



Assessment of the Quality of Delivered Care for Iranian patients with Rheumatoid Arthritis by Using Comprehensive Quality Measurement Model in Health Care (CQMH)

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ABSTRACT

Introduction: Quality of care has become increasingly critical in the evaluation of healthcare and healthcare services. The aim of this study was to assess quality of delivered care among patients with rheumatoid arthritis using a model of Comprehensive Quality Measurement in Health Care (CQMH).

Methods: This cross-sectional study was conducted on 172 patients with rheumatoid arthritis (RA) who were received care from private clinics of Isfahan University of medical sciences in 2013. CQMH questionnaires were used for assessing the quality of care. Data were analyzed using SPSS for Windows.

Results: The mean scores of Quality Index, Service Quality (SQ), Technical Quality (TQ), and Costumer Quality (CQ) were 72.70, 79.09, 68.54 and 70.25 out of 100, respectively. For CQ only 19.8% of participations staying the course of action even under stress and financial constraints, there is a significant gap between what RA care they received with what was recommended in the guideline for TQ. Scores of service quality was low in majority of aspects especially in "availability of support group" section.

Conclusion: Study shows paradoxical findings and expresses that quality scores of service delivery for patients with arthritis rheumatoid from patient's perspective is relatively low. Therefore, for fixing this paradoxical problem, improving the participation of patients and their family and empowering them for self-management and decision should be regarded by health systems.

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Introduction

Rheumatoid arthritis (RA) is a chronic autoimmune disorder characterized by inflammation of synovial tissues that leads to joint swelling, stiffness, pain, and progressive joint destruction with unpredictable course and wide variation in severity.¹⁻³ The one percent of the world's population is affected by RA, suffer

substantial morbidity as a result of rheumatoid arthritis and early death as a result of comorbid diseases.³⁻⁵ Unfortunately, cure of RA is not possible, and management and control of this disease is considered with current procedures, then it can be said that, for incurable diseases the quality of care is considered very important.^{6,7}

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Quality of care has become increasingly critical in the evaluation of healthcare and healthcare services.⁵ However, little is known about whether patients with RA receive appropriate care for their disease and few tools exist to evaluate this question.⁸ Evaluation of the rheumatic healthcare quality is a major issue for detection of needed care and long-term dependency on healthcare.⁹ Initially, the assessing of quality of care is often performed by healthcare professionals; However, patients' perspectives on healthcare quality differ from the views of healthcare professionals and policy makers.^{5,9,10} Quality of care from the perspective of patients is increasingly considered an important component of comprehensive chronic disease management and as an instrument for evaluation of health care quality. In many preceding studies, quality of care from the patient's perspective has been considered as patient satisfaction.^{10,11} The limitation of these surveys was that the scores were extremely subjective, highly skewed (>90% are satisfied), and influenced by personal preference and patient expectation.^{5,9,12} Therefore, a more refined and less subjective instrument for evaluating healthcare quality from the patients' perspective is needed.

Donabedian, one of the pioneers in quality promotion, proposed a model to measure quality of health care using Technical Quality (TQ), Structure Quality (SQ), and Process Quality (PQ).¹³ Lack of a comprehensive measurement method in health care has created a miss understand regard to result of quality assessment in health services.² Also, most of studies on the quality of health care focus on the technical and service aspects of care, and the most important aspect in delivery of health services, customer quality, is neglected.¹⁴ In this regard, based on a model developed by Tabrizi *et al.*, the quality of health services are assessed from three dimensions: service,

technical and customer quality.¹⁵ Service quality refers primarily to how the care are received and is influenced by the physical, social, and cultural context. Technical quality refers to the degree to which the delivered care meets scientific and professional standards that are likely to optimize the benefits and minimize the risks.^{16,17} This aspect of quality reflects the knowledge, skill, and ability of the care giver for self-management. Customer Quality refers to the attributes of patients or health care consumers that enable them to participate more effectively with health care delivery system in order to successfully manage their own conditions.¹⁸ Quality Index (QI) is the combination of three aspects of quality of care and indicates an overall value for quality of delivered care among patients (Figure 1).^{16,18}

