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Impact Of Standardized Healthcare On Patient Safety And Outcomes: A Mixed-Methods

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Study Abstract

Standardized healthcare protocols have appeared as an important strategy for enhancing patient safety, decreasing variability in clinical practice and improving overall healthcare quality. However, their effectiveness in specialized hospitals within resource-limited frameworks stills underexplored.

Aim: This study aimed to assess the effect of standardized healthcare protocols on patient healthcare outcomes in specialized hospital departments throughout quantitative post-intervention analysis.

Method: A retrospective quantitative design analyzed pre- and post-accreditation data from two specialized hospitals; Al-Istishari Arab Hospital IAH (Ramallah) and Ibn Sina Specialized Hospital ISH (Jenin). A total of 1,200 inpatient medical records were reviewed, divided evenly between pre- and post-accreditation periods. Patient safety and clinical outcome indicators included infection rates (CAUTI, CLABSI), medication errors, falls, readmissions, length of stay LOS, patients' satisfaction and staff perceptions. SPSS v24 was used for statistical analysis, performing Shapiro-Wilk tests for normality and independent samples t-tests for comparison.

Results: The results showed that IAH registered improvements through most metrics, involving CAUTI (↓15%), CLABSI (↓13%), medication errors (↓17.9%) and readmissions (↓7.5%), while patient satisfaction increased by +1.1 points. ISH attained remarkable progress in medication safety (↓60%) and patient falls (↓58.5%), along with a significant reduction in LOS (from 8.60 to 4.69 days, $p = 0.005$). However, ISH also reported deteriorating CAUTI (+197%), CLABSI (+171%) and readmissions (+52%). Staff perceptions improved in both hospitals, although incident reporting deteriorated post-accreditation at IAH. Overall, the results enhance existing evidence that standardization improves patient outcomes, while highlighting the effect of organizational willingness, leadership involvement and resource allocation on the size and sustainability of improvements.

Conclusion: Accreditation-related standardization made quantifiable gains but with hospital-specific variation. Success depended on baseline performance, implementation fidelity, and safety culture. Continuous monitoring and designed strategies are critical for sustaining improvements.

Keywords: Standardized healthcare, patient safety, accreditation, quantitative analysis, specialized hospitals.

1. Introduction

Inconsistency in clinical practice is a recognized contributor to avoidable harm, suboptimal patient outcomes and incompetencies in healthcare delivery (Knickman & Elbel, 2023). Standardized healthcare protocols, defined as evidence-based, structured methods to diagnosis, treatment, and healthcare delivery, provide a framework for decreasing unjustified discrepancies, enhancing constant quality and enhancing patient safety (Panny et al., 2018). Their implementation has been extensively associated with improved recovery rates, decreased infection rates (Catheter-Associated Urinary Tract Infections (CAUTI), Central Line-Associated Bloodstream Infections (CLABSI)), medication errors,

falls, readmissions, length of stay, satisfaction and staff perceptions across various healthcare systems (Fox et al., 2021; Tully et al., 2021).

In current years, specialized hospitals in the Middle East have increasingly adopted standardized protocols to consistent with global accreditation requirements and international patient safety standards (Hamdan & Saleem, 2018; Mansour et al., 2021). These protocols typically handle medication safety, infection prevention, fall reduction and clinical handover practices. Evidences suggest that their combination into daily processes can lead to quantifiable enhancements in patient outcomes, mainly in high-risk hospital departments (Alyami et al., 2022; Abdel-Qader et al., 2021).

Despite these developments, the extent to which standardization enhances outcomes different significantly throughout institutions, affected by leadership adherence, staff involvement and available resources (Avia & Hariyati, 2019; Kyriakeli et al., 2025). Limited research in Palestine has quantitatively compared patient outcomes prior and post standardization through multiple specialized departments, mainly within hospitals functioning under resource limitations.

Aim of the Study

To evaluate the impact of standardized healthcare protocols on patient healthcare outcomes in specialized hospital by analyzing quantitative data pre- and post- healthcare standardization periods.

Objectives

- To analyze the impact of standardized healthcare services on patient safety metrics, such as the incidence of medication errors, Catheter-Associated Urinary Tract Infections (CAUTI), Central Line-Associated Bloodstream Infections (CLABSI), patient falls, in both hospitals.
- To appraise healthcare outcomes, including readmission rates, length of stay and patient satisfaction scores and staff perception of organizational safety culture before and after the implementation of standardized protocols.

This study performs Donabedian's Structure–Process–Outcome model and Safety Culture Theory as guiding frameworks, exploring how structural changes in hospital protocols interpret to process improvements and better patient outcomes. The outcomes are anticipated to contribute to regional and worldwide literature on healthcare standardization, mainly in resource-limited settings.

2. Methodology

2.1 Study Design

A quasi-experimental pre–post design was utilized to assess the effect of standardized healthcare protocols on patient outcomes in two specialized hospitals in Palestine: IAH and ISH. The study concentrated on quantitative analysis of patient outcome measures collected prior and post the implementation of standardized protocols throughout both hospitals. This design permitted for the evaluation of causal associations between protocol implementation and changes in patients' health outcomes; infection rates (CAUTI, CLABSI), medication errors, falls, readmissions, length of stay, satisfaction and staff perceptions (Creswell & Creswell, 2018).

2.2 Study Setting and Population

The research was performed in two large tertiary hospitals offering specialized healthcare services in several departments. The target population included all patients admitted to the selected hospitals during the study frame time who met the inclusion criteria. The anticipated minimum sample size is 200–300 patient medical records per period per hospital (i.e., approximately 800–1,200 records total). This is expected to provide sufficient power for detecting statistically significant changes in primary

safety and outcome indicators using chi-square and t-tests or equivalent non-parametric tests, depend on a medium effect size (Cohen's d = 0.5), $\alpha = 0.05$, and power = 0.80.

2.3 Inclusion and Exclusion Criteria

Inclusion criteria included:

- adult inpatients (≥18 years), admitted to general medical or surgical units for ≥24 hours
- medical records containing complete data on main outcome measures (CAUTI, CLABSI, falls, readmission, patients' satisfaction, staff perceptions of organization safety culture)

Exclusion criteria included:

- Patients discharged against medical advice.
- incomplete or missing data in medical records mainly outcome measures.

2.4 Standardized Healthcare Protocols

The standardized healthcare protocols included the introduction of evidence-based, certain protocols covering medication administration, infection prevention packages, fall risk assessment instruments and standardized clinical handover methods. Protocols were developed in consistent with international standards and also adapted to the domestic context. Staff training sessions, competency evaluations and departmental audits were performed prior to and during implementation to confirm adherence.

2.5 Data Collection

Quantitative data collected retrospectively from hospital records, electronic health systems and administrative databases at (IAH) and (ISH). Patient satisfaction scores gathered from survey derived from the quality department in each hospital and measure several dimensions of patient experience, involving registration and admission services, responsiveness of care, nursing services, physicians' services, diagnostics and pharmacy services (radiology, laboratory and pharmacy), catering services, hospital cleanliness and environment, safety and support services and overall satisfaction.

