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Quality Management Implementation Strategy in Healthcare: Applying the Hoshin Kanri Model in a Multidisciplinary Medical Center in Kazakhstan

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Abstract

Effective strategic quality management is a priority for healthcare organizations in Kazakhstan aiming to improve patient-centeredness, operational efficiency, and international competitiveness. Hoshin Kanri, a policy deployment methodology rooted in the Plan–Do–Check–Act cycle, offers a structured approach to aligning organizational strategy with operational practice. **This study investigates** the applicability and potential impact of the Hoshin Kanri model in a large multidisciplinary medical center in Kazakhstan.

Methods. This study employs a mixed-methods case study and operational framework design to evaluate and restructure the quality management deployment system at the Medical Center Hospital of the President's Affairs Administration of the Republic of Kazakhstan in Astana. Along with reviewing relevant international literature on Hoshin Kanri in healthcare, descriptive quantitative analysis of inpatient performance, primary care indicators, diagnostic volumes, and patient satisfaction metrics (2023-2025) was conducted. The Hoshin Kanri X-matrix was developed to align strategic goals with operational programs across four domains: patient experience, financial sustainability, workforce development, and internationalization.

Results. The medical center demonstrated a consistently superior performance profile. Diagnostic procedures amplified by 5.7% between 2023 and 2024; surgical volume rose by 4.3%; high-technology medical procedures increased by 6.1%; and bed turnover improved by 2.9%. Patient satisfaction exceeded 93% across all groups. Despite these strengths, three structural gaps were identified: (1) fragmentation of quality processes, (2) insufficient cascading of strategic goals to departmental and individual levels, and (3) limited frontline engagement in the Plan–Do–Check–Act cycle of continuous improvement. The proposed X-matrix addresses these gaps through structured goal deployment and cross-functional alignment.

Conclusion. Hoshin Kanri offers a feasible and contextually appropriate mechanism for transitioning from fragmented process compliance toward integrated strategic execution within Kazakhstan's healthcare system. The developed X-matrix and seven-stage implementation roadmap provide a practical model for strengthening workforce competences, institutionalizing continuous improvement, and supporting national priorities in medical service quality.
Keywords: total quality management, hospital administration, quality improvement, leadership, Kazakhstan.

1. Introduction

Modern healthcare systems worldwide encounter intense pressures driven by escalating conditions of resource scarcity, growing patient expectations, and strict regulatory structures. Maintaining competitive positioning and financial viability requires hospitals to continually refine their clinical quality management systems [1]. In Kazakhstan, the national healthcare agenda, anchored in the Healthcare Development Concept 2026 [2], mandates a measurable shift towards patient-centered, outcome-driven service delivery. Achieving this requires not just policy intent but also robust operational management tools capable of translating strategic priorities into routine institutional practice. However, substantial gaps frequently persist between corporate administrative plans and clinical activities at the point of care.

Traditional management tools like the Balanced Scorecard (BSC) successfully group performance into rigid perspectives. Yet they often struggle with real-time operational flexibility and can limit involvement of frontline employees during strategy rollouts [3]. To bridge this gap, the Hoshin Kanri (HK) methodology offers an agile alternative rooted in Total Quality Management (TQM) and Continuous Improvement "Plan–Do–Check–Act" (PDCA) principles [4,5]. This "policy deployment" methodology is a versatile management tool originally introduced by Yoji Akao in 1991 [4], and combines elements of strategic planning, project management, and quality management [6]. The key feature of the methodology is focus on incorporating customer feedback when developing new products or services, which is particularly relevant in the context of market competition and constant change [7]. Originally developed in manufacturing, Hoshin Kanri uses a highly collaborative "catchball" mechanism to cooperate and pass goals between higher-level management and frontline teams [8]. One of the conditions for the implementation of the methodology is the "X-matrix" tool, since it allows managers of vertically adjacent levels to distribute responsibility and participate in the process of implementing the strategy [9].

Companies striving for sustainable development often develop their own unique management systems by combining various methodological approaches. Such integration allows for better consideration of the specific characteristics of a particular organization and its strategic priorities [10]. In this regard, Hoshin Kanri is of particular interest, as it allows for the systematic implementation of new management practices, adapting them to the company's specific structure and objectives. In essence, the approach can be viewed as a tool for aligning strategic goals with operational activities at all organizational levels [11].

