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Comparison of Patient Safety and Quality of Care Indicators Between Pre and Post Accreditation Periods in King Abdulaziz University Hospital

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Abstract: Accreditation is an internationally recognized evaluation process used to assess, promote and guarantee efficient and effective quality of patient care and patient safety. This study provides valuable information as to the impact of accreditation in a unique multicultural, multi-language competitive environment at King Abdul-Aziz University Hospital in Saudi Arabia. To achieve an unbiased assessment of the impact of accreditation on quality of patient care and patient safety as perceived by nursing staff. A cross-sectional surveys were conducted pre and post accreditation. A total of 870 registered nurses of 8 different cultural backgrounds from 22 hospital units participated in an electronic accessed surveys. A five point Likert scale was used. For comparison, the pre and post-survey results were statistically analyzed using the McNemar test for testing the significance. A total of 721 nurses answered the survey questionnaire, 675 met the survey criteria. The comparison of percentages of those who answered Agree and Strongly agree pre and post-accreditation items showed post-accreditation improved perception on the quality of patient care and patient safety and promoted good safety practices. Accreditation has an overall statistically highly significant perceived improvement on quality of patient care and patient safety ($p<0.001$).

Key words: Accreditation, quality of patient care, patient safety, nursing survey

INTRODUCTION

There is increased interest around the world in the evaluation of healthcare, coming not only from governments but also from providers and consumers (Zeribi and Marquez, 2005). Therefore initiatives to address quality of health care have become worldwide phenomena. As quality is a crucial factor in health care consequently accreditation of health care organizations is increasingly being used as a tool for governmental regulation to guarantee quality (El-Jardali *et al*., 2008). There is little research on the impact of accreditation (Buetow and Wellingham, 2003) accordingly no conclusive evidence that it improves quality of care (Viswanathan and Salmon, 2000; Salmon *et al*., 2003; Shaw, 2001). In the domain of quality, patient safety has become of particular concern (Kohn, 2000; Adams and Corrigan, 2003).

Accreditation has attracted great significance in recent years as a comprehensive approach for improving and maintaining healthcare quality that traditionally has been a voluntary process in which organizations choose to participate rather than one required by government regulations. Some countries have made participation legally compulsory (Shaw, 2004). Besides its basic purpose of assessing hospitals' compliance with standards, a hospital accreditation program may play an educative, consultative and informative role and provides a platform for continued dialogue among various stakeholders (Nandraj *et al*., 2001).

Accreditation is a process whereby an organization is assessed on a set of pre-determined standards (Klazinga, 2000; Montagu, 2003). These standards are usually regarded as optimal and achievable and are designed to encourage continuous improvement efforts within accredited organizations (Rooney and van Ostenberg, 1999). The degree of compliance to standards could be more easily measured however, some researchers have expressed their reservations on the methods used to measure the real impact of accreditation on risk management. The effect of implementing patient safety

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practices and their resultant impact on patient outcomes remain relatively unexplained in healthcare (Shojania *et al*., 2001). A study conducted in 2000 by the World Health Organization revealed that there were no accreditation programs in the Eastern Mediterranean (WHO, 2003) Since then, several countries in this region have been developing and implementing accreditation programs (El-Jardali, 2007) and Saudi Arabia is among those reported having enacted a law or directive relating to patient safety standards (WHO, 2005). The Kingdom of Saudi Arabia (KSA) is a large country with a population approaching 20 million people. It is a relatively young country only united in 1932. The health services started with limited resources and very small clinics and gradually reached highly sophisticated modern hospitals, medical centers and cities (Al-Rabeeah, 2003).

King Abdul-Aziz University Hospital (KAUH) is one of the larger sized governmental hospitals in Saudi Arabia with a total bed capacity of 878. It underwent accreditation process from 2007-2008. With its size and multicultural patient population, it provided a challenge for any accreditation organization and now it was seen as presenting a valuable and unique multicultural, multi-language competitive environment for this type of study. This environment applies to all who are in direct or indirect contact with the hospital and likewise to the society as a whole within variable degrees.

Context: The accreditation process was conducted in KAUH during the period 2007-2008. The first stage of accreditation process dates back to 2007 while the second stage was in 2008. Throughout the process, the hospital was exposed to challenging self-assessment of present standards, meeting the required standards and data collection which included many different clinical indicators. The hospital had met the accreditation requirements successfully.

Objective: To evaluate the perception of KAUH nursing staff on the quality of patients care and patients safety after application of the accreditation process and its contributing factors that can explain changes, if any.

