Quality Improvement in Action

Impact of Accreditation Certification on Improving Healthcare Quality and Patient Safety at Johns Hopkins Aramco Healthcare

Huda Al-Sayedahmed, Jaffar Al-Tawfiq, Basma Al-Dossary, Saeed Al-Yami

Department of Quality and Patient Safety, Johns Hopkins Aramco Healthcare, Dhahran, Saudi Arabia

Address correspondence to Huda Haider Al-Sayedahmed (huda.alsayedahmed@jhah.com).

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ABSTRACT

Introduction: Accreditation gained worldwide attention as a means of increasing awareness of medical errors, improving healthcare quality, and ensuring a culture of safety. Johns Hopkins Aramco Healthcare has been accredited by Joint Commission International (JCI) since 2002. The aim of this study was to evaluate the effect of the accreditation process on healthcare quality performance by maintaining compliance with the requirements of JCI's international patient safety goals (IPSGs) over a 4-year period and how this was reflected by patient safety and satisfaction. Methods: In Johns Hopkins Aramco Healthcare, the six JCI IPSGs are part of the key performance indicators that reflect organizational performance in different services. For this study, data from January 2017 to the end of 2020 were analyzed apropos performance and correlation with patient experience. Results: The IPSGs data analysis showed that general performance was maintained above the target values (> 90%–96%) in all IPSGs. This was significantly reflected in high patient satisfaction during this period, with Pearson correlation of 0.9 and p < 0.000. Conclusions: Maintaining accreditation status over time enhances patients' confidence in an organization and its leadership as providers of safe, quality healthcare services. However, individual staff perception, commitment, accountability, and responsibility have an influence on performance, the organization's accreditation status, and patients' experiences.

Keywords: Accreditation, Joint Commission International (JCI), international patient safety goals (IPSGs), key performance indicators (KPIs)

INTRODUCTION

Although “do no harm” has always been the guiding principle in healthcare provision, medical errors are common events in hospitals worldwide. However, such errors ultimately affect the cost curve and endanger confidence levels toward any healthcare center. Achieving accreditation is one way to increase awareness of medical errors and improve the healthcare quality enterprise.[1,2] In healthcare settings, accreditation is intended to assess the quality of healthcare and ensure patient safety.[3,4]

Countries around the globe, including Saudi Arabia, often use accreditation as a supplement to governmental regulations to guarantee the quality of patient care and safety.[5–7] Several studies have confirmed that the involvement in accreditation activities of all staff members at different organizational levels has a positive impact on the quality of healthcare.[8–10] In addition, accreditation attributes steps provide a structured framework for quality improvement maturity and patient safety culture; they elevate patient trust and satisfaction and are an incentive to obtaining a better accreditation evaluation.[11–13]

Furthermore, accreditation emphasizes leadership support as a requirement to guarantee the sustainability of envisioning initiatives.[14,15] Numerous quantitative and qualitative studies worldwide established the positive benefits of accreditation by meeting the standards.[16–19] For example, Desveaux et al.[20] proposed a grounded theory approach that requires that three key stages to be met for accreditation to have a noticeable impact on healthcare quality. The first stage, “coherence,” requires that the healthcare provider recognize that accreditation aligns with its organizational values and believes. The second stage, “buy-in,” demands the availability of
organizational champions eager to drive change for the better. The third stage, “action,” refers to the organization’s conducting of quality improvement projects upon identifying opportunities either in response to self-observation or as a result of the accreditation process findings.20