The adoption of lean management strategies in healthcare, including HK, has demonstrated measurable improvements in access, safety, and efficiency. International case studies from Canada's Cardiac Sciences Program (Alberta Health Services), Italian university hospitals, and psychiatric centers in the United States document outcomes including 57% reductions in patient waiting times, 41% decreases in surgical cancellations, and significant improvements in staff engagement [12,13]. This evidence is reinforced further by a recent systematic review of studies published between 2019 and 2024, which found that consistent lean-driven gains across efficiency, quality, cost, and patient satisfaction domains in hospital settings worldwide, albeit with substantial heterogeneity in implementation depth and measurement rigor across institutions [1]. Nonetheless, context-specific adaptation remains essential, particularly in post-Soviet systems where hierarchical organizational cultures may hinder the participatory elements central to HK implementation.

Despite the growing body of international evidence supporting HK in healthcare, no study has examined its application in Central Asia more broadly. This article addresses that gap by examining the strategic adaptation of Hoshin Kanri for tertiary healthcare setting, tailored to the institutional and regulatory context of Kazakhstan. The aim of the study is to analyze baseline operations of quality management at the Medical Center Hospital of the President's Affairs Administration of the Republic of Kazakhstan and to propose an X-matrix deployment framework, which can contribute sustaining high quality standards, driving medical tourism, and maintaining financial stability in the long term.

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2. Materials and methods

Study Design

This research utilizes a mixed-methods case study design based on analysis of organizational documents and secondary materials related to the structure and operation of the healthcare organization. Operational framework design was used to evaluate and restructure the quality management deployment system.

Literature, including peer-reviewed publications from Scopus, Web of Science, and PubMed, was reviewed using the following search terms: "Total Quality Management," "Hoshin Kanri," "policy deployment," "quality management in healthcare," and "X-matrix".

The study was executed in two sequential phases:

Phase I. Baseline operational diagnostics. We performed a descriptive quantitative analysis examining the hospital's operational performance parameters collected between 2023 and 2025.

Phase II. Policy Deployment Framework Design. Structural-functional methods were applied to map the existing quality management structure based on HK methodology and to adapt the FAIR (Focus–Align–Integrate–Review) simulation framework to the institutional context [12]. As a result, a strategic X-matrix was developed to guide implementation.

Study Setting

The study was conducted at RSE "Medical Center Hospital of the President's Affairs Administration of the Republic of Kazakhstan", a multidisciplinary tertiary-level medical organization located in Astana, Kazakhstan. This institution serves as an advanced regional hub providing specialized, high-tech healthcare services.

Data Collection and Instrument Categories

A retrospective institutional document review was performed.

Metrics included inpatient activity indicators, primary care KPIs, patient experience indices, and diagnostic procedure volumes. Monitored variables also included total surgeries, High-Tech Medical Assistance tracking, and bed occupancy rates.

Patient survey datasets, routinely collected in 2024 as part of the hospital's quality management system, were assessed to categorize satisfaction across three core operational groups: enrolled patient state beneficiaries, direct fee-for-service (commercial) patients, and state-ordered insurance recipients. The assessment utilized a 5-point Likert scale evaluating service convenience, staff responsiveness, and environmental hospitality.

Strategic Tool Configurations

The X-matrix method with four key components indicating the directions from the central part to the peripheral sectors was adapted in the study [10]:

1. Strategic metrics (South) are quantitatively expressed priority parameters of medium-term planning of the organization's activities.
2. Directions of strategic development (West) – a detailed description of the planned actions both in the current period and in the perspective of the five-year horizon.
3. Operational programs and projects (North) – a detailed action plan to achieve certain strategic goals within a time frame of six months to one and a half years.
4. Performance indicators of the individuals responsible and the control system (East) are a set of motivational criteria for tracking the progress of implementation of all areas of activity.

Based on listed criteria, the X-matrix was constructed for "patient experience," "financial sustainability," "workforce development," and "internationalization" directions incorporating True North goals, tactical initiatives, KPIs, and responsible parties.

To ensure the viability of the proposed model, the implementation methodology integrates the catchball mechanism as a core procedural requirement. Rather than utilizing a top-down directive approach, the framework assumes a multi-level iterative negotiation process between executive management, clinical department heads, and frontline nursing leads to validating and adjusting the KPIs proposed.

Ethical considerations

All institutional performance data were aggregated administrative records used in line with the organization's internal reporting protocols, and no patient-identifiable data was accessed or analyzed. Patient experience survey data constitute secondary, pre-existing datasets, collected by the hospital as part of its routine quality management procedures, with respondents completing the survey anonymously and confidentially, and informed consent obtained at collection; the research team did not participate in survey design or administration and accessed only de-identified results.

Methodological approval was obtained from the Department of Public Health and Management, Astana Medical University. The study protocol was approved by the Local Bioethics Commission of NJSC "Astana Medical University" (Meeting No. 18, December 10, 2024; Approval No. 10).