MATERIALS AND METHODS

KAUH nursing staff was surveyed in an effort to assess their perception on quality of patient care and patient safety as a result of accreditation. The same survey had been conducted before and after the accreditation process. For comparison, the pre and post survey results were statistically analyzed using McNemar test for testing the significance of difference between two sample proportions. Calculation of the relative coefficient percent relates the result to the original state of opinion of the surveyed group and thus gives a true relative indicator of the change.

Survey design: The survey had been based from the National Patient Safety Goals. A cross-sectional survey design was conducted pre and post accreditation using the five points Likert Scale as the survey tool.

Survey sample: KAUH is one of the larger sized hospitals in Saudi Arabia with total of 878 beds capacity with a unique multicultural, multi-language competitive environment. A total of 870 registered nurses of 8 different cultural backgrounds from 22 hospital units were given electronic access to answer the survey questionnaire.

The most numerically predominant cultures were the Indian (44.53%) and the Filipino (41.00%). Second to this highly significant foreign culture came (11.73%) with different Arabic cultures of which (78.6%) were Saudi nationals. The remaining cultural minorities, (2.74%) represent other Western and Asian cultures. Of the complied nurses, a total of 721 nurses answered the survey questionnaire (82.87% response rate), 675 (93.62%) met the survey criteria. Only those who answered: Agree and Strongly Agree for pre and post-accreditation items questioned in the survey were taken in consideration for statistical comparisons.

Survey instrument: The survey tools consisted of 4 major scales with 18 subscales that were rated on a five point Likert scale (ranging from 1 for strongly disagree to 5 for strongly agree). A section on demographics e.g., nationality, gender, age, educational qualifications, occupational category and years of experience was also included. Ethical approval was obtained from the KAUH administrators together with written consents from participating nurses before proceeding with the study.

RESULTS

A total of 721 nurses answered the survey questionnaire (82.87% response rate), 675 (93.62%) met the survey criteria. Only those who answered: Agree and strongly agree for pre and post accreditation items questioned in the survey were taken in consideration for statistical comparisons. The results of the present study

are shown in Table 1-4 with each table presenting the scores of answers to the components of one item of the study questionnaire. Table 1 shows the pre and post- survey results of Nursing Clinical Information. It is clear from the table that there is an overall statistically highly significant positive attitude towards the application of the accreditation process in the form of (13-35%) increased percentages in response to all items surveyed post-accreditation as compared to the pre-accreditation survey ($p<0.001$).

On the other hand, lower values, (7-24%) of the positive attitude towards the application of the accreditation process are shown in Table 2 which shows the pre and post-survey results on Patient Medication Information.

The results indicate that there is an overall statistically highly significant increase in all items surveyed post-accreditation as compared to the pre-accreditation survey ($p<0.001$). Meanwhile, the data shown in Table 3 on the pre and post-survey results of Risk management show the highest percentage of improvement (10-44%). It is clear from the table that there is an overall statistically highly significant increase in the positive attitude towards the application of the accreditation process on all items surveyed post-accreditation as compared to the pre-accreditation survey ($p<0.001$).

Where is Table 4 shows the pre and post-survey results of Nursing Action to Prevent Risk. Evident in the table is an overall statistically highly significant increase in the positive attitude towards the application of the accreditation process in 4 out of 4 items surveyed (8-33%) post-accreditation as compared to the pre-accreditation survey ($p<0.001$).

Statistical analysis of the results of the evaluation of nursing staff perceptions on quality of patient care and patient safety in this study were on alignment with measured indicators of this research as majority of the surveyed staff found (agree/strongly agree) that the

Table 1: Comparison of compliance as perceived by KAUH nursing staff pre and post-accreditation on Nursing Clinical Information at KAUH (n = 675)

	Agree and Strongly Agree			McNemar test		
Nursing Clinical Information	Pre (%)	Post (%)	Perceived improvement (%)	χ^2	p-value	Relative improvement (%)
Patient identifier	82	95	13	86.011	<0.001	15.85
Patient orders and reporting	76	97	21	139.007	<0.001	27.63
Abbreviations and symbols	51	86	35	236.004	<0.001	68.63
Timeliness of reporting and receipt	64	90	26	178.006	<0.001	40.63
Hand Off communications	60	92	32	211.005	<0.001	53.33

Table 2: Comparison of compliance as perceived by KAUH nursing staff pre and post-accreditation on Patient Medication Information at KAUH (n = 675)

