

The Impact of CBAHI Accreditation on Efficiency Rate and Patient' Safety: Makkah Experience, KSA

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Abstract Background: Understanding the effect of accreditation on healthcare outputs and outcomes and the cost savings associated with accreditation is valuable for policymakers as well as hospitals facing the decision to commit potentially limited resources to the accreditation process. Literature reviews on the effects of accreditation on the quality of care do not deliver strong evidence due to limitations of the studies. **Aim of the study:** The aim of the current study is to determine the impact of the CBAHI accreditation on efficiency rate and patient's safety measures on three different hospitals in Makkah city. **Subjects and Methods:** A retrospective cohort research design was utilized to achieve the aim of the study. Data required for this study was obtained from available electronic medical records and quality management departments data base from three different hospitals in Makkah city that has different functions and sectors. Data which has been collected concerning bed occupancy rate, bed turnover rate, average length of stay and cancellation rate as variables to measure the efficiency rate in addition to rate of medication errors/ 1000 dispensed doses, rate of patient falls, mortality rate, hospital acquired pressure ulcer and surgical site infection as variables to measure the patients safety profile in the involved hospitals after getting the approval from the quality department seniors that those factors are reflecting both efficiency and patients safety status. Data was collected the data from January 2016 to March 2020 which has the data of 15 months before the accreditation, and we will compare it with the data of 36 months after the accreditation for the same variables and monitor the progression of those variables after accreditation. **Results:** No statistically significant differences were found related to efficiency rate and patient safety before and after CBAHI accreditation 2017. Also, no statistically significant differences found related to efficiency rate and patient safety before and after CBAHI reaccreditation 2020 except bed turnover rate. **Conclusion:** Research measuring the impact of CBAHI accreditation on efficiency rate and patient's safety measures using methodologically strong designs is lacking So, more rigorous designs are needed to establish causal links between the accreditation and outcomes.

Keywords: CBAHI, accreditation, efficiency rate, patient' safety

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1. Introduction

Safety, defined as a state free from physical and psychological damage, is a basic requirement that should be satisfied not only in the home, workplace, and community, but also in medical institutions. Patients and their families expect safe care during admission and treatment in hospitals. Accordingly, safe treatment in a safe environment is a basic patient right and a basic duty of hospital employees. Patient safety and patient centered care are emerging as key drivers in healthcare reform [1].

The Agency for Healthcare Research and Quality is promoting four projects to guarantee patient safety which

includes identification of factors threatening patient safety, development and evaluation of effective clinical standards for patient safety, education, distribution and application of effective clinical standards for patient safety, and continuous evaluation and monitoring for patient safety [2].

Today's healthcare system is complex. Standardization in the form of policies, standards, guidelines, procedures, and pathway packages is a popular strategy among healthcare leaders to improve the quality of care. One way to promote standardization is to apply an accreditation model, attempting to ensure consistent quality of care and continual improvement of care in line with rising standards [3].

In 2000, a study was conducted by the WHO revealed that there were no accreditation programs in the Eastern

Mediterranean. Since then, several countries in this region have been developing and implementing accreditation programs. Although there are many different definitions for quality, improvement in quality is believed to result in fewer medical mistakes, improvements in productivity, minimizing delays, increased market share and lower the healthcare services costs. Accreditation is an internationally recognized evaluation process used to assess and improve the quality, efficiency, and effectiveness of health care organizations. Simply put, accreditation is based on the premise that adherence to evidence-based standards will produce higher quality health care services in an increasingly safe environment. It is also a way to publically recognize that a health care organization has met national quality standards [4].

Health service organizations are under pressure to improve the quality of care. In response to this pressure, health service organizations in countries worldwide consider accreditation as the key approach to achieve this goal [5,6]. According to the current literature on the impact of hospital accreditation programs on hospitals' performance it shows mixed results. In the United States, accredited hospitals have generally shown modest improvements in performance compared with non-accredited hospitals; for example, accredited hospitals provided better emergency response planning, training and patient safety system initiation and implementation, and performed better in care of acute myocardial infarction, heart failure and pneumonia. However, other studies have found no such relationships [7,8].

