World Applied Sciences Journal 17 (5): 598-606, 2012
ISSN 1818-4952

Relationship Between Accreditation and Quality Indicators in Hospital Care: A Review of the Literature

Alyah M. Almoajel

Department of Community Health Sciences, Applied Medical Sciences College,
King Saud University, Riyadh, Saudi Arabia

Abstract: There is a widespread and increasing tendency to develop hospital performance indicators in the field of accreditation/certification system and quality benchmarking. The aim of this study was to identify the relationship between accreditation and quality indicators used in hospital care services. A systematic review of literature was carried out. The search used the data base of MEDLINE in the duration from January 2005 to January 2011. Hospital-based full article English language studies which examined the relationship of quality indicators and accreditation were included. Discussion or commentary pieces were excluded. Results revealed that Out of the 222 initially allocated studies, 23 studies that matched the search inclusion criteria were selected. In many of the included studies using of quality indicators resulted in improvement of the hospital health services. In conclusion, it is essential for quality improvement of health care organizations to have quality indicators and go through accreditation.

Key words: Accreditation · Health Care · Quality Indicators · Quality Measures

INTRODUCTION

Accreditation, quality and continuous improvement have become an intrinsic part of the discourse and activities of health services. Accreditation is a process whereby an organization is assessed on a set of pre-determined standards [1, 2]. Meanwhile, quality had been defined as the degree to which health services for individuals and populations increase the likely hood of desired health outcomes [3].

Quality can be evaluated based on three dimensions; structure, process and outcomes. Structural quality evaluates health system characteristics, while process quality assesses interactions between clinicians and patients and outcomes offer evidence about changes in patients' health status. All these three dimensions can provide valuable information for measuring quality [4]. In order to improve the quality of care, hospitals in various countries report and monitor quality indicators [5-8] that aim to detect sub-optimal either in structure, process or outcome and can be used as a tool to guide the process of quality improvement in health care [4]. This is clear when the quality indicator is a comprehensive one measuring the three dimensions of quality and so produces information that is useful for decision making and become both a sign and a source of motivation for quality commitment [9]. It is to be mentioned that these quality indicators are designed not only to identify excellence structures, but mainly to assess operative conditions and draw up plans of action to provide a continuous quality improvement. Quality indicators are based on standards of care, which are either found in the research literature, in statements of professional medical organizations or determined by an expert panel [10].

Internationally, since 1970s, health care accreditation programs and accrediting organizations emerged and developed. In many parts of the world, accreditation is now accepted as an important element in quality improvement activities. Nevertheless, the evidence base for accreditation is thought to be incomplete. Moreover, there was no evidence about the effectiveness of different quality systems and ways to implement them [11].

The purpose of current study was to identify the relationship between accreditation and quality indicators used in hospital care services through systematic review of literature.

Corresponding Author: Alyah M. Almoajel, Department of Community Health sciences, Applied Medical Sciences College, King Saud University, Riyadh, Saudi Arabia.

MATERIAL AND METHOD

Study Allocation: A systematic literature search was conducted for MEDLINE data base in the duration from January 2005to January 2011.

Only studies published in English were included in the search. The search strategy combined a truncated search for " health care quality indicators " or "quality measures" with text word ' accreditations". In addition, the reference lists of all retrieved articles were searched for additional relevant references.

Study Selection Criteria: On basis of relevance to current study aim, researcher selected the studies to be reviewed as follows:

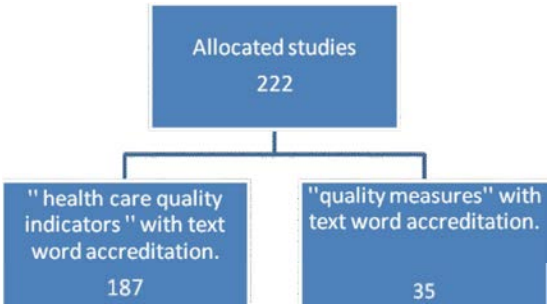
Study Content: Studies were included if they examined accreditation, accreditation process and the relationship between accreditation and quality indicators. In addition to studies that measured care processes or patient outcomes for inpatient care at the hospital level, ward, or specialized clinics. Studies concerned with primary care, e.g. general practitioners, chronic health, mental health and dental care were excluded because the delivery of care may differ considerably in these care settings from the previously mentioned hospital care setting.

