Review Article

A Systematic Review and Meta-Analysis of Health Care Quality in Iran Based on the Comprehensive Quality Measurement in Health Care Model

Abstract

Background: Comprehensive assessment of health care quality is the first step in improving care and achieving health service goals. Therefore, this study aimed to conduct a systematic review and meta-analysis of health care quality in Iran based on the Comprehensive Quality Measurement in Health Care model. **Methods:** In this study, the databases of PubMed, Scopus, Web of Science, Iranian Scientific Information Database (SID), MagIran, and Google Scholar were searched using English and Iran keywords without time limit. STATA 16 software and a random effect model were used for conducting meta-analysis. **Results:** Of the 750 articles found, 20 were finally included; 13 of which were related to service quality, five to customer quality, and four to technical quality. Overall mean score of service quality was 7.79 [95% CI 7.43–8.15, df = 12, I^2 = 98.48, P value < 0.000] out of 10, and overall mean score of customer quality was 73.20 ± 4.56 [95% CI 65.18–81.22, df = 5, I^2 = 99.34, P value < 0.001] out of 100. Among the 12 dimensions of service quality, the confidentiality dimension (9.55 ± 0.12) had the highest mean score and the group support dimension (5.92 ± 0.901) had the lowest score. In general, from the viewpoint of service receivers, the technical quality is relatively favorable. **Conclusions:** According to the results of this study, the quality of health care in Iran is significantly far from ideal. Therefore, planning to improve providing health care is essential.

Keywords: *Customer quality, health care, meta-analysis, service quality, systematic review, technical quality*

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Introduction

Nowadays, the high cost of health care and the increasing public awareness and expectations on health systems have made the health systems to constantly think about improving and enhancing the quality of health care provided to people.[1,2] However, health systems in all countries around the world are working to provide quality health services for their citizens whenever and wherever they need. Health service providers also try to improve the quality of health services by formulating valid guidelines and standards and comparing their performance with it.[3]

The concept of quality, especially in the health sector and about the services provided in this sector, can have difficult and ambiguous definitions. Such that quality, in general, can be defined as achieving a high level of superiority and desirability.[4] In the health sector, the quality of service can be defined as the method of service delivery and the service delivery environment depending on the conditions, and the way the customer receives service.[5] The American Medical Institute has also defined the quality of health care as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."[6] The UK health system has also defined the quality of health care services as to provide the proper health services to people in need, with appropriate practical methods that society can afford it and are acceptable to the public.[7] Given the high importance of quality in health systems, continuous measurement and planning to improve it is of particular importance because the low quality is a contributing factor to disease incidence, increased primary and clinical care costs, disabilities in patients, and also increased people's mistrust of the health system.[8,9] Measuring and enhancing the quality of health care services can reduce

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hospital infections and mortality and thus improve the quality of life of patients. Paying attention to measuring the quality of service in the health system and improving it can alleviate many problems and shortcomings of health centers and hospitals.[8-11]

In recent years, with the increasing emphasis on quality assessment of health services, various researchers have designed frameworks and tools for this purpose.[12-15] One of the most important and comprehensive of these approaches and tools is the Comprehensive Quality Measurement in Health Care (CQMH) model presented by Tabrizi *et al*.[16] in 2009 in Australia, which includes three main dimensions of quality (technical, service, and customer). The technical dimension assesses the clinical part of health services about evidence-based guidelines and includes issues, such as the experiences, knowledge, and performance of health care providers.[17] The service quality dimension encompasses non-clinical aspects of care and assesses the patient's perspective and experience of the health system, taking into account the relationships between the patient and care providers, the physical space of service delivery, and the facilities used to provide health care services.[5,18,19] Customer quality dimension relates to the characteristics of the clients themselves, which helps them to intervene effectively in health care processes and to decide on the best course of treatment.[16]

In recent years, studies using this model have been designed and carried out in Iran. Although the results of these studies have been able to somewhat clarify the quality status in health care delivery, they have been conducted in a small setting and with limited sample sizes. Therefore, it is necessary to summarize these studies to get a general view and to estimate more accurately the health care status in Iran. Therefore, this study aimed to systematically review and meta-analysis the quality of health care in Iran based on the CQMH model.

Methods

This study is a systematic review and meta-analysis conducted in 2020 following the book "A Systematic Review to Support Evidence-Based Medicine."[20]

Eligibility criteria

Inclusion and exclusion criteria based on PICO model are presented in Table 1.

CQMH model

This model has been proposed by Tabrizi *et al*. from Australia.[5] In this model, in addition to technical and service quality axes, customer quality has been added to quality dimensions. The service quality of this instrument consists of 12 dimensions (Choice of care provider, Communication, Autonomy, Continuity, Support group, Quality of basic amenities, Dignity, Prompt attention, Safety, Prevention/early detection, Accessibility, and Confidentiality) that assessed through 42 questions. Each dimension

Table 1: Inclusion and exclusion criteria based on P= Population, I= Intervention, C= Comparison, O= Output (PICO) model

