
	The gap between the services received and the users' maximum expectations	-4.01	-4.39	-4.38
Total evaluation of libraries services dimensions	Users' minimum expectations	3.36 ± 1.6	3.47 ± 1.3	3.32 ± 1.6
	Users' maximum expectations	7.17 ± 2.5	7.22 ± 2.5	7.34 ± 2.6
	Level of services received	3.52 ± 1.8	3.37 ± 1.7	3.69 ± 1.8
	The gap between the services received and the users' minimum expectations	0.15	-0.1	0.37
	The gap between the services received and the users' maximum expectations	-3.65	-3.85	-3.65

^aValues are expressed as mean ± SD.

there were statistically significant differences between the mean of users' maximum expectations level and perceived services within the dimension of 'user's perception of service' in the libraries in AJA University of Medical Sciences ($P < 0.001$ for all three libraries).

Third question: Are there statistically significant differences between the users' minimum expectations, the level of services received, and the users' maximum expectations in the dimension of 'library as a place' in each library at AJA University of Medical Sciences?

According to the data given in Table 1, within the dimension of 'library as a place', the mean of services received in the three libraries (the medical school, the school of nursing, and the school of dentistry) is higher than the mean of the users' minimum expectations (3.90, 3.75, and

4.01 respectively). However, the mean of services received in the libraries is less than the mean of the users' maximum expectations. According to the t-test in Table 2 there are statistically significant differences between the means of services received and users' maximum and minimum expectations. P-values of the mean of services received and the minimum expectations in the medical school library, the library of the school of nursing, and the library of the school of dentistry were less than 0.001, 0.009, and 0.008 respectively.

Fourth question: Are there statistically significant differences between the users' minimum expectations, the level of services received, and the users' maximum expectations in the dimension of 'information control' in each library in AJA University of Medical Sciences?

Table 2. Paired Samples T-Test of Service Dimensions and Total Evaluation of Service Quality in Libraries of AJA University of Medical Sciences

Dimensions of Services	Levels of Services	Libraries	Paired Differences				T	Sig.
			Mean ± SD	SEM	95% CI			
					Lower	Upper		
Users' perception of services	The services received and the users' minimum expectations	Medical school	13.55 ± 0.84	0.98	-1.09	2.78	0.85	0.39
		Nursing school	12.66 ± 2.54	1.70	-0.87	5.97	1.49	0.14
		Dentistry school	14.88 ± 2.66	4.29	-12.12	6.79	-0.62	0.54
	The services received and the users' maximum expectations	Medical school	12.34 ± 33.74	0.89	31.97	35.50	37.68	< 0.001
		Nursing school	13.72 ± 34.69	1.85	30.98	38.40	18.75	< 0.001
		Dentistry school	14.75 ± 31.66	4.26	22.29	41.04	7.43	< 0.001
Library as a place	The services received and the users' minimum expectations	Medical school	5.91 ± 3.60	0.43	-4.45	-2.76	-8.41	< 0.001
		Nursing school	5.74 ± 2.09	0.77	-3.64	-0.54	-2.70	0.009
		Dentistry school	5.88 ± 5.50	1.69	-9.24	-1.76	-3.24	0.008
	The services received and the users' maximum expectations	Medical school	6.44 ± 18.48	0.47	17.56	19.41	39.55	< 0.001
		Nursing school	6.83 ± 19.43	0.92	17.59	21.28	21.09	< 0.001
		Dentistry school	9.45 ± 17.75	2.73	11.74	23.75	6.51	< 0.001
Information control	The services received and the users' minimum expectations	Medical school	10.45 ± 0.60	0.76	-2.09	0.89	-0.79	0.43
		Nursing school	8.73 ± 1.73	1.17	-0.63	4.09	1.47	0.14
		Dentistry school	11.15 ± 3.00	3.22	1.08	4.08	-0.93	0.37
	The services received and the users' maximum expectations	Medical school	18.89 ± 28.05	1.37	25.34	30.75	20.45	< 0.001
		Nursing school	21.24 ± 30.67	2.86	24.93	36.41	10.71	< 0.001
		Dentistry school	32.67 ± 32.00	9.43	11.24	52.76	3.39	0.006
Total evaluation of libraries services dimensions	The services received and the users' minimum expectations	Medical school	28.11 ± 3.36	2.04	-7.39	0.66	-1.65	0.10
		Nursing school	24.89 ± 2.18	3.36	-4.55	8.91	0.65	0.51
		Dentistry school	29.53 ± 11.16	8.52	-29.93	7.59	-1.31	0.21
	The services received and the users' maximum expectations	Medical school	32.28 ± 80.27	2.34	75.65	84.89	34.27	< 0.001
		Nursing school	35.69 ± 84.80	4.81	75.15	94.45	17.62	< 0.001
		Dentistry school	50.75 ± 81.42	14.65	49.17	113.66	5.55	< 0.001

Abbreviations: CI, confidence interval; SEM, standard error mean.