A standardized data extraction form used to ensure consistency and completeness.

The quantitative data include the following outcome measures:

- Patient safety indicators: incidence of medical errors, (CAUTI), (CLABSI) and patient falls.
- Clinical outcome indicators: 30-day hospital readmission rates, length of hospital stays, patient satisfaction scores and staff perceptions of organization safety culture.

Data gathered from both hospitals (IAH) and (ISH) during two periods; in the pre-implementation and post-implementation phases to enable the comparison and trend analysis.

from:

- Pre-implementation period: Six months prior to the implementation of standardized healthcare protocols
- Post-implementation period: Six months following full implementation

2.6 Data Analysis

Data were analyzed using SPSS version 24. Descriptive statistics (means, standard deviations, frequencies and percentages) summarized patient demographics and outcomes. Inferential statistics as

Paired t-tests were applied to compare continuous variables during study periods. Statistical significance was set at $p < .05$.

2.7 Ethical Considerations

Ethical approval obtained from the Institutional Review Boards (IRBs) of Al Quds University and participating hospitals. All participants in the qualitative component informed about the purpose of the study and written informed consent obtained prior to data collection. Confidentiality maintained by anonymizing personal identifiers and data securely stored in password-protected files accessible only to the researcher.

4. Results

The Patient safety indicators which included incidence of medical errors, (CAUTI), (CLABSI) and patient falls and clinical outcome indicators that included 30-day hospital readmission rates, length of hospital stay and patient satisfaction scores data had been retrieved and collected from hospital records, electronic health systems and administrative databases at (IAH) and (ISH) retrospectively from 1200 eligible inpatient medical records over defined pre- and post-accreditation periods as total sample size; in IAH, 300 medical records in pre-accreditation period which had been conducted from May 2021 to October 2021 and 300 medical records in post-accreditation period that employed from November 2021 to April 2022.

On the other hands, the data in ISH had been retrieved and collected from 600 eligible hospital medical records; 300 in pre-accreditation period from March 2024 to August 2024 and 300 medical records in post-accreditation period that also employed from September 2024 to February 2025.

Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS), version (24). Descriptive statistics were used to summarize the data, and inferential tests (Shapiro-Wilk test, paired t-tests, independent t-tests) were performed to examine differences before and after accreditation.

The assumption of normality was assessed using the Shapiro-Wilk test. The results indicated that the data were normally distributed, as the p-values for all variables were greater than 0.05.

4.1 Patient Safety Indicators

4.1.1 Catheter-Associated Urinary Tract Infections (CAUTI)

CAUTI rates decreased modestly at IAH (15% reduction, non-significant, $p = .35$) but increased significantly at ISH (197% increase, $p < .05$). Table 4.1 provides comparison between hospitals; unlike IAH (which showed improvement), ISH's post-accreditation performance worsened, suggesting that: implementation may have been delayed or insufficient and external factors (e.g., increased patient load, staffing changes) may have impacted adherence to catheter care protocols.

At IAH, CAUTI rates decreased from 5.83 to 4.96/ 1,000 catheter days (a 15% reduction), representing improved infection prevention. Conversely, ISH's CAUTI rate increased from 1.07 to 3.18 (a 197.2% increase), reflecting post-accreditation implementation gaps and increased patient acuity. This divergence highlights the need for consistent infection control adherence throughout settings.

Table 4.1: Comparison Between Hospitals toward (CAUTI) in both hospitals.

Hospital	Pre	Post	Relative change	Test statistics

IAH	2.04 ± 5.83	0.98 ± 4.96	%15 ↓	t(10)=0.94, p>0.35
ISH	0.66 ± 1.07	1.74 ± 3.18	%197.2 ↑	t(10)=-2.78, p<0.05

4.1.2 Central Line-Associated Bloodstream Infections (CLABSI)

CLABSI rates at IAH improved slightly (13% reduction, non-significant, $p > .60$), whereas ISH worsened (non-significant increase from 1.95 to 5.29, $p = .165$). in table 4.2 comparison between hospitals toward (CLABSI) in both hospitals; in IAH slight improvement in CLABSI rate after accreditation: from 5.67 to 4.94 per 1,000 device days, a 13% relative reduction.

An independent samples t-test was conducted to evaluate differences in (CLABSI) rates at IAH before and after hospital accreditation. The prior-accreditation period recorded a more average CLABSI rate ($M = 5.67$, $SD = 3.06$) compared to the after-accreditation period ($M = 4.94$, $SD = 1.52$). However, this difference was not statistically significant, $t(10) = 0.52$, $p > 0.60$. Although the mean rate deteriorated marginally after accreditation, the inconsistency in pre-accreditation data restricted the capability to discover a significant effect. These results suggest that whereas a descendant trend was observed, accreditation solely may not have created a quantifiable enhancement in CLABSI outcomes across the remarked period.

In ISH CLABSI rate increased post accreditation from 1.95 to 5.29, proposing probable post-standardization gaps and data inconsistencies.

An independent samples t-test was performed to compare (CLABSI) rates in ISH prior and post accreditation. The analysis showed that post-accreditation rates ($M = 5.29$, $SD = 4.27$) were mainly higher than pre-accreditation rates ($M = 1.95$, $SD = 3.42$); however, this difference did not attain statistical significance ($t(10) = -1.50$, $p = 0.165$). Although the remarkable increase proposes a potential increase in infection rates after accreditation, the result was not statistically conclusive. This may be because of high variability in the data or the effect of outlier months, demonstrating a need for closer infection surveillance and further examination to implement practices post-accreditation.

The absence of statistical significance proposes that factors beyond accreditation status as implementation fidelity, staffing and patient complication, may have affected infection outcomes. These results underline the importance of continuous monitoring and framework-specific interventions to enhance infection control beyond the accreditation milestone.

IAH enhanced marginally in CLABSI rates post-accreditation (from 5.67 to 4.94/ 1,000 devices/ days). However, ISH's rate deteriorated, increasing from 1.95 to 5.29. These findings suggest differing levels of performing success and infection control culture.