PICO components	Inclusion criteria	Exclusion criteria
Target group	Hospitals, clinics, laboratories, health centers, clinics, dental clinics, and other health centers	Other organization (non-health)
Intervention	Studies that assess quality of care based on CQMH Model	Studies that not assess quality of care. Studies that assess quality of care based on other model
Control group	N/A	N/A
Output	All outputs related to health care quality assessment (Customer quality, Technical quality, and Services quality).	Outputs not related to quality assessment and quality dimensions
Study design	All descriptive, analytical and cross-sectional studies	Clinical trials and experimental studies. Studies that presented at conferences and congresses
Article language	Published studies in English or Persian	Published studies in other language

of the questionnaire measured through two aspects of importance and performance and the formula [Service Quality = 10 − (Importance × Performance)] is used to calculate the quality of service. The 4-point Likert scale is used to score the importance of quality of service, which scores for not important (0), relatively important (3), important (6), and very important (10). The 4-point Likert scale (Never, Sometimes, Often, and Always) is also used to evaluate performance. The performance is divided into poor (Never and sometimes = 0) and good (often and always = 1). Finally, overall service quality score is calculated from worst/lowest quality with the score (0) to the best/highest quality with the score (10).[5,16,21] To measure customer quality dimension, this questionnaire measures patients' perspectives in four self-management steps (Step 1: Patients belief in the importance of their role, Step 2: having confidence and necessary knowledge to perform their duties, Step 3: performing measures to maintain and improve health by the patient themselves, and Step 4: Staying in course, even under stressful conditions.[22] This dimension was evaluated using 13 questions. The 5-point Likert scale is used to rate customer quality, which are strongly disagrees (1), disagree (2), no idea (3), agree (4), and strongly agree (5). In this model, a specific questionnaire is designed and validated for the technical quality dimension based on the disease or health service under study using the guides and related standards.

Information sources

Required data were searched in PubMed, Scopus, Web of Science, SID, MagIran, and Google Scholar databases without a time limit. Keywords "Customer quality," "service quality," "technical quality," "health care quality," "health service quality," "healthcare quality," "healthcare services quality," and Iran were used to search the studies. Several specialized journals in the field were searched manually. The source list of finalized articles was also checked manually for inclusion in the study (references of Reference). The complete search strategy for PubMed databases is presented in Appendix 1.

Review process

First, the title of all articles was reviewed, and articles that were incompatible with the study objectives were excluded. At the screening stage of the studies, the abstracts and full texts of the articles were studied and studies that did not meet the inclusion criteria and had poor correlation with study objectives were excluded. The data were extracted according to the researcher-made data extraction form and entered into Word Microsoft Office: 2010. Articles were screened by two authors, and disputed cases were referred to a third person.

Quality assessment

All extracted articles were evaluated by two evaluators using the Joanna Briggs Institute (JBI) critical appraisal checklist[23] and the disputes between the two evaluators were referred to a third person. This checklist was selected for evaluation of articles in this study because of its specificity for evaluation of observational studies.

Data analysis

Meta-statistical methods were used to calculate the studied indices. STAT 16 software was used for the meta-analysis. To report the results, Forest plot diagrams were used in which the size of each square represents the sample size and the lines drawn on each side of the square represent a 95% confidence interval for each study. I^2 index was used to measure the heterogeneity of the results. In this study, I^2 higher than 50% determined as heterogeneous criteria of articles.

Results

Out of 750 articles extracted through search in databases, 20 articles were finally included in the study [Figure 1]. During the screening process, 51 articles were removed for duplication. In the next phase of screening, the articles were reviewed by title and abstract and 671 articles were removed. Finally, during the review of the full text of the articles, eight articles were excluded because of insufficient information and re-publication. Of the 20 studies found, 13 were related to service quality, five to customer quality, and four to technical quality (in some studies, more than one dimension was examined). Articles related to service quality evaluated 10 services with 2059 participants. Customer quality articles with 836 participants and technical quality articles with 544 people had evaluated the quality. The mean age of participants in service quality studies was 55.81 ± 10.32, in customer quality studies 61.45 ± 10.85, and technical quality studies 61.45 ± 10.85 [Tables 2, 3, and 4].

Service quality

The results showed that the overall mean quality of service provided was 7.79 [95% CI 7.43–8.15, df = 12, I^2 = 98.48, *P* value < 0.000] (out of 10) [Figure 2].

Service quality based on gender

The results of the study showed that the overall mean of service quality in the view of women was 7.86 [95% CI 7.13–8.58, df = 4, I^2 = 98.01, *P* value < 0.001] and the overall mean of service quality in men's perspective was 7.85 [95% CI 7.1–8.59, df = 4, I^2 = 98.35, *P* value < 0.001] was obtained [Figure 3].

Quality of service according to disease control

The results of the study showed that the overall mean of service quality with respect to disease control at its lowest level was 7.49 [95% CI 6.73–8.24, df = 3, I^2 = 99, *P* value < 0.001] and at its highest quality level was reported 7.68 [95% CI 6.94–8.42, df = 3, I^2 = 98.77, *P* value < 0.001] [Figure 4].

The mean of service quality in chronic patients was obtained 7.52 [95% CI 7–8.04, df = 4, I^2 = 98.07, *P* value < 0.001] and the overall mean of service quality in non-chronic patients was 7.96 [95% CI 7.49–8.42, df = 7, I^2 = 98.44, *P* value < 0.000] [Figure 5].

According to the 12 dimensions of quality of service, Confidentiality and Choice of Care Providers had the highest mean score of 9.558 and 8.597 (out of 10), respectively. In addition, Support group and Safety dimensions with the mean score of 5.920 and 7.250 (out of 10) scored the lowest mean score, respectively [Table 5].

Customer quality

The results showed that the overall mean of customer quality related to provided service was 73.20 [95% CI 65.18–81.22, df = 5, I^2 = 99.34, *P* value < 0.001] (out of 100) [Figure 6].

According to the results of studies on customer quality, most patients (63.8%) are in step 3 of self-management (taking necessary measures to maintain and promote health) [Figure 7].