Study Design: The included studies, if they were full text empirical work that may systematically examine the previously mentioned relation.

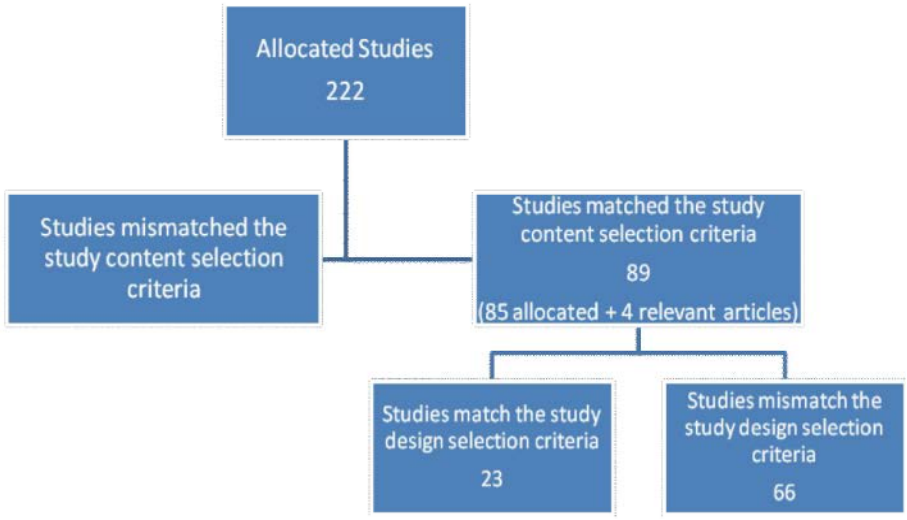
RESULTS

The allocated studies were 222 studies. Out of these 222 studies, 187 studies resulted from the truncated search for " health care quality indicators " with text word accreditation (Scheme 1) while 35 studies resulted from the truncated search for "quality measures" with text word accreditation.

Out of the 222 allocated studies, 137 studies were excluded because of content mismatch. The remaining 85 studies, along with other 4 studies added by searching the relevant articles, were included as they were hospital-based studies that examined the relationship between quality indicators and accreditation. These 89 (85+4) studies that matched the study content selection criteria were investigated regarding their matching to the study design selection criteria. 66 studies were excluded and 23 studies matched the study design selection criteria, full text systematic empirical work, were included in the current study systematic review (Scheme 2).



Scheme 1: Distribution of allocated studies.



Scheme 2: Flow chart of study selection process.

Table 1: Key results of Relationship between accreditation andTable 1Quality indicator