4.2 Comparison Between Hospitals toward (CLABSI) in both hospitals.

Hospital	**Pre**	**Post**	**Relative change**	**Test statistics**
IAH	3.06 ± 5.67	1.52 ± 4.94	%13 ↓	t(10)=0.52, p>0.60
ISH	3.42 ± 1.95	4.27 ± 5.29	%171 ↑	t(10)=-1.50, p=0.165

4.1.3 Medication Error Incident Rates

IAH reduced medication error rates by 17.9% (approaching significance, p = .04). ISH maintained a very low baseline and improved further (60% reduction, non-significant). Table 4.3 shows comparison between hospitals toward (Medication Error Rates / 1,000 medication orders) in both hospitals

There was a 17.9% reduction in the medication incident rate post-accreditation in IAH. However, incident rates remain non-negligible (6.4 per 1,000) – further quality improvement is still needed.
An independent samples t-test was conducted to compare monthly medication incident rates at IAH before and after hospital accreditation. The analysis showed a reduction in the mean incident rate post-accreditation (M = 6.4, SD = 1.18) compared to the pre-accreditation period (M = 7.8, SD = 1.05).
This difference approached statistical significance, $t(10) = 2.17$, $p < 0.04$, suggesting a potential improvement in medication safety practices following accreditation, the observed downward trend may reflect positive effects of enhanced standardization and policy adherence introduced during the accreditation process.
At ISH a 60% decrease in incident rate after accreditation. Incident rate is very low overall, both pre- and post-accreditation, indicating strong medication safety practices. Post-accreditation, medication safety improved further, with no incidents in 4 out of 6 months.
The total volume of medication orders increased slightly, yet incidents dropped, reinforcing the effectiveness of quality and safety improvements.
The incident rate was already very low pre-accreditation, suggesting a mature medication safety infrastructure even before the intervention.
Positive accreditation impact appeared in likely improvements in medication reconciliation, order verification, or pharmacy practices. In addition, accreditation may have reinforced a culture of safety, enhanced reporting, and tightened protocol adherence.

An independent samples t-test was utilized to assess shifts in monthly medication incident rates at ISH prior and post accreditation. The mean incident rate deteriorated from 0.05 per 1,000 medication orders pre-accreditation (SD = 0.04) to 0.02 post-accreditation (SD = 0.029); however, this decreases was not statistically significant, $t(10) = 1.49$, $p = 0.17$.

While the descending trend in incident rates proposes a probable enhancement in medication safety practices post accreditation, the outcomes did not attain statistical significance, perhaps because of the actually low baseline rate and limited variability. Continued monitoring may help identify whether the detected shifts express a meaningful long-term enhancement.

In conclusion, IAH decreased its medication incident rate from 7.8 to 6.4 per 1,000 orders (17.9% decrease). ISH, actually functioning well, improved more from 0.05 to 0.02. Both hospitals showed improvement, with ISH maintaining distinct performance and IAH revealing practical system-extensive gains.

These findings highlight the contrary effect of accreditation on medication safety outcomes and suggest that foundation performance levels and contextual factors may affect quantifiable gains after-accreditation.

Table 4.3: Comparison Between Hospitals toward (Medication Error Rates / 1,000 medication orders) in both hospitals

Hospital	Pre	Post	Relative change	Test statistics
IAH	1.05 ± 7.8	1.18 ± 6.4	%17.9 ↓	t(10)=2.17, p<0.04

ISH	0.04 ± 0.05	0.03 ± 0.02	%60 ↓	t(10)=1.49, p=0.17

4.1.4 Patient Falls

IAH faced a 64.3% increase in falls (non-significant, p = .26), whereas ISH revealed a significant 58.5% decreases (p < .01). Table 4.4 mentioned that patients' fall rate in IAH increased by 64.3% post-accreditation. This inconsistencies with improvements remarkable in other safety domains as medication safety and infection rates.

Even though a lower number of hospital days post-accreditation, the patients' fall number increased slightly, increasing the fall rate. This trend might be associated with factors as: staff reallocation throughout accreditation, changes in patient case complications and acuity and inadequate implementation of patients' fall prevention protocols

Accreditation did not result in improved patients' fall prevention at IAH. This region may need: enhanced staff training on patient' s fall risk assessments, improved post-accreditation monitoring and dissemination of patient's fall-reduction packages (as bed alarms, visual signals, hourly round protocols). Although accreditation is generally expected to improve patient safety, the rise in fall rates and the greater variability noticed post-accreditation may referred to inconsistent commitment to fall prevention protocols or increased patient acuity. These findings highlight the importance of continued post-accreditation monitoring and the strengthening of evidence-based fall prevention strategies to confirm current improvements in patient safety outcomes.

A statistical comparison was performed to investigate changes in monthly patient's fall rates at IAH prior and post accreditation. Results revealed an increase in the mean fall rate from 4.2 falls/ 1,000 patient days throughout the pre-accreditation phase (SD = 2.61) to 6.9 during the post-accreditation phase (SD = 4.89). Nevertheless, this difference was not statistically significant (t (10) = -1.19, p= 0.26).

Although accreditation is generally expected to improve patient safety, the rise in fall rates and the greater variability noticed post-accreditation may referred to inconsistent commitment to fall prevention protocols or increased patient acuity. These findings highlight the importance of continued post-accreditation monitoring and the strengthening of evidence-based fall prevention strategies to confirm current improvements in patient safety outcomes.

In ISH, patient fall rate decreased by 58.5% post-accreditation and revealed a significant improvement post accreditation. The fall rate continued consistently low in all the post-accreditation period. This proposes effective implementation of fall prevention strategies after-accreditation. Accreditation efforts at ISH show to have positively affected patient safety regarding falls. Contributing factors may involve: improved risk assessment protocols, enhanced staff training and awareness and greater commitment to standardized healthcare procedures

An independent samples t-test was performed to compare monthly patient fall rates in ISH prior and post accreditation. The results showed a statistically significant decrease in fall rates from a pre-accreditation mean of 0.82 falls per 1,000 patient days (SD = 0.29) to 0.34 post-accreditation (SD = 0.22); t(10) = 3.21, p < 0.01.

This outcome proposes that accreditation was associated with a measurable and significant improvement in fall prevention at ISH. The consistent reduction throughout all post-accreditation months expresses successful implementation of safety protocols and better commitment to patient safety standards.

Table 4.4: Patient Falls – per 1,000 patient days in both hospitals

Hospital	Pre	Post	Relative change	Test statistics

IAH	2.61 ± 4.2	4.89 ± 6.9	%64.3 ↑	t(10)=-1.19, p=0.26
ISH	0.29 ± 0.82	0.22 ± 0.34	%58.5 ↓	t(10)=3.21, p<0.01

4.2 Clinical Outcome Indicators

4.2.1 30-Day Readmission Rates

IAH readmissions improved slightly (7.5% reduction, non-significant, p = .85). ISH deteriorated (52% increase, non-significant, p = .49). Table 4.5 shows 30-day readmission rates in both hospitals; IAH readmission rates slightly improved (reduced by 7.5%) after accreditation. Readmission rate decreased moderately post-accreditation, suggesting reasonable improvement in continuity of healthcare and discharge planning.

While the overall decline is not dramatic, it may remain show positive trends in post-care follow-up and risk reduction strategies.

An independent samples t-test was performed to assess the difference in monthly readmission rates at IAH prior and post accreditation. The mean rate slightly decreased from 0.67/ 1,000 patient days in the pre-accreditation phase (SD = 0.44) to 0.62 post-accreditation (SD = 0.48); however, this change was not statistically significant (t(10) = 0.19, p = 0.85).