Technical quality

In a study by Gholipour *et al*.[39] who evaluated the technical quality of care in 93 pregnant women in 2016, the technical quality of self-care in pregnant women in
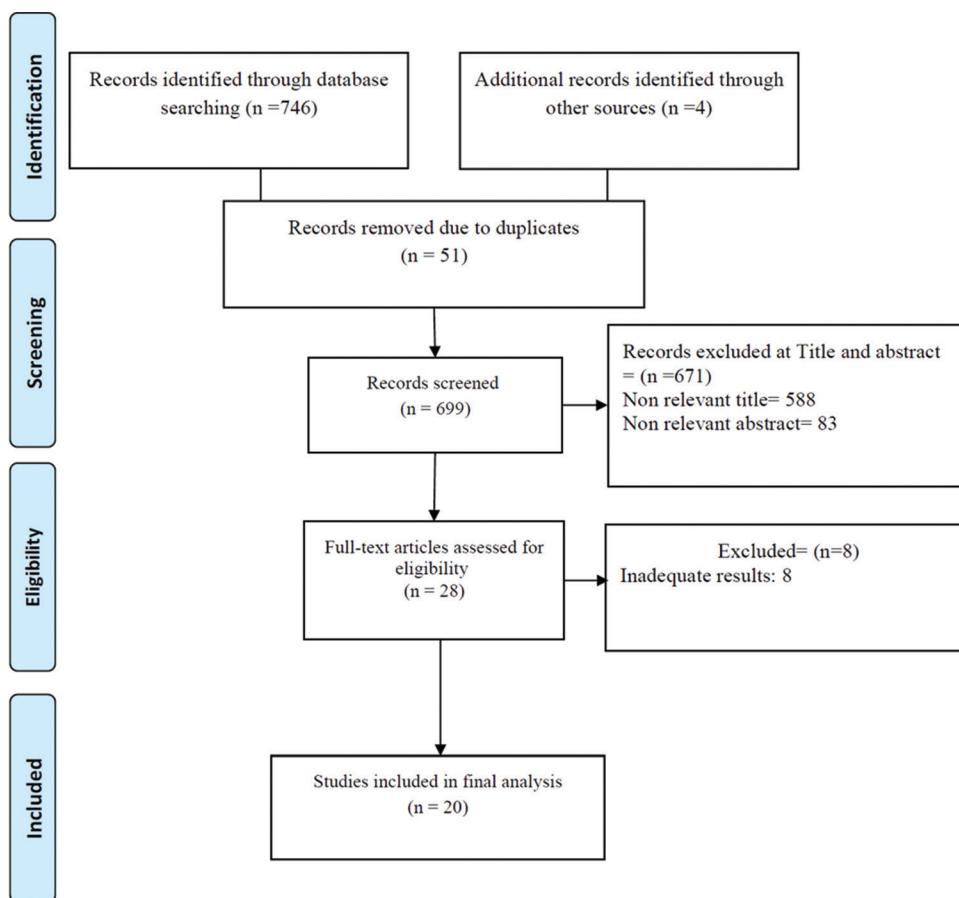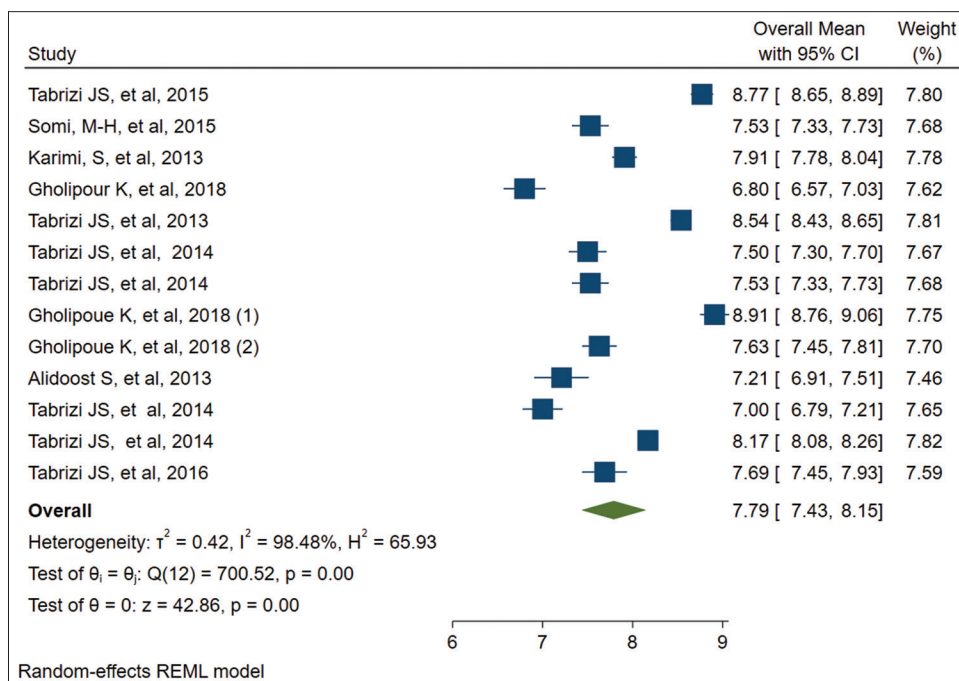
Figure 1: Articles selection and screening process

Figure 2: The overall mean of service quality in hospitals

the intervention group was better than the control group and 93.4% of the mothers reported the technical quality as

effective. Also in the Wilson *et al.*[40] study that assessed the technical quality of care in 185 pregnant women,

