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ORIGINAL RESEARCH

Comparative Evaluation of Patient-Reported Experience in Day Surgery Under International JCI and National Accreditation in Kazakhstan

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Aim: Healthcare quality management requires robust, evidence-based evaluation of organizational frameworks. Building on prior findings regarding healthcare professionals' perspectives, this study aimed to evaluate quality management frameworks by examining three-year trends (2023–2025) in patient-reported experience measures (PREMs) across Joint Commission International JCI accredited and nationally accredited institutions within Kazakhstan's day surgery sector.

Methods: A repeated cross-sectional, comparative study was conducted among 600 patients in Astana (n=100 per cohort per year). A validated 19-item questionnaire assessed clinical trust, digital maturity, and financial transparency. Statistical analysis employed Pearson's Chi-square tests for gap analysis, Binary Logistic Regression to determine independent predictors of institutional loyalty (Odds Ratios), and Multivariate Cluster Analysis (PCA-style) to map quality zones.

Results: Over the three years, a trend of narrowing quality gaps was identified. JCI-accredited institutions were associated with higher ratings in perceived physician competence and digital maturity (56.0% online booking). High physician competence emerged as the primary predictor of loyalty (OR = 4.12; 95% CI: 2.80–6.10, p<0.001), indicating that patients perceiving high competence were four times more likely to recommend the facility. In nationally accredited polyclinics, loyalty ratings increased from 51.0% in 2023 to 74.0% in 2025 (p<0.001). However, in high-tier centers, a significant association was found between high out-of-pocket diagnostic costs (90.0%) and negative perceptions of financial transparency (45.0% in 2025).

Conclusion: JCI accreditation is associated with clinical and digital excellence, while national standards correlate with improvements in the service baseline of primary care. The study suggests that sustainable modernization requires management frameworks that balance clinical protocols with infrastructure scalability and transparent financial counseling to maintain institutional integrity.

Keywords: hospital accreditation, joint commission international, JCI, national accreditation, day surgery, patient-reported experience, Kazakhstan

Introduction

The global healthcare landscape increasingly emphasizes Patient-Reported Experience Measures (PREMs) as essential performance indicators alongside clinical outcomes.[1,2] In Kazakhstan, this shift is supported by the transition to Statutory Social Health Insurance (OSMS), which aims to improve service quality through provider accountability.[1]

Accreditation frameworks are the primary tools for standardizing clinical workflows and mitigating systemic risks.[2] While national accreditation is mandatory in Kazakhstan, several leading organizations, such as the University Medical Center (UMC), also pursue Joint Commission International (JCI) accreditation to meet international safety benchmarks.[3] However, there is ongoing debate regarding whether the administrative compliance required by international standards results in a measurable improvement in patient-perceived quality.[4,5]

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Our previous research[6] demonstrated that medical staff in JCI-accredited facilities report a significantly stronger safety culture compared to those in nationally accredited clinics. Nevertheless, a "perception gap" often exists between healthcare providers and recipients, where clinical standardization does not necessarily correlate with patient comfort.[5,7] Furthermore, the sustainability of quality management models depends on institutional transparency, yet few studies have compared how different accreditation frameworks affect patient perceptions of financial and clinical integrity in Central Asia.

Despite the widespread adoption of these models, there is a lack of comparative evidence regarding their longitudinal association with patient experiences. This study addresses the following research question: How do JCI and national accreditation frameworks differ in their association with patient-reported experiences in day surgery over three years (2023–2025)?

We hypothesize that while JCI-accredited facilities maintain a lead in perceived physician competence and digital maturity, the higher patient volumes attracted by international accreditation may lead to operational capacity constraints, negatively affecting satisfaction with physical infrastructure.

The primary measurable outcomes evaluated in this study include PREM scores for physician competence, digital service access, and financial transparency, as well as institutional loyalty, defined as the willingness to recommend the facility.

