Effective Interventions on Service Quality Improvement in a Physiotherapy Clinic

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ABSTRACT

Background: Service quality is considered as a main domain of quality associated with non-clinical aspect of healthcare. This study aimed to survey and improves service quality of delivered care in the Physiotherapy Clinic affiliated with the Tabriz University of Medical Sciences, Tabriz, Iran.

Methods: A quasi experimental interventional study was conducted in the Physiotherapy Clinic, 2010-2011. Data were collected using a validated and reliable researcher made questionnaire with participation of 324 patients and their coadjutors. The study questionnaire consisted of 7 questions about demographic factors and 38 questions for eleven aspects of service quality. Data were then analyzed using paired samples t-test by SPSS16.

Results: In the pre intervention phase, six aspects of service quality including choice of provider, safety, prevention and early detection, dignity, autonomy and availability achieved non-acceptable scores. Following interventions, all aspects of the service quality improved and also total service quality score improved from 8.58 to 9.83 (*P<0.001*).

Conclusion: Service quality can be improved by problem implementation of appropriate interventions. The acquired results can be used in health system fields to create respectful environments for healthcare customers.

Introduction

The physiotherapy services have incremental applications in treatment of vast scopes of diseases. Generally, the physiotherapy services consist of therapeutic procedures by the means of physical and mechanical tools including heat, cold, electromagnetic waves, electricity, ultrasound and low power laser with the aim of restoring disabled people to normal life.[1] Thus, the quality of provided services in physiotherapy is an important parameter along with technical quality of services. The pioneers of quality science delivered the various definitions for it: Deming says that quality is the level of customers' satisfaction and reduction of variation in processes performance; Juran defined quality as the achievement of defined aims; and Crosby defined it as the compatibility of products and services with standards and requirement.[2]

Quality is one of the main indicators in health services that consist of three aspects: technical, customer and service quality. Technical quality is associated with the clinical aspects of health care as reflected by service providers' skill, care processes, care outcomes and shows how well health systems deal with the specific condition.[3,4] The customer quality is a series of abilities that a service recipient needs to actively participate in health services processes, key decisions and true and timely interventions.[5,6] Service Quality (SQ) refers to the non-health aspects of care and reflects the relationship among customers, providers, and care processes. SQ should be assessed and judged directly by health care users based on their experience of health care.[7-9]

Evidence shows that non-therapeutic aspects of health services have significant effect on quality of therapeutic services and satisfaction of services recipients. For example, evidence revealed that the following SQ, aspects have significant effects on treatment results: listening to patient needs, allocating sufficient time for patients to ask their questions, improving communication skills of health acre providers, sharing patients in therapeutic decision making, informing patients properly, giving patients opportunity to choose health care center, health care providers and type of treatment, properly replying patients and their coadjutors needs, directing patients to self care, respecting ideas and characteristics of patients, giving right to accept or refuse the therapeutic decisions, availability of health services, continuity of care, duration of admission time, timeliness in service delivery.[4,10-12]

Following the request of dean and physiotherapy clinicians of Tabriz Rehabilitation Faculty to assess and improve quality of delivered care for their problems in quality aspects, the researchers organized an intervention team including researchers, faculty managers and clinicians with other clinic personnel to improve circumstance. Therefore, this study aimed to survey service quality in physiotherapy clinic of the rehabilitation faculty affiliated with the Tabriz University of Medical Sciences, Tabriz, Iran based on customers' perspectives and to improve SQ using efficient and effective interventions.

Materials and Methods

Participants and Procedures

This quasi experimental interventional study was implemented in Physiotherapy Clinic of the Faculty of Rehabilitation in Tabriz University of Medical Sciences in 2011-2012. Ethical approval of this study was gained from the Research Ethics Committee. The study participants were patients and their coadjutors with experience of at least 2 sessions of physiotherapy and willing to participate in the study. The sample size of the study was calculated by regarding the number of questions in the questionnaire using the rule of 1 to 5 (5 sample for each question in the questionnaire) and considering the minimum of 200 sample size in an exploratory study.[13] Thus, 204 subjects participated in pre test study, but the post test study was performed with the collaboration of 120 patients and their coadjutors. The reason for smaller number of obtained questionnaire in post test phase is a pilot study that was done with 30 completed questionnaires in this level for their focal mean and low standard deviation for total score of service quality, and noticing 95% confidence interval with 80% power of test.