Table 2: Characteristics of the studies included in service quality

Author	Ward/Disease type	Sample size	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	Total	sex male	sex female	Disease control Poor	Disease control well
Tabrizi et al.[24]	Emergency	120	*8.84 (1.38)	8.8 (1.52)	8.84 (1.38)	6.00 (0.00)	--	8.89 (1.13)	9.71 (0.83)	9.58 (0.77)	6.52 (0.58)	9.58 (0.77)	9.62 (1.10)	9.74 (0.82)	8.77 (0.66)	8.76 (0.65)	8.77 (0.68)	---	---
Somi et al.[25]	Endoscopic	172	9.25 (1.63)	7.01 (2.96)	7.80 (2.90)	6.06 (3.41)	8.50 (1.97)	9.60 (1.46)	7.57 (2.92)	6.60 (2.52)	7.49 (3.24)	6.15 (4.07)	6.65 (2.83)	8.83 (2.91)	7.53 (1.31)	--	--	---	---
Tabrizi et al.[21]	Cardiovascular	203	7.66	8.43	8.10	9.52	6.20	7.75	6.87	7.84	5.07	3.91	5.37	7.33	7.00 (1.59)	--	--	--	--
Karimi et al.[26]	Rheumatoid arthritis	172	9.37 (1.63)	8.28 (1.83)	8.42 (1.75)	3.11 (3.20)	8.63 (1.47)	7.78 (2.17)	8.88 (1.50)	7.82 (2.10)	7.94 (2.31)	7.29 (2.60)	8.86 (1.98)	9.77 (0.99)	7.91 (0.87)	7.77 (0.90)	7.94 (0.87)	7.66 (0.77)	8.00 (0.90)
Tabrizi et al.[27]	Type 2 Diabetes	180	7.9	8.2	7.26	9.3	8.44	8.2	8.93	7.87	7.45	7.95	8.8	7.34	8.17 (0.64)	-	-	8.38 (0.64)	8.36 (0.64)
Gholipour et al.[28]	Myocardial infarction	164	8.00 (4.00)	6.25 (3.63)	7.00 (3.75)	9.00 (3.00)	5.00 (4.33)	7.75 (4.00)	9.63 (2.06)	6.40 (4.60)	7.00 (4.33)	6.00 (4.00)	5.00 (6.38)	10.00 (3.00)	6.80 (1.47)	6.76 (1.55)	6.87 (1.37)	6.52 (1.79)	6.60 (1.63)
Tabrizi et al.[9]	Physiotherapy	204	6.40 (2.97)	9.78 (1.05)	8.32 (3.50)	9.75 (1.08)	---	9.83 (0.867)	7.97 (1.99)	9.85 (0.679)	6.89 (2.46)	7.06 (2.46)	8.48 (2.23)	9.84 (1.22)	8.54 (0.797)	8.57 (0.79)	8.51 (0.81)	---	---
Tabrizi et al.[30]	Asthma	180	8.23	8.23	8.46	8.71	3.63	8.42	9.06	6.13	7.64	6.13	7.63	9.93	7.69 (1.67)	-	-	7.35 (1.6)	7.74 (1.6)
Tabrizi et al.[31]	Caesarean Section and Normal	200	6.54	6.93 (8.25)	6.00 (8.19)	5.46 (6.57)	5.93 (7.32)	7.44 (7.51)	6.54 (7.37)	6.41 (6.88)	7.12 (7.28)	6.99 (7.04)	5.62 (7.64)	6.61 (8.47)	7.50 (1.45)	---	---	---	---
Tabrizi et al.[32]	Maternity care	185	8.57 (1.94)	8.70 (2.33)	7.85 (2.71)	9.16 (1.55)	3.66 (3.32)	7.49 (2.37)	7.14 (2.53)	7.79 (1.98)	6.80 (3.66)	7.43 (4.14)	9.12 (2.67)	9.76 (1.47)	7.53 (1.36)	---	---	---	---
Gholipoue et al.[33] (1)	Maternity care	92	8.78 (1.40)	9.90 (0.4)4	9.33 (1.77)	9.17 (2.04)	7.88 (3.35)	8.67 (2.11)	8.08 (1.68)	8.19 (1.87)	9.07 (1.72)	9.51 (1.45)	9.07 (1.62)	10.00 (0.00)	8.91 (0.76)	--	-	--	--
Gholipoue et al.[33] (2)	Maternity care	93	8.85 (1.32)	9.23 (1.56)	8.77 (1.55)	9.27 (1.60)	2.16 (2.64)	8.93 (1.48)	6.48 (2.53)	7.90 (2.07)	7.05 (2.19)	6.14 (3.30)	8.55 (1.73)	10.00 (0.00)	7.63 (0.91)	--	-	--	--
Alidoost et al.[34]	Inflammatory bowel	94	9.48 (1.86)	8.00 (2.68)	8.16 (2.84)	950. (1.59)	5.56 (3.49)	6.91 (3.23)	8.11 (2.06)	6.54 (3.57)	6.51 (3.39)	5.42 (4.27)	7.34 (2.95)	9.46 (2.25)	7.21 (1.46)	7.31 (1.53)	7.11 (1.4)	--	--

D=Dimension, D1=Choice of care provider, D2=Communication, D3=Autonomy, D4=Continuity, D5=Support group, D6=Quality of basic amenities, D7=Dignity, D8=Prompt attention, D9=Safety, D10=Prevention/early detection, D11=Accessibility, D12=Confidentiality. *Mean (SD)

Table 3: Characteristics of the studies included in Customer Quality

Author	Disease type	Sample size	Mean age	CQ score	Self-management capability groups			
					One	Two	Three	Four
Azami-aghdash et al.[35]	Angiography	202	55.81±10.32	*60.42±10.07	**1 (0.5)	29 (14.6)	168 (84.4)	0
Tabrizi et al.[36]	Maternity care	185	67.1±11.39	67.79±11.29	0	9 (5.0)	146 (80.7)	26 (14.4)
Tabrizi et al.[37]	Inflammatory Bowel	94	–	70.63±9.67	0	1 (1.1)	82 (87.2)	11 (11.7)
Gholipoue et al.[33] (1)	Maternity care	92	–	87.47±6.75	0	0	16 (17.4)	76 (82.6)
Gholipour et al.[33] (2)	Maternity care	93	–	82.63±7.21	0	0	46 (49.5)	47 (50.5)
Azad Shokri et al.[38]	Rheumatoid Arthritis	170	–	70.25±13.2	0	15 (9.3%)	115 (71)	32 (19.8)