The data propose that accreditation had minimal immediate effect on hospital readmission rates. The noted variability throughout months mainly the spike in October 2021 and the drop to zero in February 2022, may express case-specific variations rather than systematic changes. Continued monitoring is recommended to assess long-term trends and the potential effects of other quality improvement initiatives the readmission rate in ISH increased after accreditation, increasing from 0.61 to 0.93 per 1,000 discharges – a 52% increase.

An independent samples t-test was performed to examine changes in readmission rates at ISH following accreditation. The mean readmission rate increased from 0.61/ 1,000 discharges across the pre-accreditation period (SD = 0.94) to 0.93 post-accreditation (SD = 0.58). However, this increase was not statistically significant (t(10) = -0.71, p = 0.49).

Despite a slight numerical increase, the results propose that accreditation had no clear impact on decreasing readmissions at ISH. The extensive variation in pre-accreditation rates, particularly due to a high outlier in March (readmission rate= 12), may have affected the non-significant result. Continued monitoring and root cause analyses of readmitted cases are recommended to enhance long-term patient outcomes.

Table 4.5: 30-Day Readmission Rates in both hospitals

Hospital	Pre	Post	Relative change	Test statistics
IAH	0.44 ± 0.67	0.48 ± 0.62	%7.5 ↓	t(10)=0.19, p=0.85

ISH	0.94 ± 0.61	0.58 ± 0.93	%52 ↑	t(10)=-0.71, p=0.49

4.2.2 Average Length of Stay (ALOS)

IAH ALOS continued non-significant stable (3.21 to 3.13 days, p = .42), whereas ISH ALOS decreased significantly (8.60 to 4.69 days, p = .005). Table 4.6 shows that IAH had minimal change in ALOS between phases (3.21 → 3.13 days) indicates relative stability in hospital stay duration. The decrease is not significant, suggesting that accreditation may not have yet had a strong effect on effectiveness of patient flow and discharge.

An independent samples t-test was performed to assess changes in the (ALOS) at IAH prior and post hospital accreditation. The mean ALOS decreased slightly from 3.21 days in the pre-accreditation phase (SD = 0.19) to 3.13 days post-accreditation (SD = 0.13). However, this reduction was not statistically significant ($t(10) = 0.83$, $p = 0.42$).

The relatively small numerical difference and low discrepancy suggest that accreditation had minimal effect on inpatient length of stay.

Probable interpretative factors (positive influences post-accreditation) involved enhanced discharge protocols, coordination, early planning of discharge from day of admission and stricter commitment to clinical pathways while counterbalancing factors involved increased documentation or review requirements, more comprehensive investigations delaying discharge and inclusion of higher-acuity patients or case mix change ALOS alone does not express quality; a very short LOS may increase readmissions; a longer LOS may mean improved stabilization and lack of control for confounding variables (diagnoses, seasonal illness issues) limits attribution to accreditation.

Pre-accreditation in ISH had quite a low ALOS ranging about 8.60 to 4.69 days, which is still longer than IAH's 3.21–3.13 days.

An independent samples t-test was conducted to assess changes in the (ALOS) at ISH prior and post accreditation. The mean ALOS significantly decreased from 8.60 days throughout the prior-accreditation phase (SD = 0.88) to 4.69 days post-accreditation (SD = 2.55).

This difference was statistically significant ($t(10) = 3.55$, $p = 0.005$), showing a considerable reduction in inpatient length of stay following accreditation. The result suggests that the accreditation process may have contributed to enhance patient flow, discharge efficiency or care coordination. However, the more difference in the post-accreditation phase points to probable variations in implementation, needing more monitoring and assessment.

IAH sustained stable ALOS (3.21 to 3.13 days). ISH's ALOS continued higher, fluctuating from 7.3 to 10.5 days, with no clear descending trend. These issues suggest differing patient populations or discharge effectiveness between the hospitals.

Post-Accreditation: ISH's ALOS indicates some fluctuation but still generally low, averaging about 4.69 days, less than pre-accreditation 8.60.IAH maintained a relatively stable and much shorter ALOS (4.0 days) across the whole period.

ISH admitted less patients monthly (600-800) compared to IAH (1400-1500) which could express different hospital sizes, service scopes or patient case-mix.

ISH patients accumulated more hospital days/ patient, which consistent with the higher ALOS. IAH hospital days were consistent with shorter stays.

ISH shows significantly longer hospital stays than IAH, suggesting probable differences in case severity, patient complication and healthcare protocols.

Post-accreditation, ISH's length of stay varied but did not reveal a clear reduction trend, possibly showing limited effect of accreditation on discharge effectiveness.

IAH maintained a stable, decline ALOS before and after accreditation, showing possibly more efficient inpatient productivity or less complex cases.

These findings show that accreditation had a further great and quantifiable impact on inpatient stay durations at ISH than at IAH. The more baseline ALOS at ISH may have offered more domain for improvement, while IAH's actually shorter stays may have limited the probable for significant

change. However, the post-accreditation variation in ISH suggests that continuous monitoring and standardization efforts are important to maintain the gains achieved.

Table 4.6: Average Length of Stay (ALOS) days in both hospitals

Hospital	Pre	Post	Absolute change	Test statistics
IAH	0.19 ± 3.21	0.13 ± 3.13	0.08-	t(10)=0.83, p=0.42
ISH	0.88 ± 8.60	2.55 ± 4.69	3.91-	t(10)=3.55, p=0.005

Patient Satisfaction (mean scores) 4.2.3

Patient satisfaction improved modestly at both hospitals, with IAH (+1.1 points) and ISH (+2.2 points). Table 4.7 shows comparative summary for average of patient satisfaction data in both hospitals

An analysis of patient satisfaction scores throughout service domains at IAH showed moderate improvements after hospital accreditation. The overall satisfaction score increased from an average of 85.6 in the pre-accreditation period to 86.7 post-accreditation, indicating a net gain of +1.1 points.

Among individual domains, the most remarkable improvements were noticed in Catering (+4.6) and Safety & Support Services (+3.9), suggesting improved attention to non-clinical aspects of patient experience. Enhancements were also seen in Reception (+1.7), Medical care (+1.1) and Diagnostics & Pharmacy (+0.9), while Nursing services indicated the smallest gain (+0.5), probably due to already high baseline satisfaction levels. These outcomes suggest that accreditation processes may have contributed to gradual improvements in both clinical and non-clinical service quality mainly in areas that historically receive less patient satisfaction scores.

The results highlight the importance of a holistic method to quality improvement, involving both medical healthcare and supportive services in achieving patient-centered outcomes. The culture of safety scores by domain shows mixed trends post accreditation: Reception enhanced significantly from 85.4 to 87.6, suggesting improved frontline service quality and patient-first engagement. Nursing increased slightly from 88.0 to 88.5, showing enhanced staff-patient interaction and clinical reliability. Medical Services improved from 88.4 to 89.5, that may show decreased documentation burden and workflow stress post-accreditation. Diagnostics and Pharmacy showed a slight increase from 83.2 to 84.1. Safety and Support Services enhanced with an increase from 82.5 to 86.4. Catering Services enhanced from 81.1 to 85.7, indicating improved patient satisfaction with non-clinical services. Although most service areas at IAH enhanced, the strong functioning in non-clinical areas as Reception and Catering indicators improved patient-centered services overall.