	Agree and Strongly Agree			McNemar test		
Patient Medications Information	Pre (%)	Post (%)	Perceived improvement (%)	ϕ’χ2	p-value	Relative improvement (%)
Look alike/sound alike medications	50	68	18	120.008	<0.001	36.00
Medication label	84	97	13	83.012	<0.001	15.48
Patient's current medications	49	56	7	49.020	<0.001	14.29
Drug concentrations	61	85	24	163.006	<0.001	39.34

Table 3: Comparison of compliance as perceived by KAUH nursing staff pre and post-accreditation on Risk Management If information at KAUH (n = 675)

	Agree And Strongly Agree			McNemar test		
Risk Management of Information	Pre (%)	Post (%)	Perceived improvement (%)	ϕ’χ2	p-value	Relative improvement (%)
Communicate to patients about safety	46	90	44	295.003	<0.001	95.65
Identify patients at risk	73	92	19	121.008	<0.001	26.03
Pre-operative verification process	77	87	10	67.014	<0.001	12.99
Operative marks	23	46	23	155.006	<0.001	100.00
Time out process	39	50	11	73.013	<0.001	28.21

Table 4: Comparison of compliance as perceived by nursing staff pre and post-accreditation on nursing action to prevent risk at KAUH (n = 675)

	Agree and strongly agree			McNemar test		
Nursing action to prevent risk	Pre (%)	Post (%)	Perceived improvement (%)	ϕ’χ2	p-value	Relative improvement (%)
Hand hygiene guidelines	56	89	33	225.004	<0.001	58.93
Fall reduction program	71	94	23	155.006	<0.001	32.39
Management of unanticipated death	69	87	18	120.008	<0.001	26.09
Patient's discharge/transfer	68	76	8	48.020	<0.001	11.76

accreditation has a positive impact on quality of patient's care and subsequently patient outcomes. The results of the coefficient of relative improvement percent (Relative Improvement) which relates the post-accreditation change to the original state of opinion of the surveyed group.

DISCUSSION

Quality improvement has become an important issue during the past decades with a number of countries aiming for high quality and safe healthcare (Mattke *et al*., 2006). Many countries are embarking on accreditation programs without any evidence that they are the best use of resources for improving quality and no evidence about the effectiveness of different systems and ways to implement them (Ovretveit and Gustafson, 2003). 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 (Synder and Anderson, 2005). However, another study revealed that accredited hospitals performed better on a range of quality indicators than did non-accredited hospitals, albeit there was considerable variation of performance within the accredited hospitals (Chen *et al*., 2003).

Since there were few uncertainties regarding the impact of accreditation process on the quality of patient's care and patient's safety (Shortell *et al*., 1995; Pomey *et al*., 2004) provided conceptual guidance to the study. They assessed the organizational changes after accreditation and argued that accreditation can promote quality improvement implementation in hospitals thus lead to greater perceived patients outcomes. Furthermore Shortell *et al*. (1995) found that large sized hospitals face some difficult challenges in terms of quality improvement implementation, underlining the importance of assessing hospital size.

Saudi Arabia as one of the first countries in the Eastern Mediterranean region to implement healthcare accreditation standards had however, little or no data describing its impact on the quality of patient care. It is not possible to draw direct comparisons between the outcomes of such a process in different countries due to multiple variations in the accreditation processes, the local legislation and cultural factors. For those reasons, the present study provides valuable unbiased assessment of the impact of accreditation on quality of patient care and patient safety as perceived by nursing staff pre and post-accreditation in KAUH in Saudi Arabia. The health professionals targeted in this study were nurses. Evidence shows that nurses are key factors in quality of care and are interested in providing good patient outcomes (Aiken and Patrician, 2000). It is also known that nurses spend 90% of their time caring for patients (O'Brien-Pallas *et al*., 2003) so obviously are in an ideal position for assessing the impact of accreditation on the quality of patient care and patient safety as they perceive it to be pre and post accreditation.

As for the nursing staff who participated in the present study eight different cultural backgrounds were recognized. The most numerically predominant cultures were the Indian (44.53%) and Filipino (41.00%) and second to this highly significant foreign culture come (11.73%) Arabic cultures of which (78.6) were Saudi nationals. Albeit numerically highly significantly lower percentage of the overall cultural groups, they might represent and reflect considerable effects on the outcome of the study as being deeply rooted in the society and consequently might have dominant cultural effects. The remaining cultural minorities (2.74%) represent other Western and Asian cultures.

Evaluation of the perception of KAUH nursing staff on the quality of patient care pre and post the implementation of the accreditation process to a multicultural, multi-language competitive environment points to an overall statistically highly significant post-accreditation improvement ($p<0.001$) for the following dimensions: Nursing Clinical Information, Patient Medication Information, Risk Management Information and Nursing Action to Prevent Risk.