Measures

The study tool was a researcher-designed questionnaire that included 7 demographic questions and 38 items about 12 aspects of SQ consisting of the choice of care provider, communication and relationship, autonomy, continuity of care, quality of basic amenities, dignity, timeliness, safety, prevention and early detection, availability and access, confidentiality, and complaint system. The aspects of SQ were questioned based on two dimensions of importance and performance. The content validity of the questionnaire was assessed by an expert panel with the participation of 10 experts in health services

administration and physiotherapy fields and content validity ratio (CVR) with content validity index (CVI) was approved by score of 89% and 92% respectively. The reliability of questionnaire was assessed by Cronbach's Alpha (α=0.83) and the data were tested for the normal distribution with the Kolmogorov-Smirnov test. For each aspect of SQ, respondents were asked to evaluate the importance of the aspect and their perception of the quality of care which had received in relation to that aspect (performance) over the past therapeutic sessions. Importance of SQ was scored on a four-point Likert scale, which was then scaled as 0 = not important, 3 = may be important, 6= important, and 10 = very important. Perceived performance of care received was scored on a four-point scale ranging from 'never, sometimes, usually, and always' or 'poor, fair, good, and excellent'. For analysis, this scale was dichotomized as 0=usually/always or good/excellent' and 1 =never/sometimes or poor/fair. An overall measure of SQ was calculated for each SQ factor by combining the importance and performance scores using the following equation:

Service quality = 10 – (importance × performance)

The SQ score was then ranged from 0 = the worse/lowest quality to 10 = the best/highest quality. In most surveys, regardless of methodology, approximately 10% of the population reported inadequate quality of the care, and a similar percentage reported being dissatisfied with care in hospitals. Thus, it is reasonable to conclude that a service quality score of less than 9 indicates a significant opportunity for improvement.[4,8,9]

Manipulation procedure

The interventions that led to SQ improvement: Based on Levin's model in change process, in the first stage the current situation must be challenged, in the second stage the good situation exchange with previous level, and in the final stage the suitable changes being permanent in our organizations.[14,15] Table 1 shows the performed interventions for each aspects of SQ that have no acceptable situation in pre test.

Designed and implemented interventions in each aspect of SQ:

- Choice of providers (health providers, patients and coadjutors education with educational sessions, packages, brochures and banners)
- Safety (personnel education for delivering suitable educations to patients and coadjutors, patients instruction on safety in their disease, design of educational packages about prevalence of disease and disability)
- Prevention (personnel education for delivering suitable and required instructions to patients and their coadjutors)
- Dignity (health providers instruction on letting the coadjutors to enter the patients' treatment room and delivering required educations to them, attracting the patients confidence to reveal their problems and objections and ask their questions freely, providing positive and peaceful atmosphere in clinic to make a good between patients and health providers)
- Autonomy (effects of health providers and clinic personnel on patients and coadjutors' participation in treatment process and freedom of patients and satisfaction and autonomy)
- Availability (acceptance of all type of health insurances and cashes to increase financial accessibility, showing respect to clients believes, religious and language to increase cultural accessibility, providing therapeutic service in all times of a day and week to increase time availability)
- Total service quality (Analyzing situation by collaboration of all stakeholders, problems prioritize, design and implementation of efficient and effective interventions, providing educational packages and holding session in SQ importance for instruction to patients, coadjutors and health provi-

ders, design of documentation system and medical records, design of complaint system in clinics).

The intervention lasted for about a year, and then followed by post test phase. The results of the pre and post tests were compared. For assessing the significance of tests, the level of 0.05 was set and the SPSS version 16 was used for data analysis. MANOVA used for assessing the various aspects of SQ in the defined groups by background variables simultaneously. The relationship between demographic or background variables and dependent variables, variation of dependent variables in related groups and

related background variables assessed by using Chi-Squire Test, Spearman, independent t and ANOVA. All analyses were conducted by SPSS 17 (SPSS Inc. IL, Chicago, USA) considering 0.05 significance level.

Results

The demographic properties of participants (patients or coadjutors), age, sex, educational status, employment situation, local, and the reason for choosing the clinic in pre and post tests are shown in Table 1.

Table 1: The participants' demographics in pre and post tests

Characteristics	Categorization	Pre test Number (Percent)	Post test Number (Percent)
Participants	Patients	132 (64.6)	77 (64.2)
	Coadjutors	72 (35.4)	43 (35.8)
Age (yr)	<32	68 (33.3)	27 (22.5)
	32-47	68 (33.3)	37 (3.8)
	48≥	68 (33.3)	56 (46.7)
Sex	Male	121 (59.3)	60 (50)
	Female	83 (40.7)	60 (50)
Educational status	Illiterate	6 (2.9)	7 (5.8)
	Elementary and mid school	54 (26.5)	33 (27.5)
	High school	78 (38.2)	54 (45)
	University	66 (32.4)	26 (21.7)
Employment situation	Unemployed	12 (5.9)	3 (2.5)
	Employed	89 (43.5)	29 (24.2)
	Housewife	52 (25.5)	47 (39.2)
	Retired	25 (12.3)	31 (25.8)
	Other	26 (12.8)	10 (8.3)
Local	Yes	189 (92.6)	120 (100.0)
	No	15 (7.4)	0 (0.0)
Reason for choosing the clinic*	Neighborhood area	52 (25.7)	50 (41.7)
	People advise	76 (37.6)	47 (39.2)
	Quality of services	41 (20.2)	116 (96.6)
	Low fee and cost	10 (4.9)	20 (16.7)
	Physician advise	96 (47.5)	12 (10)
	Other	4 (1.9)	3 (2.5)