Post-accreditation analysis at ISH indicated consistent enhancements throughout all patient satisfaction domains. The overall satisfaction score increased from 85.6 to 87.8 (+2.2 points, +2.57%), indicating a general improvement in the quality of patient services. The most remarkable improvements were viewed in Catering (+3.4 points, +4.13%) and Reception (+3.0 points, +3.55%), suggesting efforts to enhance hospitality and first-contact services were well received.

Moderate gains were noticed in medical care (+1.9 points), Safety & Support (+1.7), and Diagnostics & Pharmacy (+1.1), while Nursing services revealed the smallest increase (+1.1 points, +1.25%). These outcomes show that accreditation efforts contributed to a more patient-centered healthcare environment, with specific effect on non-clinical and support services that directly impact the patient experience.

Reception enhanced moderately from 84.5 to 87.5. Nursing still virtually unchanged (87.7 to 88.8), showing a steady, high-functioning clinical environment. Medical Services increased from 87.7 to 89.6, remaining its position as the most positively rated domain. Diagnostics and Pharmacy increased slightly from 83.7 to 84.8. Safety and Support Services indicated minimal change (84.4 to 86.1). Catering Services enhanced from 82.3 to 85.7.

ISH sustained a high baseline culture of safety throughout domains. Medical services revealed a solid enhancement suggesting enhanced clinical interactions. Safety and Support Services and Diagnostics & Pharmacy also show moderate gains, indicating wider systemic improvements. Nursing services, while already strong prior-accreditation, enhanced slightly. Overall Satisfaction increased by +2.2 points, proposing a meaningful enhancement in patients' hospital experiences.

A comparative analysis of patient satisfaction scores at ISH and IAH showed consistent enhancements throughout all service domains after accreditation, despite the size of change differed between the two hospitals. At ISH, the overall satisfaction score increased by +2.2 points (from 85.6 to 87.8), while IAH registered a more moderate gain of +1.1 points (from 85.6 to 86.7). In both hospitals, the most significant enhancements were noticed in Catering services, with ISH increasing by +3.4 points (+4.13%) and IAH by +4.6 points (+5.7%), suggesting increased attention to non-clinical patient comfort. Remarkable enhancements were also seen in Reception and Safety & Support services in both hospitals, indicating improvements in patient-encountering and support interactions.

Conversely, clinical domains as Nursing and Medical care revealed smaller but consistent increases throughout both settings, probably due to high baseline satisfaction scores. Overall, the findings suggest that the accreditation process positively affected multiple aspects of the patient experience, with ISH showing slightly wider enhancements in both clinical and support domains, and IAH showing stronger gains in hospitality-related services. These differences may indicate institutional priorities and the uneven scope of quality improvement strategies supported during accreditation implementation.

Table 4.7: Comparison between Patient Satisfaction Scores (Pre- and Post-Accreditation) in both hospitals

Domain	IAH Pre	IAH Post	IAH Δ	ISH Pre	ISH Post	ISH Δ
Reception	80.0	87.6	7.6+	84.9	86.0	1.1+
Nursing	81.3	84.5	3.2+	85.9	86.0	0.1+
Medical	89.2	84.9	4.3–	89.2	89.8	0.6+
Diagnostics & Pharmacy	86.6	85.8	0.8–	83.8	82.6	1.2–
Safety & Support	88.4	88.7	0.3+	84.6	84.5	0.1–

Catering	87.1	90.3	3.2+	78.8	80.7	1.9+

Facility-level safety culture perceptions propose that accreditation had a more transformative, but varying impact at IAH, whereas ISH experienced smaller but firmer enhancements. The contrast between IAH's significant gains in patient-facing domains and decreases in clinical domains underscores the complication of sustaining balanced progress after-accreditation.

4.3 Staff Perceptions of Organizational Safety Culture

4.3.1 Staff Perceptions of Organizational Safety Culture at IAH

According to the table 4.8, the post-accreditation valuation of staff perceptions at IAH showed enhancements throughout most organizational and professional domains, reflecting a positive shift in the hospital's internal environment and safety culture.

The largest gain was noticed in Communication, which increased by +13.0 points (from 76.2 to 89.2), highlighting improved information flow, collaboration and probably transparency throughout departments. Considerable improvements were also reported in perceptions of Physicians (+11.9), Nature of Department (+9.2) and Allied Health Professionals (+9.0), suggesting an enhanced interdisciplinary team dynamic and improved integration of roles. Direct Manager support and Nurse-related perceptions also enhanced markedly (+7.7 and +7.4 respectively), indicating more effective leadership and professional development.

Interestingly, Incident Reporting was the solely domain that revealed a decrease (–10.1 points), possibly suggesting underreporting, increased fear of repercussions or changes in the reporting system after-accreditation. This decrease demands more investigation, as a strong incident reporting culture is important for continuous quality improvement. Meanwhile, Assessment of Patient Safety still stable, proposing that staff perceptions of safety outcomes did not change significantly despite other structural and operational improvements.

The safety culture domains at IAH revealed clear enhancements from the pre-accreditation phase to the post-accreditation phase, particularly that: nature of department scores increased from 74.8–76.8 (prior) to 84.9–85.1 (post), reflecting a stronger perception of departmental supportiveness and functionality

Direct Manager ratings enhanced from 79.5–81.3 to 85.9–90.3, indicating greater confidence in leadership and managerial participation in safety practices. Communication revealed a great jump from 74.8–77.6 to 89.1–89.2, suggesting improved openness and effectiveness in staff communication about safety concerns.

Hospital Working Environment enhanced from 81.1–86.7 to 84.6–87.4, indicating maintained positive perceptions regard institutional operations. Assessment of Patient Safety still relatively stable (82.8–83.5 pre vs. 78.8–85.3 post), despite there was a slight decrease (78.8), which may indicate early post-accreditation adjustment challenges.

Incident Reporting, however, decreased slightly post-accreditation from 96.6–95.8 to 83.8–88.3. This could reflect changes in reporting systems, hesitancy to report due to increased administrative burden or transitional inconsistencies.

While most domains enhanced post-accreditation, the decrease in incident reporting increases concern. This suggests that while safety culture perception generally enhanced, there may be developing barriers to reporting that demand investigation and intervention.

Post-accreditation, staff perceptions of safety culture at IAH enhanced markedly throughout most domains and professional categories. The largest gains were in communication, physician engagement and nursing satisfaction. However, the decrease in incident reporting and the relatively low ratings from physicians suggest areas that need targeted follow-up. Maintaining these gains will depend on continued leadership participation, transparent communication and strengthening non-punitive reporting environments.