* Mean (SD)** *n* (%)

Table 4: Characteristics of the studies included in technical quality

Author	City	Care/ Disease	Sample Size	Effective care (%)			Main Results
				Poor and weak	Average	Good and Excellent	
Gholipour et al.[39]	Tabriz	Maternity Care	93	6.6	–	93.4	Logistic regression analysis showed that the self-assessed technical quality of maternity care received by the women was significantly better in the intervention than the control group for several of the standards concerning clinical examinations, maternal education, and vitamin, and mineral supplements.
Wilson et al.[40]	Tabriz	Maternity Care	185	12.4	–	87.6	There was no significant relationship between demographic factors and maternity care standards and the TQ score. In addition, based on women's reports of care during pregnancy, adherence to Ministry of health (MOH) recommended protocol for maternity care was relatively high for some clinical examination and low for education, supplements, and Para-clinic examinations.
Nahangi et al.[41]	Isfahan	Rheumatoid Arthritis Care	172	26.5	–	73.5	Technical quality had a significant relationship with age and patients with complications reported higher Technical Quality score than who havenot complications. Overall, technical quality for people with rheumatoid arthritis was relatively low.
Tabrizi et al.[42]	Tabriz	Inflammatory Bowel Disease	94	11.8	32.3	55.9	The results showed a substantial gap between provided care for the people with Inflammatory Bowel Disease and the relevant standards.

there was no significant relationship between technical quality, demographic information, and care of pregnant women, and 87.6% of participants reported that the pregnancy care was good and excellent. In a study by Nahangi et al.[41] on the evaluation of the technical quality of care in 172 patients with Rheumatoid Arthritis, 26.5% of participants reported care effectiveness as poor. In this study, the technical quality was also reported poor by patients with Rheumatoid Arthritis. Similar findings were reported in another study conducted by Tabrizi et al.[42] In 2015 regarding the assessment of the technical quality of care in patients with Inflammatory Bowel Disease, 32.3% of patients reported effective care as moderate and 11.8% of patients reported effective care as poor. The study also points to the gap between service providers, patients, and related standards. In general, in the view of service recipients, despite some deficiencies in providing health services, services provided have relatively good status in terms of technical quality.

Discussion

This study included 20 articles out of a total of 750 extracted articles, 13 of which were related to service quality, five were related to customer quality, and four were related to technical quality. The overall mean of service quality provided to 2056 patients was 7.79 ± 0.17 (out of 10). Among the 12 dimensions of service quality in the measurement tool, confidentiality had the highest mean score of 9.558 ± 0.12 (out of 10) and group support dimension had the lowest score of 5.920 ± 0.901 (out of 10). Furthermore, in this study, the mean score and standard deviation of total customer quality with 836 participants were 73.20 ± 4.56 (out of 100). In general, from the viewpoint of service receivers, the technical quality of health care is in a desirable condition. The overall mean of service quality for women was 7.86 ± 0.28 and for men was 7.85 ± 0.35. In addition, the overall mean of service quality was 7.49 ± 0.34 (poor) and 7.68 ± 0.31 (well) in terms of disease control.
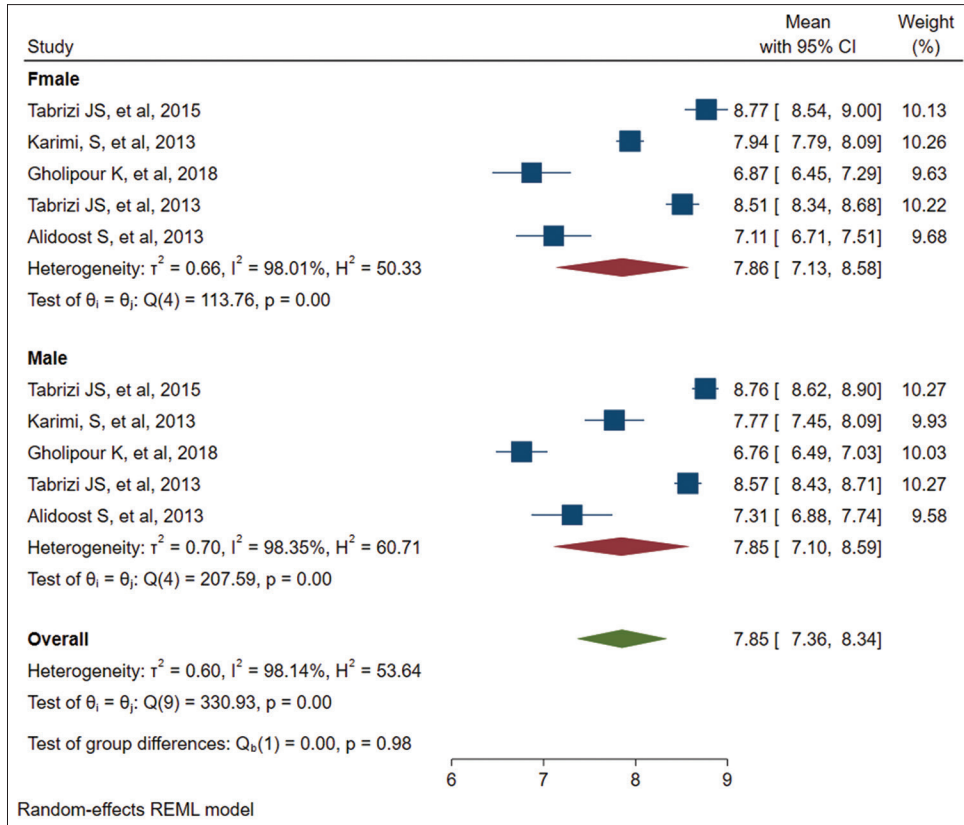
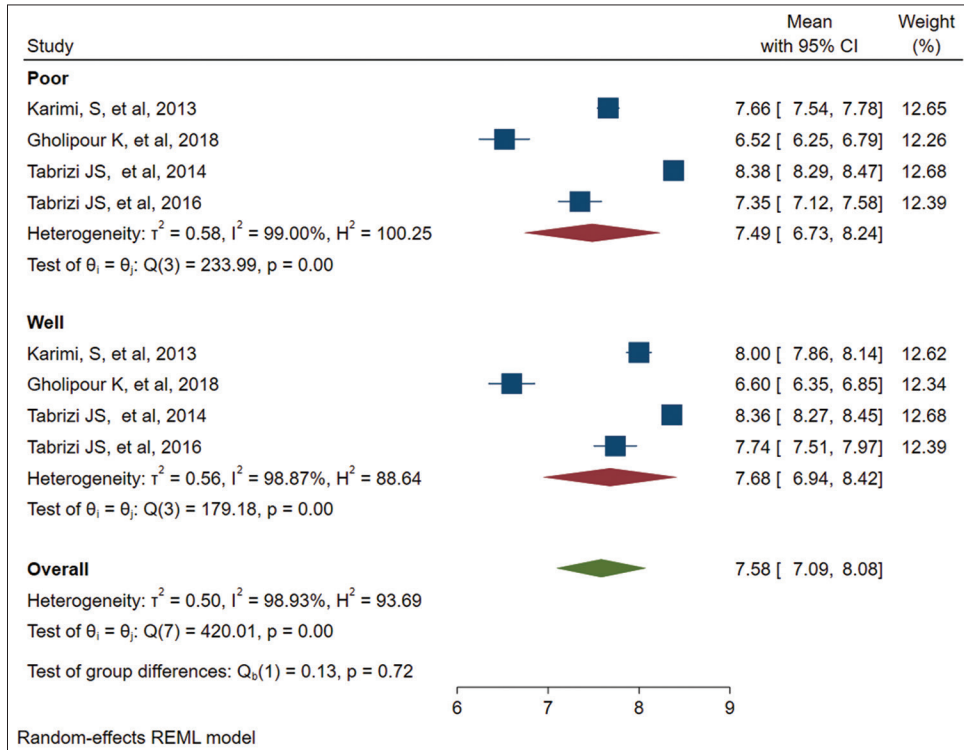Figure 3: The overall mean of service quality by gender