* In this section the responders were free to choose more than one option

In pre test phase, the timeliness, confidentiality and quality of basic amenity obtained highest score, respectively and choice of providers, safety and prevention gained lowest service quality score respectively. Six aspects of SQ including choice of care pro-

vider, autonomy, dignity, safety, prevention and early detection, and access showed quality scores less than 9 indicating non-acceptable quality and significant room for quality improvement from the service recipients' perspectives (Table 2).

Table 2: The service quality scores in pre and post stet

Service Quality Aspects	Stages		
	Pre test Mean (St. Dev.)	Post test Mean (St. Dev.)	P-value*
Choice of providers	6.40 (2.97)	9.54 (1.20)	<0.001
Communication and relationship	9.78 (1.05)	9.97 (0.30)	0.061
Autonomy	8.32 (1.53)	9.78 (0.69)	<0.001
Continuity of care	9.75 (1.08)	10.00 (0.00)	0.014
Quality of basic amenities	9.83 (0.86)	10.00 (0.00)	0.036
Dignity	7.97 (1.99)	9.84 (0.58)	<0.001
Timeliness	9.85 (0.67)	10.00 (0.00)	0.017
Safety	6.46 (2.46)	9.46 (1.53)	<0.001
Prevention and early detection	7.06 (2.46)	9.66 (0.64)	<0.001
Availability and access	8.46 (2.23)	9.86 (0.66)	<0.001
Confidentiality	9.84 (1.22)	10.00 (0.00)	0.177
Complaint system	-	9.82 (1.33)	-
Total Service Quality	8.58 (0.79)	9.83 (0.25)	<0.001

*P-values based on paired t-tests.

There were no significant relationship between total SQ score and demographic variables. In pre test phase , there were significant differences between participants age less than 32 years and those in age group 32-48 and over 48 years in SQ score ($P<0.001$). Participants under 32 years old showed lower SQ scores ($P<0.001$) than participants aged over 32 years old. Moreover in pretest phase, it was observed that there were significant differences between 4 education levels and autonomy ($P=0.012$) and timeliness ($P=0.006$). Illiterate participants had significant differences compared with the other 3 groups.

Additionally, there was no significant relationship between overall SQ score and reason for choosing the clinic , but there was significant differences between overall SQ score and advice of physician ($P=0.02$), quality of clinic services ($P=0.044$) and continuity of care ($P=0.001$) and low cost ($P<0.001$).

Our study results in pre test phase showed a statistically significant relationship between age and continuity of care, and also education and autonomy and timeliness ($P<0.05$), so that participants aged less than 32 years old were more likely to report continuity of care than in people over 32 years old. The main reason for that probably related to customers of trauma clinic. The majority of their patients were young and athlete people with upper and lower extremities trauma which received their therapy from a regular and unique physiotherapist. There were significant differences between overall SQ score and advice of physician, and quality of clinic services ($P=0.044$). Participants who chose physiotherapy clinic because of physician advice ($P=0.02$), and quality of clinic services ($P=0.044$) were more likely to achieve higher service quality score than participants who chose clinic for other reasons.

Discussion

The aim of this study was to investigate the possible problems in service quality aspects and to design and implement efficient and effective interventions to reduce or eliminate them. The pre and post tests results showed that the designed interventions were success in resolving problems and increasing service quality level so that all aspects of service quality were increased to an acceptable quality level and total service quality was significantly changed from 8.58 to 9.82.

After interventions, the customers were able to choose their physiotherapist freely, to participate in treatment process actively, had more respectful communication with

the health providers, received suitable instruction about safety and prevention with early detection in their disease and disabilities, increased their financial, geographical, cultural and time accessibility, and medical records and disease process documentation were improved, and design of advanced complaint system in physiotherapy clinic was established.

A survey by Tabrizi et al. (2007) in Australia for assessing the quality of delivered care from the perception of patients with Type 2 diabetes revealed that the aspects of continuity of care, autonomy, safety, prevention and access had non-optimum conditions and the younger patients had lower service quality score, requesting a suitable intervention for solving these problems.[4] Our results have high compatibility with those found by Tabrizi et al.

