RESEARCH ARTICLE

Customer Quality: A Self-reporting Survey among Angiography Patients

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Abstract

Background and Objectives: The increasing pressure on health systems to improve quality of health care, require them to develop novel conceptual framework and indices aimed at evaluating decision variables in the contemporary complex community. Customer Quality is a newly introduced concept addressing capability of patients in contribution to healthcare process and cooperation with healthcare providers for an improved healthcare services provision. This concept has been suggested to be regarded as a new dimension to quality of healthcare delivery. To further explore the potential impact of this factor on clinical outcome and health care performance, this study surveys Customer Quality among angiography patients.

Methods: In a cross-sectional study, 202 cardio-vascular patients from Educational-Medical Shahid-Madani Center (Tabriz, Iran) were surveyed in 2013. A 19-item 5-point Likert-type Customer Quality questionnaire was used for data collection. Based on cumulative score of response to the questions, the patients were categorized into four ordinal self-management-capability groups: 1-19: belief in the importance patient role in healthcare process improvement; 20-50: having adequate confidence and knowledge to participate in healthcare provision; 50-80: being ready to take action to improve health care outcome; >80: maintaining care practices even under stressful situations. The data were summarized using descriptive statistical methods. T-test and ANOVA were used to compare the mean values.

Findings: The mean Customer Quality was calculated to be 60.42±10.07. While ~84.4% of the patients fell in the third self-management-capability category, ~86% stated that they can help prevention of diseases or decrease the risks related to their health, ~97.% believed that their participation in provision of healthcare services is important to their health improvement, ~83% stated that after receiving treatment from the medical teams, they themselves are responsible for their health, 75% of patients consider themselves as a member of health team, and ~53% stated that they are not informed about development and prognosis of their disease.

Conclusions: Our results clearly indicate the positive attitudes of cardiovascular patients towards contributing to healthcare process and self-care. Despite strong implication of of this positive attitude in attaining a high Customer Quality level, its potential impact on healthcare performance remains untapped due to the limited knowledge of patients on the nature of their diseases and the associated health-care and health-efficacy. Our findings implies the need for systematic inclusion of training services in health setting for increasing the awareness of patients on different aspects of their diseases and improving their communicative and self-efficacy skills, in order to attain higher Customer Quality-based healthcare outcome.

Keywords: Customer Quality, Self-care, Self-efficacy, Self-management, Healthcare Services Health Care Quality, Health Care Performance, Cardio-vascular Diseases, Angiography, Hospital, Patient

Background and Objectives

Cardio-Vascular Diseases (CVD) are known as the main causes of mortality in most industrial and developing countries [1], including Iran [2]. Despite new advances in treatment of these diseases and development of complicated interventional methods, mortality rate resulting from these diseases is still very high [3, 4], while environmental and genetic factor increasingly add to the complexity of the situation [5]. The increased costs in the health sector on one hand, and elevated expectation of community alongside with various social pressures on the other hand, have forced health systems to seek strategies for

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improving the quality of health services [6-8]. Quality of healthcare could be evaluated based on experiences of customers about services they are provided with [9-12]. Quality in health and medical services is usually thought of having two dimensions: technical dimension which is related to the clinical aspects of healthcare quality, and service-welfare dimension that takes into account other aspects of health services which impact the patient's well-being [13,14]. While these two facets of quality of health services provision are well established, Tabrizi *et al.* (2009) [15] suggested adding a new dimension to the concept of health services quality, namely, Customer Quality (CQ). QC is defined as "characteristics customers need to possess for effective involvement in healthcare processes, decision making and actions aiming at improving the quality of care delivered". Nowadays, paying attention to customer views is a hallmark of quality in healthcare delivery [16], in particular in CVD and angiography patients [17]. Given the novelty of CQ in the Iranian healthcare context, there is a need for conduction of quantitative and qualitative studies for promotion of this evidently useful concept in healthcare services improvement. As a contribution to addressing this need, the present study explored CQ as perceived by CVD patients in an Iranian context.