Author, year	Study Design	Setting	Aim of the study	Sample size	Methodology	Main Findings
12Grasso *et al*, 2005	accreditation survey	Hospitals	to detect an error-prone medication usage system			experienced surveyors failed to detect an error-prone medication usage system(shown by an independent audit) this raised questions about the validity of survey scores as a measure of safety.
13Miller *et al*, 2005	Comparison study	hospitals accredited by the JCAHO	examines the association between the joint commission on accreditation of health care organizations (JCAHO) accreditation scores and the agency for health care research and quality's inpatient quality indicaters and patient safety indicators (IQIs/PSIs)	All united states hospitals accredited by the JCAHO	JCAHO Accreditation data were from 1997 to 1999were matched with institutional IQI/PSI performance from 24 states in the health care cost and utilization project	No significant relationships existed between categorical accreditation decisions (JCAHO) and quality indicators.
14Gabriele *et al*, 2006	Analysis study	Radiotherapy institution	to analyze the practical feasibility and efficacy of the quality indicators elaborated by the National Health Service study group in a radiotherapyunit.	133 consecutive patients treated in Radiotherapy Unit wereanalyzed,	The study analyzed 8 of the 13 indicatorsaccording to the National Health Service Project.	The project had the potential to be the starting point to improve the quality of services and to compare national and international quality assurance results
15Vansuch *et al*, 2006	A retrospective study	a single tertiary care hospital	To determine whether documentation of compliance with any or all of the six required discharge instructions is correlated with readmissions to hospital or mortality.	randomly sampled patients hospitalised for heart failure from July 2002 to September 2003	Applying the Joint Commission on Accreditation of Healthcare Organizations criteria, 782 of 1121 patients were found eligible to receive discharge instructions.	Including discharge instructions among other evidence-based heart failure core measures appeared to reduce re-admission or mortality.
16 Williams *et al*, 2005	Descriptive analysis	accredited hospitals.	To examine hospitals' performance on 18 standardized indicators of the quality of carefor acute myocardial infarction, heart failure and pneumonia	Data were collected over a two-year period inmore than 3000 accredited hospitals.	examined hospitals' performance on 18 standardized indicators of the quality of carefor acute myocardial infarction, heart failure and pneumonia. One measure assessed aclinical outcome (death in the hospital after acute myocardial infarction) and the other17 measures assessed processes of care.	Feedback to hospitals on their clinical indicator performance produced consistent improvement over the study period. Hospitals initially with low levels of performance had greater improvements than those with higher performance.
17Williams *et al*,2006	Survey	approximately 3400 accredited US hospitals	investigate the reliability of self-reported standardized performance indicators introduced by the Joint Commission on Accreditation of Healthcare Organizations and to identify the most common data quality problems and determine causes and possible strategies for resolution.	from a random sample of 30 hospitals		improvement in the accuracy and completeness of the self-reported data is possible and desirable, the baseline level of data reliability appears to be acceptable for indicators used to assess and improve hospital performance on selected clinical topics
18Synder& Anderson, 2005	A retrospective study	hospitals	To explore whether the quality of hospital care for Medicare beneficiaries improves more in hospitals that voluntarily participate with Medicare's QIOs compared with nonparticipating hospitals.	Data from 4 Quality improvement organizations (QIOs)charged with improving the quality of care in 5 states (Maryland, Nevada, New York, Utah and Washington) and the District of Columbia were used. Hospitals participate with the QIOs on quality improvement on a voluntary basis	The medical records of approximately 750 Medicarebeneficiaries per state in each of 5 clinical areas (atrial fibrillation, acute myocardialinfarction, heart failure, pneumonia and stroke) were abstracted at baseline (1998)and follow-up (2000-2001).	Hospital that participate in a quality improvement program were no more likely to show improvement on quality indicators than were hospitals that did not participate.

Table 1: Continued

Author, year	Study Design	Setting	Aim of the study	Sample size	Methodology	Main Findings
19 Jardali *et al*, 2008	A cross-sectional survey design	all hospitals that successfully passed both national accreditation surveys(I and II) were included	The objective is to assess the perceived impact of accreditationon quality of care through the lens of health-care professionals, specifically nurses. This study also investigates the perceivedcontributing factors that can explain changes in quality of care.	A total of 1048 registered nurses from 59 hospitals were sampled	survey tool consisted of nine scales and subscalesthat were rated on a five-point Likert scale	hospital accreditation is a good tool for improving quality of care. In order to ensure that accreditation brings effective quality improvement practices,there is a need to assess quality based on patient outcome indicators.
20Preston LJ,2	A review of the literature	319 of 3198 clinical laboratories	to capture information about quality indicators in use within the state of Arizona also to heighten awareness of benchmarking practices for clinical laboratory managers and laboratory quality assurance personnel, to develop objective methods of quality monitoring for performance improvement and to encourage collaboration between laboratories and accreditation agencies.	Of the 319 of 3198 clinical laboratories randomly selected to receive the survey, 21 (6.58% of the sample or 0.66% of the population) responded with completed surveys	A review of the current literature was conducted to assess the status of benchmarking within the clinical laboratory. Data were also obtained from the Centers for Medicare & Medicaid Services (CMS) about all licensed clinical laboratories in Arizona. A mail survey was then created and conducted to investigate the use of clinical laboratory quality indicators in Arizona.	Key finding quality indicators are used for quality improvement purposes within the clinical laboratory; although it also showed that the industry still does not have a standardized approach to the use of quality indicators for benchmarking performance against other laboratories.
21philibert *et al*, 2009	Statistical examination	teaching hospitals	Statistical examination of the data underlying the rankings and their relationship with measures of educational and clinical quality in teaching hospitals			that the data elements underlying the rankings may provide valid assessments about the quality of care in educational settings.
22Braun *et al*, 2006	Comparative Study	total of 28 hospitals participating in the EPIC study.	To determine the extent to which variation in indicator specifications affected infection rates and hospital performance rankings	Hospitals submitted deidentified information about all patients with BSIs from January through September 199	Multicenter observational study	Bloodstream infection (BSI) rates are used as comparative clinical performance indicators; and seem to be a logical indicator of clinical performance, the use of various indicator specifications can produce remarkably different judgments of absolute and relative performance for a given hospital.
23lutfiyyahh *et al*, 2009	Comparative Study	US critical access hospitals.	To determine whether quality measures used in the US Centers for Medicare and Medicaid Services Hospital Compare database differed for critical access hospitals based on Joint Commission on Accreditation of Healthcare Organizations accreditation status.	US critical access hospitals differences (P < or = 0.01).	Cross-sectional with t-test statistics computed on weighted data to ascertain statistically significant	The differences between accredited and non-accredited rural critical access hospitals for 4 out of 16 hospital quality indicators were statistically significant (P < or = 0.01) and favored accredited hospitals. Also, accredited hospitals were more likely to rank in the top half of hospitals for 6 of the 16 quality measures. and accreditation appears to result in modestly better performance.
24Mansi *et al*, 2010	Review study	a university hospital caring for high-risk patients.	To determine the effects of compliance with TJC core quality measures for heart failure on patient outcomes at a university hospital caring for high-risk patients.	Of 646 reviewed records,542, representing 357 patients, were included in the analysis.	Reviewing data collected for TJC in patients admitted with heart failure at a university hospital serving an indigent population in Louisiana.	Compliance with TJC quality measures for heart failure at a university hospital in Louisiana was associated with higher readmission rates for heart failure. Several factors may explain this trend, including patient characteristics and focus on national reporting benchmarks rather than patient-centered health care.