Johns Hopkins Aramco Healthcare (JHAH) center is a 290-bed hospital located in the Eastern Province of Saudi Arabia. JHAH is a first-of-its-kind healthcare joint venture between a world-leader energy company and an international healthcare leader. JHAH aims to enhance community wellbeing in an environment of growth and learning by providing integrated and person-centered care to its beneficiaries. JHAH was initially accredited by Joint Commission on Accreditation of Healthcare Organizations (JCAHO) in 1965 then has been accredited by the Joint Commission International (JCI) since 2002, and by the Central Board for Accreditation of Healthcare Institutions (CBAHI) since 2017. JHAH uses its accreditation program as a way of realizing its vision, mission, and values, and to adhere to the healthcare dimensions of “safe, timely, effective, efficient, equitable, and patient-centered care” (STEEP). The JCI has set international patient safety goals (IPSGs) to ensure patient safety throughout the healthcare journey.21 This article focused on JHAH’s efforts to maintain quality, safe healthcare via preserving accreditation status over the years. The main goal of this study was to evaluate the effect of accreditation on JHAH’s ability to maintain the IPSGs quality performance during the last 4 years, and to study its impact on patient satisfaction (we evaluated the correlation, but not causation, between the quality performances enforced by successful accreditation versus patients’ experiences).

METHODS

This was a retrospective, cross-sectional, analytical observational study. Formal approval was obtained from the institutional review board at JHAH (IRB 20-29) to perform this study and publish the data. Informed consent was waived for our study.

Data Sources and Collection

JHAH uses the six JCI IPSGs as key performance indicators (KPIs) that reflect organizational performance in different services. The sample size of each goal audit was predetermined based on the total number of patients served per month, as agreed by the accreditation committee. Following the JCI’s recommendations22,23 apropos proper sample size, it was decided to randomly select 20% of the total patient population served by JHAH as appropriate for each individual IPSG. This selection reflects the real practice and is valid to monitor the performance (e.g., JHAH outpatient procedure area cares for 800 to 1000 cases per month; a 20% sample will therefore be between \( n = 160 \) and 200 cases, which is randomly selected by data owners to be included in the audit).

Data for the IPSGs have been collected on a monthly basis since 2017. Either manually by direct process observation (for IPSGs 1, 5, and 6) or using our electronic health record system functionality and data aggregation features (for IPSGs 2, 3, and 4), and then sent to the accreditation unit where the data are stored in a folder shared with the data owners. Beginning in 2018, owing to the installation of a new electronic health record system (i.e., Epic), which has advanced features for data aggregation and reporting, replacing the old (SAP) system. The IPSGs data are validated quarterly for assessing completeness and accuracy by an internal auditing team. The deficiencies are then shared with data owners to improve the reliability of the data if required.

The International Patient Safety Goals (IPSGs) at JHAH

The requirements of the six IPSG are followed as described in the JCI accreditation manual.23

1. Identify patients correctly. Our policy in JHAH is to use the patient’s full name and governmental identification number in alignment with Saudi regulations. However, armband scanning can be used if the patient is unresponsive or uncooperative for some reason. Patient safety officers observe the practice, to ensure that the appropriate identification process is followed, collect the data, and send it to the accreditation unit.

2. Improve effective communication.

3. Improve the safety of high-alert medications.

4. Ensure safe surgery. Data are collected for dental procedures, operating room surgeries/procedures, and the outpatient procedural area by means of direct manual observation and Epic reports that are then sent to the accreditation unit.

5. Reduce the risk of health care–associated infections. Observational data on proper hand hygiene process are collected daily by the assigned infection control champions; these data are then submitted to the infection prevention and control team, who calculate the compliance rate for each unit. The data are shared with the accreditation unit.

6. Reduce the risk of patient harm resulting from fall: The data are collected by nurses for all units daily throughout the month, validated by the nursing quality improvement team, and then shared with the accreditation unit.

Data Retrieval and Analysis

JASP software (version 0.14.1; Amsterdam, the Netherlands) was used for the statistical analysis.

Quality measure 1: IPSG performance

Once accreditation-unit coordinators receive the IPSG data, the compliance rate for each KPI is calculated and
the KPI scorecard shared with the data owners for monitoring. Quality improvement (QI) projects are then implemented, as needed, to improve healthcare processes and compliance with the JCI standards. The performance is checked by the process owners, in collaboration with the QI team and accreditation team as a steering committee.