Methods

Study Design

This study is a descriptive-analytical study of cross-sectional design conducted to investigate perceived CQ of CVD patients underwent angiography.

Setting and Sample

The study enrolled 202 CVD patients who underwent angiography Shahid-Madani Educational-Medical Center in 2013. The inclusion criteria were angiography, absence of any chronic disease except CVD disease, age of greater than 30 years, and being capable of participating in the study. A 5-point Likert-type scale was adopted, where "1 = Strongly Disagree", "2 = Disagree", "3 = Agree", "4 = Strongly Agree" and "5 = Not Applicable (N/A)". QC scores were calculated by adding up the responses to all 16 questions as follows. Each N/A or missing value responses, up to a maximum of three responses for each respondent was interpolated to apply the median score for the corresponding question. Reliability of the survey tool has been confirmed by Tabrizi *et al.* in a study on the perceived CQ by type II diabetic patients in Australia [18], and the perceived CQ by pregnant women in Iran [19]. The final questionnaire included 16 questions quantifying

QC perception of patients. In order to improve content validity of questionnaire, in this study, ideas and advices from some CVD experts were used, which led to introduction of three additional questions to the survey tool. Based on cumulative score of response to the questions, the patients were categorized into four ordinal self-management-capability groups: 1-19: belief in the importance patient role in healthcare process improvement; 20-50: having adequate confidence and knowledge to participate in healthcare provision; 50-80: being ready to take action to improve health care outcome; >80: maintaining care practices even under stressful situations.

Data were summarized using descriptive statistical methods. T-test and ANOVA were used to compare CQ score between demographic and physiological groups. P-value less than 5% was considered as statistically significant. All statistical analyses were carried out using SPSS Version16 Software.

Ethics

An approval for this study was obtained from Regional Ethics Committee, located at Tabriz University of Medical Sciences. The consent of all participants was obtained and they were assured of the privacy of their responses.

Results

The demographic characteristics of the participants are described in Table 1. Five respondents were excluded from study during the analysis since they had chosen N/A option in more than 3 cases. As seen, among 203 respondents, 134 (66%) were males, and the mean age of the participant was 55.81±10.32 years. Most participants have low level of education (primary level), and about 45% of them are unemployed.

Table 2 shows distribution of participants' responses to QC-related questions. As seen, about 85% of patients stated that after receiving treatment from the medical team, they themselves are responsible for their health. Also 97.5% of patients believe that their participation in healthcare provision process is useful to their health and performance improvement. About 33% of patients stated that they have no idea about effects of prescribed drugs and about 38% were uninformed about reasons and origins of their diseases. About 53% of patients also stated that they were not informed about development and prognosis of their diseases. About 75% of patients have considered themselves as a member of health team and believe that their participation in provision of medical and healthcare services would contribute to improvement of these services.

Table 3 presents the distribution of patients among each self-management-capability groups. As seen, only a single patient (0.5%) falls in the first group with no patient falling in the fourth, leaving nearly all patients to be placed in third self-management-capability group. While mean CQ was calculated to be 60.42±10.07, no significant relationship was found between CQ and demographic variables.

Discussion

The mean score of CQ as perceived by angiography patients in this study is lower than that of Type II diabetic patients in Australia (64.5)[19] and lower than that of the pregnant women in Iran (67.79) [18]. This observation can be possibly explained by higher quality of healthcare services in Australia as well as the nature of CVDs which are more specialized than Type II diabetes.

More than four fifth of patients stated that they can help prevention of diseases or decrease the risks related to their health. Notably, nearly all of patients believed that their participation in provision of health-care services is important to their health improvement. This is encouraging, as several previous studies have indicated that patients' self-efficacy and their participation in health care can really improve the outcome of the provided cares [20-22].