On measuring the dimension of 'information control' in services of medical and dentistry libraries from the users' viewpoint, the mean of services received was found to be higher than the mean of users' minimum expectations (3.43 and 3.61 respectively). The mean of services received in the library of the school of dentistry was higher than that of other libraries (3.61). In the library of the school of nursing, the gap between the mean of services received and the mean of users' minimum expectations is negative (-0.25). The means of services received in three libraries are less than the mean of users' maximum expectations (Table 1). According to the t-test result shown in Table 2 there are no statistically significant differences between the means of users' minimum expectations level and per-

ceived services within the dimension of 'information control' in the libraries at AJA University of Medical Sciences (the medical school library: 0.43; nursing school: 0.15; and dentistry school: 0.37). However, there were statistically significant differences between the mean of users' maximum expectations level and perceived services within the dimension of 'information control' in libraries in AJA University of Medical Sciences ($P < 0.05$).

Fifth question: In general, is there a statistically significant difference in terms of service quality among the libraries of the AJA University of Medical Sciences?

The ANOVA test was used to answer this question. The data from the analysis of the variance test in Table 3 shows that at the 0.05 level of significance, there is no statistically

significant difference in terms of service quality among the libraries of the AJA University of Medical Sciences ($F(1,254) = 1.8$ and $P = 0.168$). Thus, there is no statistically significant relationship between service quality in the libraries of the AJA University of Medical Sciences.

4. Discussion and Conclusions

The results of the study indicate that, based on the general service measurements, the libraries in the AJA University of Medical Sciences are able to meet the users' minimum expectations. The provision of services with higher than minimum acceptable quality shows that the performance of the mentioned libraries in terms of delivering the services has been relatively successful and the libraries' users are satisfied with the services, at least at a minimum acceptable level. Also, the results showed that the service quality of libraries in AJA University of Medical Sciences is far less than the users' maximum expectations level; the libraries could not improve the quality of services to meet the users' maximum level of expectations. The findings of this study are consistent with those of the studies conducted by Ghafari and Korani (9), Esfandyari and Babolhavaeji (11), Hariri and Afnani (12), and Hamzavi et al. (13), who also concluded that the quality of current services of libraries in the studied universities is at an average level. Also, in comparison with the findings of international studies, it can be concluded that the quality of services in the libraries investigated in the current study is relatively lower than those in international studies. This positive difference ranges between 0.12 for Lund institute of technology in Sweden (2), 0.46 for medical sciences libraries in the United States (6), 0.48 for Glasgow University (8), and 0.49 for medical sciences libraries in the United States (3). These differences may be due to some factors such as limited availability of print journals, essential books, and electronic information resources. As the results show, among the libraries investigated in the current study, while the situation of the library of the school of dentistry was better in meeting its users' expectations, the library of the school of nursing could not meet the users' minimum acceptable services. The differences between the means of services received and maximum expectations were negative in all three studied libraries. The findings of other local and international studies also show a negative gap between library services and users' maximum expectations. However, an important issue is that the gap between services received and the users' maximum expectations in the studied libraries is too large (-3.65, -3.85, and -3.65). These gaps in some academic libraries in other countries are as follow: -0.85 in the University of Alabama (14), -0.85 in medical sciences libraries in the United States

