



Hospital Services Quality from Patients' viewpoint in Iran: A Systematic Review and Meta-Analysis

Mohammad Mohseni ¹, Ahmadreza Raeisi ^{2*}, Saber Azami-Aghdash ³, Ahmad Moosavi ⁴, Seyed Masood Mousavi ⁵

¹ Health Management and Economics Research Center, Iran University of Medical Sciences, Tehran, Iran

² Health Management and Economic Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

³ Tabriz Health Services Management Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

⁴ Department of Health and Community Medicine, Dezful University of Medical Sciences, Dezful, Iran

⁵ School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran

ARTICLE INFO

Article History:

Received: 30 Sep 2017

Revised: 20 Nov 2017

Accepted: 21 Dec 2017

***Corresponding Author:**

Ahmadreza Raeisi

School of Health Management and Information Sciences, Isfahan University of Medical Sciences, Isfahan, Iran.

Email:

raeisi@mng.mui.ac.ir

Tel:

+ 98- 31-37925177

ABSTRACT

Background: The identification of strengths and weaknesses of services provided is the first step for the improvement of the quality of services. In hospitals, patients are the most important groups for the evaluation of the quality of healthcare services. Thus, this systematic review and meta-analysis aims to evaluate hospital service quality from patients' perspective in Iran using Servqual model.

Methods: A systematic review and meta-analysis of studies evaluating patients' perspective about hospital services quality was conducted. Required data were collected through searching following key words: Servqual, services quality, gap, hospital, patients, Iran, using the database sources including PubMed, Scopus, Google Scholar, MagIran, SID and IranMedex. Comprehensive meta-analysis (CMA) software, Version 2 was used to estimate the total mean score of patients' perception and expectation of services quality and the gap between them.

Results: Totally, 11 eligible studies were entered into the systematic review. Based on the random effect model, the total mean score of patients' perception, patients' expectation and the gap between them were estimated 3.66 (95% CI, lowest = 3.40, highest = 3.92), 4.62 (95% CI, lowest = 4.42, highest = 4.82) and 0.94 (95% CI, lowest = 0.78, highest = 1.10), respectively. The mean score of the gap between perception and expectation was 0.95 and the biggest gap was related to the responsiveness dimension.

Conclusion: Responsiveness is related to the areas, such as providing appropriate and timely services, the reliability of providers, good communication between staff or physicians and patients. The importance of these areas signifies the necessity of taking actions in order to provide more appropriate and higher quality services.

Key words: Hospital Service Quality, Systematic Review, Meta-Analysis

Citation

This paper should be cited as: Mohseni M, Raeisi AR, Azami-Aghdash S, Moosavi A, Mousavi SM. **Hospital Services Quality from Patients' Perspective in Iran: A Systematic Review and Meta-Analysis.** Evidence Based Health Policy, Management & Economics. 2017; 1(4): 261-9.



Introduction

Nowadays the improvement of the quality of service in order to meet the expectations of service recipients and their satisfaction has become a major challenge for service delivery organizations (1,2). In the meanwhile, in the health sector, particularly in hospitals, given the importance of the nature of health services which is a matter of life of humans, improving and assuring quality are of great importance for the health system and people (3,4). Considering these issues, the identification of strengths and weaknesses of services provided is the first step for the improvement of the quality of services.

Strengths and weaknesses of services provided can be identified using service quality measurement instruments. Servqual model is one of these instruments widely used to measure the quality of services in various service sectors such as hospitals (5-7). Studies focusing on service quality measurement using Servqual framework investigate the gap (difference) between expectations and perceptions of patients. This model has been used to measure and evaluate the quality of services in different countries and cultures such as the United States, China, Australia, Greece, Hong Kong, Korea, South Africa, Netherlands, United Arabic Emirates, and the United Kingdom (8). In regional hospitals in Ghana, for instance, Servqual model was used to measure patient satisfaction with healthcare services (9); in private hospitals in India, the model was used to measure the quality of health care (10); in another study conducted in 2015, the model was also used to measure the quality of health services (11). Also, this model has been used in most of studies measuring the quality of hospital services conducted in Iran (12).

Therefore, the importance of this instrument to measure the gap of quality of services in hospitals is obvious. In addition, patients are one of the most important groups for the evaluation of the quality of healthcare services (13-15). Patient in hospital is the main focus and all hospital services are done for patient. As a result, patients' opinion about the

quality of hospital services is a matter of great importance and they should determine what aspects of service are the most useful ones (16). Finally, given the importance of the assessment of hospital services quality and current gap between patients' expectations and perceptions of quality of services, this systematic review and meta-analysis aimed to evaluate hospital service quality from patients' perspective in Iran using Servqual model, so that its results may be helpful for improving quality in hospitals in Iran.