In this study the pre and post survey results of Nursing Clinical Information shows an overall statistically highly significant positive attitude towards the application of the accreditation process in the form of 13-35% increased percentages in response to all items surveyed post-accreditation as compared to the pre-accreditation survey (Table 1). The coefficient of variation percent in change of the above mentioned item is almost parallel to the perceived improvement percent, as the original opinions of the nursing staff reflect mostly a positive overview to the subject under evaluation.

However, the coefficient of variation percent in change of nursing staff opinions on Patient Medication Information as shown in Table 2 should change the overview about the concept of evaluating the lower score improvements (7 and 13% for patient's current medications and medication labels, respectively) which has been changed to almost an equal value of about 14-15% whilst mid-valued improvements in opinion of 18

and 24% for look alike/sound alike medications and drug concentrations, respectively which has been changed to almost 36-40%. It is clear from the table however that there is an overall statistically highly significant increase in all items surveyed post-accreditation compared to the pre-accreditation survey.

Meanwhile, the data shown in Table 3 on the pre and post-survey results of Risk Management of information, reflects clearly the importance of the concept of the value of the coefficient of variation percent in change in such cases where the starting percentage of opinions are highly variable as is the case with Risk Management of Information (23-77%) that has been improved by 10 and 23% for pre-operative verification process and Operative Marks, respectively. Not surprisingly, the 10% improvement has been turned to give a 12.99% coefficient of relative improvement percent while the 23% improvement gave a surprisingly 100.00% coefficient of variation with respect to the original opinion of only 23%. However, it is clear from the table that there is an overall statistically highly significant increase in the positive attitude towards the application of the accreditation process on all items surveyed post-accreditation as compared to the pre-accreditation survey.

The same rules apply without doubt to Table 4 for the pre and post-survey results of Nursing Action to Prevent Risk. Here we see an overall statistically highly significant increase in the positive attitude towards the application of the accreditation process in 4 out of 4 items surveyed (8-33%) post-accreditation as compared to the pre-accreditation survey ($p<0.001$).

One of the most important angles of view in the present study is the conceptual analysis of the pre-accreditation items that scored 50% or less and their post-accreditation improvement and its coefficient percentage.

In this respect, Table 2 Patient Medication Information shows two highly critical items that scored 50 and 49% pre-accreditation; i.e., items No.1 and 3 on Look Alike/Sound Alike Medications which has been improved post-accreditation by 18% with a relative improvement of 36.00% and patient's current medications which has been improved post-accreditation by only 7% with a relative improvement of 14.29%, respectively. More critical items that scored <50% pre-accreditation are shown in Table 3 concerned with Risk Management of Information.

Items No. 1 on Communicate to Patients about safety, item No.4 on operative marks and item No. 5 on time out process scored 46, 23 and 39% and improved by 44, 23 and 11% with relative improvements of 95.65, 100.00 and 28.21%, respectively. All such items are very significant in the repeatedly stressed on; multicultural, multi-language environment. There is no doubt that all Accreditation Organizations have considered patient safety and risk management as a vital aspect of their programs. However, we discovered during the process that their approach to patient safety was not exhausted and that the true value of accreditation may lie in its ability to generate discussion and stimulate change in general. The ability to ascertain the impact of accreditation depends on the measurement techniques available for measuring the impact therefore it could be described as an imprecise science and best described perhaps as a management consultancy approach to problem solving rather than a tool for measuring the organization's performance. The accreditation process at King Abdul-Aziz University Hospital with its unique multicultural, multi-language competitive environment significantly improved positive impact on the quality of patient care and patient safety indicators tackled in this research.

CONCLUSION

Despite all the barriers created by the multicultural, multi-language environment in which we provide the patient care, the accreditation process conducted at King Abdul-Aziz University Hospital has generated a positive impact on the quality of patient care and patient safety as perceived by nursing staff.

RECOMMENDATIONS

Researchers strongly recommend that in order to further improve the patient outcomes, evaluate more indicators and further confirm the unbiased assessment of the impact of accreditation on the quality of patient care and patient safety as perceived by the nursing staff, the study presented in this research should be repeated on a yearly basis in the hospital with evaluation of the survey format made and altered to meet any new strategic changes in the hospital environment.

REFERENCES

Adams, K. and J.M. Corrigan, 2003. Priority Areas for National Action. National Academies Press, Washington, DC. USA.

Aiken, L.H. and P.A. Patrician, 2000. Measuring organizational traits of hospitals: The revised nursing work index. Nursing Res., 49: 146-153.