Table 1: Continued

Author, year	Study Design	setting	Aim of the study	Sample size	Methodology	Main Findings
25Bradley *et al*, 2006	Comparative Study	assessed hospital performance in the CMS/JCAHO AMI core process measures using 2002-2003 data from 962 hospitals participating in the National Registry of Myocardial Infarction (NRMI) and correlated these measures with each other and with hospital-level, risk-standardized, 30-day mortality rates derived from Medicare claims data.	To determine correlations among AMI core process measures and the degree to which they explain the variation in hospital-specific, risk-standardized, 30-day mortality rates.			The publicly reported acute myocardial infarction (AMI) process measures capture a small proportion of the variation in hospitals' risk-standardized short-term mortality rates.
26Fong *et al*,2008	Hospital quality performance report	hospitals	To assess the performance of its contracted hospitals,		Using 4 databases (patient satisfaction, patient safety, quality indicators and hospital compare data) to assess patient safety and quality of car	an association between hospital accreditation with the composite score, patient safety scor and hospital compare data score..
27Pardini *et al*, 2010	Survey	in an academic medical center	Improving and sustaining core measure performance through effective accountability of clinical microsystems	in an academic medical center		Holding clinical Microsystems accountable for improving unit performance proved beneficial to Microsystems performance of the Joint Commission core measures.
28Mattke, 2008	Survey	10 organizations	To document current practices on long-term maintenance of quality measures and to develop a consensus framework to guide the design of maintenance systems.	Five measures developers, two provider and three purchaser organisations. Six were private sector organisations, two were governmental agencies and two were accreditation institutions	Survey of 10 organisations developing measures and selected researchers in the USA about current policies and procedures and desirable properties for a comprehensive system for measures maintenance. Panel discussions with all respondents to arrive at consensus recommendations for a framework for maintenance of measures.	A sufficient degree of implicit consensus was found among leading measures developers to arrive at a consensus framework for policies and procedures for measures maintenance
29Bilimoria KY *et al*, 2009	Comparative Study	hospital	To compare CoC-approved and non-CoC-approved hospitals with respect to structural characteristics (ie, accreditations, geography and oncologic services provided).	Of the 4,850 hospitals identified, 1,412 (29%) were CoC-approved hospitals and 3,438 (71%) were not CoC-approved hospitals	By using the American Hospital Association Annual Survey Database (2006), CoC-approved and non-CoC-approved hospitals were compared with respect to structural characteristics (ie, accreditations, geography and oncologic services provided).	Compared with non-CoC-approved hospitals, CoC-approved hospitals were larger, were more frequently located in urban locations and had more cancer-related services available to patients. Studies that use the NCDB should acknowledge this limitation when relevant.