Material and Methods

Search Strategy

This systematic review and meta-analysis were conducted in 2016 according to guidelines for conducting and reporting meta-analyses (17). The search was conducted on May, 2016 using databases including PubMed, Scopus, Google Scholar, MagIran, SID and IranMedex. Required data were collected through searching following key words: Servqual, services quality, gap, hospital, patients, Iran and no restrictions were placed on study date. References were exported and managed using Reference management (Endnote X5) software to organize and assess the titles and abstracts, as well as to identify duplicate studies. The following search terms were used: Servqual, services quality, gap, hospital, patients, Iran. Review articles on the services quality of hospital and the reference lists of articles meeting the eligibility criteria were also hand-searched for additional articles.

Study Selection

Abstracts and titles of all studies were screened independently to identify original studies that evaluate patients' perspective about hospital services quality. Articles were included if they met the following criteria: original research, performed in hospital setting, reported the mean score of patients' perception and expectation of hospital services quality, published in English or Persian and conducted in Iran. Exclusion criteria were the proceedings papers, case reports, and interventional studies.



Quality Assessment

Two reviewers independently evaluated the articles on the basis of the ‘Strengthening the Reporting of Observational Studies in Epidemiology’ (STROBE) checklist (18) (Appendex 1). Controversies between these reviewers were referred to a third author.

Data extraction

Two reviewers extracted data from included articles using a standard data collection form. For each study, information about characteristics of the survey including author, year of implementation, setting, sample size, mean score of dimensions of services quality and important findings were extracted (Table 1).

Data analysis

Computer software CMA 2 (Comprehensive Meta-Analysis) (Englewood, NJ, USA) was used to estimate the overall mean score of services quality. I^2 was used to evaluate heterogeneity of studies. As the heterogeneity was found among selected studies (Q statistic P -value < 0.05 or I^2 > 50%), the random effects model was used with 95% confidence interval. Funnel plot was applied

to evaluate the possibility of publication bias and Microsoft Office Excel 2010 was used to draw graphs.

Results

Out of the 231 retrieved studies from literature, finally 11 studies were included to analysis the data (Fig1). From 11 studies which their results were extracted (Table1), 3781 patients were studied. The studies were conducted between 2008 and 2013, (1, 3, 12, 16, 19-25). With regard to the score of patients' perception of quality of services, while the highest score was related to the study conducted by Jenaabadi H et al. (2011), with a mean score of 4.01, and the lowest score was related to the study conducted by Havasbeigi F et al. (2011), with a mean score of 2.79. In the section about expectations of quality of services, the highest score was related to the study conducted by Hekmatpou D et al. (2010), with a mean score of 4.95, and the lowest score was related to the study conducted by Havasbeigi, F et al. (2011), with a mean score of 4.60. In respect of the gap rate, the highest and lowest gap rates were related to studies conducted by Razlansari (1.29) and Havasbeigi F et al. (2011) (0.05), respectively.