In another study for assessing the service quality in private and public physiotherapy clinics in Tabriz, the health providers relationship, confidentiality and timeliness had highest score and patients instruction, clinic physical environment and treatment cost had lowest score in assessed service quality aspects respectively, demanding the implementation of interventions to resolve this faults.[1]

In an interventional study about the implementation of service quality improvement system in emergency department in a hospital of the United States, the researchers designed and executed some interventions to resolve the problems such as increasing patients' complaint, vast dissatisfaction of them and unacceptable timeliness. The researchers could resolve all problems by establishing an intervention team from stakeholders, deep analyzing of problems, process problem solving, patients and health providers' instruction, using Benchmarking, amendment in treatment protocols, advance of management information system and using clinical audit. This study also suggested to design and to implement the same interventions in same situations to improve quality level.[16]

In another interventional study on the increasing availability and accessibility of care and improving health outcome indicators, the researchers could reach to their aims by designing and implementing of interventions including local man power, improve of basic amenity and waiting room quality, patients and health providers' instruction, participate of people in identification and resolving of health problems and inter-sector collaboration in health centers. This study also announced that continues quality improvement led to best outcome on community health and improved health indicators.[17]

Based on the study results, the researchers suggested that in order to improve care results and increase the community satisfaction from health services, managers and policy makers must take into account the service quality of care process and improve it constantly from costumer perspectives and root cause analysis of related problems.

The main limitation of our study is the design (quasi design and lack of control group) and generalizability of our findings (because the results of interventional study limited to study field and population). Other limitation is the smaller number of interventional study in service quality aspects, especially studies that focus on all aspects of SQ improvement in order to compare our results with them.

Conclusion

From the perspective of patients and their coadjutors there are notable gaps between the existing situation and optimum condition in the number of service quality aspects. This problem can be solved with appropriate interventions.

Acknowledgement

Competing interests

The authors declare that there is no conflict of interest.

References

1. Jannati S. Service quality evaluation in Tabriz physiotherapy centers based on patients satisfaction [MSc Thesis]. Tehran: The University of welfare and rehabilitation sciences; 2010. [In Persian]

2. Lame'ei A. Total quality management; principles, application and lessons from an experience. 3rd ed. Orumiieh: Shahed va Isargaran Publication; 2003. [In Persian]

3. Tabrizi JS. Quality of delivered care for people with type 2 diabetes: a new patient-centred model. *J Res Health Sci* 2009;9:1-9.

4. Tabrizi JS, O'Rourke PK, Wilson AJ, Coyne ET. Service quality for type 2 diabetes in Australia: the patient perspective. *Diabet Med* 2008;25:612–617.

5. Tabrizi JS, Wilson AJ, O'Rourke PK. Customer quality and type 2 diabetes from the patients' perspective: a cross-sectional study. *J Res Health Sci* 2010;10:69-76.

6. Tabrizi JS, Wilson AJ, O'Rourke PK. Customer quality in health care. *Patient Educ Counc* 2009;74:130-131.

7. Tabrizi JS, Wilson AJ, O'Rourke PK, Coyne ET. Clients' perspective on service quality for type 2 diabetes in Australia. *Aust N Z J Public Health* 2007;31:511-515.

8. Tabrizi JS. Quality of health care: The patients perspective on quality of care for type 2 diabeties[PhD thesis]. Queenzland: The University of Queenzland; 2007.

9. Tabrizi JS. Improving health care quality - basics, concepts, dimensions. 2nd ed. Saarbrüchen, Germany: LAP LAMBERT Academic Publishing; 2010.

10. Coulter A, Jenkinson C. European patients' views on the responsiveness of health systems and healthcare providers. *Eur J Pubic Health* 2005;15:355–360.

11. Nik Sherina H, Teng CL, Yasin S. Continuity of care of diabetic patients in a family practice clinic: how important is it? *Asia Pac Fam Med* 2003;2:10-15.

12. Vinter-Repalust N, Petricek G, Katić M. Obstacles which patients with type 2 diabetes meet while adhering to the therapeutic regimen in everyday life: qualitative study. *Croat Med J* 2004;45:630-636.

13. Schumacker RE, Lomax RG. A beginner's guide to structural equation modeling. 2nd ed. Mahwah, NJ: Lawrence Erlbaum Associates, Inc. Publishers; 2004.

14. Robbins SP, De Cenzo DA. Fundamentals of management; essential concepts and applications. 4th ed. Tehran: Cultural Research Bureau;2005. [In Persian]

15. Iran NejadParizi M, Sasangohar P. Organization and management: theory and practice. 8th ed. Tehran: Iran Banking Institute, Central Bank of the Islamic Republic of Iran; 2006. [In Persian]

16. Welch SJ, Allen TL. Data-driven quality improvement in the Emergency Department at a level one trauma and tertiary care hospital. *J Emerg Med* 2006;30:269–276.

17. Hayman N. Strategies to improve indigenous access for urban and regional populations to health services. *Heart Lung Circ* 2010;19:367–371.