Table 1: Continued

Author, year	Study Design	setting	Aim of the study	Sample size	Methodology	Main Findings
9Cioninia *et al*, 2007		in a number of Italian radiotherapy Centres and medical physics Services	to develop a setof performance indicators for a typical radiotherapy Centre and to evaluate their ability to provide a continuous qualityimprovement.	15 Italian radiotherapy Centres and medical physics Services	A working group consisting of radiation oncologists, medical physicists and radiationtechnologists under the coordination of experts in health technology assessment has elaborated a set of generalindicators able to monitor performances and the quality level of a typical radiotherapy Centre.	The impact or effectiveness of accreditation programs has been researched with a variety of foci and to differing degrees. The 66 documents were categorized under 10 topics, quality measures is one of them. Inconsistent findings were identified in quality measures.
30 Greenfield & Braithwaite, 2008	systematic review.	health caresystems	to identify and analyze research into accreditation and accreditation processes.	of over 3000 abstracts, 66 studies that met	A multi-method, systematic review of the accreditation literature was conducted from March to May 2007. The search identified articles researching accreditation. Discussion or commentary pieces were excluded.	Effective strategies to implement quality indicators in daily practice in order to improve hospital care do exist, but there is considerable variation in the methods used and the level of change achieved.
31Vos *et al*, 2009	review the literature	health caresystems	To review the literature concerning strategies for implementing quality indicators in hospital care and their effectivenessin improving the quality of care.	21 studies	Hospital-based trials studying the effects of using quality indicators as a tool to improve quality of care.	a set of quality indicators for diabetes care was developed, to be used for benchmarking the performance of health care systems. These measures could reveal valuable insight into the differential performance of health systems.
32 Nicolucci *et al*, 2006	Review study	health caresystems.	set of quality indicators for diabetes care was developed, to be used for benchmarking the performance of health caresystems	six indicators for care processes andthree for outcomes of care.	reviewing the literature, consulting withexperts and surveying organizations already using diabetesperformance measures.	comprehensive set of indicators for the quality of diabetescare has emerged on the international level that could be usedto benchmark health systems.
33 Merle *et al*, 2009	pilot observational study	three French public hospitals	To assess whether comparison of quality of hip fracture care among three teams located in different hospitals isassociated with improvement in process and outcomes.	Professionals caring for patients operated on for a low-impact hip fracture.	Review and discussion of comparative performance results by three teams followed by implementation ofquality improvement as deemed necessary by each team.	hospitals with higher risk-adjusted mortality have poorer quality of care is neither consistent nor reliable.

The relationship between quality indicators and accreditation is complex; key results of reviewing the literature, are presented in Table 1.

DISCUSSION AND CONCLUSION

Quality indicators incorporate items defined as clinical indicators, quality measures or clinical performance measures. In some work, it does not appear that there is a direct relationship between the quality indicators and accreditation. No relationship is generally found between a specified quality indicator and an accreditation outcome [12-13]. And another study showed no significant relationships existed between accreditation decisions and a specified Quality indicators performance [29].

While not always an essential part of their respective accreditation programs, some quality measures have been shown to improve care outcomes in health organizations [14-17, 19, 20, 25, 26, 32].

Similarly, the use of various indicator specifications can produce remarkably different judgments of absolute and relative performance for a given hospital [22]. As well as another studies found that the using clinical indicator improves health care performance. In this instance a clinical guideline [27].

However, another study found that the hospitals with higher risk-adjusted mortality have poorer quality of care is neither consistent nor reliable [33].

On other hand, a study examines the impact or effectiveness of accreditation programs, inconsistent findings were identified in quality measures [9] and a study finding indicated that there must be a framework for policies and procedures for measures maintenance [28].

An important argument has been made that effective strategies to implement quality indicators in daily practice in order to improve hospital care do exist, but there is considerable variation in the methods used and the level of change achieved [30].

Conflicting findings hold in comparing accredited and non-accredited hospital quality indicator performance. Quality indicator results from hospitals that voluntarily participate with quality improvement organizations could not be differentiated from those hospitals that do not participate [18]. While in another study, indicators used to assess and improve hospital performance on selected clinical topics [20].