Again above four fifth of patients stated that after receiving treatment from the medical teams, they themselves are responsible for their health. Previous studies has shown that self-care and participation of patients in treatment and care process has positive outcomes [23-25]. This positive attitude of patients for active participation in self-care process, encourage the policy-makers and providers of health care services to meet the requirements, for involvement of patients in the health care processes.

Most participants in our study lack adequate knowledge about their diseases and its treatment, which is similar to the observations in previous studies [26-28]. Given the positive attitude of patients towards self-care and self-efficacy, interventions for increasing patients' information about the nature of the diseases and their treatment would be effective, as previously reported [29-31], although local situations should also be accounted for a successful result.

Similar to the results of the study by Tabrizi *et al.* [18] on prenatal care, in this study, no significant relationship was found between self-reported CQ and demographic and clinical variables. However, in another study by Tabrizi *et al.* [19] conducted in Australia, the perceived CQ was found to be significantly related to the level of education. Other studies have also re-

Table 1   Demographic characteristics of the participants

Variables	N	%
Sex *(n = 203)*		
Male	134	66
Female	69	34
Age *(n = 203)*		
25-39	16	7.9
40-59	108	53.2
>60	79	38.9
Education *(n = 203)*		
Elementary	113	55.7
Guidance school	22	10.8
High school	31	15.3
University	37	18.2
Residential area *(n = 203)*		
City	160	78.81
Village	43	21.19
Employment status *(n = 203)*		
Employed	112	55.2
Unemployment	91	44.8
BMI* (kg/m2) *(n = 203)*		
Normal weight <25	64	31.4
Over weight 25-30	95	46.6
Obese >30	44	21.7

*Body Mass Index BMI

ported the significant relationship between level of educational and perceived quality of services [32-34]. The discrepancy in findings can be explained by the postulation that patients with higher education have more information on the impact of self-care and self-efficacy on healthcare outcome, while in our study most surveyed patients had low level of education.

Providers can actively communicate patients to evaluate and improve the self-care process. Swinton [35] recommends "opening all communications channels" such as telephone, email, fax, and more effectively face-to-face interviews among his nine strategies for involving customers in provision of services, and thereby increasing quality of services provision.

The results of this study add weight to the notion that more attention should be paid to CQ and patients' cooperation with healthcare providers. Our result, alongside with previous findings indicate that it is possible to expect an increased health services quality, decrease costs of services and higher satisfaction with services provided, by informed involvement of patients in healthcare processes.

Table 2   Customer Quality Self-report from Angiography Patients

Customer Quality Item	Strongly Disagree	Disagree	Not Applicable	Agree	Strongly Disagree
After all health and medical efforts by medical staff, finally I am responsible for my health.	4 (2)	9 (4.5)	0 (0)	28 (13.9)	161 (79.7)
Having an active role in my own health care an important factor in determining my health and performance.	1 (.5)	4 (2)	0 (0)	41 (20.3)	156 (77.2)
I am sure that it is possible to do something reduce or prevent the risks related to my health.	7 (3.5)	16 (7.9)	4 (2)	69 (34.2)	105 (52)
I know the role of each prescribed drug for me.	24 (11.9)	41 (20.3)	0	68 (33.7)	68 (33.7)
I know the reason of medical care and affairs provided for me.	20 (9.9)	42 (20.8)	3 (1.5)	70 (34.7)	66 (32.7)
I am sure that I can recognize when I need for medical services (health care) and when I can solve my problems (without referring to doctor).	22 (10.9)	26 (12.9)	5 (2.5)	85 (42.1)	63 (31.2)
I am sure that I can state my worries about my health to my doctor, even when he does ask me.	5 (2.5)	14 (6.9)	2 (1)	54 (26.7)	126 (62.4)
I am sure that in case of need for health care at home, I can do it myself according to orders of doctor or health staff.	2 (1)	7 (3.5)	6 (3)	45 (22.3)	140 (69.3)
I know the origin and reasons of problems related to my health.	36 (17.8)	41 (20.3)	8 (4)	63 (31.2)	53 (26.2)
I am informed about development of my problems or their prognosis.	48 (23.8)	58 (28.7)	16 (7.9)	50 (24.8)	29 (14.4)
I am informed about all medical and care methods applicable about my disease.	36 (17.8)	40 (19.8)	5 (2.5)	74 (36.6)	45 (22.3)
I consider myself as a member of health team and	7 (3.5)	11 (5.4)	8 (4)	75 (37.1)	97 (48)
I can keep the changes I made in my life style in order to be healthy.	11 (5.4)	11 (5.4).	4 (2)	43 (21.3)	130 (64.4)
I know how to prevent problems related to my health.	12 (5.9)	22 (10.9)	5 (2.5)	77 (38.1)	82 (40.6)
I am sure that I can find solutions to solve my new health problems.	16 (7.9)	32 (15.8)	7 (3.5)	57 (28.2)	88 (43.6)