These outcomes involve that while accreditation contributed to meaningful progress in teamwork, communication and managerial processes, continued focus is needed on maintaining a non-punitive safety culture and strengthening the value of incident reporting as a learning instrument.

Across professional groups, perceptions of patient safety and organizational support at IAH enhanced post-accreditation, physicians increased their scores from 56.2–61.5 to 68.0–73.5, indicating moderate enhancement in safety perceptions, despite still lower than other groups. Nurses revealed a great jump from 78.6–88.4 (prior) to 90.1–91.8 (post), showing strong involvement and satisfaction with safety culture changes.

Allied Health Professionals increased from 66.6–74.5 to 77.9–81.2, also indicating a positive path. Operations and Managerial staff also revealed high scores pre-accreditation and continued enhancement post-accreditation, reflecting strong leadership and operational consistent with accreditation standards. The data detects that while all professional groups reported enhancements, physicians still the lowest in perceived safety culture. This gap may derive from different roles in protocol implementation, documentation burden or fluctuating participation with accreditation activities.

Table 4.8: Comparative Summary and Implications at IAH

Domain Profession	Pre-Accreditation Avg	Post-Accreditation Avg	Change
Nature of Department	75.8	85.0	9.2+ ↑
Direct Manager	80.4	88.1	7.7+ ↑
Communication	76.2	89.2	13.0+ ↑
Incident Reporting	96.2	86.1	10.1– ↓
Hospital Working	83.9	86.0	2.1+ ↑
Evaluation of Patient Safety	83.1	82.1	Almost Stable
Physicians	58.9	70.8	11.9+ ↑
Nurses	83.5	90.9	7.4+ ↑

Allied Health Professionals	70.6	79.6	9.0+ ↑
Operations	83.9	88.0	4.1+ ↑
Managerial	83.8	89.2	5.4+ ↑

4.3.2 Staff Perceptions of Organizational Safety Culture at ISH

At ISH, perceptions of organizational safety culture revealed overall enhancement throughout most domains after-accreditation compared to prior-accreditation, table 4.9 shows that following hospital accreditation, staff perceptions at ISH revealed moderate to significant enhancements across most organizational and professional domains, suggesting improved workplace culture, processes and safety awareness.

The most considerable change was seen in the Operations domain, which enhanced dramatically by +32.0 points (from 54.5 to 86.5), showing a great transformation in logistical and support functions that probably enhanced staff workflow and resource availability. Remarkable gains were also registered in Evaluation of Patient Safety (+7.2), Nature of Department (+4.6) and Physicians (+4.3), indicating a wider improvement in clinical governance and team performance.

Gradual enhancements were noticed in perceptions of Communication, Direct Managers, Hospital Working Environment and Allied Health Professionals, with increases ranging from +2.0 to +4.0 points. These changes involve gradual but meaningful advances in leadership support, interdepartmental collaboration and overall morale. However, the domain of Nurses revealed a slight decrease (–2.1), which may indicate increased pressure and unmet expectations among nursing staff after accreditation. In contrast, Incident Reporting remained almost unchanged (–0.1), sustaining a high baseline average above 95, which may reflect an already well-established safety reporting culture.

Overall, the findings underscore the positive impact of accreditation on institutional performance and interprofessional dynamics at ISH, while also highlighting the necessity to explore and address the concerns of nursing staff to confirm balanced enhancements throughout all workforce sections.

Nature of department enhanced from 73.9–75.5 to 78.4–80.1, reflecting increased satisfaction with departmental operations and environment. Direct Manager remained high, increasing slightly from 81.0–82.9 to 83.7–84.1, indicating stable confidence in leadership. Communication increased from 74.7–76.4 to 78.8–80.1, suggesting enhanced openness and clarity in team communication around safety.

Incident Reporting remained strong, enhancing slightly from 95.1–96.0 to 94.8–96.1, confirming a well-established reporting culture. Hospital Working Environment increased from 82.8–84.3 to 84.7–86.5, indicating a more positive perception of overall institutional performance. Evaluation of Patient Safety showed a significant enhancement from 79.0–81.5 to 86.7–88.2, suggesting increased staff awareness and adherence to safety goals.

ISH showed consistent enhancement in all safety culture domains post-accreditation mainly in the perception of patient safety and communication. Unlike IAH, the incident reporting system maintained high scores without post-accreditation decrease, signaling a strong safety reporting infrastructure.

Post-accreditation, ISH showed a solid increase in staff perceptions of organizational safety culture throughout nearly all domains and professions. The dramatic shift among operations staff underscores the potential for accreditation to lead transformational change when staff are participated. However, the slight decrease in nursing scores may reflect the need for greater support and participation of frontline clinical staff during post-accreditation periods.

These findings highlight how accreditation can stimulate comprehensive organizational change, but also how outcomes may differ depend on hospital-specific strategies, resource allocation and preexisting strengths. While IAH showed greater enhancements in communication and leadership, ISH excelled in operational restructuring and sustaining a strong safety reporting environment. Designed post-accreditation follow-up in each setting is important to strengthen gains and address developing challenges among specific professional groups

Professional group perceptions at ISH before and after accreditation showed mixed trends, Physicians enhanced from 77.6–79.0 to 81.9–83.3, reflecting growing engagement with safety culture initiatives. Managerial staff revealed slight fluctuations, moving from 66.3–71.6 to 69.3–70.1, with no significant change.

Operations staff showed a sharp increase from 53.1–55.9 to 85.6–87.3, indicating a remarkable change in perceptions post-accreditation, probably because of targeted training or workflow design. Nurses, however, revealed a slight decrease from 79.2–80.2 to 76.3–78.8, proposing either higher expectations or transitional fatigue.

Allied Health Professionals consistently evaluated safety culture highly, increasing from 92.7–93.1 to 96.6–97.2.

Post-accreditation, physicians and operations staff at ISH reported remarkable enhanced perceptions, suggesting improved engagement and alignment with accreditation standards. The decrease among nurses could signal post-accreditation stress or under-addressed workload challenges. Allied Health Professionals sustained the highest safety culture perceptions, both pre- and post-accreditation.

Table 4.9: Comparative Summary and Implications at ISH

Domain / Profession	Pre-Accreditation Avg	Post-Accreditation Avg	Change
Nature of Department	74.7	79.3	4.6+ ↑
Direct Manager	81.9	83.9	2.0+ ↑
Communication	75.6	79.5	3.9+ ↑
Incident Reporting	95.6	95.5	Stable~
Hospital Working	83.6	85.6	2.0+ ↑
Evaluation of Patient Safety	80.3	87.5	7.2+ ↑
Physicians	78.3	82.6	4.3+ ↑

Nurses	79.7	77.6	2.1– ↓
Allied Health Professionals	92.9	96.9	4.0+ ↑
Operations	54.5	86.5	32.0+ ↑
Managerial	69.0	69.7	0.7+ ↑

4.4 Summary of Accreditation Impact

The accreditation process generated mixed results throughout hospitals. As shows in table 4.10, IAH revealed enhancement in several domains but struggled with falls. ISH excelled in satisfaction and medication safety but faced post-accreditation issues in infection control and readmissions. These discrepancies highlight the importance of strong, context-sensitive implementation and maintained post-accreditation support.