Materials And Methods

Study Design and Setting

A repeated cross-sectional, comparative design was employed to evaluate the association between different quality management frameworks and the patient experience. The study spanned a three-year period (January 2023 to December 2025) to capture the temporal trends of quality management in Kazakhstan's surgical sector. The research was conducted in Astana, the administrative and medical hub of Kazakhstan, where the most intensive healthcare quality reforms are implemented.

The selection of study sites was guided by three primary considerations. First, the UMC Republican Diagnostic Center (RDC) was selected as the benchmark for international excellence, being a pioneer of Joint Commission International (JCI) standards in Central Asia. Second, Urban Polyclinics No. 4 and No. 9 were selected to represent the baseline of nationally accredited institutions operating under the Statutory Social Health Insurance (OSMS) framework. Third, the focus was restricted to Day Surgery Units (DSUs). As a high-turnover clinical model, the DSU serves as an ideal "operational stress-test" for organizational technologies, where management must synchronize safety protocols and patient flow within a single working day.[6,8]

Sampling and Participants

A stratified convenience sampling approach was utilized to enroll patients at the point of discharge from the DSUs. A post-hoc power analysis was performed using G*Power 3.1. With a total sample size of N=600 (n=100 per group per year) and an alpha level of 0.05, the study achieved a statistical power of 0.94 to detect a medium effect size (Cohen's $w = 0.3$). This significantly exceeds the standard threshold of 0.80. Participants were required to meet the following criteria: (i) aged 18 years or older; (ii) successfully completed a day surgery procedure; (iii) cognitively and physically capable of completing the questionnaire independently; and (iv) provided voluntary informed consent. Ethical approval was obtained from the Local Bioethical Committee at Astana Medical University (Protocol No. 6, dated September 24, 2022). All procedures adhered to the ethical principles of the Declaration of Helsinki.

Data Collection Procedures

Data were collected using a structured 19-item questionnaire adapted from the Consumer Assessment of Healthcare Providers and Systems (CAHPS) and contextualized to reflect the regulatory, organizational, and financing characteristics of the healthcare system in Kazakhstan. The instrument was designed to capture patient-reported experience measures relevant to healthcare quality, risk management, and institutional accountability. The questionnaire comprised five domains aligned with the study's analytical framework. Access and Digital Services (Items 3–5) assessed patient utilization of official medical organization websites and online appointment-booking systems in comparison with traditional registration pathways. Clinical Trust (Items 7, 8, 11, and 12) evaluated patient perceptions of physician competence, communication, and professional behavior using a 5-point

Likert scale ranging from excellent to poor. Facility and Infrastructure (Items 9–10) examined the physical environment and organizational conditions of care delivery, including seating availability, access to drinking water, and sanitation facilities. Financial Transparency (Items 6, 14, 15, and 19) captured patient-reported out-of-pocket payments for medications and diagnostic services, as well as perceived clarity and predictability of costs in relation to health insurance coverage. Patient Loyalty and Feedback (Items 17–18) assessed willingness to recommend the medical organization using a Net Promoter Score (NPS)–based approach and evaluated patient engagement with institutional feedback channels. Before the main survey, the questionnaire was pilot-tested among 30 patients to assess clarity, cultural relevance, and linguistic appropriateness. Feedback from the pilot resulted in minor wording adjustments in both the Kazakh and Russian language versions. Construct validity was evaluated using exploratory factor analysis. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.801, and Bartlett's test of sphericity yielded a chi-square value of 2841.15 ($p < 0.001$), confirming the suitability of the data for factor analysis. Factor loadings for all items ranged from 0.62 to 0.88, confirming strong structural validity. Reliability analysis demonstrated strong internal consistency, with a Cronbach's alpha coefficient of 0.84. The finalized instrument operationalized five core domains relevant to healthcare risk governance and patient-centered quality management: (1) Digital Maturity, (2) Clinical Trust, (3) Facility Infrastructure, (4) Financial Integrity, and (5) Institutional Loyalty.

Measures

Dependent Variable: Patient Loyalty (Institutional Trust), operationalized as the willingness to recommend the facility (Binary: 1=Yes, 0=No). *Independent Variables*: (1) Accreditation Type (JCI vs National); (2) Clinical Trust Index (Physician competence); (3) Access Technology (Digital vs Traditional booking); (4) Financial Integrity (Out-of-pocket expenses and financial transparency perception); and (5) Logistics Indicators (Infrastructure bottlenecks).