A key constraint for hospitals is the cost of accreditation, a process that consumes resources that could be used for frontline medical services. There are two key questions: does accreditation make a difference to the quality of care and hospital performance? and to what extent is any positive effect, if evident, sustainable over time? The literature, however, shows inconsistent results over the impact and effectiveness of hospital accreditation. Greenfield et al investigated the outcomes across 66 studies and inconsistent findings were reported for the relationship between quality measures and accreditation. Furthermore, Devkaran and O'Farrell have argued that rigorous empirical studies that evaluate whether hospitals sustain compliance with quality and patient safety standards over the accreditation cycle are lacking [3,7].

In Saudi Arabia, the perception of accreditation is being perceived as a key component in strengthening and encouraging quality improvement. In 2005, under a Ministerial Order, the Central Board for Accreditation of Healthcare Institutions (CBAHI) was developed, and its jurisdiction was expanded to the whole country. In 2012 the CBAHI's second edition of national standards for hospitals was certified by the International Society for Quality in Healthcare (ISQua). In late 2013, CBAHI accreditation became mandatory for all public and private healthcare delivery facilities (hospitals, polyclinics, blood banks and medical laboratories) in Saudi Arabia [9,10].

Understanding the effect of accreditation on healthcare outputs and outcomes, and the cost savings associated with accreditation, is valuable for policymakers as well as hospitals facing the decision to commit potentially limited resources to the accreditation process. Literature reviews

on the effects of accreditation on the quality of care do not deliver strong evidence due to limitations of the studies. So, the aim of this study is to determine the impact of the CBAHI accreditation on efficiency rate and patient's safety measures on three different hospitals in Makkah city.

2. The Aim of This Study

The aim of this study is to

- 1) Determine the impact of the CBAHI accreditation on efficiency rate and patient's safety measures on three different hospitals in Makkah city.
- 2) Assess the effectiveness of reaccreditation through comparing patient safety and efficiency post accreditation and post reaccreditation.

3. Research Methods

A retrospective cohort research design was utilized to achieve the aim of the study. Data required for this study was obtained from available electronic medical records and quality management departments data base from three different hospitals in Makkah city that has different functions and sectors. First is King Abdullah Medical city (KAMC) as a tertiary level hospital second, is Alnoor specialist hospital (NSH) as a level one trauma center which both belonging to Ministry of health. The third hospital is the security force hospital (SFH) as a tertiary level hospital that belonging to the ministry of interior.

3.1. Ethical Considerations

An official approval and permission from KAMC IRB were obtained before conducting the research. The researcher was committed to all ethical considerations required to conduct research. In addition, ethical approval was obtained from institutional review board to carry out the study.

3.2. Data Collection

Data which has been collected concerning bed occupancy rate, bed turnover rate, average length of stay and cancellation rate as variables to measure the efficiency rate in addition to rate of medication errors/ 1000 dispensed doses, rate of patient falls, mortality rate, hospital acquired pressure ulcer and surgical site infection as variables to measure the patients safety profile in the involved hospitals after getting the approval from the quality department seniors that those factors are reflecting both efficiency and patients safety status. Data was collected the data from January 2016 to March 2020 which has the data of 15 months before the accreditation, and we will compare it with the data of 36 months after the accreditation for the same variables and monitor the progression of those variables after accreditation.

Comparison of data three months before and three months after 2017 accreditation done for the three hospitals. Then comparison of three months before and

three months after 2020 accreditation done for the three hospitals. post 2017 accreditation and post 2020 reaccreditation data were compared to assess the effectiveness of reaccreditation on patient safety and efficiency rate.

3.3. Statistical Analysis

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 26, SPSS Inc. Chicago, IL, USA). Continuous variables were represented as mean and standard deviation. The Mann-Whitney U test was used to compare differences between two non-parametric variables. Statistically significant was considered as (p-value <0.05).

4. Results

Table 1 illustrates there were no statistically significant differences related efficiency rate and patient safety dimensions before and after a year of CBAHI accreditation 2017 (p>0.05), except patients' falls rate, and hospital acquired pressure ulcer.

Table 2 illustrates there were no statistically significant differences related efficiency rate and patient safety before and after CBAHI reaccreditation 2020 except bed turnover rate (p<0.05).

Table 3 illustrates there was no statistically significant differences related efficiency rate and patient safety after CBAHI accreditation 2017 and reaccreditation 2020 (p>0.05). Whereas there was statistically significant difference related operation cancellation rate, and patients' fall rate (p< 0.05).