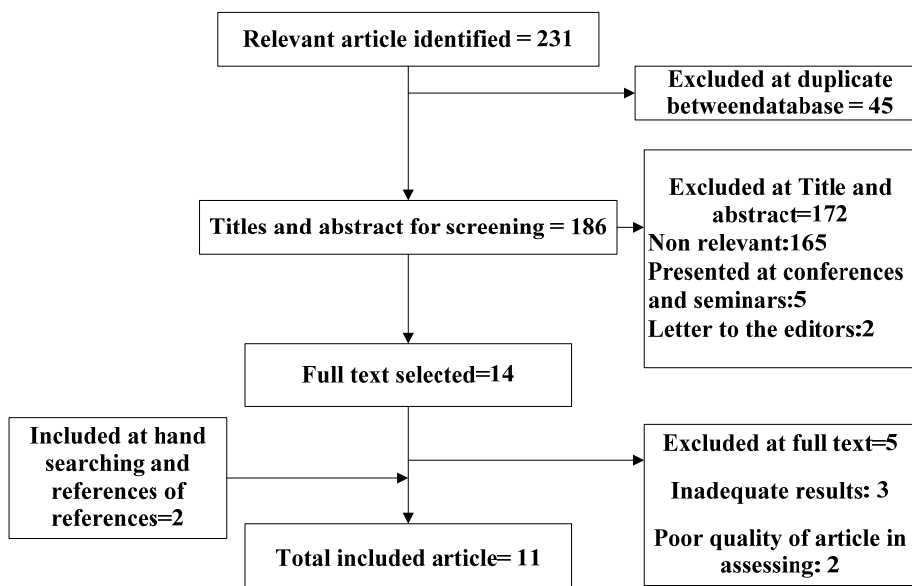


Figure 1. Flow diagram for study selection

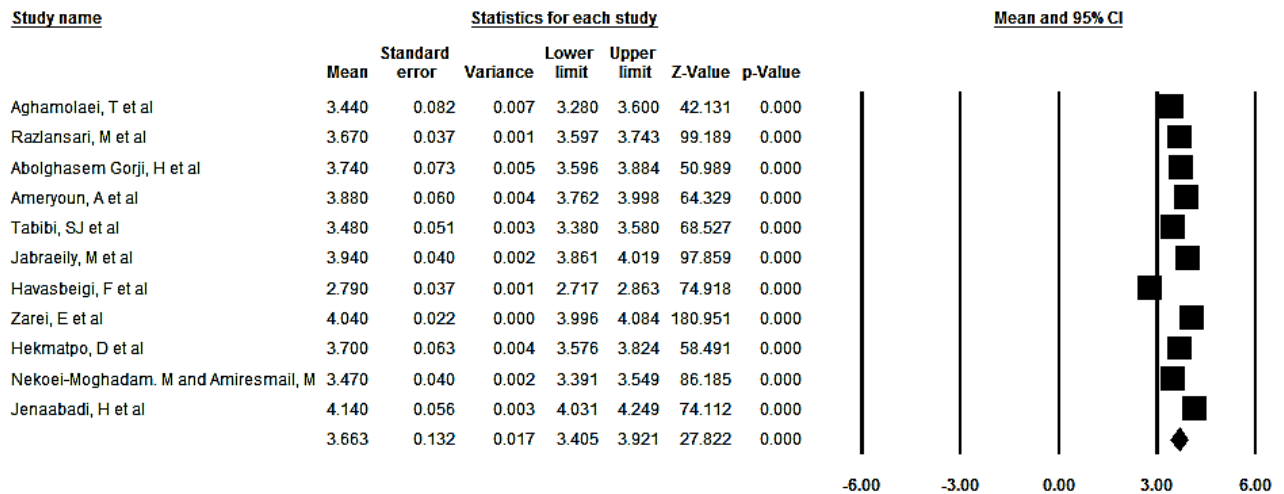


Figure 2. The total means score of patients' perception based on the random effect model

The total mean score of patients' perception based on the random effect model was calculated to be 3.66 (95% CI: 3.40 - 3.92). 95% CI for the mean score was drawn for each study in the horizontal line format (Q = 996 df = 10, P < 0. 001, I² = 98.99) (Fig2).

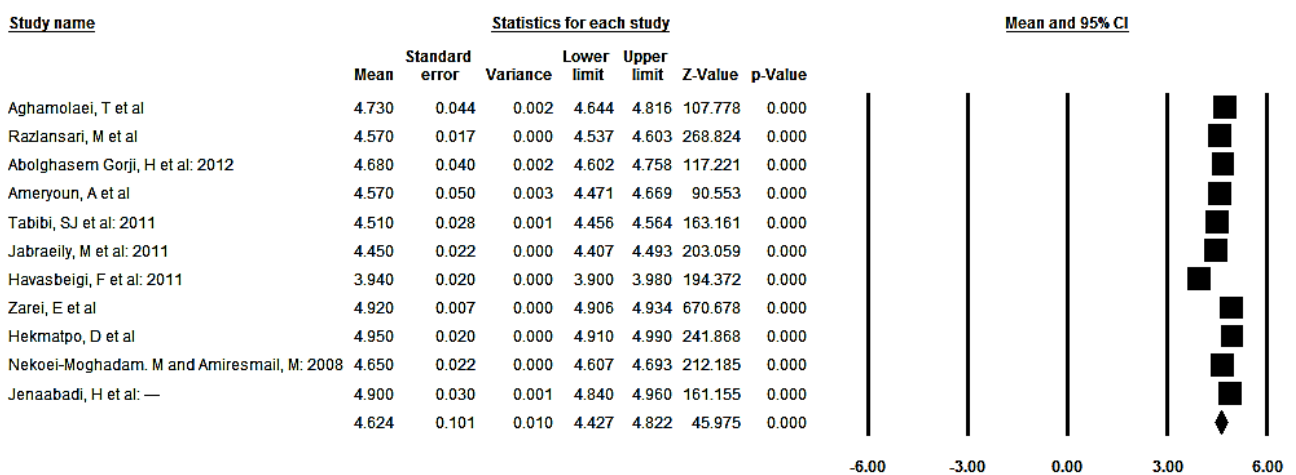


Figure 3. The total means score of patients' expectation based on the random effect model

The total mean score of patients' expectation based on the random effect model was calculated to be 4.62 (95% CI: 4.42-4.82). 95% CI for the mean score was drawn for each study in the horizontal line format (Q = 2665 df = 10, P < 0. 001 I²= 99.62) (Fig3).

