Assessment of Process Measures of Quality of Care through Client Flow Analysis

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ABSTRACT

Background: Quality of health care services is emerging as a field with multifaceted approach. Measuring the quality is tricky and needs standards. Many global standards are in place but still the contextual applications of standards need research on the measurable aspects of the quality of care. **Material & Methods:** A cross-sectional study was conducted at general medical out patient departments of two tertiary care hospitals of Lahore, one from the public sector and the other from the private sector selected using multi-stage sampling. 93 patients were selected from each hospital. Process measures of quality of care delivered in medical out patient departments were assessed using client flow analysis technique, performed by trained personnel. **Results:** Access to the hospital OPD, waiting time outside the consultant room, physical environment of the OPD and provision of relevant information to the patient were observed for adherence to standards and statistical association found with the patient satisfaction on these aspects. **Conclusion:** The process measures must be assessed in order to evaluate the quality of care in a specific service or hospital as patient satisfaction (outcome measure) alone is not enough to judge the quality of care.

Key words: Quality of care, process measures of quality, patient satisfaction, outcome measure of quality.

INTRODUCTION

The issue of quality health care has achieved growing prominence over the last 2 decades.[1,2,3] The public reporting of "quality"; the use of quality as an important factor in negotiating care contracts; and activities to improve the quality of care at the practitioner, managed care organization, and hospital levels are now widespread and constitute what has been labeled the "quality revolution".[4,5] The definition of quality of care according to the Institute of Medicine is "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]

Donabedian's (1982) model describing the determinants of quality care and General Systems Theory guided the development of the Quality Practice Settings Attribute Model. Donabedian (1982) describes assessment of quality as a judgement concerning the process of care, based on the extent to which the care contributes to valued outcomes.[7] Continuous improvement of quality is necessary because expectations change and therefore what meets today's expectations may not meet tomorrow's expectations. Deming, one of the key exponents of quality assurance has summed this up by saying that quality is "not just satisfying but delighting the customer by continuously meeting and improving upon agreed requirements."

A quality health care system is one which guarantees the continuum of care, not merely for curative services, but for health promotion as well as prevention. Assessment of quality usually focuses on technical concerns as well as the process through which care is delivered. This assessment becomes more authentic and legitimate if based on the application of professional standards integrating the patients' views, experiences and perceptions.[8] However, an effective system can only function properly, if it operates on a regular assessment of people's perceptions and monitors itself based on their feedback.

In a study "Patient flow analysis in a children's clinic", patient flow analysis was used to assess the waiting time of patients referred to a large paediatric outpatient department, and also the lengths of the consultations of the paediatricians and interns.[9] A study "Comparing public and private hospital care service quality" used Donabedian's framework to compare and contrast a public and private hospital care service quality.[10]

An article presents an alternative strategy for developing and validating process quality measures. The development of an alcohol use disorder (AUD) treatment quality measure is used as an example. Several of the candidate process-of-care quality measures predicted facility- and patient-level outcomes.[11]

Quality programs usually range from basic traditional Quality Assurance (QA) to Continuous Quality Improvement (CQI) and complex Total Quality Management (TQM). Quality assurance is the static and retrospective review or inspection of services to identify problem areas.[12,13] Quality improvement requires a continuous study and improvement of a process, system, or organization.[13]

The standard framework for measuring quality of health care provision is based on three measures of quality: structure, process, and outcome. Process measures depict the interior of the hospital "black box," allowing measurement of the care patients actually receive. The present study aimed at assessing the process measures of quality of health care delivered in medical OPDs through direct observation in client flow analysis technique and assessing patient satisfaction with the process of care and measuring the association of patient satisfaction with the actual adherence/non-adherence of doctors to the best quality health care practices observed. The process measures used in the present study related to delivery of health care in medical out patient departments of two tertiary care hospitals are; waiting time, seating arrangements for patients, patient flow, information flow and rapport with clients, physical examination, manner of receiving patients, privacy, confidentiality of patients' health information, adherence to professional standards and guidelines, appropriate application of technical skills etc.