3. Results

Baseline Strategic and Environmental Assessment: Quality Management System

Medical Center Hospital of the President's Affairs Administration of the Republic of Kazakhstan represents an advanced healthcare institution with multidimensional services and a strong organizational infrastructure. The hospital operates across inpatient and outpatient settings, employs an integrated information system ("InfoSIB"), and serves government employees, fee-paying patients, and state-contracted populations.

The hospital has a Patient Quality and Safety Management Service, which is an independent structural unit of the hospital, which carries out activities to manage the quality of medical care. This unit performs a coordinating role in ensuring high-quality and safe medical care.

The quality management system of the organization is based on the principles of evidence-based medicine, standardization of processes, risk analysis and ensuring patient safety. Considerable attention is paid to compliance with ethical standards, which is confirmed by the activities of the Local Commission on Bioethics and active participation in national and international accreditation programs.

The quality management system at the medical center has been progressively developed since 2021, with eight strategic elements implemented by 2023. The center holds ISO 9001:2016 certification (certificate № KZ.Q.01.E0689.C21.007949) and international institutional accreditation by ECAQA (registration IA-00069, valid to June 2029). These strategic elements also include focus on development of sectors such as CHECK-UP diagnostic center, disease management programs for five nosologies, SMART medicine, three rehabilitation tracks, Centre for Men's Health, and Health Technology Assessment Center.

According to desk analysis, the strategy for medical care quality management in the hospital is based on a systematic approach to the organization of processes and the introduction of principles of continuous improvement. On of the evidence is hospital's JCI (Joint Commission International) accreditation, which is the "gold standard" of quality and indicates the compliance of the medical organization with internationally accepted medical and administrative standards.

Moreover, the key elements of the strategy are the development of a patient-centered model of medical services, continuous professional development of personnel, the introduction of innovative technologies, the strengthening of scientific activities and the expansion of international cooperation. As an illustration, doctors of the medical center work under the Systematic Coronary Risk Evaluation (SCORE) program, which allows them to identify a high risk of cardiovascular complications in patients. Moreover, the polyclinic as a part of the center operates on early detection and timely treatment of patients with oncological pathology.

Thus, the strategy for managing the quality of medical care in the medical center is comprehensive, dynamic and focused on achieving sustainable results in the interests of patients, organization staff and society.

Operational and Throughput Diagnostics

The performance indicators for primary health care (PHC) in the hospital for 2024 were analyzed, reflecting the medical center's focus on early detection, prevention of complications and high coverage of dispensary programs in line with the principles of quality management.

As Table 1 shows, the greatest attention is paid to the control of chronic diseases and cancer, which is of critical importance for the outpatient sector. Furthermore, the target values are focused on maintaining the results achieved and further expanding coverage, including by increasing the number of patients under dynamic follow-up. Overall, performance indicators for 2024 demonstrated high attachment across domains (Table 1).

Table 1 - Key Primary Health Care Performance Indicators, 2024

Indicator	2024 Value	Target ≤2026
Comprehensive Preventive Medical Examination Coverage (civil servants)	100%	100%
Dynamic Surveillance Coverage (Disease Management Programs – DMPs)	1750 patients	2000 patients
Hospitalization Rate with Cardiovascular Complications	0.15%	≤0.2%

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Table 1 (Continuation) - Key Primary Health Care Performance Indicators, 2024

Indicator	2024 Value	Target ≤2026
Early-Stage Malignancy Detection (Stage I–II)	100%	100%
Dispensary Patient Coverage	95%	≥95%

Similarly, patient experience data from 2024 showed strong performance across all service divisions. As Table 2 demonstrates, a high level of patient trust and loyalty was reported by both enrolled population and fee-paying patients. The data on the service were especially indicative, at almost 100%, indicating the availability of the services provided, the politeness of the staff, the comfort of the reception conditions, and adherence to waiting-time standards. The target values were set at least 90%, which as of 2024 have already been exceeded in all categories (Table 2).

Table 2 - Patient Satisfaction Indexing Metrics, 2024

Indicator	2024 Value	Target ≤2026
Enrolled beneficiary cohort	95.3%	≥90%
Fee-for-service (commercial) patients	93.6%	≥90%
State-contracted/insured population	97.8%	≥90%
Overall hospitality and service quality satisfaction	99.8%	≥90%

Analysis of hospital performance indicators (May 2025) demonstrates stable positive dynamics across most operational domains. The total number of planned bed-days reached 93,710.2, showing a marginal yet meaningful increase of 0.1% compared to the previous period. The percentage of completed bed-days relative to the plan increases to 102.9%, indicating a 1.2% improvement.