However, another study revealed that accredited hospitals performed better on a range of quality indicators than did non-accredited hospitals and favored accredited hospitals. Also, accredited hospitals were more likely to ranking .and accreditation appears to result in modestly better performance [23]. on other hand, a study rankings may provide valid assessments about the quality of care in educational settings [21].

Conclusion: The main objective of this study was to identify and analyze studies that evaluate the relationship between accreditation and Quality indicators.

Although the researcher searched in a multi-method, comprehensive manner, electronic research indexing is generally problematic and we may have missed some key literature.

This review, relationship between quality indicators and accreditation, literature reveals a complex picture. There are mixed views and inconsistent findings, but most of the studies agreed about that quality indicators are very important to improve the quality of health care services when going for accreditation.

REFERENCES

1. Klazinga, N., 2000. Re-Engineering Trust: The Adoption And Adaption of Four Models For External Quality Assurance Of Health Care services In Western European Health Care Systems. International Journal OF QUALITY health Care, 12: 183-9.
2. Montagu, D., 2003. Accreditation and Other External Quality Assessment Systems for Healthcare: Review of Experience and Lessons Learned. London: Department For International Development Health Systems resource Centre,. Http:// Www.Dfidhealthrc.Org/ Publications/ Health_ Service_ Delivery/ Accreditation.Pdf
3. LOHR, K.N., 1990. (Ed.) Medicare: A Strategy For Quality Assurance. Vols I And 11.Washington,DC: National Academy Press.
4. Donabedian, A., 1980. Explorations in Quality Assessment and Monitoring The Definition of Quality and Approaches to its Assessment. Michigan: Health Administration, PRESS. Agency for healthcare Research and Quality, United States. Http://www.qualityindicators.ahrq. gov/introduction.htm(//February 2011, DATE last accessed).
5. Chiu, W.T., C.M. Yang, H.W. Lin and T.B. Chu, 2007. Development and implementation of a nationwide health care quality indicator system in Taiwan. international Journal of QUALITY HEALTH Care, 19(1): 21-8.
6. Collopy, B.T., 2000. Clinical indicators in a accreditation: an effective stimulus to improve patient care. International Journal of quality Health Care, 12: 211-6.
7. Commission for Health Improvement, United Kingdom. Http://www.chi.nhs.uk/ratings/ (18 february 2011, date last accessed)
8. Cioninia, L., G. Gardanib, P. Gabrielec, S. Magrid, P.L. Morosinie, A. Rosif and V. Vitif, 2007. Quality indicators in radiotherapy. Radiotherapy and Oncology, 191–200. www.thegreenjournal.com
9. Schuster, M.A., E.A. mcglynn and R.H. Brook, 2005. How Good Is the Quality of Health Care in the United States?. The Milbank Quarterly, 83(4): 843-95.
10. Ovretveit, J. and D. Gustafson, 2003. Using research to inform quality programmes. BMJ, 326: 759-61.
11. Grasso, B.C., J.M. Rothschild, C.W. Jordan and G. Javaram, 2005. What is the measure of a safe hospital Medication errors missed by risk management clinical staff and surveyors. Journal of Psychiatric Practice, 11: 268-73.