Statistical Analyses

Descriptive statistics summarized key performance indicators (KPIs). Group differences were assessed using Pearson's chi-square test and the Mann–Whitney *U*-test. Binary logistic regression identified independent predictors of patient loyalty using the pooled dataset (N=600). Model fit was validated using the Hosmer–Lemeshow test and Nagelkerke's R^2. Multicollinearity was examined using the variance inflation factor (VIF); all variables exhibited VIF values below 1.8.

To explore quality management performance, principal component analysis (PCA) followed by cluster analysis was conducted. The adequacy of the cluster solution was validated using the Silhouette coefficient. All analyses were performed using SPSS Statistics (v. 27.0) and Python (v. 3.9). A two-sided p-value < 0.05 was considered statistically significant.

Results

Temporal Trends in Patient Loyalty

Over the three-year study period, a trend of narrowing quality gaps was observed between nationally accredited polyclinics and JCI-accredited facilities. As illustrated in Figure 1, patient loyalty (willingness to recommend) in national polyclinics increased significantly from 51.0% in 2023 to 74.0% in 2025 ($p<0.001$). Detailed descriptive statistics and 95% confidence intervals (CI) for all key performance indicators are provided in Table 1.

Statistical Significance of Quality Gaps

At the end of the study (Figure 2), JCI-accredited facilities maintained a lead in perceived physician competence (43.0% vs 29.0%; $p = 0.038$). Conversely, national polyclinics were associated with more positive perceptions regarding financial transparency, particularly in the "Absence of perceived corruption" domain (87% vs 55%; $p < 0.001$). A comprehensive summary of these cross-sectional differences and their statistical significance is presented in Table 2.

Management Bottlenecks and Financial Risks

Infrastructure-related issues were identified as the primary drivers of patient dissatisfaction. JCI-accredited facilities reported operational strain related to drinking water access in 39.0% of cases in 2025. In contrast, nationally accredited

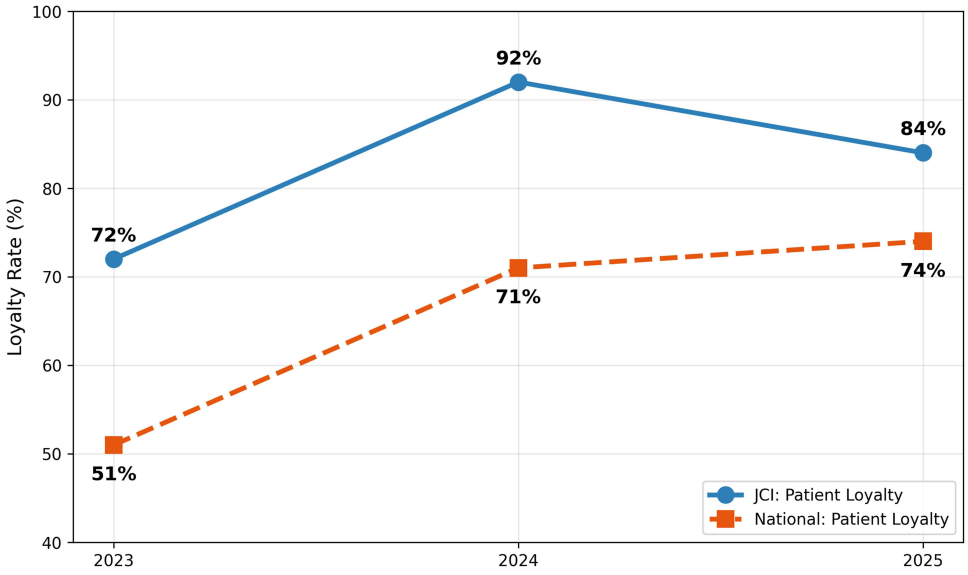

Figure 1 3-Year Trends of Patient Loyalty (2023–2025).
Notes: Trend lines based on repeated cross-sectional data showcasing the narrowing gap in patient loyalty. Statistically significant growth ($p < 0.001$) was observed in the national standard group over the study period.

polyclinics demonstrated measurable improvements in medication supply chain efficiency, with shortages decreasing from 44.0% to 23.0% over the study period. Detailed operational and financial indicators are presented in Table 3.