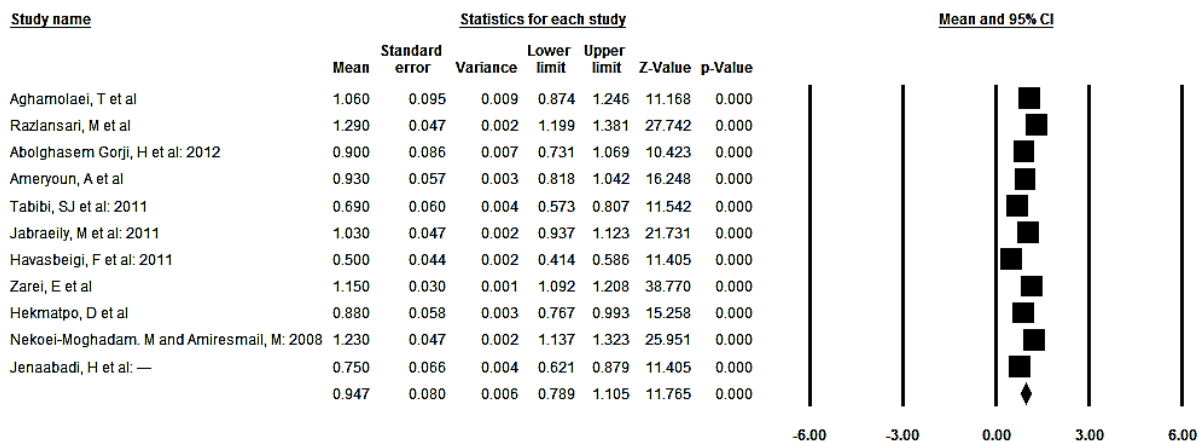


Figure 4. The total means score of gap between patients' perception and expectation based on the random effect model. The total mean score of Gap between perception and expectation based on the random effect model was calculated to be 0.94 (95% CI: 0.78-1.10). 95% CI for the mean score was drawn for each study in the horizontal line format (Q = 266, df = 10, P < 0.001 I² = 96.23) (Fig4).

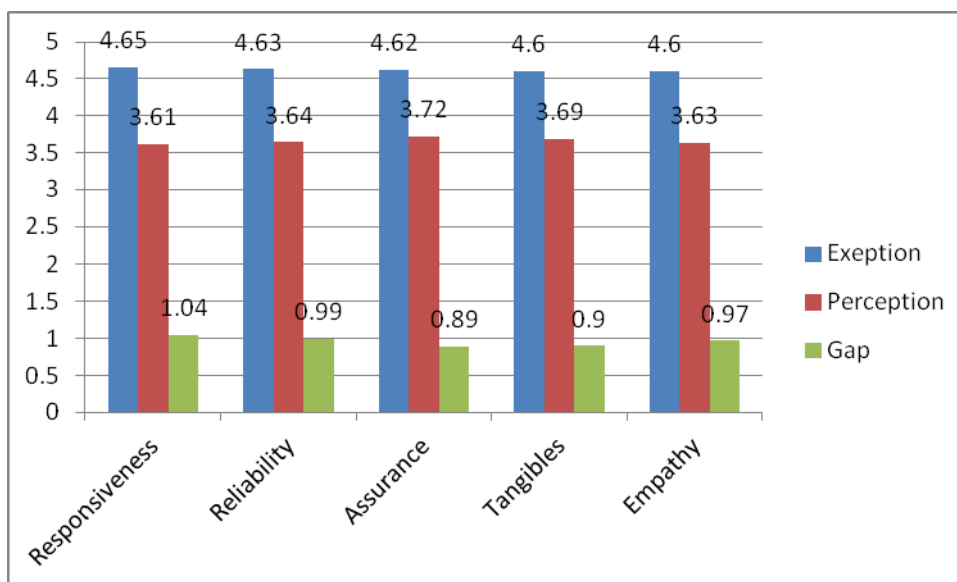


Figure 5. The mean score of patients' perception and expectation of services quality and the gap between them

As it can be seen in Fig 5, for the score of patients' perception of services quality, the highest score is related to the dimension of assurance (3.72) and the lowest one is related to the dimension of responsiveness (3.61). Also, in the section of expectations of services quality, the highest score is related to the dimension of responsiveness (4.65) and the lowest one is related to the dimension of empathy (4.60). In regard to gap rates, the highest and lowest rates are related to responsiveness (1.04) and assurance (0.89), respectively.