12. Miller, M.R., P. Pronovost, M. Donithan, S. Zeger, C. Zhan, I. Morlock and G.S. Meyer, 2005. Relationship between performance measurement and accreditation: implication for quality of care and patient safety. American journal of medical quality, 20: 239-52.
13. Gabrlele, P., G. Malinvernl, C. Bona, M. Manfredi, E. Delmastro, M. Gatti, G. Penduzzu, B. Balotto and M. Stasl, 2006. Are quality indicators for radiotherapy useful in the evaluation of service efficacy in a new based radiotherapy institution .Tumori., 92: 496-502.
14. Vansuch, M., J. Naessens, R. Stroble, J. Huddleston and A. Williams, 2006. Effect of discharge instructions on readmission of hospitalised patients with heart failure: do all of the Joint Commission on Accreditation of Healthcare Organizations heart failure core measures reflect better care?. Quality & Safety in Health Care, 15: 414-7.
15. Williams, S.C., S.P. Schmaltz, D.G. Morton, R.G. Koss and J.M. Loeb, 2005. Quality of care in U.S hospitals as reflected by standardized measures. New England Journal of Medicine (NEJM), 353: 255-64.
16. Williams S.C., A. Watt, S.P. Schmaltz, R.G. Koss and J.M. Loeb, 2006. Assessing the reliability of standardized performance indicators. International Journal of Quality Health Care, 18: 246-55.
17. Synder, C. and G. Anderson, 2005. Do Quality improvement organizations improve the quality of hospital care for Medicare beneficiaries?, JAMA, 293: 2900-7.
18. Jardali F., D. Jamal, H. Dimassi, W. Ammar and V. Tchaghchaghian, 2008. The impact of hospital accreditation on quality of care: perception of Lebanese nurses .International Journal for Quality in Health Care, Volume 20, 5: 363-371. 10.1093/ intqhc/ mzn023 Advance Access Publication: 1 July 2008.
19. Preston, L.J., 2008. A survey of quality indicator use in the clinical laboratory. Journal Of The American Society For Medical Technology, 21(1): 25-32.
20. Philibert, I., 2009. Can hospital rankings measure clinical and educational quality? Academic Medicine: Journal Of The Association Of American Medical Colleges, 84(2): 177-84.
21. Braun, B.I., S.B. Kritchevsky, L. Kusek, E.S. Wong, S.L. Solomon, L. Steele, C.L. Richards, R.P. Gaynes and B. Simmons, 2006. Comparing bloodstream infection rates: the effect of indicator specifications in the evaluation of processes and indicators in infection control (EPIC) study .Infection Control And Hospital Epidemiology, 27(1): 14-22.
22. Lutfiyya, M.N., A. Sikka, S. Mehta and M.S. lipsky, 2009. Comparison of US accredited and non-accredited rural critical access hospitals. International Journal for Quality In Health Care, 21(2): 112-8. Date of Electronic Publication: Feb 04.
23. Mansi, I.A., R. Shi, M. Khan, J. Huang and D. Carden, 2010. Effect of compliance with quality performance measures for heart failure on clinical outcomes in high-risk patients. Journal of The National Medical Association, 102(10): 898-905.
24. Bradley, E.H., J. Herrin, B. Elbel, R.L. Mcnamara, D.J. Magid, B.K. Nallamothu, Y. Wang, S.L. Normand, J.A. Spertus and H.M. Krumholz, 2006. Hospital quality for acute myocardial infarction: correlation among process measures and relationship with short-term mortality. JAMA: The Journal of the American Medical Association, 296(1): 72-8.
25. Fong, J., G.M. Marsh, L.A. Stokan, W. Sang, C. Vinson and L. Ruhl, 2008. Hospital quality performance report: an application of composite scoring. American Journal of Medical Quality, 23 (4): 287-95.
26. Pardini-Kiely, K., E. Greenlee, J. Hopkins, N.L. Szaflarski and K. Tabb, 2010. Improving and sustaining core measure performance through effective accountability of clinical microsystems in an academic medical center. Joint Commission Journal On Quality And Patient Safety, 36(9): 387-98.
27. Mattke, S., 2008. When should measures be updated? Development of a conceptual framework for maintenance of quality-of-care measures. Quality & Safety In Health Care, 17(3): 182-6.
28. Bilimoria, K.Y., D.J. Bentrem, A.K. Stewart, D.P. Winchester and C.Y. Ko, 2009. Comparison of commission on cancer-approved and –non approved hospitals in the United States: implications for studies that use the National Cancer Data Base. Journal of Clinical Oncology, 27(25): 4177-81.
29. Greenfield, D. and J. Braithwaite, 2008. Health sector accreditation research: systematic review .International Journal for Quality in Health Care, 20(3): 172-183.
30. Vos, M., W. Graafmans, M. Kooistra, B. Mmijboo, P.V. Voort and G. Westert, 2009. Using quality indicators to improve hospital care: a review of the literature. International Journal for Quality in Health Care, 21(2): 119-129.

31. Nicolucci, A., S. Greenfield and S. Mattke, 2006. Selecting indicators for the quality of diabetes care at the health systems level in OECD countries. International Journal for Quality in Health Care, pp: 26-30.

32. Merle, V., L. Moret, L. Pidhorz, F. Dugardin, V. Josset, S. Graveleau, J. Petit. Riou, P. Lombrail and P. Czernichow, 2009. Does comparison of performance lead to better care? A pilot observational study in patients admitted for hip fracture in three French public hospitals. International Journal for Quality in Health Care, 21(5): 321-329.