in 2003 (3), and -0.87 in 2004 (5), -0.88 in a study by Gotten in Ohio University (15), -1.8 in the University of Glasgow (8), and -1.18 in Binghamton University (3). As these findings show, the observed gap in libraries of the university of medical sciences in the current study is larger than those of academic libraries outside Iran. It is worth noting that, in addition to librarians' training, financial resources dedicated to improving the quality of services in libraries can have an important role in this regard. According to the findings from the second question of the research, the performance of libraries in AJA University of Medical Sciences within the dimension of 'user's perception of service' is acceptable but not excellent. This finding is consistent with the finding of a study conducted by Esfandyari and Babolhavaeji (11) and Hariri and Afnani (12), which indicates that the quality of current services of libraries is at an average level. As the dimension of 'user's perception of service' received mean scores less than other two dimensions, this finding is not consistent with that of the study conducted by Ghaffari and Korani, in which they concluded that the quality of libraries in Kermanshah University of Medical Sciences within the dimension of 'user's perception of service' is better than in the other two dimensions (9). If we consider studies conducted outside Iran, the findings of the current study are consistent with studies conducted by Hitchingham and Kenney (16), Probst (7), and the association of research libraries (3, 5, 7). In this context, the most important aspect would be to create motivations for librarians by implementing appropriate practices and general courses to create a participatory system that leads to creativeness and improvement, which in turn help satisfy the expectations of users in this area. The performance of the libraries in AJA University of Medical Sciences in the dimension of 'library as a place' is better than other two dimensions, since these libraries could provide their current services at a higher quality level than the users' minimum expectations. Furthermore, while the findings of the current study are consistent with those of the studies conducted by Esfandyari (11), Mohammad and Hasanzadeh (17), and Tahmasebi and Nooshinfard (18), they are not consistent with those of studies conducted by Ghafari and Korani (9), Hariri and Afnani (12), Hashemian et al. (19), and Mardani and Sharifmoghadam (10). If we consider studies conducted outside Iran, the findings of the current study are consistent with studies conducted by Hitchingham and Kenney (16), Probst (7), and the Association of research libraries (3, 6, 8). This could be due to the special circumstances of students living in the dormitory, which leads to a better evaluation of the library as a place for study. The performance of the library of the school of dentistry within the dimension of 'information control' is better than the other two libraries. The results of the t-test

Table 3. Variance Analysis of Service Quality in Libraries of AJA University of Medical Sciences

Source of Variance	Sum of Squares	Degrees of Freedom (df)	Mean Squares	F-Ratio	Sig.
Between group	2850.62	2	1425.31	1.8	0.168
Within group	199941.01	252	793.417		
Total	202791.63	254			

show that while there is no statistically significant difference between the mean of services received and the mean of users' minimum expectations, the difference between the mean of services received and the mean of users' maximum expectations is statistically significant. Though these findings are consistent with those of a study conducted by Esfandyari and Babolhavaeji (11), they are not consistent with the results of studies conducted by Mohammad and Hasanzadeh (17), Hariri and Afnani (12), Hashemian et al. (19), Ghaffari and Korani (9), and Mardani and Sharifmoghadam (10). On reviewing studies conducted outside Iran, the findings of the current study are observed to be consistent with studies conducted by Hitchingham and Kenney (16), Probst (7) and the association of research libraries (3, 5, 7). Given that the library of AJA University of Medical Sciences is the only library providing services to medical science students, it should be rich in print and non-print sources. Various studies on domestic and foreign libraries emphasize that libraries should spend most of their budget on financing information sources. However, the current study shows that AJA University of Medical Sciences has not paid much attention to this issue.

The low response rate from female subjects, employees, and faculty members eligible for completing the questionnaire can be considered as a limitation of this study, which may cause difficulty in generalizing the results to all faculty members.

Based on the above, in order to improve the service quality of libraries in AJA University of Medical Sciences, it is recommended that the provision of requirements to increase the accessibility to electronic information resources, preparing the updated print resources in libraries, and the educational programs for librarians to improve the quality of the services, are essential issues which should be considered.

According to our results, in general, the mean of services received in the three libraries of AJA University of Medical Sciences is approximately equal to the users' minimum expectations and the quality of services in these libraries is acceptable. It is hoped that by providing the required facilities according to users' expectations and needs, the libraries can provide better services to students. Also, the important role of human relations in improv-

ing the quality of services makes librarians' training programmes more essential.

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Footnotes

Author's Contribution: Mojgan Mohammadimehr and Sayed Majed Hashemi conceived the study and developed the methods. Ali Shayesteh Moghanlou and Sanaz Zargar Balaye Jame collected the data. Sanaz Zargar Balaye Jame and Mojgan Mohammadimehr analysed the data. Sayed Majed Hashemi wrote the first draft of the manuscript. All of the authors contributed to the revision of the manuscript and have read and approved the final version.

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