MATERIAL AND METHODS

A cross-sectional study was conducted at general medical out-patient departments of two tertiary care hospitals of Lahore during the period March-June 2005. One hospital was from the public sector while the other was from the private sector. The sample was selected using multistage random sampling. In the first stage, public and private tertiary care hospitals of Lahore were listed separately. One hospital was then selected from each list using simple random sampling. In the next stage, the outpatient registration record was used to enroll patients for the study. Records showed that a total of 2800 patients attended the medical OPDs in the two hospitals every month. Therefore, assuming the patient satisfaction to be 55 % [C &O 2003] and using 0.05 significance level, a sample of 93 patients was required from each hospital. Using systematic random sampling, every tenth patient attending the general medical OPD was selected. In case a patient refused consent, the next patient was approached for the study while sticking to the same interval to select the rest of the patients.[14,15]

Each patient enrolled in the study was issued a tag for identification. Relevant demographic information was obtained from each patient by a trained data collector (of the same gender as the patient). The same data collector then accompanied the patient during his/her flow through the OPD. Each doctor-patient interaction was observed and evaluated to fill a peer-reviewed 'client flow analysis form' created in the light of existing literature on the subject. The indicators used for

assessing the process measures of quality of care were graded on the client flow questionnaire. Ethical approval for the study was obtained from the institution's ethical review committee. The study was conducted in compliance with the 'Ethical Principles for Medical Research involving Human Subjects' of Helsinki Declaration. [Helsinki]. Patient names were not recorded to assure confidentiality. Verbal consent was obtained from all subjects and documented in the presence of a witness.

Data was entered and analyzed using Statistical Package for Social Sciences (SPSS) version 12.0. Results were computed separately for each of the two hospitals included in the study. Chi square test was used to evaluate the association of patient satisfaction with the actual adherence/non-adherence of doctors to the best quality health care practices observed.

RESULTS

Ninety three patients each were enrolled and directly observed during their flow through the OPD of the two hospitals. Overall, there were 138 females and 48 males (M:F = 1: 2.8). Other demographic details are shown in Table 1.

Accessibility is one of the factors assessed in the study. In Jinnah Hospital (JH) 74 (79.6%) and in Shalimar Hospital (SH) 61 (65.6%) reported direct approach to both hospitals. Moreover, 62.4% at JH and 88.2% at SH were satisfied with access to both the hospitals. The association between approach/accessibility and patient satisfaction showed no significance at JH (X^2 =1.33, df =1 and P=0.249) While at SH there was statistical association between approach/accessibility and patient satisfaction (X^2 = 4.57, df = 1, P = 0.032).

The average waiting time outside the OPD at JH was 55 minutes and at SH it was 50 min, whereas waiting time inside Consultant room at JH was 20 min and at SH it was 9 min. Moreover, 79.6% at JH and 74.7% at SH showed dissatisfaction with waiting time. There is statistical association between waiting time outside OPD and patient satisfaction at both hospitals (X^2 = 11.38, df = 1 & P = 0.0007 at JH and X^2= 3.56, df = 1 & P = 0.059 at SH). The environment of the waiting area

Table 1: Demographic and socio economic data.

Demographic data	Jinnah Hospital, Lahore		Shalimar Hospital, Lahore	
	No.	%	No.	%
Gender				
Female	73	73.5%	70	75.3%
Male	20	21.5%	23	24.7%
Total	93	100%	93	100%
Age (Years)				
15-25	32	34.00%	26	28.30%
25-35	21	22%	18	19.70%
35-45	17	19.1%	23	24.80%
45-55	14	15.2%	14	15.20%
>55	9	9.7%	12	12.00%
Total	93	100.00%	93	100.00%
Occupation				
Business	2	2.2%	1	1.1%
Govt. Servant	3	3.2%	0	0.0%
House wives	54	58.1%	56	60.2%
Labourer	9	9.7%	8	8.6%
Skill Worker	6	6.5%	8	8.6%
Student	11	11.8%	15	16.1%
Others	8	8.6%	5	5.4%
Total	93	100.0%	93	100.0%
Income/Capita (Rs.)				
<250	8	8.6%	1	1.1%
250- 500	20	21.5%	14	15.1%
500-750	19	20.5%	35	37.5%
750-1000	21	22.7%	23	24.8%
1000-1250	4	4.5%	6	6.5%
1250-1500	9	9.8%	4	4.3%
>1500	12	12.4%	10	10.7%
Total	93	100%	93	100%