Discussion

The results from the reviewed studies in this research about quality of hospital services from patients' perspective show that the mean score of patients' perception of quality of services was 3.66. In the study conducted by Teamur Aghamolaei et al. (26), in health centers, the mean score was also 3.71 that can be said that it generally has been at the average level. Results of a study conducted by Lau's in Malaysia and a study conducted by Lim's in Singapore are also almost similar to the results of the current study (19). Furthermore, in the part of expectations of quality of services, the mean score given by patients was 4.62. This mean score indicates patients' high expectation of quality of hospital services in reviewed studies. Moreover, results of the study conducted by Zarei et al. (23), and Ranjbarzatabadi et al. (27), also indicate high mean score of patients' expectations.

The results showed that the mean score of gap rate was 0.94. In fact, the results of the reviewed studies indicate that there is always a gap between patients' perceptions and expectations. In this regard, many studies acknowledged this gap from patients' view; studies conducted by Caha (28), Yesilada, and Direktor (29), can be mentioned.

In regard to five dimensions of quality, the analysis of the results of the reviewed studies about patients' perceptions show that the highest score is related to the dimension of assurance (3.72) and the lowest score is related to the dimension of responsiveness (3.61). Following these results, it can be said that since patients suffer from physical diseases along with mental and psychological discomfort and stress associated with the disease, they need more responsiveness from clinical and administrative staff in hospital so that the course of their treatment is completed and also they achieve relative mental peace after it. For instance, the availability of medical team is one dimension of responsiveness. If those who are responsible in health centers do not keep patient waiting and treatment processes are performed in an appropriate way, the patient feels that the medical team is available and there is a favorable responsiveness. Moreover, about the dimension of

assurance, which actually has the highest mean score in the reviewed studies, the quality assurance must include all principles and processes necessities to improve the quality of service.

However, unfortunately, there are several problems related to the provision optimal service to patients due to the lack of quality assurance committee in hospitals in Iran. (30) Results of a study conducted by Aghamolaei et al. (26), which are consistent with the results of the current study, also show that the lowest mean score of perception was related to the dimension of responsiveness and the highest mean score of perception was related to the dimension of assurance (19). In the meantime, in the study conducted by Jenaabadi et al. (16), the dimension of tangibles and visual appearance have the highest mean score and the dimension of empathy has the lowest. In fact, the mentioned study indicates the importance of equipment and visual appearance of hospital in patient' perception of quality, so that it suggests that those responsible in treatment wards can make patients' subjective assessment of the quality of healthcare services positive through improving visual and physical appearance of hospital environment and its staff and equip the hospital with modern and up-to-date equipment.

Furthermore, in the part of expectations of quality of services, the highest score is related to the dimension of responsiveness (4.65) and the lowest score is related to the dimension of empathy (4.60). In fact, as above mentioned discussion, the results show that to what extent the responsiveness is important for patients. About empathy, it can be said that the appropriate approach, providing a comprehensive spiritual support to the patient including cases such as raising patient's hope, empathy with patient, encouraging patients to go through treatment procedure may be useful to cure patients faster. Results of the study conducted by Mohammadi et al. (31), show that the lowest patients' expectation level is related to the dimension of empathy and the highest patients' expectation level is related to the dimension of reliability. However, in the study conducted by Nekoei-Moghadam et al. (16), the lowest patients'



expectation level is related to the dimension of assurance and the highest patients' expectation level is related to the dimension of reliability (32).

Results of the analysis of the reviewed studies about gap rate between patients' perceptions and expectations of the quality of hospital services also showed that the highest and lowest scores are related to the dimension of responsiveness (1.04) and assurance (0.89), respectively. In fact, it can be said that in the studied conducted in Iran, patients' sensitivity to responsiveness of health care centers for improving the quality of services received is high and the mentioned gap also reflects this fact. This gap signifies patients' needs and expectations have not been met which it itself can be resulted from various issues such as limited resources, and the lack of attention to the demands of people by authorities. Moreover, the lowest observed gap is related to the dimension of assurance which indicates that the performance of studied hospitals for improving the quality has been appropriate. This may be due to the reasons such as the application of knowledge and skills of providers to better serve patients and understanding true needs of patients by them. Results of a study conducted by Gorji et al .(12), which are consistent with the results of the current study also showed the lowest gap is related to the dimension of assurance. However, in a study conducted by Regaira Martínez and SolaIriarte (33) in healthcare centers in Spain, the lowest gap is related to the dimension of empathy. In addition, the results of a study conducted by Hasani et al .(34), in educational hospitals of Qazvin University of Medical Sciences, consistent with the results of the current

study, reported the highest gap in the dimension of responsiveness. The lack of access to some databases can be considered as a limitation of the current study.