Table 1. Efficiency rate and patient safety before and after CBAHI accreditation 2017 at the studied hospitals

Efficiency rate dimensions	CBAHI reaccreditation 2020		Z / p
	3 months pre	3 months post	
	Mean±SD	Mean±SD	
1. Bed occupancy rate	79.46±7.52	70.24±15.67	1.06/0.29
2. Bed turnover rate	3.73±0.94	2.92±0.54	2.25/0.02*
3. Operation cancellation rate	15.12±6.01	8.07±9.01	1.55/0.12
4. Average length of stay	5.29±2.21	5.65±2.04	0.66/0.51
Patient safety dimensions			
5. Rate of medication errors/ 1000 dispensed dose	0.43±0.43	0.37±0.40	0.72/0.45
6. Rate of patient falls	0.31±0.38	0.50±0.34	1.29/0.19
7. Mortality rate	4.38±2.15	5.64±3.24	0.13/0.89
8. Hospital acquired pressure ulcer	0.14±0.28	0.26±0.39	0.65/0.51
9. Surgical site infection	1.24±0.98	1.19±0.98	0.23/0.86

Table 2. Efficiency rate and patient safety before and after CBAHI reaccreditation 2020 at the studied hospital

Efficiency rate dimensions	CBAHI accreditation 2017		Z / p
	A year pre	A year post	
	Mean±SD	Mean±SD	
1. Bed occupancy rate	75.34±8.72	79.15±9.58	1.81/0.07
2. Bed turnover rate	4.25±1.33	3.67±1.26	1.78/0.07
3. Operation cancellation rate	19.50±9.66	21.26±8.15	1.09/0.27
4. Average length of stay	4.50±1.17	4.69±1.25	0.61/0.53
Patient safety dimensions			
5. Rate of medication errors/ 1000 dispensed dose	1.31±1.48	0.44±0.48	1.74/0.08
6. Rate of patient falls	0.33±0.20	0.22±0.25	2.73/0.006**
7. Mortality rate	3.55±2.19	3.58±2.32	0.09/0.93
8. Hospital acquired pressure ulcer	0.98±0.76	0.37±0.34	3.69/0.000**
9. Surgical site infection	1.05±1.29	0.98±1.19	0.17/0.86

Table 3. Efficiency rate and patient safety after CBAHI accreditation and reaccreditation at the studied hospitals

Efficiency rate dimensions	After accreditation 2017	After reaccreditation 2020	Z / p
	3 months	3 months	
	Mean±SD	Mean±SD	
1. Bed occupancy rate	73.85±10.14	70.24±15.67	0.57/0.56
2. Bed turnover rate	3.47±1.37	2.92±0.54	0.66/0.51
3. Operation cancellation rate	21.81±7.91	8.07±9.01	2.53/0.01**
4. Average length of stay	4.68±1.27	5.65±2.04	0.71/0.47
Patient safety dimensions			
5. Rate of medication errors/ 1000 dispensed dose	0.48±0.58	0.37±0.40	0.31/0.76
6. Rate of patient falls	0.15±0.15	0.50±0.34	2.35/0.02*
7. Mortality rate	3.63±2.36	5.64±3.24	0.93/0.35
8. Hospital acquired pressure ulcer	0.48±0.42	0.26±0.39	1.32/0.19
9. Surgical site infection	1.02±1.49	1.19±0.98	0.78/0.44

5. Discussion

A key constriction for hospitals is the cost of accreditation, a process that utilizes resources that could be used for frontline medical services. The literature, however, shows inconsistent results over the impact and effectiveness of hospital accreditation. So, the objective of this study is to determine the impact of the CBAHI accreditation on efficiency rate and patient's safety measures on three different hospitals in Makkah city and assess the effectiveness of reaccreditation through comparing patient safety and efficiency rate post accreditation and post reaccreditation.