Al-Rabeeah, A., 2003. The history of health care in the Kingdom of Saudi Arabia with emphasis on pediatric surgery. Saudi Med. J., 24: S9-S10.

Buetow, S.A. and J. Wellingham, 2003. Accreditation of general practice: Challenges and lessons. Qual. Saf. Health Care, 12: 129-135.

Chen, J., S.S. Rathore, M.J. Radford and H.M. Krumholz, 2003. JCAHO accreditation and quality of care for acute myocardial infarction. Health Affairs, 22: 243-254.

El-Jardali, F., 2007. Hospital accreditation policy in Lebanon: Its potential for quality improvement. J. Med. Liban., 55: 39-45.

El-Jardali, F., D. Jamal, H. Dimassi, W. Ammar and Victoria, 2008. The impact of hospital accreditation on quality of care: Perception of lebanese nurses. Int. J. Q. Healthcare, 20: 363-371.

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. Int. J. Qual. Health Care, 12: 183-189.

Kohn, L.T., 2000. To Err is Human Institute of Medicine. National Academy Press, Washington, DC. USA.

Mattke, S., A.M. Epstein and S. Leatherman, 2006. The OECD health care quality indicators project: History and background. Int. J. Qual. Health Care, 18: 1-4.

Montagu, D., 2003. Accreditation and Other External Quality Assessment Systems for Healthcare. Department for International Development Health Resource Centre, London.

Nandraj, S., A. Khot, S. Menon and R. Brugha, 2001. A stakeholder's approach towards hospital accreditation in India. Health Policy Planning, 2: 70-79.

O'Brien-Pallas, L., C. Alksnis, S. Wang, S. Birch, G.T. Murphy, F.A. Roy and P. Sajan, 2003. Early retirement among RNs: Estimating the size of the problem in Canada. Longwoods Rev., 1: 2-9.

Ovretveit, J. and D. Gustafson, 2003. Using research to inform quality programmes. Br. Med. J., 326: 759-761.

Pomey, M.P., A.P. Contandriopoulos, P. Francois and D. Bertrand, 2004. Accreditation: a tool for organizational change in hospitals. Int. J. Health Care Qual. Assur., 17: 113-124.

Rooney, A.L. and P.R. van Ostenberg, 1999. Licensure, accreditation and certification: Approaches to health services quality. Quality Assurance Methodology Refinement Series, Quality Assurance Project, Center for Human Services. http://www.qaproject.org/pubs/PDFs/accredmon.pdf.

Salmon, J.W., J. Heavens, C. Lombard and P. Tavrow, 2003. The impact of accreditation on the quality of hospital care: KwaZulu-Natal Province, Republic of South Africa. Quality Assurance Project. http://www.qaproject.org/pubs/PDFs/SAfrAccredScreen.pdf.

Shaw, C., 2001. External assessment of health care. Br. Med. J., 322: 851-854.

Shaw, C.D., 2004. Toolkit for Accreditation Programs. International Society for Quality in Health Care, East Melbourne, Australia.

Shojania K.G., B.W. Duncan, K.M. McDonald and R.M. Wachter, 2001. Making health care safer: A critical analysis of patient safety practices. Evidence Report/Technology Assessment No. 43, Agency for Healthcare Research and Quality, Rockville, MD. http://archive.ahrq.gov/clinic/ptsafety/.

Shortell, S.M., J.L. O'Brien, J.M. Carman, R.W. Foster, E.F. Hughes, H. Boerstler and E.J. O'Connor, 1995. Assessing the impact of continuous quality improvement/total quality management: Concept versus implementation. Health Serv. Res., 30: 377-401.

Synder, C. and G. Anderson, 2005. Do quality improvement organizations improve the quality of hospital care for medicare beneficiaries. J. Am. Med. Assoc., 293: 2900-2907.

Viswanathan, H.N. and J.W. Salmon, 2006. Accrediting organizations and quality improvement. Am. J. Manage. Care, 6: 1117-1130.

WHO, 2003. Quality and Accreditation in Health Care Services: A Global Review. World Health Organization, Geneva, Switzerland.

WHO, 2005. Regional committee for the Eastern mediterranean. Technical Paper Regional Strategy for Enhancing Patient Safety. Fifty-Second Session Agenda Item 5 (b). http://www.emro.who.int/rc52/media/pdf/EMRC5204en.pdf.

Zeribi, K.A. and L. Marquez, 2005. Approaches to healthcare quality regulation in Latin America and the Caribbean: Regional experiences and challenges. LACHSR Report No. 63. US. Agency for International Development (USAID) by the Quality Assurance Project.