Conclusion

The results of the study showed that the mean score of gap between perceptions and expectations in all studies was about 0.95; the highest gap was related to the dimension of responsiveness. Responsiveness is related to the areas, such as providing appropriate and timely services, the reliability of providers, good communication between staff or physicians and patients. The importance of these areas signifies the necessity of taking actions in order to provide more appropriate and higher quality services. Services must be such that the gap between perception and expectations remains low and also patients' perception of services becomes higher and this in turn indicates more appropriate service provision. It seems further studies focusing on patient-centered, service quality improvement solutions in the desired fields are required.

Conflicts of interest

The authors declare that they have no conflict of interests.

Authors' contributions

Moosavi A, Mohseni M and Raeisi A carried out in design of study, analysis of data, interpretation of findings and prepared initial draft of the manuscript, Moosavi A and Mousavi M participated in data collection and preparing final draft.

References

- 1) Razlansari M, Teimouri B, AlipourShirsavar HR, Mohammed T, Ashtarian H. Patients' views on perceived services quality using SERVQUAL Model at educational and medicalcenters of Kermanshah University of Medical Sciences 2013. *Journal of Clinical Research in Paramedical Sciences*. 2012; 3(1):74-83.[In Persian]
- 2) Moosavi A, Mohseni M, Ziaiiifar H, Azami-Aghdash S, Manshadi MG, Rezapour A. The Quality of Educational Services from Students' Viewpoint in Iran: A Systematic Review and Meta-analysis. *Iranian journal of public health*. 2017; 46(4): 447-55.
- 3) Tabibi SJ, Gohari MR, Shahri S, Aghababa S. Assessment of Health Care Services in outpatient



- clinics based on SERVQUAL model in Hospitals of Tehran. *Payavard Salamat*. 2012; 5(4): 49-56. [In Persian]
- 4) Behdioğlu, S., Acar, E., & Burhan, H. A. (2017). Evaluating service quality by fuzzy SERVQUAL: a case study in a physiotherapy and rehabilitation hospital. *Total Quality Management & Business Excellence*, 1-19
 - 5) Tsinidou M, Gerogiannis V, Fitsilis P. Evaluation of the factors that determine quality in higher education: an empirical study. *Quality Assurance in Education*. 2010;18(3): 227-44.
 - 6) Momeni Danaei S, Shahamat S, Khatoni A, Ghodsi S, Hashemi M. The Quality of Educational Services: Gap between Optimal and Actual Status according to Dentistry Students. *Iranian journal of medical education*. 2012; 11(7): 685-95. [In Persian]
 - 7) Esteki R, Attafar A. Quality of nursing services (contemporary level of reality and level of expectation) from nurses' viewpoint on the basis of SERVQUAL Model in Al-Zahra Hospital in Isfahan (2010). *Modern Care Journal*. 2012; 9(2): 72-9.[In Persian]
 - 8) Al Bassam T, Al Shawi S, editors. Analysing the Use of the SERVQUAL Model to Measure Service Quality in Specific-Industry Contexts. *Proceedings of 14th International Business Research Conference*; 2011.
 - 9) Peprah AA, Atarah BA. Assessing Patient's Satisfaction using SERVQUAL Model: A Case of Sunyani Regional Hospital, Ghana. *International Journal of Business and Social Research*. 2014; 4(2):133-43.
 - 10) Madan, M., & Goel, N. (2015). An Empirical study on Assessing Quality of Health care Services offered by private Hospitals Using Servqual model. In XVI Annual Conference Proceedings.
 - 11) Umath B, Marwah AK. Measurement of Service Quality in Health Care Industry using Servqual Model: A Case of Select Hospitals. *International Journal of Management and Social Sciences Research*. 2015; 4(1): 52-7.
 - 12) AbolghasemGorji H, Tabatabaei S, Akbari A, Sarkhosh S, Khorasan S. Using the service quality gap's model (SERVQUAL) in Imam Khomeini teaching hospital: 2012. *Journal of Health Administration (JHA)*. 2013; 16(51):7-18. [In Persian]
 - 13) Azami-Aghdash S, Ghaffari S, Sadeghi-Bazargani H, Tabrizi J-S, Yagoubi A, Naghavi-Behzad M. Developing Indicators of Service Quality Provided for CardiovascularPatients Hospitalized in Cardiac Care Unit. *Journal of cardiovascular and thoracic research*. 2013; 5(1): 23-8.
 - 14) Tabrizi J-S, Ghojzadeh M, Azami-Aghdash S, Daemi A, Hassanzadeh R. Quality of angiography services as perceived by the cardiovascular diseases patient. *International Journal of Hospital Research*. 2014; 3(4): 167-72.
 - 15) Izadi A, Jahani Y, Rafiei S, et al. Evaluating health service quality: using importance performance analysis. *International Journal of Health Care Quality Assurance*. 2017; 30(7): 656-63.
 - 16) Jenaabadi H, Abili K, Nastiezaie N, Yaghubi NM. The gap between perception and expectations of patients of quality of treatment centers in Zahedan by using the Servqual model. *Journal of the Iranian Institute for Health Sciences Research*. 2011;10(4): 449-57.[in persian]
 - 17) Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JP, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Annals of internal medicine*. 2009; 151(4): W-65-W-94.
 - 18) Vandembroucke JP, Von Elm E, Altman DG, Gøtzsche PC, Mulrow CD, Pocock SJ, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): explanation and elaboration. *Annals of internal medicine*. 2007; 147(8):W-163-W-94.
 - 19) Aghamolaei T, Eftekhaari TE, Rafati S, Kahnouji K, Ahangari S, Shahrzad ME, et al. Service quality assessment of a referral hospital in Southern Iran with SERVQUAL technique:



- patients' perspective. BMC health services research. 2014; 14(1): 322.
- 20) Ameryoun A, Dopeykar N, Nasiri T, Meskarpour-Amiri M, Gholami-Fesharaki M, Karamali M, et al. Assessment the Gap between Patients' Expectations and the Services Provided to them in Selected Hospitals of Tehran in 2012. Journal of Police Medicine. 2013; 2(1): 1-10. [in persian]
 - 21) Jabraeily M, Rahimi B, Khodayari R, Goli Farhodi G, Mohamadi A. Assessment of inpatient satisfaction with quality services in training centers of Urmia University of Medical Sciences with the servequal model. Health Inf Manage. 2012; 7(2): 19-24. [In Persian]
 - 22) Havasbeigi F, Yasbalaghisharahi B, Mohamadi E, Mohamadi A. Measuring the quality of services provided for outpatients in public hospitals in Ilam and Kermanshah cities based on the SERVQUAL instrument. J Ilam Univ Med Sci. 2013; 21(1): 207-1. [In Persian]
 - 23) Zarei A, Arab M, Froushani AR, Rashidian A, Tabatabaei SMG. Service quality of private hospitals: The Iranian Patients' perspective. BMC health services research. 2012; 12(1): 31.
 - 24) Hekmatpou D, Sorani M, Farazi AA, Fallahi Z, Lashgarara B. A survey on the quality of medical services in teaching hospitals of Arak University of Medical Sciences with SERVQUAL model in Arak, 2010. Arak Medical University Journal. 2012; 15(7): 1-9. [In Persian]
 - 25) Nekoei-Moghadam M, Amiresmaili N. Hospital services quality assessment: Hospitals of Kerman University of Medical Sciences, as a tangible example of a developing country. International Journal of Health Care Quality Assurance. 2011; 24(1): 57-66.
 - 26) Agha Moulaei T, Zare S, Kebriaei A, Poudat A. Quality Gap In Primary Healthcare Services In Bandar Abbas: Women's Perspective. Payesh, Journal of The Iranian Institute For Health Sciences Research. 2008;7(2):127-1.
 - 27) Ranjbarezatabadi M, Bahrami M, ZareAhmadabadi H, Arab M, Nasiri S, H H. Analysis of SERVQUAL in Shahid Sadoghi hospital, Yazd, Iran. Hormozgan Univ Med Sci J. 2012; 16(4): 333-40.
 - 28) Caha H. Service quality in private hospitals in Turkey. J Econ Soc Res. 2007; 9(1): 55-9.
 - 29) Yeşilada F, Direktör E. Health care service quality: A comparison of public and private hospitals. African Journal of business management. 2010; 4(6): 962-71.
 - 30) Logmaniyan MKh, Tabibi SJ, Karimi A, Delgoshayi B, M B. Design quality assurance model for hospital services in Iran. Journal of Medical Council of Islamic Republic of Iran. 2008; 36(1): 209-308.
 - 31) Mohammadi A. Evaluating Quality of Health Services in Health Centres of Zanjan District of Iran. Indian Journal of Public Health. 2012; 56(4): 308-13.
 - 32) Nekoei-Moghadam M. Hospital services quality assessment Hospitals of Kerman University of Medical Sciences, as a tangible example of a developing country. International Journal of Health Care Quality Assurance. 2011; 24(1): 57-66.
 - 33) Regaira Martínez E, SolaIriarte M. Care quality in intensive care evaluated by the patients using a service quality scale (SERVQUAL). EnfermIntensiva. 2010; 21(1): 3-10.
 - 34) hasani h, mohebifar r, barikani a. Measuring hospital Service Quality Gap from the viewpoint of inpatients in educational hospitals of Qazvin University of Medical Sciences (2012-13). Hospital. 2015; 14(1): 97-104.[In Persian]