and the overall OPD was observed and compared with patient satisfaction with the environment, which showed statistical significance in both hospitals (X^2=7.69, df = 1 & P= 0.005 at JH and X^2= 7.35, df = 1 & P = 0.006 at SH). The 55.9% patients reported disorganized patient flow in JH whereas in SH 54.8% patients said that it was slightly organized. The cleanliness was much better in SH according to 61.5% patients and in JH only 35.2% patients said that cleanliness was better. In JH 25% patients said that they got seats and in SH 17% said they got seat. 25.8% patients at JH and 60.2% reported that they were provided with necessary information without asking for it. There is a statistical association between provision of

information and patient satisfaction (P<0.05) at SH, while at JH the there is no statistical significance. In both the hospitals the previous records of the patient was not checked, just relied on the information given by patient or his/ her relative. In JH socio economic status of 93% patients was not assessed while it was assessed in 47% at SH.

Confidentiality and privacy during history taking and physical examination was observed to be maintained in 10.8% patients in JH and in 44.8% patients in SH. The level of satisfaction regarding privacy and confidentiality was found to be higher in both hospitals which is 72.1% in JH and 77.4% in SH.

The average consultation time at JH was 3 min and at SH was 7 min. This time included history taking, patient examination, counseling and feed back. 77.4% patients were dissatisfied in JH and 74.2% in SH, with time provided to them. The professional attitude was found to be there in health care providers as observed in 59% patients' flow at JH and 49.5% at SH. Statistical association of professional attitude actually found good and patient satisfaction was insignificant in both the hospitals. Satisfaction with overall quality of care was found in 69% patients at SH and 51% at JH.

DISCUSSION

Patient satisfaction is an important measure of service quality in health care systems but the process measures are also used in many settings and evidenced by lots of studies. A study in Turkey developed a reliable and valid instrument to measure patient satisfaction.[16] Current study focuses on process measures of Health Care Quality and Patient Satisfaction in tertiary care teaching hospitals of Public & Private sector. The main idea behind the study was to determine the association of process measures of quality with patient satisfaction. A Client flow analysis sheet and a questionnaire to measure patient satisfaction were used for documentation. There were total 186 patients observed and interviewed in both the hospitals. The socio demographic characteristics of 186 patients, 93 in each study area, revealed that the majority of those using primary health care facilities were middle-aged females. Presence of large

majority of female patients was due to the fact that outpatient hours at the hospitals were in the morning, when most of the men were at work. A similar kind was study was done on an alternative strategy for developing and validating process quality measures.[11]

Accessibility is one of the factors assessed in the study. The association between approach/ accessibility and patient satisfaction showed no significance at JH (X^2 =1.33, df =1 and P=0.249) While at SH there was statistical association between approach/accessibility and patient satisfaction (X^2 = 4.57, df = 1, P = 0.032).