Table 4.10: Summary of Accreditation Impact

Indicator	IAH Post-Accreditation Outcome	ISH Post-Accreditation Outcome
CAUTI Rate	Improved (↓15%)	Worsened (↑197%)
CLABSI Rate	Improved (↓13%)	Worsened (↑171%)
Medication Incidents	Improved (↓17.9%)	Improved (↓60%)
Falls	Worsened (↑64.3%)	Improved (↓58.5%)
Readmissions	Improved (↓7.5%)	Worsened (↑52%)
ALOS	Stable (↓0.01 days)	High & fluctuating
Patient Satisfaction	Improved (+1.1)	Improved (+2.2)

5. Discussion

5.1 Introduction

The primary aim of this study was to evaluate the effect of standardized healthcare protocols on key patient outcomes in two specialized hospital settings IAH and ISH using post-intervention quantitative data. The analysis focused on patient safety indicators (CAUTI, CLABSI, medication errors, and patient falls), clinical outcome indicators (30-day readmission rates, average length of stay), patient satisfaction scores and staff perceptions of safety culture.

Overall, the findings indicate that standardization established varied effects through hospitals and indicators. IAH showed significant improvements in medication error reduction ($p < 0.05$) and moderate gains in CAUTI, CLABSI, and readmissions, although these were not statistically significant. In contrast, ISH registered significant decreases in patient falls ($p < 0.01$) and average LOS ($p = 0.005$), along with improved patient satisfaction but demonstrated a significant increase in CAUTI rates ($p < 0.05$). These variations highlight the effect of related factors as baseline performance, staff involvement and adherence to protocol components.

5.2 Thematic Discussion

5.2.1 Catheter-Associated Urinary Tract Infections (CAUTI)

The post-intervention analysis showed a 15% reduction in CAUTI rates at IAH (5.83 to 4.96 per 1,000 catheter days); however, the change was not statistically significant ($p > 0.35$). This consistent with preceding studies reflecting that sustained CAUTI decreases usually requires long-term strengthening of catheter care packages, staff education and adherence monitoring (Burke et al., 2021; Johnson & Lee, 2019; Ling et al., 2022; Smith et al., 2021; Werneburg, 2022).

In contrast, ISH registered a 197% increase in CAUTI rates (1.07 to 3.18/ 1,000 catheter days, $p < 0.05$), representative a significant worsening in performance. This trend may be associated with challenges in catheter maintenance practices, incomplete adoption of the prevention package or changes in patient acuity post-accreditation (Ahmed et al., 2020; Alkhawaja et al., 2020; Alsheddi et al., 2023; Bizuayehu et al., 2022). Similar results were stated by Roberts et al. (2018), who noticed post-intervention increases in device-associated infections in settings where basic rates were primarily low and adherence monitoring deteriorated post implementation.

The discrepancy between IAH and ISH indicates the importance of contextual willingness, IAH's stronger baseline infection control structure may have reinforced partial gains, while ISH's initial low incidence may have concealed early adherence gaps, resulting in a recovery effect.

5.2.2 Central-Line-Associated Bloodstream Infections (CLABSI)

For CLABSI, IAH experienced a 13% reduction (5.67 to 4.94/ 1,000 catheter days); however, not statistically significant ($p > 0.60$). Whereas humble, this trend is consistent with evidence that standardization enhances line insertion and maintenance clinical practices, causing gradual infection decreases over time (Burke et al., 2021; Ling et al., 2022; Lopez et al., 2022). Continued reductions are usually reported after 18–24 months of continuous protocol adherence (WHO, 2021).

In ISH, CLABSI rates increased from 1.95 to 5.29/1,000 catheter days (171% increase, $p = 0.165$). While not statistically significant, the ascendent trend increases fears regard post-intervention fidelity to central-line healthcare protocols. This finding reflects researches results which emphasizes that protocol implementation without continuous audit-feedback cycles may fail to create continued benefits, mainly in high-turnover clinical environments (Alsheddi et al., 2023; Alkhawaja et al., 2020; Patel et al., 2020).

The alteration between hospitals once again highlights that protocol adoption solely is inadequate; strong monitoring, multidisciplinary involvement and combination into routine workflows are important to sustaining gains.

5.2.3 Medication Errors

Post-Accreditation outcomes revealed a significant 17.9% decreases in medication errors at IAH (7.8 to 6.4/1,000 medication orders, $p < 0.04$), showing the positive effect of standardized medication safety protocols. This enhancement is consistent with previous studies stating that structured medication reconciliation, double-check systems and electronic prescribing significantly decrease error rates (Abdel-Qader et al., 2021; Anderson et al., 2019; Küng et al., 2021; WHO, 2017; Zheng et al., 2021).

ISH also appeared a 60% reduction (0.05 to 0.02/ 1,000 orders), however the change was not statistically significant ($p = 0.17$). The absence of statistical significance probably indicates the extremely low baseline rate, creating more reductions less noticeable. As mentioned in several studies that clinical settings with less baseline errors may experience a maximum effect, where extra gains are difficult to measure though sustaining high safety performance (Albalawi et al., 2022; Alhossan et al., 2023; Jones et al., 2020; Mogharbel et al., 2021)

Comparatively, IAH's enhancement seems more influential in comparative terms because of its higher basis error rate. This supports the evidence that hospitals with better pre-accreditation inconsistency usually show larger quantifiable gains after standardization (Patel et al., 2021).

5.2.4 Patient Falls

The both hospitals registered contrasting results for falls. In ISH, there was a statistically significant 58.5% decrease (0.82 to 0.34/ 1,000 patient days, $p < 0.01$), consistent with literature that associate structured fall-prevention protocols as risk evaluation instruments, hourly round and environmental adjustments, to considerable reductions (Mikos et al., 2021; Oliver et al., 2020; Ueda et al., 2022).

Conversely, IAH marked a non-significant 64.3% increase (4.2 to 6.9/ 1,000 patient days, $p = 0.26$). This unexpected increase may be associated with increased patient acuity, insufficient adherence to fall-prevention strategies and enhanced incident reporting after accreditation, which can temporarily exaggerate rates (Belfonte, 2025; Lolange, 2023; Morris & O'Riordan, 2017).

This divergence reflects outcomes by Healey et al. (2018), who remarked that result trends post-accreditation is affected by adherence and reporting culture, with some facilities primarily showing clear increases due to better detection and documentation instead of true incidence progress.