Figure 4: Overall mean of service quality in terms of disease control

The service quality in health care in many countries and various parts of the health system has been evaluated using the SERVQUAL tool.[43-47] In Iran, the SERVQUAL tool has also been used in many cases to assess the quality of
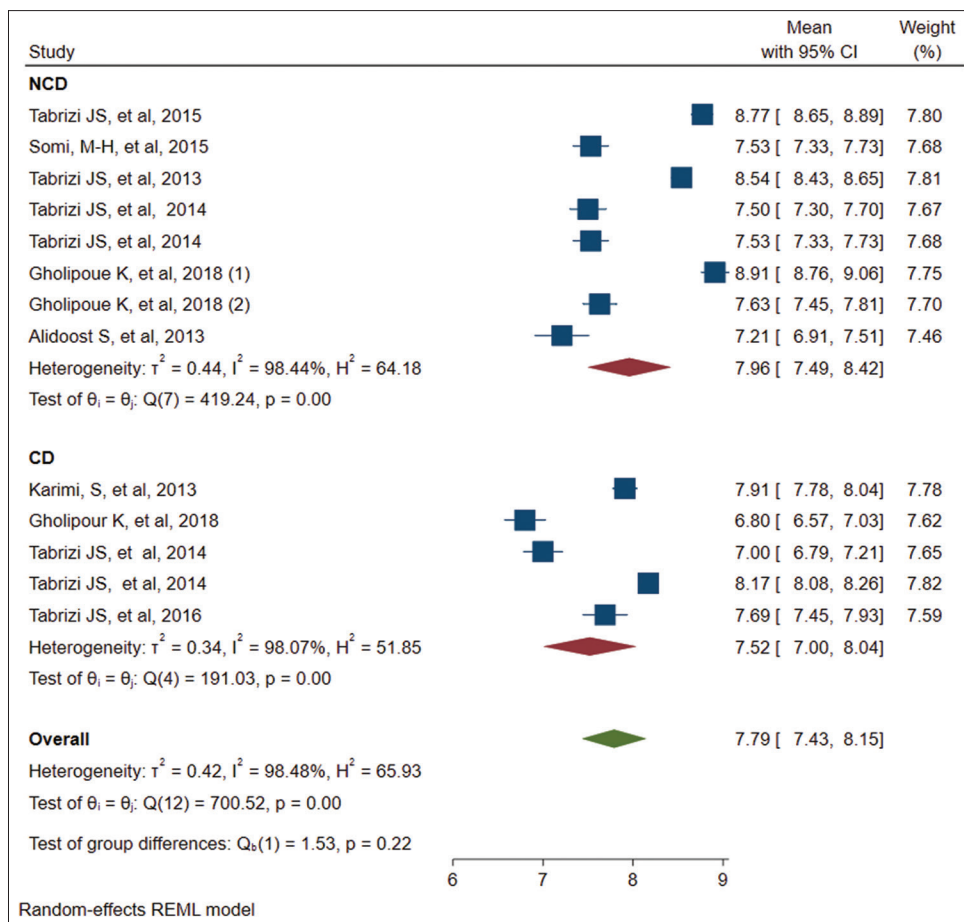
Figure 5: The overall mean score of services quality of provided services by chronic and non-chronic diseases