The average waiting time outside the OPD at JH was 55 minutes and at SH it was 50 min, whereas waiting time inside Consultant room at JH was 20 min and at SH it was 9 min. In a study Patient flow analysis was used to assess the waiting time showed the importance of this process measure.[9] There is statistical association between waiting time outside OPD and patient satisfaction at both hospitals (X^2 = 11.38, df = 1 & P = 0.0007 at JH and X^2= 3.56, df = 1 & P = 0.059 at SH). The environment of the waiting area and the overall OPD was observed and compared with patient satisfaction with the environment, which showed statistical significance in both hospitals (X^2=7.69, df = 1 & P= 0.005 at JH and X^2= 7.35, df = 1 & P = 0.006 at SH). The 55.9% patients reported disorganized patient flow in JH whereas in SH 54.8% patients said that it was slightly organized. The cleanliness was much better in SH according to 61.5% patients and in JH only 35.2% patients said that cleanliness was better. In JH 25% patients said that they got seats and in SH 17% said they got seat. 25.8% patients at JH and 60.2% reported that they were provided with necessary information without asking for it. There is a statistical association between provision of information and patient satisfaction (P<0.05) at SH, while at JH the there is no statistical significance. In both the hospitals the previous records of the patient was not checked, just relied on the information given by patient or his/her relative. In JH socio economic status of 93% patients was not assessed while it was assessed in 47% at SH. Confidentiality and privacy during history taking and physical examination was observed to be maintained in 10.8% patients in JH

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The physical environment of outpatient clinics is an important factor in client satisfaction. Proper amenities enhance patient satisfaction level and willingness to return to the facility for subsequent health care needs. Provision of necessary information effects the patient satisfaction. The drugs and investigations were suggested without assessing the per capita income of the patients. The study reflects a high expectation level of patients toward a Health Care Provider about listening them carefully and to answer their queries. The level of dissatisfaction was much more due to long waiting time for their turn. Here it is obvious that in spite of showing poor behavior of the doctors the majority of patients showed satisfaction. It may be due to some other factors. Satisfaction with overall quality of care was found in 69% patients at SH and 51% at JH.

A study just like our study assessed client satisfaction and quality of health care in rural Bangladesh. It showed the gap between the notion of patient satisfaction as an element representative of quality of care and high quality health care from a professional point of view. Thus, the most powerful predictor for client satisfaction with government health services was the provider's behavior towards the patient, particularly respect and politeness. This aspect was much more important than the provider's technical competence (characterized by elements such as explaining the nature of the problem, physical examination, and giving advice). The second most powerful predictor for being satisfied was the respect for privacy, followed by short waiting times.[17]

A study "Measuring Patient Satisfaction for Quality Improvement" was conducted to assess patient satisfaction for quality improvement showing three factors: satisfaction with the provider, satisfaction with access, and satisfaction with the office.[18] In present study private hospital was much better in many aspects of process of quality of care than the public sector one but the patient perception of satisfaction was almost same in both hospitals, showing the un-aware, illiterate population attending OPDs, who don't know their health care service and human rights. A study comparing public and private hospital care service quality, used Donabedian's framework to compare and contrast a public and private hospital care service quality. Results showed that private hospitals are expected to offer a higher quality service but it was the public sector that was exceeding its patients' expectations by the wider margin.[10]

Measuring quality is challenging.[19] The Institute of Medicine (IOM), in a report entitled "Emergency Medical Services at the Crossroads" and published in 2006, recommended the development of "evidence based performance indicators that can be nationally standardized so that statewide and national comparisons can be made".[20]

Evidence-based bundles can be good measures of the effectiveness of the system and different stakeholders have different perspectives on quality care[21,22].Now we are moving towards "Whole System Measures" defined by the Institute for Healthcare Improvement (IHI) as "balanced set of system level measures which are aligned with the Institute of Medicine's (IOM's) six dimensions of quality and are not disease or condition specific" can help overcome some of the challenges of evaluating quality in EMS. Patient satisfaction with care score, rate of adverse events, incidence of occupational injuries and illnesses, and healthcare cost per capita are some examples of these whole systems measures[23] which we can try to adopt in our health care setting.

CONCLUSION

The results of this study confirm findings in developed and some other developing countries that the perception and judgment of quality are highly

individualistic and dynamic, in the sense that the criteria or elements used for judging quality at one moment may not be the same for the next, and that consequently client satisfaction reflects only part of the quality of the entire health care process. We need to develop and apply standards in our context in health care services in order to improve the quality of care in our hospitals and make them enter the quality assurance system.