Table 1. Main characteristics of included studies

Author	Year of implementation	setting	Sample Size	Tangibles			Reliability			Responsiveness			Assurance			Empathy		
				Mean (P)	Mean (E)	Gap	Mean (P)	Mean (E)	Gap	Mean (P)	Mean (E)	Gap	Mean (P)	Mean (E)	Gap	Mean (P)	Mean (E)	Gap
Aghamolaei, T et al (19)	2013	Bandar Abbas Shahid Mohammadi Hospital Educational and medical centers of	96	3.42	4.73	-1.30	3.49	4.72	-1.22	3.34	4.76	-1.42	3.56	4.76	-1.20	3.39	4.69	-1.31
Razlansari, M et al (1)	2013	Kermanshah University of Medical Sciences	400	3.65	4.48	-0.83	3.44	4.53	-1.09	3.62	4.65	-1.03	3.74	4.64	-0.90	3.89	4.55	-0.66
Abolghasem Gorji, H et al (12)	2012	Imam Khomeini Teaching Hospital	116	3.62	4.67	-1.04	3.73	4.71	-0.97	3.64	4.64	-0.99	4.02	4.72	-0.69	3.67	4.65	-0.97
Ameryoun, A et al (20)	2012	Selected hospitals of Tehran	264	3.83	4.52	-0.69	3.89	4.6	-0.71	3.84	4.56	-0.72	4.07	4.63	-0.56	3.79	4.54	-0.75
Tabibi, SJ et al (3)	2011	Hospitals Of Tehran Teaching Hospital of	242	3.70	4.57	-0.87	3.36	4.50	-1.13	3.39	4.59	-1.20	3.49	4.23	-0.74	3.44	4.65	-1.21
Jabraeily, M et al (21)	2011	Urmia University of Medical Sciences	385	3.92	4.14	-0.34	3.86	4.46	-0.38	4.08	4.78	-0.70	3.94	4.55	-0.61	3.88	4.34	-0.46
Havasbeigi, F et al (22)	2011	Public Hospitals In Ilam and Kermanshah Cities	450	3.13	4.00	-0.87	2.79	3.95	-1.16	2.62	3.84	-1.22	2.67	4.03	-1.36	2.72	3.86	-1.14
Zarei, E et al (23)	2010	Tehran Private Hospitals	983	4.18	4.95	-0.77	4.05	4.93	-0.88	4.06	4.92	-0.86	4.11	4.94	-0.83	3.78	4.85	-1.07
Hekmatpo, D et al (24)	2010	Hospitals of Arak University of Medical Sciences	260	3.66	4.96	-1.30	3.76	4.97	-1.20	3.65	4.94	-1.24	3.80	4.96	-1.16	3.61	4.94	-1.25
Nekoei-Moghadam, M and Amiresmail, M (25)	2008	Kerman University of Medical Sciences	385	3.31	4.64	6.50	-1.86	4.95	6.64	-1.69	4.69	6.49	-1.80	5.14	6.42	-1.28	5.14	6.5
Jenaabadi, H et al (16)	—	Hospitals in Zahedan City	200	4.25	4.94	-0.69	4.19	4.88	-0.68	4.13	4.92	-0.79	3.97	4.81	-0.84	4.17	4.95	-0.77

P: Perception

E: Expectation



STROBE Statement-checklist of items that should be included in reports of observational studies

	Item No	Recommendation
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported
Objectives	3	State specific objectives, including any prespecified hypotheses
Methods		
Study design	4	Present key elements of study design early in the paper
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	6	(a) <i>Cohort study</i> —Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up <i>Case-control study</i> —Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls <i>Cross-sectional study</i> —Give the eligibility criteria, and the sources and methods of selection of participants (b) <i>Cohort study</i> —For matched studies, give matching criteria and number of exposed and unexposed <i>Case-control study</i> —For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias
Study size	10	Explain how the study size was arrived at
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) <i>Cohort study</i> —If applicable, explain how loss to follow-up was addressed <i>Case-control study</i> —If applicable, explain how matching of cases and controls was addressed <i>Cross-sectional study</i> —If applicable, describe analytical methods taking account of sampling strategy (e) Describe any sensitivity analyses



Result	
Participants	13* (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analyzed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram
Descriptive data	14* (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders (b) Indicate number of participants with missing data for each variable of interest (c) <i>Cohort study</i> —Summarize follow-up time (eg, average and total amount)
Outcome data	15* <i>Cohort study</i> —Report numbers of outcome events or summary measures over time <i>Case-control study</i> —Report numbers in each exposure category, or summary measures of exposure <i>Cross-sectional study</i> —Report numbers of outcome events or summary measures
Main results	16 (a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17 Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion	
Key results	18 Summarize key results with reference to study objectives
Limitations	19 Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	20 Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalizability	21 Discuss the generalizability (external validity) of the study results
Other information	
Funding	22 Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based