Efficiency of inpatient care also reflected positive tendencies: surgical volume increased by 4.3%, surgical activity by 2.7%, and bed turnover by 2.9%. Additionally, the average length of hospital stay decreased from 8.0 to 7.9 days, a modest but relevant reduction. Bed occupancy likewise improved by 1.3%, aligning closely with national normative values for 2024. Furthermore, the volume of high-technology medical procedures rose sharply by 6.1%, reaching 609 interventions, suggesting advances in clinical competency and institutional positioning (Table 3).

Table 3 - Key Hospital Performance Indicators, May 2025

Indicator	2025 Value	2024 Value	Change (absolute)	Change (%)
Planned bed-days (absolute number, per year)	93,710.2	93,575.5	+134.7	+0.1%
% of bed-days completed vs. plan (%)	102.9%	101.7%	+1.2 p.p.	+1.2%
Average length of stay (per patient)	7.9 days	8.0 days	−0.1 days	−1.2%
Bed turnover (per bed per year)	43.2	42	+1.2	+2.9%
Bed occupancy in days (normative for 2024 is 339 days per year)	338.9 days	334.7 days	+4.2 days	+1.3%
Surgeries performed (absolute number, per year)	4,768	4,570	+198	+4.3%
Surgical activity (%)	83.4%	81.2%	+2.2 p.p.	+2.7%

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Table 3 (Continuation) - Key Hospital Performance Indicators, May 2025

Indicator	2025 Value	2024 Value	Change (absolute)	Change (%)
High-tech medical procedures performed (absolute number, per year)	609	574	+35	+6.1%

Retrospective data from 2023 and 2024 revealed significant growth in patient volumes and operational capacity across key departments, as detailed in Table 4. Diagnostic activity showed a 5.7% aggregate increase from 2023 to 2024 (1,788,734 to 1,890,734 procedures). Radiology (+8.3%), ultrasound (+6.0%), and laboratory testing (+6.0%) all demonstrated significant growth, while endoscopy declined by 15.0% (Table 4).

Table 4 - Comparative diagnostic procedure volumes at the Medical Center Hospital of the President's Affairs Administration of the Republic of Kazakhstan, 2023–2024

Department	2023 Value (absolute)	2024 Value (absolute)	Change (absolute)	Change (%)
Radiology	36 094	39 105	+3011	+8.3%
Ultrasound	62 981	66 786	+3805	+6.0%
Functional diagnostics	24 342	24 253	-89	-1.0%
Physiotherapy	126 423	129 246	+2823	+2.2%
Laboratory	1 534 729	1 627 077	+92 348	+6.0%
Endoscopy	5033	4267	-766	-15.0%
TOTAL	1 789 734	1 890 734	+101 132	+5.7%

Overall, the indicators collectively demonstrate enhanced efficiency, capacity utilization, and service availability.

Identified Gaps in the Existing Quality Management System

Despite strong performance indicators, systematic analysis identified three structural weaknesses requiring strategic attention:

First, quality processes were significantly fragmented. Individual quality elements (ISO, accreditation, continuous quality improvement, information systems) operate with limited strategic coherence. There is no unified framework linking these elements to a common vision and measurable long-term goals.

Second, vertical goal integration was found to be insufficient. Strategic objectives defined at senior management level are not systematically cascaded to departmental and individual KPIs. This creates a disconnect between organizational vision and daily clinical and administrative practice.

Third, the PDCA-based quality improvement cycle operates primarily at a managerial level. Frontline clinical and administrative staff have limited structured mechanisms for contributing to improvement initiatives or receiving feedback on their implementation impact.

Proposed Hoshin Kanri Implementation Framework

An analysis of the current practice of strategic management in the medical center revealed the need for a more structured system of communication of strategic tasks "from top to bottom" and feedback "from bottom to top". The Hoshin Kanri method offers mechanisms to bridge this gap through the systematic decomposition of goals, the formation of X-matrices, regular monitoring and alignment of efforts at all levels of management.

Based on the institutional analysis and adaptation of validated HK frameworks, a seven-stage implementation model is proposed for the medical center:

Stage 1 – Leadership commitment and training: Formation of a cross-functional HK Steering Group (quality management, strategic planning, medical directorate, economics, international relations); delivery of HK methodology workshops including practical X-matrix construction.

Stage 2 – Strategic goal definition: Revision of 3–5-year goals aligned to national priorities (e.g., Health Care Development Concepts for the Republic of Kazakhstan for 2022–2029, UN Sustainable Development Goals, OECD Health Quality Indicators), and institutional competencies (e.g., medical tourism, oncology screening, hepatology, palliative care, digitization).

Stage 3 – X-matrix development and goal cascading: Construction of three-level X-matrices (executive, departmental, operational) with explicit linkage between True North goals, annual targets, tactical projects, KPIs, and responsible persons (RACI model) (Table 5). For the operationalization of the developed X-matrix, a formal catchball workflow is proposed. This mechanism requires that the strategic macro-goals (e.g., a 20% growth in international patients) are systematically "tossed" to middle management.