Predictors of Loyalty and Cluster Mapping

Binary logistic regression was employed to identify independent predictors of patient loyalty. Multivariate modeling (Figure 3) identified high physician competence as the strongest independent predictor (OR = 4.12; 95% CI: 2.80–6.10, $p < 0.001$). Cluster analysis (Figure 4) confirmed that JCI accreditation is associated with a distinct "Zone of Excellence." The black diamond symbols in Figure 4 represent the cluster centroids, indicating the mathematical center of the identified patient experience profiles.

Discussion

The findings of this study indicate a significant association between international accreditation frameworks and perceived clinical quality in Kazakhstan's day surgery sector. The persistent lead of JCI-accredited facilities in physician competence scores (p=0.038) suggests that the integration of International Patient Safety Goals (IPSG) is associated with higher levels of patient trust.[9–11] This aligns with our multivariate analysis, which identified perceived physician competence as the primary driver of institutional loyalty (OR = 4.12; 95% CI: 2.80–6.10).

A notable trend observed in the JCI-accredited cohort was a decline in satisfaction with the physical environment as patient volumes increased (Figure 2). Rather than a failure of clinical standards, this suggests an operational discrepancy

Table 1 Summary of Repeated Cross-Sectional KPI Data with 95% Confidence Intervals (2023–2025)

Indicator	Group	2023% (95% CI)	2024% (95% CI)	2025% (95% CI)
Excellent Quality	JCI (RDC)	90.0 (82–94)	71.0 (61–79)	37.0 (27–47)
	National	85.0 (76–91)	19.0 (11–28)	34.0 (24–44)
Full Comfort	JCI (RDC)	95.0 (88–97)	60.0 (49–69)	35.0 (25–45)
	National	94.0 (87–97)	39.0 (29–49)	42.0 (32–52)

Notes: Overlapping 95% Confidence Intervals between groups in 2025 indicate that while trends differ, the differences in "Excellent Quality" and "Full Comfort" scores reached statistical parity by the study's end.

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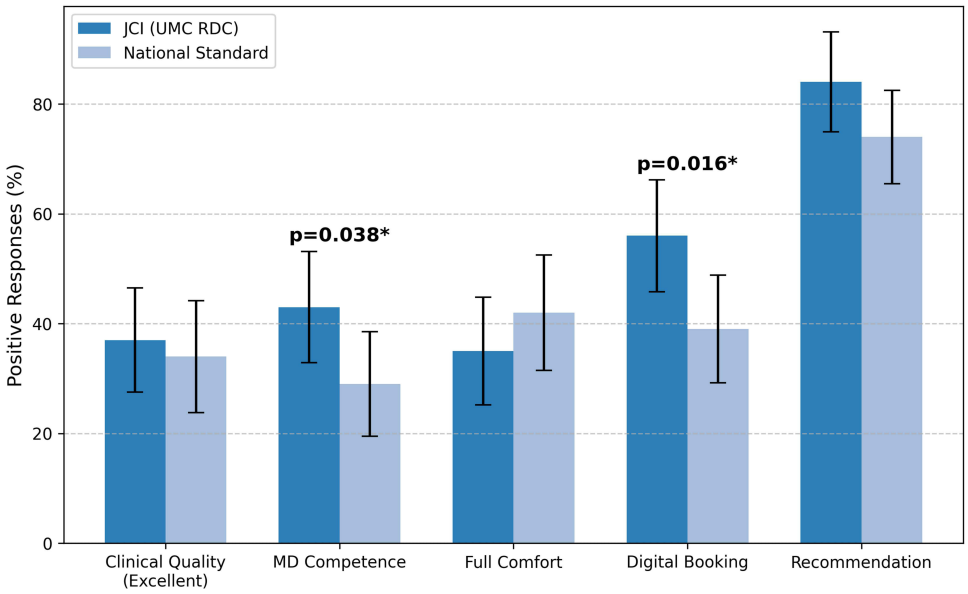