In this study, data from January 2017 to December 2020 were analyzed using logistic regression testing. The performance of each individual IPSG against the target values was used as a quality measure. The performance was calculated in percentage of compliance to accreditation standards over the total patient population. This was illustrated in a run chart that showed the performance and sustainability of applying all accreditation requirements that are put in place to seek high-standard healthcare and patient safety over the 4 years under consideration.

**Patient satisfaction rate:** In addition to the above procedures, patient satisfaction is an outcome measure that is used in JHAH as a KPI for patient experience. Data regarding patient experience are collected by means of a Press Ganey survey that is sent to each patient after their visit/discharge comprising an SMS mobile phone message with a link to follow to complete the survey. The survey includes patient impact on each step throughout the healthcare journey. In JHAH, the patient response rate is above 90%. The satisfaction results and patient comments are shared internally on a monthly and quarterly basis via a shared folder accessible to all healthcare providers. In addition, the results are posted on the JHAH intranet as well as on the monthly executive report on the JHAH’s public website. Moreover, the patient satisfaction data are subjected to monthly validation by the Press Ganey team with the service excellence division. Additionally, it is validated internally on a yearly basis by the JHAH auditing team to assess for data accuracy.

**Quality measure 2: Patient satisfaction versus IPSG performance**

For this study, the patient satisfaction rates were analyzed in alignment with each of the six IPSG compliance rates using Pearson’s correlation coefficient test, to reflect the impact of the professional healthcare performance on the patient’s outcome as revealed by patient satisfaction survey.

**RESULTS**

The IPSG 1 compliance rate was between 90% and 100% during 2017 and 2018 but started to decline during 2019. The reason was that the previous hospital policy indicated using the patient’s full name and employment or badge number. Subsequently, early in 2019 the policy was changed to using the patient’s full name and governmental identification number for Saudi patients and Iqama number for non-Saudis as per governmental regulations. This created confusion for few healthcare workers for a period of time, especially for long-term staff, which led to a lower compliance rate in 2019. Nevertheless, it was noticed that some staff used only one identifier, the patient’s name. As a result, an action plan was implemented to familiarize all healthcare providers with the policy changes, and extensive education and awareness sessions were conducted to emphasize compliance with accreditation requirements and the JHAH policy in using the two correct patient identifiers. The improvement in 2020 was significant, and the compliance rate rose to between 95% and 100% ($p = 0.03$) (Fig. 1A).

There was an issue with the IPSG 2 in that the compliance rate was meeting the target ($\geq 90\%$) in 2017 until the beginning of 2018, which is when the installation of the Epic system took place. The implementation of the new system created many challenges during 2018, such as Epic built of the “handover communication” tool, “verbal order and telephone order” communication tool, and “critical laboratory and radiology result alerting” tools. The struggles include appropriate documentation by healthcare providers and commitment to use this tool whenever needed to comply with accreditation standard requirement as well as JHAH policy requirement. However, the compliance rate recovered during 2019. The QI and accreditation teams monitored it, and the target for this IPSG was met until end of 2020 ($p < 0.000$) (Fig. 1B).

The IPSG 3 witnessed a drop in July 2017, as the collected data sample size was small, not representative, and without outliers being taken out of consideration during analysis. However, compliance with safe medication management was maintained above the target ($p < 0.000$) (Fig. 1C).

The remaining IPSGs maintained their performance compliance above the set targets, except for a few occasions that were controlled, random, situational, or where outliers were not excluded to show the real outcomes (Figs. 1D–F).

**DISCUSSION**

By 2017, JHAH had been accredited by JCI for 15 years and by CBAHI for 3 years as per Saudi Arabian regulations. The analysis illustrated the medical staff’s IPSG-related performance against predefined target values. Table 1 summarizes the six IPSGs, their target values used and the source of the targets. Overall, logistic regression analysis of the IPSGs data for the 4-year period under consideration showed that general performance was maintained at or above the targets, with logistic regression ($p < 0.000$) and 95% confidence interval (CI) (Fig. 1).