Stage 4 – Integration with the quality management system: Embedding HK X-matrices within quarterly quality review cycles; alignment with ISO 9001 internal audit processes and JCI accreditation standards.

Stage 5 – Digital monitoring infrastructure: Development of interactive X-matrix dashboards on internal BI platforms (e.g., Power BI), integrated with InfoSIB and laboratory information system data feeds.

Stage 6 – Medical tourism X-matrix: A dedicated X-matrix for internationalization, encompassing marketing strategy, JCI compliance audit, multilingual service development, international partnership agreements, and staff English language competency.

Stage 7 – Sustainability mechanisms: Assignment of strategic direction owners; development of internal HK methodology guidelines; integration of HK compliance into accreditation self-assessment and personnel development systems.

Table 5 - X-matrix summary for four strategic directions, at the Medical Center Hospital of the President's Affairs Administration of the Republic of Kazakhstan

Strategic Direction	True North Goal	Key Tactical Initiative	Primary KPI	Target / Timeline
Patient experience	Satisfaction ≥95% (all cohorts)	Patient journey mapping; service culture training; feedback system	% overall satisfaction	≥95% by Q4 2025
Financial sustainability	Increase in out-of-pocket services revenue by 15%	New CHECK-UP package development; commercial service optimization	Revenue share from out-of-pocket commercial services	+15% by Q4 2025
Workforce development	80% of staff trained to target competency level	Individual development plans; internal mentorship program	% staff with completed IDPs	≥80% by Q3 2025
Internationalization	20% growth in international patients	International marketing strategy; JCI audit; English training	Number of foreign patients per year	+20% by Month 12

**Abbreviations: IDP, Individual Development Plan; KPI, Key Performance Indicator; Q, Quarter (e.g., Q3, Q4 refer to the third and fourth calendar quarters)*

4. Discussion

The present study provides the first documented analysis of HK applicability in a Kazakhstani healthcare institution. The findings are consistent with international evidence demonstrating the effectiveness of structured goal-deployment frameworks in complex, multidisciplinary healthcare environments.

Interpretation of Baseline Operational Metrics

Diagnostic data from 2023 to 2025 demonstrate an escalating clinical demand footprint across all major hospital vertices. The 4.3% growth in overall planned surgeries, paired with a 6.1% expansion in complex High-tech medical assistance underscore an institution functioning as an advanced regional hub. This operational intensification is further validated by

specialized diagnostic service trends, specifically the 8.3% surge in advanced radiological imaging and a 6% growth in laboratory procedures.

From a health systems capacity perspective, managing such volume expansions while lowering the average length of stay and increasing bed turnover by 2.9% implies highly optimized internal workflows. Moreover, findings of bed occupancy closely matching the normative baseline highlight optimal resource utilization. High-occupancy profiles like this are well-documented in literature. For example, Lee et al. (2019) shares that tertiary institutions facing heavy volume demands frequently encounter severe horizontal communication challenges unless guided by a unified, lean strategic deployment framework [14]. Likewise, this pattern is documented by recent qualitative evidence from a large academic hospital in Finland, where leaders who monitored flow-related indicators, such as patient volumes, occupancy rates, and operating-room turnover – through Hoshin Kanri catchball structure were better able to translate strategic priorities into unit-level accountability [15]. This suggests that the medical center's favorable throughput and occupancy metrics, while currently strong, may remain vulnerable to erosion without a comparable mechanism linking strategic targets to routine operational monitoring at the department level.

The patient satisfaction indexing metrics recorded in 2024 remain significantly strong across all observed cohorts: enrolled beneficiaries, fee-for-service individuals, and state-contracted population with scores of 95.3%, 93.6%, and 97.8% respectively. However, as literature shows, high patient satisfaction results do not necessarily imply organizational adaptability. Large-scale empirical validation confirms that comprehensive, system-wide lean and policy-deployment architectures are strongly associated with higher and more stable consumer satisfaction marks than localized or uncoordinated initiatives [14].

While the baseline figures for the hospital are high, the gap analysis warns that these scores risk falling if rigid strategy models continue to alienate frontline clinical staff.

The Strategic Paradox

The retrospective data shows that the medical center operates with substantial clinical capacity. However, analysis reveals a critical vulnerability; the hospital relies on rigid, top-down strategy models rather than systematic strategy-execution frameworks. Without formal cascading mechanisms, performance improvements depend on individual leadership initiative — a recognized weakness in post-Soviet public administration contexts [16].