Table 5: Mean scores related to the service quality dimensions in Iran

Dimensions	Dimension statues (95% CI)				Heterogeneity test (95% CI)			
	Mean	Variance	Lower limit	Upper limit	df	Q	P	I²
Choice of care provider	8.597	0.056	8.135	9.060	9	190.962	<0.001	95.287
Communication	8.350	0.094	7.750	8.949	9	518.918	<0.001	98.266
Autonomy	8.160	0.044	7.749	8.570	9	97.696	<0.001	90.788
Continuity	7.856	0.328	6.733	8.979	8	880.866	<0.001	99.092
Support group	5.920	0.812	4.154	7.685	7	858.823	<0.001	99.185
Quality of basic amenities	8.374	0.091	7.783	8.966	9	388.296	<0.001	97.682
Dignity	8.047	0.122	7.362	8.733	9	441.462	<0.001	97.961
Prompt attention	7.749	0.150	6.990	8.507	9	771.464	<0.001	98.833
Safety	7.250	0.092	6.657	7.843	9	239.397	<0.001	96.241
Prevention/early detection	7.295	0.286	6.246	8.344	8	538.431	<0.001	98.514
Accessibility	7.931	0.116	7.264	8.599	9	293.155	<0.001	96.930
Confidentiality	9.558	0.015	9.795	9.795	7	48.305	<0.001	85.509
Total Services Quality	7.790	0.029	7.456	8.125	12	659.456	<0.001	98.275

service, whether in the context of outpatient or inpatient care in hospitals and primary health care centers[48-56] or medical education.[12-14] The SERVQUAL tool contains 44 questions. Twenty-two questions are related to customer expectations and 22 questions are related to customer perception of received services. This tool has five main dimensions (Tangibility, Reliability, Responsiveness,

Assurance, and Empathy). To calculate the mean of service quality and the gap between customers' perceptions and expectations, scores of customer perceptions are deducted from scores of customer expectations.[57-59] In addition to many advantages and capabilities of this tool, experts point out that it also has some limitations and drawbacks, most notably are the too much attention to customer
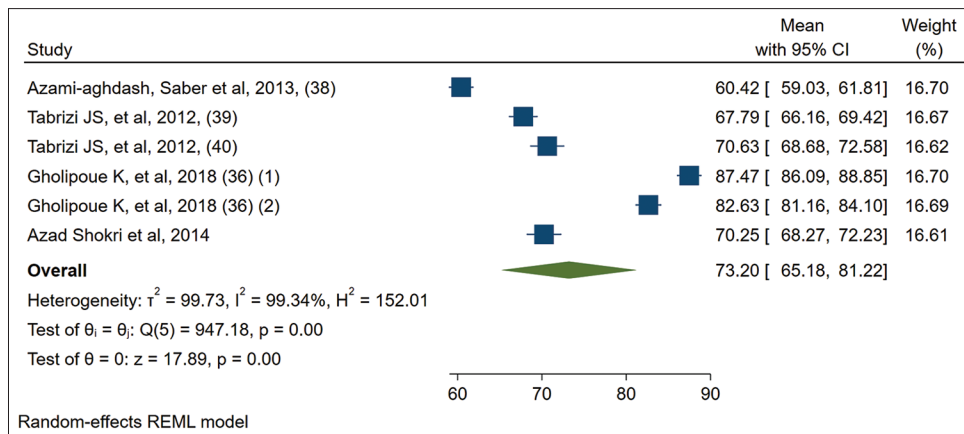
Figure 6: The overall mean score of customer quality about the service received
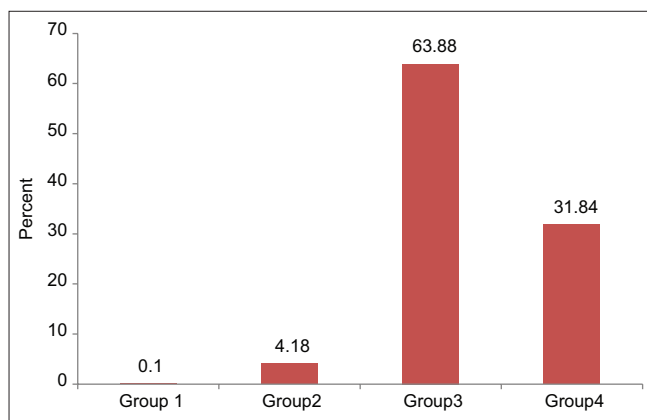

Figure 7: Iranian self-management capability groups according to customer quality assessment

perceptions and expectations and the lack of attention to other dimensions, the lack of a clear method to measure the quality of services, weak structural stability of the factors, not being widely used in various industries all over the world, and low convergence of indicators.[60] In recent years, many models have been introduced in addition to the SERVQUAL model to measure service quality, and each has its own characteristics, advantages, and disadvantages.[61] One of these models is the CQMH model developed by Tabrizi *et al*. from Australia.[5] In this model, in addition to technical and service quality axes, the customer quality axis has also been added to the quality dimensions and has largely been able to overcome the problems and weaknesses of previous tools. However, it seems that researchers and experts in the field of quality assessment in health systems need to do more research and efforts to develop a more comprehensive and less defective scale.