The current study demonstrates that there were no statistically significant differences related efficiency rate and patient safety dimensions before and after a year of CBAHI accreditation 2017, except patients' falls rate, and hospital acquired pressure ulcer. This may be due to that CBAHI standards are not established specifically to reflect outcomes and may not measure those practices and procedures that are most important for ensuring safe patient care and use traditional accreditation, which focuses on structural evaluation. Another possible cause is that CBAHI accreditation might be more of an inspection than a continuous quality improvement process. This result is in line with Shaikh1 et al [11] who reported that there was no statistically significant difference between pre and post CABHI Accreditation. Moreover, a study done at Saudi Arabia by Almasabi et al [5] concluded that CBAHI accreditation was not associated with better outcomes. Lam et al [12] also, stated that accreditation is not associated with better patient outcomes as the focus of organizations has been on improving structural factors and clinical processes rather than improving patient outcomes. In contrast, Al-Surimi et al [13] revealed that The Saudi national accreditation program had a significant positive impact on some patient safety culture dimensions and outcomes. Another study done by Claudia [14] revealed that accreditation may have a positive impact on efficiency, safety, effectiveness, timeliness, and patient-centeredness. Bogh et al and AL Shammari et al [15,16] reported that Accreditation has an overall statistically highly significant perceived improvement on quality of patient care and patient safety.

Findings of the study indicate that there were no statistically significant differences related efficiency rate and patient safety before and after CBAHI reaccreditation 2020 except bed turnover rate. These findings have significant implications. Hospital accreditation is a central element of the quality strategy for many countries and is thought to be an important component of maintaining the quality and safety of care delivered. However, given the minimal benefit seen with reaccreditation in our study, increases the question of whether our efforts need to focus on reaccreditation as much as they do. If we need to continue to use reaccreditation and spend the large amount of money, we should consider substantially rethinking our reaccreditation process. This result is consistent with Poremski et al [17] who reported that Although accreditation drives improvement via clear mechanisms, policy makers must be aware of unintended consequences. Organizations struggling with accreditation must clearly

communicate the rationale for the implementation of new processes linked to reaccreditation.

The present study findings revealed that there was no statistically significant differences related efficiency rate and patient safety after CBAHI accreditation 2017 and reaccreditation 2020. This may be due that the hospitals already provide services of high quality and that there is no need for reaccreditation. Another cause that CBAHI standards use traditional accreditation, which emphasizes on structural evaluation. However, the literature encourages a movement to modern accreditation, which involves all three measures of quality-of-care structures, processes, and outcomes to maintain improvements. This result is matched with Brubakk et al [1] who stated that no evidence to support accreditation and certification of hospitals being linked to measurable changes in quality of care as measured by quality metrics and standards. In contrast Devkaran and O'Farrell [3] reported that there is a transient drop in performance immediately after the accreditation and shows that the improvement achieved from accreditation is maintained during the three-year accreditation cycle.

Whereas there was statistically significant difference related operation cancellation rate, and patients' fall rate after CBAHI accreditation 2017 and reaccreditation 2020. This is relevant to Yildiz's [18], which indicated that several years after accreditation there was still a steady increase in the quality of results, with measurable improvements in the quality of care provided to patients.

6. Conclusion and Recommendations

The current study findings indicated that there is no statistically significant differences were found related to efficiency rate and patient safety before and after CBAHI accreditation 2017. Also, no statistically significant differences found related to efficiency rate and patient safety before and after CBAHI reaccreditation 2020 except bed turnover rate. Research measuring the impact of CBAHI accreditation on efficiency rate and patient's safety measures using methodologically strong designs is lacking So, more rigorous designs are needed to establish causal links between the accreditation and outcomes. While accreditation continues to be generally accepted as a crucial driver to improve quality and safety in healthcare organizations, there is still limited evidence to confidently confirm that it is the best use of resources.

In light of the current study findings, the following recommendations are suggested:

- Transferring from scheduled surveys to an unannounced survey strategy is recommended to create a heightened awareness of the level of compliance and standards.
- Focusing on continuous quality improvement to provide greater interest and engagement which resulting in improving quality of care.
- New and developing accreditation programs should be encouraged to publish and share their experience to promote learning and improvement of local accreditation programs worldwide.

7. Limitation of the Study

Our study has some limitations. Firstly, as a retrospective cohort study, it cannot assess causality. Owing to the non-randomized study design, we cannot exclude the probability that our results might be confounded by unmeasured factors. Second the study has been carried out in a tertiary level hospitals; therefore, the results may not be representative of other hospitals with different level of services, finally accreditation did not take place concurrently in the studied hospitals.

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