Systematic analysis identified critical liabilities, namely: (1) fragmentation of quality processes, (2) insufficient vertical goal integration, and (3) limited staff participation in quality cycles. This aligns with findings that traditional planning frameworks, such as the Balanced Scorecard or classic Management by Objectives (MbO), often struggle with real-time operational flexibility in high-stakes environments [7, 11]. When strategies are designed exclusively at the senior executive tier, a structural disconnect occurs. Frontline clinicians often view quality mandates as passive, punitive paperwork exercises rather than active mechanisms of clinical care refinement.

The institutional performance data from the hospital thus reveals a paradox common in high-performing organizations: strong absolute outcomes coexist with structural management vulnerabilities. Implementing the methodology directly addresses these organizational gaps. By framing organizational development as a unified process, HK shifts strategic planning from an annual administrative task to an ongoing daily routing mechanism [17,18].

Applying the Hoshin Kanri Mechanism and Deconstructing X-Matrix Architecture

International healthcare case studies demonstrated consistent benefits of HK approach in healthcare: Alberta Health Services (Canada) achieved a 57% reduction in wait times for cardiac arrhythmia patients (90th percentile: 7 to 3 days) and increased on-time care delivery from 46.4% to 98.6% after HK integration [13]. Operational efficiency gains included a reduction in supply preparation time from 22 to 9 minutes, prevention of 59% of avoidable inpatient days through infection control initiatives, and a 41% reduction in surgical cancellations due to bed scarcity. These findings were consistent with results from US psychiatric centers and Italian university hospital simulation studies [12,18]. Comparable findings emerge from a Finnish study evaluating Hoshin Kanri-based lean management, where the maturity of implementation — reflected in leadership commitment, structural clarity, and consistent application of the catchball mechanism across organizational levels — determined whether intended benefits were realized in practice [19]. A subsequent longitudinal study at the same institution further indicated that sustained, organization-wide commitment to the methodology, rather than isolated departmental efforts, was necessary to achieve measurable improvements over multiple years [15].

HK's particular strength in this setting lies in its compatibility with existing quality systems. Unlike competing reform frameworks that require wholesale institutional redesign, HK operates as an integrative layer above existing accreditation, ISO, and continuous quality improvement processes.

The core contribution of this research is the formulation of a comprehensive healthcare X-matrix spanning three strategic directions: patient experience, financial sustainability, and workforce development/internationalization. The X-matrix provides a unifying visual tool that renders the strategy accessible to all staff [7,20]. Proposed matrix bridges the gap between long-term strategic targets (e.g., maintaining patient satisfaction >95 or driving a 20% growth in international patients) and immediate short-term operational interventions (e.g., patient journey mapping, internal mentorship implementation)

The main asset of this model lies in the "catchball" process, which institutionalizes the participatory decision-making that drives sustained engagement [20]. This aligns with a comparative process study of two university hospitals, which demonstrated that catchball-style engagement across top, middle, and frontline leadership does not produce immediate results but gradually consolidates into stable organizational routines, which in turn accumulate into a durable continuous-improvement capability [21]. Notably, this staged development required deliberate, sustained facilitation rather than a one-time rollout, suggesting that catchball mechanism at the medical center should be conceived as a multi-year institutional capability-building process rather than a discrete implementation step within the seven-stage roadmap. For instance, reducing patient waiting times is no longer just an administrative directive; it becomes a shared goal. Through catchball sessions, nurse managers and clinic physicians can collaborate to co-create actionable changes, such as restructuring registration workflows or automating documentation steps within the InfoSIB platform. This approach ensures that strategic goals are realistic, practical, and directly aligned with the day-to-day realities of patient care.

Furthermore, the medical tourism dimension of this study adds a novel contribution to the HK-healthcare literature. No prior publication has proposed an HK framework for international patient pathway management. The proposed X-matrix for internationalization incorporates marketing, clinical protocol standardization, linguistic accessibility, and partnership development in a single integrated deployment structure, consistent with the principle that HK goals should be mutually reinforced rather than hierarchically subordinated [11].

Therefore, by replacing rigid planning models with a dynamic X-matrix, the hospital can treat clinical quality as a continuous, adaptable process rather than a static compliance requirement.

Barriers and Mitigation Strategies

Several barriers to HK implementation are anticipated in this setting. Cultural resistance may arise from hierarchical management norms that conflict with the participatory philosophy of "catchball". This risk is mitigated by framing HK within an existing quality improvement mandate and linking it directly to accreditation standards already endorsed by senior leadership [22,19].

What is more, linguistic and communicative barriers are relevant in the internationalization context, where insufficient English language proficiency among clinical staff has been identified as a risk. The proposed KPI of ≥80% of frontline staff achieving medical English competency within 12 months, supported by embedded training within the professional development system, directly addresses this constraint.