In addition, to study the impact of this performance on patient outcomes, patient satisfaction data for the 4 years under consideration were collected and analyzed in correlation with each goal. Analysis using Pearson’s correlation coefficient revealed a retained patient satis-
faction rate above 90% that rose to above 95% during 2020, which was the year of reaccreditation preparation, with \( p < 0.001 \), and 95% CI, 90.8, 95.4). Furthermore, a mean change in patient satisfaction per IPSG performance of 0.946 indicated a positive linear regression coefficient impact on patient safety and experience while complying with the JCI requirements (Figs. 2A–F).

Indeed, JHAH was expecting reaccreditation survey visits from both accreditation bodies, the JCI and the CBAHI, by the end of 2020. Besides all the challenges arising from the COVID-19 pandemic and its consequences, analysis of the 2020 data from all six IPSGs reflected the awareness and commitment of the medical staff, with extraordinary efforts being made to comply with the IPSG requirements. Ensuring a safe healthcare environment.

**Table 1. The six IPSGs with their corresponding target values and reference**

| IPSG                                      | Target | Reference for the Target Values                  |
|-------------------------------------------|--------|-------------------------------------------------|
| 1: Identify patients correctly            | 95%    | Year-to-date baseline performance                |
| 2: Improve effective communication        | 90%    | Johns Hopkins International                      |
| 3: Improve the safety of high-alert medications | 98%    | Year-to-date baseline performance                |
| 4: Ensure safe surgery                    | 96%    | Johns Hopkins International                      |
| 5: Reduce the risk of health care–associated infections | 94%    | Year-to-date baseline performance                |
| 6: Reduce the risk of patient harm resulting from falls | 95%    | Year-to-date baseline performance                |

IPSG: international patient safety goal.
provision while complying with accreditation standards had an obvious impact on patient experience. The logistic regression analysis between the IPSG performance and patient satisfaction rates for each IPSG during the study period indicated a constructive significant positive correlation of 0.946, \((p = 0.000481)\).

This achievement ultimately points out the importance of committing to accreditation standard requirements to provide safe and trustworthy healthcare in our organization, which is reflected by high patient contentment with being cared for by JHAH. This is similar to the experience of other professional health institutes; many studies have shown strong potential for improving the quality of healthcare and thus patient safety through compliance with accreditation body standards and requirements.\(^{[22–26]}\)

Furthermore, the study from Al-Surimi et al.\(^{[27]}\) provided local experimental evidence on the substantial impact of a national accreditation program in a tertiary hospital on the patient safety culture. This confirms that either national or international accreditation programs affects staff awareness about safety dimensions and participate in enhancing the quality of healthcare systems. In fact, it contributes to greater efficiency and encourages a better use of resources, eventually leading to an effective cost curve control.

Our organization was preparing for JCI reaccreditation by December 2020, the year of the COVID-19 pandemic. Even though a good percentage of JHAH medical staff were absent from the workplace because of precautionary measures based on the Ministry of Health guidelines from March through June, and due to staff not able to return to the country because of flight cancellations. JHAH remains committed to seeing that the accreditation activities and high standard of staff performance are not threatened by the crisis. The truth is that passing the JCI reaccreditation survey successfully in December 2020 with a 98.8% overall performance score, after all the

Figure 2. (A–F) Performance of the six IPSGs versus the patient satisfaction rates from January 2017 to December 2020 in JHAH. IPSGs: international patient safety goals; JHAH: Johns Hopkins Aramco Healthcare.
CONCLUSIONS

JHAH proved that maintaining accreditation status while endeavoring for optimal conformity with the JCI guidelines forced our institution to focus on vetted issues. This in turn, had potential to influence the behavior of healthcare professionals being committed to improve and sustain the quality and safety of patient care. However, QI maturity and continuous accreditation readiness developed the high standard of care in alignment with JHAH’s quality dimensions, which undoubtedly had an impact on patient safety, outcomes, and satisfaction and strengthened the confidence of JHAH’s beneficiaries in our organization and its leadership as a provider of quality healthcare services. Our next step is to study the perception of hospital accreditation among healthcare professionals in our organization to support the implication of this study.

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