Figure 2 Comparison of Patient Experience Indicators (2025) with 95% CI.
Notes: Clustered bar chart illustrating quality indicators at the study's conclusion. Statistically significant differences ($p < 0.05$) were maintained in perceived physician competence and digital maturity, while other indicators reached statistical parity. Asterisks (*) indicate statistical significance at the $p < 0.05$ level.

between facility capacity and patient throughput. As high-tier centers attract larger volumes due to their reputation, the resulting pressure on infrastructure, reflected in dissatisfaction with seating and water access (Table 3), may impact overall patient-reported experience measures (PREMs). These results suggest that quality management systems must prioritize infrastructure scalability alongside clinical standardization to maintain service quality under high-demand conditions.[12]

The observed correlation between high out-of-pocket (OOP) diagnostic costs (90% in 2025) and negative transparency ratings (45%) provides critical insight into patient-perceived integrity. These findings suggest that financial anxiety regarding diagnostic co-payments may influence a patient's broader perception of institutional honesty.[13,14] However, in the absence of a detailed cost-structure analysis, this should be interpreted as a "perceptual gap" rather than a systemic ethics failure. The data highlight an urgent need for enhanced communication strategies to clarify the scope of Statutory Social Health Insurance (OSMS) coverage and billing protocols, thereby reducing uncertainty and improving perceived financial integrity.[15] Our findings regarding this correlation align with recent data from Almaty, which demonstrated that uninsured patients or those facing direct out-of-pocket payments report significantly lower satisfaction scores in specialized care settings.[16] This reinforces the hypothesis that financial anxiety remains a primary barrier to a positive

Table 2 Cross-Sectional Significance of Accreditation Gaps (2025)

Quality Dimension	JCI (%)	National (%)	Gap	P-value
Digital Booking Maturity	56.0	39.0	+17.0	0.016
High Physician Competence	43.0	29.0	+14.0	0.038
Absence of Financial transparency	55.0	87.0	−32.0	< 0.001

Table 3 Service Bottlenecks and Out-of-Pocket (OOP) Financial Risks

Risk Indicator	JCI 2023%	JCI 2025%	National, 2023%	National, 2025%
OOP Medication Cost	29.0	18.0	44.0	23.0
OOP Diagnostic Cost	78.0	90.0	60.0	53.0
Water Access Issues	5.0	39.0	12.0	25.0