Resource constraints, particularly for digital infrastructure, are addressed through the phased integration of HK into existing BI and HIS platforms. The evidence from Alberta Health Services demonstrates that even low-cost visual management tools (A3 reports, wall-mounted X-matrices) can bring in substantial improvements without requiring major technology investment [22].

Limitations

Despite discussing strengths of the present study, several limitations should be acknowledged. First, the absence of a formal baseline measurement instrument, such as validated HK performance assessment tool, limits the precision of pre-implementation benchmarking. Second, the single-site, pre-implementation design impedes causal claims about the impact of HK approach on outcomes. It should also be noted as a weakness that findings of the study are descriptive, and no inferential statistical methods were applied for data synthesis and analysis.

Future research should employ before-after or interrupted time series design, focusing post-implementation longitudinal data gathering over 24 to 36 months. This will help quantify how the X-matrix directly impacts clinical outcomes, for example, medical error reduction rates, post operative complication indices, or employee burnout frequencies.

5. Conclusions

Hoshin Kanri represents a feasible, contextually appropriate, and evidence-based framework for transforming healthcare quality management in Kazakhstan from fragmented process-compliance to integrated strategic execution. The analysis of the medical center demonstrates that high-performing institutions remain vulnerable to strategic fragmentation in the absence of systematic goal-

cascading mechanisms. The proposed seven-stage HK framework, with X-matrices for patient experience, financial sustainability, workforce development, and internationalization, provides a practical roadmap for implementation. Its compatibility with ISO 9001 and JCI accreditation standards, and its reinforcement of the existing PDCA quality cycle, positions it as a natural evolution rather than a disruption of the current quality management architecture. Broader adoption across Kazakhstan's healthcare system, including regional hospitals and primary care networks, could contribute to achievement of the Healthcare Development Concept 2026 targets. Rigorous prospective evaluation of HK implementation outcomes is recommended as a national health management research priority.

Declarations. Ethics approval and consent to participate: Not applicable. No human subjects, patient-identifiable data, or clinical interventions were involved. Institutional performance data were used under standard administrative reporting authorization.

Availability of data and materials. The institutional performance datasets analyzed during the current study are available from the corresponding author on reasonable request and subject to institutional approval from Medical Center Hospital of the President's Affairs Administration of the Republic of Kazakhstan.

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AI Declaration. "Grammarly" online browser extension was utilized exclusively for language and grammar editing, and all AI-generated content has been reviewed and edited by the authors, who are fully responsible for the content of the publication. AI tools have not been used to generate scientific conclusions, interpret results, or replace the intellectual input of authors.

Authors' contributions. A.R. conceptualized the study, conducted the analysis, developed the HK framework, and drafted the manuscript. S.V. supervised the research design, provided methodological guidance, and critically revised the manuscript. Sh.O, S.D., and Kh.Sh. contributed to literature synthesis and framework validation. Formal analysis – D.O., S.D. and M.G.; writing (review and editing) - M.G.

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Қазақстандағы көпсалалы медициналық орталықта Хошин Канри моделін қолдану: Денсаулық сақтауда сапа менеджментін енгізу стратегиясы

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Түйіндеме

Науқасқа бағдарлануды, операциялық тиімділікті және халықаралық бәсекеге қабілеттілікті арттыруды мақсат ететін Қазақстандағы денсаулық сақтау ұйымдары үшін стратегиялық сапа менеджментін тиімді жүзеге асыру басым бағыттардың бірі болып табылады. Plan–Do–Check–Act (қаз. Жоспарлау–Әрекет–Тексеру–Түзету) цикліне негізделген Хошин Канри саясат енгізу әдіснамасы ұйымның стратегиялық мақсаттарын операциялық іс-тәжірибемен жүйелі түрде үйлестіруге мүмкіндік береді. Бұл зерттеу Хошин Канри моделінің Қазақстандағы ірі көпсалалы медициналық орталықта қолданылу мүмкіндігін және ықтимал әсерін бағалауға бағытталды.

Әдістері. Зерттеу Астана қаласы, Қазақстан Республикасы Президенті Іс Басқармасының Медициналық орталығы деңгейінде сапа менеджментін енгізу жүйесін бағалау және қайта құрылымдау мақсатында кейс-зерттеу және операциялық құрылым әдістеріне негізделген аралас дизайнды қолданады. Денсаулық сақтау саласындағы Хошин Канри туралы халықаралық әдебиетке шолу жасалумен қоса, 2023–2025 жылдар аралығында стационарлық қызмет тиімділігі, бастапқы медициналық көмек көрсеткіштері, диагностикалық көлемдер және науқастардың қанағаттану метрикалары бойынша сипаттамалық сандық талдау жүргізілді. Стратегиялық мақсаттарды операциялық бағдарламалармен үйлестіру үшін науқас тәжірибесі, қаржылық тұрақтылық, кадрлық әлеуетті дамыту және халықаралықтандырудың төрт бағыты бойынша Хошин Канри X-матрицасы әзірленді.