Table 2   Customer Quality Self-report from Angiography Patients *(Continued)*

Customer Quality Item	Strongly Disagree	Disagree	Not Applicable	Agree	Strongly Disagree
I am practically capable of actively participating in taking care of myself or cooperating with health team.	13 (6.4)	19 (9.4)	11 (5.4)	53 (26.2)	100 (49.5)
I am able to cooperate with health team members (health and medical staff) in providing services and improve my health by developing the quality of provided services.	8 (4)	17 (8.4)	6 (3)	61 (30.2)	106 (52.5)
I am sure that I can keep the changes I made in my life (such as diet and sport) even in hard times, stress and anxiety.	13 (6.4)	16 (7.9)	1 (.5)	45 (22.3)	125 (61.9)
I am sure that I can keep the changes I made in my life (such as diet and sport) even in financial limitations.	21 (10.4)	24 (11.9)	9 (4.5)	40 (19.8)	106 (52.5)

   Regarding that CQ is a new concept, studies should continue to explore the extent to which this construct can contribute to improvement of healthcare systems, and to develop an evidence base for incorporation of this novel concept in policy-making.

Study Limitation

While the present study was among the first to survey to address CQ concept in the healthcare domain, it is subject to several weaknesses. First, the CQ was surveyed only among angiography patients, which pose constraint to the interpretation of the results. Second, the relatively small size of the sample, advise caution in generalization of the results. Further, the reliability of the survey tool is not examined in an Iranian context. Future studies should address these limitations for broader and more robust conclusions.

Conclusions

This study revealed the positive attitudes of angiography patients in participating in healthcare provision process. However, their inadequate knowledge about the nature

Table 3   Distribution of Patients among Self-management-capability Groups

Self-management group	Capability	N	%
One	Belief in the importance patient role in healthcare process improvement	1	.5
Two	Having adequate confidence and knowledge to participate in healthcare provision	29	14.6
Three	Being ready to take action to improve health care Outcome	168	84.4
Four	Maintaining care practices even under stressful situations	0	0

of the disease and the way they could contribute to treatment process limits the impact of such positive attitude, and yield a Costumer Quality index of moderate level. Our findings implies the need for systematic inclusion of training services in health setting for increasing the awareness of patients on different aspects of their diseases and improving their communicative and self-efficacy skills, in order to attain higher CQ-based healthcare outcome. The evidently high attitude of patients towards participation in healthcare provision, promises improvement of CQ index as a significant contributor to an increased health services quality, decreased costs of services, higher satisfaction with services provided, and overall, higher health system performance.

Abbreviations

(CQ): customer quality; (CVD): cardio-vascular diseases

Competing Interests

The authors declared no competing interests.

Authors' Contributions

JST conceived and designed the study, contributed to interpretation of the results, and drafting and revision of the manuscript. SAA was involved in analyzing and interpretation of the results, and drafting and revising the manuscript. MG participated in data analysis and interpretation. SI and TT participated in data collection and analysis. MNB contributed to data analysis and manuscript preparation. All authors read and approved the final manuscript.

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