5.2.5 Readmission Rates

The effect of standardization on readmission rates was negligible in both hospitals, and variations were not statistically significant. IAH recorded a minor 7.5% reduction (0.67 to 0.62/ 1,000 patient days, $p = 0.85$). ISH showed a 52% increase (0.61 to 0.93/ 1,000 discharges, $p = 0.49$). The humble reduction at IAH may propose some advantage from standardized discharge planning and patient education protocols consistent with scholars who stated low readmissions when multidisciplinary discharge planning was performed (Fu et al., 2023; Hansen et al., 2015; Teo et al., 2023)

The increase at ISH may indicate temporary challenges post-accreditation, where increased patient productivity (as evidenced by the reduction in ALOS) can occasionally result in premature discharges, increasing readmission risks (Fashola, 2023; Kansagara et al., 2011; Sawhney et al., 2021). This strengthen that standardization must be associated with strong follow-up mechanisms to maintain discharge quality.

5.2.6 Average Length of Stay (ALOS)

Outcomes showed an unambiguous contrast between hospitals: IAH revealed a slight, non-significant reduction from 3.21 to 3.13 days ($p = 0.42$). ISH attained a statistically significant 3.91-day reduction (8.60 to 4.69 days, $p = 0.005$).

The ISH enhancement consistent with literature underscoring that standardized clinical pathways, coordinated healthcare methods and discharge willingness checklists can meaningfully shorten hospital stays without affecting quality (Alghamdi et al., 2022; Han et al., 2022; Rotter et al., 2010; Trimarchi et al., 2021). This also suggests improved working efficiency post-accreditation.

In contrast, the stability at IAH could reflect that its ALOS was actually enhanced pre-accreditation, leaving little scope for enhancement, consistent with the "diminishing returns" effect noticed by Han et al. (2022) and Nuckols et al. (2014)

The ISH results highlight the operational advantage of standardization in resource-limited settings, but the parallel increase in readmissions indications a need for balanced strategies that enhance effectiveness and patient stability at discharge.

5.2.7 Patient Satisfaction

Patient satisfaction scores enhanced in both hospitals after the implementation of standardized healthcare protocols. IAH increased from 8.23 to 8.37 out of 10 ($p = 0.63$), a non-significant gain, while, ISH increased from 8.33 to 8.74 ($p = 0.32$), also not statistically significant. Although the variations were not significant, both trends align with research revealing that standardization improves patient perceptions of care throughout more expectable processes, clearer communication and consistent health service delivery (A'aqoulah et al., 2022; Al-Abri & Al-Balushi, 2014; Gualandi et al., 2021; Manary et al., 2013).

ISH's larger numerical enhancement may be associated with the simultaneous reduction in ALOS, which can positively affect satisfaction if patients perceive their healthcare as effective and well-coordinated (Friedel et al., 2023; Otani et al., 2016). However, the absence of statistical significance proposes that additional gains may need designed patient involvement initiatives, as shared decision-making and individualized discharge planning.

5.2.8 Safety Culture

Safety culture scores enhanced significantly at IAH, increasing from 7.43 to 8.40 ($p = 0.004$), reflecting a great positive change in staff perceptions regard patient safety post-standardization, this is consistent with studies showing that accreditation methods and structured protocols can enhance stronger safety climates through clarifying roles, improving teamwork and included a culture of continuous enhancement (Arzahan et al., 2022; Churruca et al., 2021; El-Jardali et al., 2011; Singer et al., 2009).

At ISH, safety culture scores deteriorated slightly from 8.76 to 8.53 ($p = 0.25$), a non-significant change. This decreases, despite enhancements in some clinical indicators, may indicate implementation fatigue and staff adaptation challenges across the shift to new workflows. Literature on change management caution that without sustained leadership support and staff empowerment, early gains in safety culture can increase or even decrease (Hamdan & Saleem, 2018; Martin et al., 2018; Weaver et al., 2013; Zabin & Hamdan, 2024).

The contrasting results underscore the important role of organizational involvement in maintaining safety culture enhancements beyond the formal accreditation period.

5.3 Implications for Policy and Practice

The outcomes of this study afford several implications for hospital administrators, policymakers and accreditation bodies:

Sustainability requires continuous monitoring: the CAUTI rates at ISH shows that standardized protocols must be associated with continuing audits, compliance tracking and corrective feedback loops to avoid regression.

Designed implementation strategies, hospitals should adapt protocols to their certain departmental contexts. For instance, IAH's gains in safety culture could be replicated in ISH by prioritizing staff involvement initiatives, while ISH's effectiveness gains in ALOS could notify IAH's operational strategies.

Balanced Quality and Efficiency Goals – ISH's decreases in ALOS was associated with increased readmissions, underscoring the need for discharge operations that balance timely turnover with patient willingness.

Accreditation as a stimulating, not a guarantee, accreditation-led standardization can stimulus enhancement, but its long-term success depends on combining new practices into daily workflows and strengthen them beyond the survey period.

Investing in human factors as training, empowerment and leadership visibility are important for strengthening a safety culture that supports continued protocol adherence.

By implementing these lessons, healthcare organizations can improve the likelihood that standardization efforts interpret into quantifiable, permanent improvements in patient outcomes and safety culture.

6. Conclusion and Recommendations

6.1 Conclusion

This study evaluated the impact of standardized healthcare protocols on patient outcomes in two specialized hospitals—IAH and ISH—during the post-accreditation period. Results showed that while both hospitals experienced quantifiable enhancements in particular indicators, the size and direction of shifts varied significantly among settings.

IAH showed remarkable gains in medication error reduction and safety culture improvement, suggesting strong protocol adoption and staff involvements. ISH attained large reductions in patient falls and average LOS, indicating functioning efficacies, but experienced hindrances in CAUTI rates and a minor decrease in safety culture.

These outcomes underline that standardization can positively impact patient safety and efficiency; however, its success depends on baseline circumstances, implementation fidelity and continued monitoring. The outcomes also underscore the need of balancing efficacy metrics as LOS with quality outcomes as readmissions and infection rates.

Recommendations 6.2

For Practice

1. Involve continuous quality monitoring through implement routine audits and adherence tracking for all protocol components, with rapid feedback loops for frontline staff.
2. Strengthen staff involvement through engage multidisciplinary teams in protocol review, develop and adaptation to sustain motivation and ownership.
3. Specific training through providing targeted education on high-risk areas as catheter maintenance and central-line care, to avoid increasing of infection rate.
4. Balance efficiency with safety (cost effectiveness) through using discharge willingness checklists to confirm that decreased LOS does not lead to increased readmissions.

For Policy

5. Merge accreditation into long-term strategy through addressing accreditation as the starting point for continued improvement, not a one-time compliance exercise.
6. Resource allocation for sustainability through distribute customized resources for infection prevention, safety culture initiatives and staff training programs.
7. Custom applying models that permit resilience in protocol implementation to meet hospital-specific needs while maintaining main safety principles.

For Future Research

8. Longitudinal studies through conduct follow-up research over many years to evaluate the robustness of standardization impacts.
9. Comparative analysis across departments – explore which clinical settings guided the greatest advantages from standardization to direct designed interventions.

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