REFERENCES

1. Blumenthal D. Part 1: Quality of care-what is it? N Engl J Med. 1996; 335:891–94.
2. Brook RH, McGlynn EA, Cleary PD. Quality of health care. Part 2: measuring quality of care. N Engl J Med. 1996;335 :966 –70
3. Chassin MR, Galvin RW. The urgent need to improve health care quality. Institute of Medicine National Roundtable on Health Care Quality. JAMA. 1998;280 :1000–05
4. Kizer KW. The emerging imperative for health care quality improvement. Acad Emerg Med. 2002;9 :1078 –84.
5. Bodenheimer T. The American health care system—the movement for improved quality in health care. N Engl J Med. 1999;340 :488 92.
6. Lohr K. Medicare: A Strategy for Quality Assurance. Washington, DC: National Academy Press; 1990
7. Ridge RA, Bland Jones, Systems theory and analysis in health care and nursing. In: Nursing issues in leading and managing change (J Lancaster (Ed.) Toronto, ON: Mosby; 1999; pp. 25-60.
8. Haddad S, Potvin L, Roberge D, Pineault R, Remondin M. Patient perception of quality following a visit to a doctor in a primary care unit. Fam Pract 2000 ;17:21-9.
9. Assefzadeh S. Patient flow analysis in a children's clinic; Eastern Mediterranean Hlth J 1996; 2 412-17.
10. Camilleri D, O'Callaghan M. Comparing public and private hospital care service quality. Int J Health Care Qual Assur Inc Leadersh Health Serv 1998;11:127-33.
11. Harris AH, Kivlahan DR, Bowe T, Finney JW, Humphreys K. Developing and validating process measures of health care quality: an application to alcohol use disorder treatment. Med Care. 2009;47:1244-50.
12. Laffel G. and Blumenthal D. The case for using industrial quality management science in health care organizations, JAMA, 1989; 262: 2869–73.
13. Berwick DM. Continuous improvement as an ideal in the health care, N Engl J Med 1989; 320: 53–56, 1989.
14. Cockcroft A, Omer K. Baseline Community Based User Survey – Bangladesh Hospital Improvement Initiative. Final Report. April 2000.
15. Cockcroft A, Omer K. Baseline Community Based User Survey – Bangladesh Hospital Improvement Initiative. Revised Report. August 2003.
16. Yildlz Z, Erdogmus S. Measuring patient satisfaction of the quality of health care: a study of hospitals in Turkey. J Med Syst. 2004;28:581-9.
17. Jorge MA, Helga P, Ahmed Al-S. Client satisfaction and quality of health care in rural Bangladesh; Bulletin of the World Health Organization, 2001, 79: 512–517.
18. Harris, Lisa E. Swindle, Ralph W. Measuring patient satisfaction for quality improvement. J Med Care. 1999; 37:1207-13.
19. Mazen J. El-Sayed. Measuring quality in emergency medical services: A review of clinical performance indicators. Emergency Medicine International, 2012 doi:10.1155/ 2012/161630, http://www.hindawi.com/ journals/emi/2012/161630/
20. Donabedian A. Explorations in quality assessment and monitoring. The definition of quality and approaches to its assessment, Health Administration Press, Ann Arbor, Mich, USA, 1980. vol. 1
21. Grol R. Improving the quality of medical care: building bridges among professional pride, payer profit, and patient satisfaction. JAMA, 2001; 286:2578–85
22. Blumenthal D. Part 1: quality of care—what is it? N Engl J Med, 1996; 335:891–94.
23. Martin LA, Nelson EC, Lloyd RC, and Nolan

TW. Whole System Measures, IHI Innovation Series White Paper, Institute for Healthcare Improvement, Cambridge, Mass, USA, 2007.

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