According to the results of this study, out of 12 dimensions of service quality, the Support group with a mean score of 5.920 had the lowest score that indicates the poor performance of the Iranian health system in providing health services in this dimension. In most studies in Iran, the "support groups" dimension has not achieved a good

score (at least 9 out of 10) and is a poor performance dimension in the field of quality of service.[21,26,27,31,32] A similar study conducted by Tabrizi *et al*.[5]in Australia showed that the "support groups" dimension scored high. One possible reason for this may be the novelty of the concept of "support groups" in low- and middle-income countries, including Iran. However, in high-income countries, this concept is very widespread and various studies have been conducted in this area.[62-67] Therefore, it seems that by promoting and expanding the concept of "support groups" in health care provider centers, it is possible to obtain better results in the recovery process of patients, especially those involved in diseases with high social and psychological side effects.

The "safety" and "prevention" dimensions of service quality also had low mean scores. One possible reason for this may be the type of health care provider. Because in most of the studies reviewed the service provider center belongs to the public sector, where the volume of visits to these centers is high, usually because of limited facilities and lack of human resources and low motivation, providing safe services and paying attention to prevent issues, including training self-care to patients, is having trouble. In a general view, part of the low total score of service quality in this study and similar studies can be linked to this issue. Therefore, the results of most studies have shown that the quality of services provided in private health centers is higher than in public centers.[68,69] As Fazaeli *et al*.[70] stated in their study that more patients' willingness to go to the public or private sector may be because of the quality of service delivery, especially the quality of non-clinical services, health care provider centers while attracting more patients can increase their satisfaction through increasing their attention to the quality of service. This issue should be given more attention in the public sector.

Because of the importance of the service quality dimension in clinical care, its impact on the overall quality of clinical care is very high. Service quality dimension in health care assesses issues, such as the relationship between

the patient and the care providers, the physical space of service delivery, and the facilities needed for service delivery.[5,18,19,22] Although the quality of service has not been satisfactory based on the results of this study, it is expected that this problem will be partially resolved after the implementation of the health system evolution plan in Iran, one of the major goals of which is to improve the quality of service, especially in hospitals.[71,72]

In this study, customer quality with a mean score of 73.20 ± 4.56 was relatively favorable compared to Tabrizi's study in Australia with a mean score of 64.5.[16] Today, the simple and one-dimensional concept of quality in health care has been replaced by a complex and multidimensional concept, based on the involvement of consumers, suppliers, and the community in decision making and in overall in service delivery process[73] and all around the world, clients of health systems have broad access to health information to participate in the service delivery process. On the other hand, health care providers are also more desirable to engage customers in the service delivery process because of the increasing complexity of health care and the need for decision making by clients.[74] Therefore, in recent years, "customer quality," which can generally be defined as "customer involvement in the service delivery process for improving results," has been considered. Therefore, customer quality and involving patients in the decision-making process and collaborating with the health care provider team through increasing patient awareness and knowledge, enhancing communication and decision-making skills, creating and developing mechanisms and processes for patients' participation, gaining the trust and loyalty of patients, and other managerial strategies should be given greater consideration and be one of the priorities of health care providers. In this case, it can be expected to increase the quality of health care, reduce the costs of providing services and better welcoming and receiving services, and overall high patient satisfaction. In this regard, Bandura points out in his social-cognitive model that self-efficacy and patient participation in health care can play an effective role in improving the outcomes of care provided.[11] Other studies have also shown that self-efficacy and patient participation have had a positive effect on quality improvement.[14,15] Managers and health care providers can provide different ways for patients to participate in providing services and communicating with providers. For example, Swinton, by introducing nine solutions to improve customer quality, points out that organizations can use the telephone, email, fax, and most importantly, face-to-face interviews and conversations to connect with and engage the customers in providing services process.[75]

Because of the technical quality of care, in two studies by Tabrizi and Nahangi, which were, respectively, related to inflammatory bowel disease and rheumatoid arthritis Care, the technical quality was reported poor.[41,42] The results of Tabrizi *et al*.'s study of the technical quality of care

in inflammatory bowel patients showed a gap between the care provided to patients with updated standards and this finding was following the studies of Rejler,[76] Chauhan,[77] and Kappelman,[78] which indicates that there was a significant gap between patient care and approved standards. In the study of Nahangi also, by examining the technical quality of care, it was found that patients received less than standard information about drug use and side effects, which is consistent with the Wyke study.[79]

One of the limitations of this study is the low number of studies, especially in the field of customer quality and technical quality. Furthermore, because the studies included in this study were conducted in limited areas of Iran, the generalizability of this study is reduced.

Conclusions

According to the results of this study, it can be stated that from the viewpoint of health care recipients, the quality of services provided in Iran is significantly lower than world standards. Therefore, it is suggested to identify the main causes that affect the quality of services and to design and implement necessary interventions to improve them.

Although few studies have been conducted on the quality of health care, this study provides an overview of the three dimensions of health services quality (quality of service, customer, and technical) for health system policymakers. Policymakers and health services managements, according to the results of this study, can design, plan, and implement the necessary interventions to improve the weak dimensions.

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Appendix Table

Appendix 1: Complete search strategy for PubMed databases

Set	Strategy	Results
#1	((((((("health care quality"[Title/Abstract]) OR "health service quality"[Title/Abstract]) OR "healthcare quality"[Title/Abstract]) OR "healthcare services quality"[Title/Abstract]) OR "customer quality"[Title/Abstract]) OR "services quality"[Title/Abstract]) OR " technical quality"[Title/Abstract]	6074
#2	Iran[Affiliation]	136820
#3	#1 AND #2	89*

*Filters activated: English, Persian.