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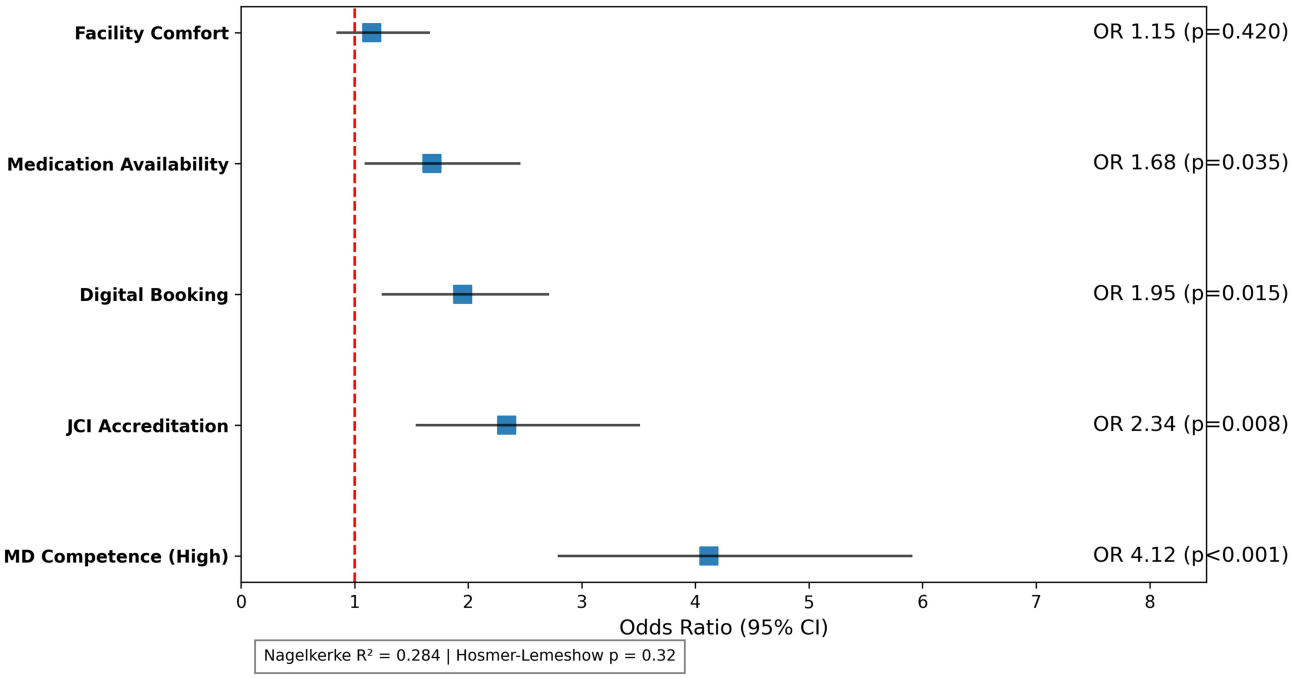

Figure 3 Independent Predictors of Patient Loyalty: Pooled Analysis.
Notes: Forest plot displaying Odds Ratios (OR) and 95% CI. High physician competence (OR = 4.12, p < 0.001) and JCI accreditation (OR = 2.34, p = 0.008) were identified as the strongest independent significant predictors of loyalty. The model fit was validated using Nagelkerke R^2 (0.284) and Hosmer-Lemeshow test (p=0.32).