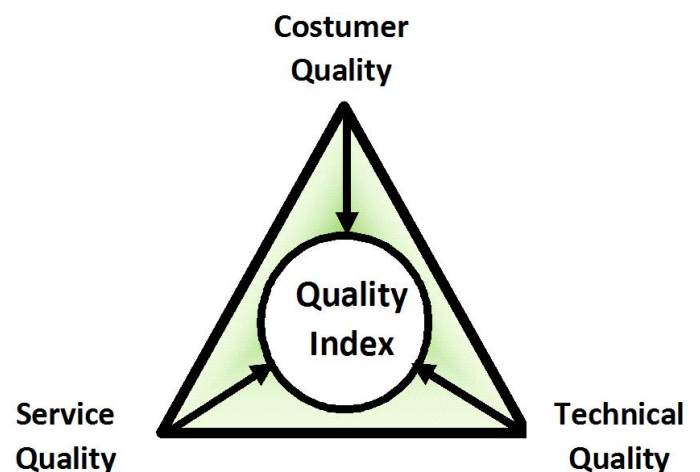


Figure. 1. The proposed model of Comprehensive Quality Measurement in Health Care (CQMH)

To the best of our knowledge, despite the importance of care among the arthritis rheumatoid patients, few studies have been done to assess the quality of it. So, our aim in this study was to assess quality of delivered care among patients with rheumatoid arthritis based on a model of Comprehensive Quality Measurement in Health Care (CQMH).

Materials and methods

This was a cross-sectional study, conducted on 170 subjects with rheumatoid arthritis who were received care from specialist clinics of Isfahan University of medical sciences in 2013. According to the convenience sampling subjects who were referred to clinics from January to April 2013 was included in the study. Quality of delivered care -TQ, SQ, and CQ- was measured by using the reformed CQMH questionnaire for RA patients.¹⁶

Due to the lack of national instructions, international instructions were used for measuring the technical quality of services.¹⁹⁻²¹ Then standards was categorized in five group of clinical care and services, paraclinical services, lifestyle education, education about drugs, and assessment of drug side effects. CQMH_SQ questionnaire was used to measure service quality. Service quality had twelve aspects. For each aspect of service quality, respondents were asked to evaluate the importance of that aspect and to determine their perception about the quality of care received in relation to that aspect (performance), over the past year.

Customer Quality was measured using CQMH_CQ questionnaire. This instrument measures customer empowerment in four important stages: 1) believing the patients' role is important, 2) having the confidence and knowledge necessary to take action, 3) actually taking action to maintain and improve one's health, and 4) staying the course even under stress and financial constraints. Final section of study questionnaire was included demographic information such as: age, education level, care provider, health insurance and rheumatoid arthritis control status.

Validity of the study questionnaires were reviewed and confirmed by 10 faculty members at Tabriz and Isfahan University of medical sciences. Also reliability was confirmed according to Cronbach's alpha

index (SQ; $\alpha = 0.721$, TQ; $\alpha = 0.766$, CQ; $\alpha = 0.803$), based on a pilot study by participation of thirty subjects.

The scores of technical quality was determined as 0 (worst adherence) and 1(best adherence) according to the adherence of rheumatologist to care standards. Service quality for each of twelve aspects was measured using the Importance and Performance scales based on the Netherlands Institute for Health Services Research methodology.¹⁶

Crude scores of CQ normalized as 0-100, and then active CQ scores was calculated. CQ active scores were categorized based on the study has been conducted by Tabrizi et al., in 2012.¹⁸ Final scores for each dimension were transformed to 0-100 scales, and higher scores indicated more quality. Based on the study conducted by Tabrizi et al., three dimensions of quality had same contribution, so the Principal Component Analysis was used to calculate Quality Index (QI), instead of three dimensions.

In the descriptive statistics, frequencies were used for qualitative variables and Mean (SD) for continuous variables such as: CQ, SQ, TQ and QI scores. Independent Samples T-test and ANOVA Test were conducted to compare CQ, SQ, TQ and QI score between categorical variables. Data were analyzed through the SPSS-13 statistical package (SPSS, Chicago, IL, USA). $P \leq 0.05$ were considered as statistically significant.