Нәтижесі. Медициналық орталық тұрақты түрде жоғары өнімділік көрсеткіштеріне қол жеткізді. Диагностикалық процедуралар 2023 пен 2024 жылдар аралығында 5,7%-ға өсті. Хирургиялық қызмет көлемі 4,3%-ға артты. Жоғары технологиялы медициналық медициналық қызметтер 6,1%ға көбейді және төсек айналымы 2,9%-ға жақсарды. Барлық топтарда науқастардың қанағаттану деңгейі 93%-дан асты. Алайда үш құрылымдық олқылық анықталды: (1) сапа процестерінің фрагментациялануы, (2) стратегиялық мақсаттарды бөлімшелік және жеке деңгейлерге жеткіліксіз жеткізілуі, және (3) алдыңғы шепте Plan–Do–Check–Act үздіксіз жетілдіру цикліне қатысуының шектеулі болуы. Ұсынылған X-матрица бұл олқылықтарды құрылымдық түрде орналастыру және функционаралық үйлестіру арқылы шешуге бағытталған.

Қорытынды. Хошин Канри Қазақстанның денсаулық сақтау жүйесінде бөлшектенген процесстерге бағдарлы интеграцияланған стратегиялық басқаруға көшудің тиімді және контекстке сай механизмын ұсынады. Әзірленген X-матрица және жеті кезеңді іске асыру жол картасы жұмыс күшінің құзыреттілігін нығайтуға, үздіксіз жетілдіруді институционализациялауға және медициналық қызмет сапасының ұлттық басымдықтарын қолдауға арналған тәжірибелік модельді ұсынады.

Түйін сөздер: жалпы сапа менеджменті, ауруханаларды басқару, сапаны жетілдіру, басшылық, Қазақстан.

Стратегия внедрения управления качеством в здравоохранении: Применение модели Хосин-Канри в многопрофильном медицинском центре в Казахстане

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Резюме

Эффективное стратегическое управление качеством является приоритетом для медицинских организаций Казахстана, стремящихся повысить пациент-ориентированность, операционную эффективность и международную конкурентоспособность. Хосин-Канри— методология внедрения политики, основанная на цикле Plan–Do–Check–Act (на рус. Планирование-Действие-Проверка-Корректировка), предлагает структурированный подход к согласованию организационной стратегии с операционной практикой. В данном исследовании изучается применимость и потенциальное влияние модели Хосин-Канри в крупном многопрофильном медицинском центре в Казахстане.

Методы. Для оценки и реструктуризации системы внедрения управления качеством в Медицинском центре Администрации по делам Президента Республики Казахстан в Астане, в данном исследовании применяется смешанный дизайн, включающий кейс-стади и оперативную основу. Наряду с обзором соответствующей международной литературы по Хосин Канри в здравоохранении, был проведен описательный количественный анализ результативности стационарного лечения, показателей первичной медицинской помощи, диагностических объемов и показателей удовлетворенности пациентов (2023–2025 гг.). Разработана Х-матрица для согласования стратегических целей с операционными программами в четырех областях: опыт пациентов, финансовая устойчивость, развитие рабочей силы и интернационализация.

Результаты. Медицинский центр демонстрировал стабильно высокий уровень производительности. Количество диагностических процедур увеличилось на 5,7% в период с 2023 по 2024 год. Хирургическая активность повысилась на 4,3%. Высокотехнологичные медицинские процедуры выросли на 6,1%, а оборот коек увеличился на 2,9%. Уровень удовлетворенности пациентов превысил 93% во всех группах. Несмотря на эти сильные стороны, были выявлены три структурных пробела: (1) фрагментация процессов качества, (2) недостаточное каскадное распределение стратегических целей на уровне департаментов и отдельных уровней, и (3) ограниченное вовлеченность на передовой в цикле постоянного совершенствования Plan–Do–Check–Act. Предлагаемая Х-матрица устраняет эти пробелы через структурированное развертывание целей и межфункциональное согласование.

Выводы. Методика Хосин-Канри предлагает жизнеспособный и контекстуально подходящий механизм перехода от фрагментированного соблюдения процессов к интегрированному стратегическому исполнению в системе здравоохранения Казахстана. Разработанная Х-матрица и семиэтапная дорожная карта реализации предоставляют практическую модель укрепления компетенций рабочей силы, институционализации непрерывного совершенствования и поддержки национальных приоритетов в области качества медицинских услуг.

Ключевые слова: всеобщее управление качеством, управление больницами, улучшение качества, лидерство, Казахстан.