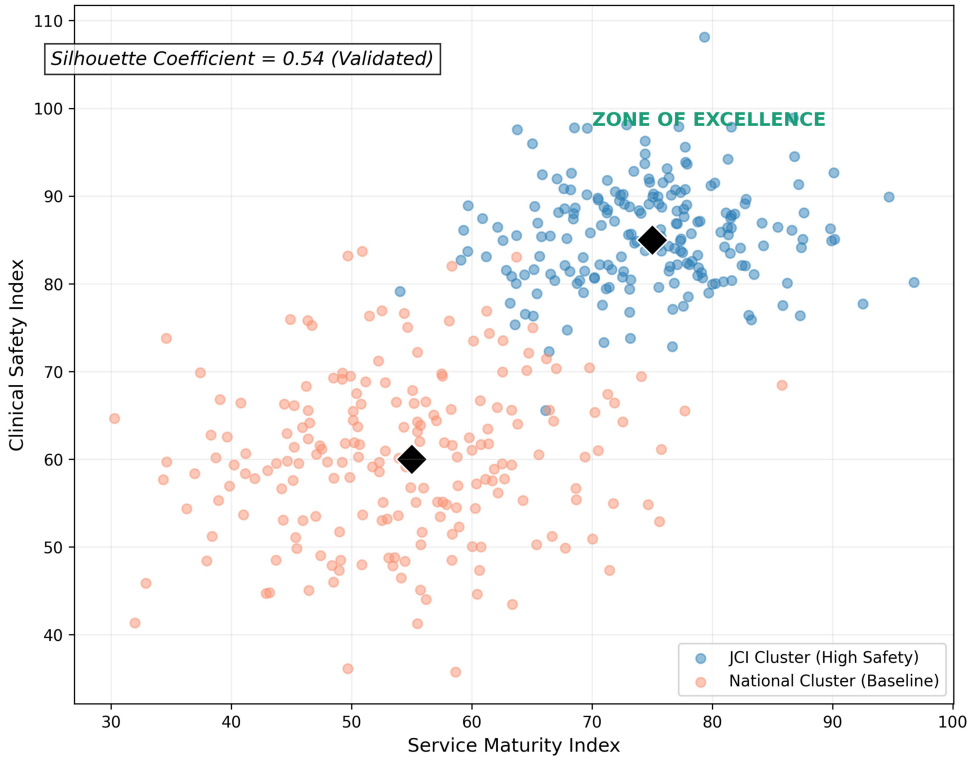

Figure 4 Multivariate Cluster Mapping of Patient Experience (2023–2025).
Notes: Scatter plot visualizing the qualitative separation between quality profiles. The black diamond symbols represent the cluster centroids, denoting the mathematical mean position of each group. The statistical significance of the separation was confirmed via MANOVA (F = 12.4, p < 0.001), and cluster quality was validated using the Silhouette coefficient (0.54).

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patient experience in Kazakhstan, regardless of the facility's accreditation level. Consequently, the modernization of the day surgery sector must involve not only clinical standardization but also the development of sophisticated financial counseling to maintain institutional trust during the ongoing insurance transition.

Limitations

Several limitations warrant consideration. First, although the study spanned three years, the use of a repeated cross-sectional design rather than true longitudinal cohort tracking limits our ability to determine individual-level changes or causal trajectories over time. Second, while our findings demonstrate a significant association between JCI accreditation and patient trust, we acknowledge that this study did not control for potential confounding variables, such as institutional funding models, specific insurance structures, or the "urban center effect." Consequently, the observed differences cannot be attributed to accreditation status alone, and future research should employ multi-level modeling to isolate these factors.

Third, the research was geographically focused on Astana, the administrative and medical hub of Kazakhstan. While the city represents the vanguard of healthcare reform, the findings may not be fully generalizable to rural regions where infrastructure and digital maturity levels vary significantly. Fourth, the reliance on self-reported data introduces potential social desirability bias, although anonymous surveys at the point of discharge were used to mitigate this risk.

Fifth, the convenience sampling method, while practical for day-surgery settings, may introduce selection bias and does not capture the perspectives of patients who experienced surgical complications requiring emergency conversion to inpatient care. Furthermore, although we identified a correlation between out-of-pocket costs and negative perceptions of transparency, the study did not include a formal cost-structure analysis. Therefore, we cannot determine the objective basis for these financial perceptions. Finally, further qualitative research is required to explore the specific psychological drivers behind the association between diagnostic costs and institutional trust, as the current quantitative approach provides an associative overview rather than a definitive explanation of patient behavior.

Conclusion

This study indicates that JCI accreditation in Kazakhstan's day surgery sector is associated with higher perceived physician competence and digital service maturity. However, the significant improvement in patient loyalty within nationally accredited polyclinics suggests a trend of quality convergence between international and national frameworks. Sustainable healthcare modernization requires balancing clinical standardization with infrastructure capacity and transparent financial communication to maintain patient trust.

Abbreviations

CI, Confidence Interval; DSU, Day Surgery Unit; IPSG, International Patient Safety Goals; JCI, Joint Commission International; KMO, Kaiser–Meyer–Olkin; OR, Odds Ratio; OSMS, Statutory Social Health Insurance (Kazakhstan); PCA, Principal Component Analysis; PREMs, Patient-Reported Experience Measures; RDC, Republican Diagnostic Center; UMC, University Medical Center; VBHC, Value-Based Healthcare; VIF, Variance Inflation Factor.

Data Sharing Statement

Data are available upon reasonable request to the corresponding author, Oxana Tsigengagel (email: tsigengagel.o@gmail.com).

Ethics Approval and Consent to Participate

The study protocol was approved by the Local Bioethical Committee at Astana Medical University, and all participants provided written informed consent (Approval No. 6, dated September 24, 2022).

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Science OA (DOI: 10.1080/20565623.2025.2598252), the data presented in this manuscript regarding patient-reported experience measures (PREMs) are original, derived from a distinct dataset, and have not been published previously.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare no conflicts of interest related to this work.

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