Results

Findings indicated that 82.7% of participants were female, and the majority (63%) of participants was housekeeper. Most of participants aged over 50 years old (41.4%), and the mean disease duration was approximately 10 years. Also, 14.2% of patients were illiterate and only 22.6% of them had educated in the university.

Response to treat was assessed well by majority of participants (73.5%), and considerable proportion of them (75.9%) reported some kinds of complications. Among these, the prevalence of joint complications and arthritis among subjects were 32.7% and 43.8%, respectively. All of the participants were covered by health insurance. Findings showed that 41.4% of patients also suffered from osteoporosis, 14.1% had a history of heart disease and 35.8% of participants had ophthalmic problems. Whereas 73.5% of participants stated that self-evaluation of disease control, were good and excellent.

Regarding to self-reported customer quality score, all of the participants passed the first stage of self management successfully. The failure rate in second and third stage was 9.2% and 71%, respectively. Finally, forty-five subjects reached to last stage (Table 1).

Recommended care for patients within Rheumatoid Arthritis and received care based on the reports of participants are presented in Table 2. Findings showed that, Para-clinic examinations and lifestyle education with mean 80 (± 20.32) and 41.37 (± 27.51) had highest and lowest scores, respectively.

The average scores for importance, performance and service quality according to SQ aspects are shown in Table 3.

Findings indicated that, confidentiality had the highest score for performance and then there is choice of care provider, accessibility and dignity, respectively. Basic amenities, communication, prevention, dignity and safety had the highest scores for Importance aspect. Confidentiality and choice of care provider achieved the highest SQ scores the overall results have shown in Table 4.

In all quality dimensions and the Quality Index, men had higher quality score than women, but this difference was not statistically significant ($P > 0.05$). Study results indicated that participations with higher educational level significantly had greater CQ and Quality index scores ($P = 0.13$, and $P < 0.01$, respectively). Patients with complication also significantly had greater TQ and Quality index scores ($P < 0.01$).

Similarly, there was a significantly positive correlation between age and TQ score ($P = 0.12$). Participants who had active disease reported higher CQ score than who hadn't active disease ($P = 0.03$). There was also positive significant correlation between occupation and Quality Index ($P = 0.02$).

Table 1. Self-reported score of Customer Quality from participant perspective

Self-management stage	Participants (N)	Failure (N)	Failure (%)
Believing the patients' role is important	--	--	--
Having the confidence and knowledge necessary to take action	170	15	9.2
Actually taking action to maintain and improve one's health	155	110	71.0
Staying the course even under stress and financial constraints	45	--	--

Table 2. Recommended care and its mean score based on international care protocols

Recommended RA patient Care	Adherence to standards Mean (SD)
Clinical care and services	62.65 (18.27)
Para-clinic examinations	80.00 (20.32)
Lifestyle education	41.37 (27.51)
Pharmaceutical education	73.24 (22.36)
Complications education and assessment	71.18 (27.60)

Table 3. Performance, importance and service quality scores for people with rheumatoid arthritis from participants view

Service quality aspects	Performance [¥]	Importance ^{¥¥}	SQ score*
	Mean (SD)	Mean (SD)	Mean (SD)
Choice of care provider	0.11 (0.25)	6.94 (2.37)	9.37 (1.63)
Communication	0.21 (0.20)	7.92 (1.52)	8.28 (1.83)
Autonomy	0.36 (0.29)	6.23 (2.10)	8.42 (1.75)
Availability of support group	1.00 (0.00)	6.89 (3.20)	3.11 (3.20)
Continuity of care	0.28 (0.23)	4.33 (1.83)	8.63 (1.47)
Basic amenities	0.27 (0.25)	8.09 (1.73)	7.78 (2.17)
Dignity	0.17 (0.21)	7.79 (1.70)	8.88 (1.50)
Timeliness	0.36 (0.21)	6.75 (1.87)	7.82 (2.10)
Safety	0.33 (0.30)	7.05 (1.98)	7.94 (2.31)
Prevention	0.38 (0.34)	7.80 (1.90)	7.29 (2.60)
Accessibility	0.16 (0.26)	5.95 (2.09)	8.86 (1.98)
Confidentiality	0.05 (0.16)	6.86 (2.32)	9.77 (0.99)
Total service quality score	0.32 (0.11)	6.99 (0.97)	7.91 (0.87)

¥1 was the best and 0 is the worst, ¥¥10 was the best and 0 is the worst, *10 was the best and 0 is the worst

Table 4. Quality score and demographic for people with Rheumatoid arthritis

	Quality of delivered care for			
	Technical quality Mean (95% CI)	Service quality Mean (95% CI)	Customer quality Mean (95% CI)	Quality index Mean (95% CI)
Overall	68.54 (66.56, 70.53)	79.09 (77.76, 80.41)	70.25 (68.20, 72.29)	72.70 (71.44, 73.96)
Sex				
Male	70.81(65.92, 75.69)	77.66(74.35, 80.98)	72.70(68.06, 77.34)	74.27(71.00, 77.54)
Female	68.04 (65.85, 70.23)	79.40 (77.95, 80.86)	69.73 (67.44, 72.03)	72.37 (70.99, 73.75)
Age (yr)				
< 30	59.60 (54.42, 67.41)	77.01 (72.84, 81.19)	71.04 (64.32, 77.76)	70.73 (66.90, 74.55)
30-40	61.98 (57.31, 65.88)	78.24 (75.24, 81.24)	68.21 (62.65, 73.77)	70.61 (67.69, 73.52)
40-50	66.43 (62.88, 70.61)	79.79 (77.42, 82.17)	72.67 (68.56, 76.77)	74.28 (71.54, 77.03)
≥ 50	67.87 (64.15, 70.35)	79.66 (77.46, 81.87)	69.36 (68.56, 76.77)	73.22 (71.40, 75.04)
Response to treat				
Poor	68.73 (64.69, 72.77)	79.50 (76.77, 82.23)	68.54 (64.47, 72.61)	72.62 (70.20, 75.04)
Well	68.48 (66.17, 70.78)	78.94 (77.41, 80.47)	70.86 (68.47, 73.26)	72.73 (71.22, 74.23)
Active disease				
No	68.86 (66.24, 71.48)	78.99 (77.30, 80.68)	71.90 (69.32, 74.47)	73.27 (71.58, 74.95)
Yes	68.11 (64.84, 71.38)	79.15 (76.87, 81.43)	67.18 (63.71, 70.65)	71.64 (69.64, 73.64)
Occupation				
Employed	68.17(64.85, 71.48)	78.79 (76.50, 81.08)	73.38 (69.86, 76.90)	73.78 (71.54, 76.03)
Unemployed	68.77 (66.25, 71.28)	79.26 (77.62, 80.90)	68.54 (66.04, 71.04)	72.11 (70.57, 73.65)
Educational level				
Illiterate	63.47 (57.24, 69.70)	80.32 (76.24, 84.40)	60.91 (56.07, 65.76)	68.23 (64.16, 72.31)
Non-academic	69.44 (67.05, 71.84)	78.46 (76.81, 80.11)	71.84 (69.37, 74.30)	73.15 (71.64, 74.66)
Tertiary education	69.03 (64.64, 73.42)	80.13 (77.34, 82.92)	71.65 (66.95, 76.36)	74.29 (71.69, 76.89)
Rheumatoid arthritis complication				
No	61.49 (57.96, 65.02)	77.30 (74.96, 79.64)	69.54 (65.34, 73.74)	69.52 (67.20, 71.83)
Yes	71.08 (68.84, 73.33)	79.73 (78.14, 81.32)	70.47 (68.09, 72.85)	73.71 (72.24, 75.17)

Discussion

In this study, Quality Index score was relatively low for subjects with rheumatoid arthritis from patient's perspective. There is a significant gap between the quality of care received by patients with RA with what was recommended in the guideline, in term of overall Service Quality, and Customer Quality scores.

According to patient's report, RA care failed to meet the technical standard in many cases. Similarly, delivered care to arthritis rheumatoid patients in Canada were not met standards.²² The largest gap in this study was related to lifestyle education and clinical care and services. So, there are considerable opportunities to improve RA care by paying more attention to nutritional regimens, effective physical activity, and refer to orthopaedic surgery. It is important to state that these guidelines are minimum of standards which must be fully implemented, then there is still room for considerable improvement.

There is much potential for self-management of arthritis rheumatoid with regard to long term and chronic nature of disease and low ability of patients to manage their health under stressful condition and financial constraints.

Based on the instructions of American College of Rheumatology, educating self-management measures to patients was considered as main component of treatment. This statement has also been confirmed by committee of osteoarthritis.²³

Exercise has become an important part of rehabilitation during the last decade²⁴ which, main purpose for prescribing therapeutic exercise to prevention of functional disability.²⁴ Study of Van Den Ende indicated that dynamic exercise therapy has a positive effect on physical capacity²⁵ and has been shown to decrease the risk of heart disease, hypertension,²⁶ patient-reported disability and pain²⁷ as well as beneficial in improving symptoms and quality of life.²⁸ Thus, our study

suggests patient self-management education to improve customer quality and ability in managing their daily problems and conditions that leads to reduction in long-term and acute complications.

In our study, service quality score was relatively low for people with rheumatoid arthritis from the patient perspective. Of the 12 aspects of service quality, the scores of "confidentiality" and "choice of care provider" were highest (high 9 score), while the score of "availability of support group" was lowest. Based on the service quality score, participants in the current study were less concerned about communication, autonomy, continuity of care, accessibility and dignity, while participants also reported inadequate quality in term of basic amenities, timeliness, safety and prevention. Service quality and non-health aspects of care has become most important factor in marketing and utilization of services especially in industries with high customer like the health system.²⁹ Based on the experts' viewpoint, service quality is also defined as Organization's ability to meet growing expectations of customer.²⁸ Nevertheless, scores of service quality was poor from the patient's perspectives especially in "Availability of support group" domain.

Despite the important effect of the supportive groups to individual's health, many of participations stated that they don't access to support group.^{30,31} Studies have been done by Doeglas *et al.*, and Gottlieb *et al.*, showed that, participating in support groups had valuable contribution to the empowerment of patients.^{32,33} It's important to be noted that, these results could be helpful for decision makers to focus on important and neglected aspects of service quality.

The customer quality based on the RA patients' perspectives in the city of Isfahan was found to be moderate with an average score of 70.25 (13.20). A great part of the participants (71%) reported taking action while faced with RA-related health

problems, and only about 20% of patients were able to maintain needed actions even under stress and financial constraints. In our study, highly educated subjects had high scores in Customer Quality, self-management ability, and Quality Index (Table 4).

These findings is consistent with other studies that showed, education level is positively associated with level of patient involvement in medical decisions and patients with inactive disease had better C.Q score than active ones.^{34,35} Shokri also has stated increased anxiety and depression in patients with active disease.³⁶

Self-management and stress management education is a essential base for the empowering patients and is a basic ability for patients to effectively manage their diseases and to make appropriate decisions in all conditions.^{37,38} Koehn and Newman defined self-management as 'the individual's ability to manage the symptoms, physical, psychological consequences and life-style changes inherent in living with a chronic condition'.^{39,40}

This study has some limitation such as the high number of questions, time consuming interviews, and lack of appropriate places to interview with patients.

Conclusion

This model shows that from the patients' perspective the quality of service delivery for AR patients in terms of three dimensions were almost low in Isfahan.

This means that, despite the improvement in the status of RA patients in the last decade, the quality of services is still worrying. So, regarding to technical quality, life style trainings should be considered for RA patients. Also, there is need for focusing on clinical services through providing related equipment, physiotherapy programs, regimes, and need assessment of patients for referring to orthopedist.

Supportive assembly for RA patients, high level facilities, preventive measures, and safety in service delivery should be considered to improve the service quality.

Also, customer quality could be promoted through involving the RA patients in treatment process and educational programs such as knowledge, skill, and self-esteem increment for self-management of disease. Finally, it is no table that total quality of service could be improved through providing intelligible information for low educated subjects, more attention on the complication of disease and treating of it.

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Ethical issues

None to be declared.

Conflict of interest

The authors declare no conflict of interest in this study.

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