



Management of human resources in nursing in Kazakhstan: Analysis of working conditions and professional development in the context of the International Labor Organization's recommendations

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ABSTRACT

Nursing staff play a critical role in healthcare delivery, disease prevention, and public health promotion; however, in Kazakhstan, they continue to face structural challenges such as low wages, high workloads, limited professional autonomy, and unequal access to professional development. Despite recent reforms and the introduction of new educational programs and professional standards, a substantial gap remains between national practices and international labor standards, particularly those outlined in ILO Convention No. 149 and Recommendation No. 157. This study examined the working conditions, labor relations, and professional development of nurses in Kazakhstan in relation to international standards and proposes evidence-based policy recommendations for improvement. A multidisciplinary mixed-methods approach was used, including an online survey of 3,142 nurses, semi-structured interviews with 15 experts, and three focus group discussions, with quantitative data analyzed using IBM SPSS 25 and qualitative data interpreted thematically. The findings revealed regional and institutional disparities in wages and job satisfaction, persistent staffing shortages, and limited access to continuing professional education, while more than 85% of respondents supported the ratification of ILO Convention No. 149. Overall, the results highlight the urgent need for systemic reforms, and the study proposes a policy framework focused on legal modernization, continuous professional development, monitoring of psychosocial well-being, strengthening trade unions, and nursing leadership development to promote decent work and sustainable workforce development in the healthcare system.

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1. Introduction

Nursing personnel constitute a cornerstone of the healthcare system, providing not only direct patient care but also essential contributions to disease prevention, health promotion, clinical monitoring, education, and management (Ferreira et al., 2022). In recent decades, the role of nurses in countries with advanced healthcare systems has expanded considerably, recognizing them as autonomous professionals empowered to make independent decisions within their areas of competence. Within this transformation, special emphasis has been

placed on ensuring decent working conditions, continuous professional development, active involvement in healthcare quality management, and the recognition of nurses' vital contribution to the sustainability of health systems (Kieft et al., 2014).

As of 2024, more than 190,000 nursing professionals are employed in the Republic of Kazakhstan. Despite this substantial human resource potential, systemic challenges persist in securing decent working conditions for nurses. These include a misalignment between remuneration and job responsibilities, limited opportunities for professional advancement, an underdeveloped regulatory framework for role expansion, insufficient support for independent practice, and the low social prestige of the nursing profession. Collectively, these factors contribute to high levels of occupational burnout, job dissatisfaction, and staff turnover - particularly amid increasing demands for quality healthcare services and a growing shortage

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of health personnel. In light of global trends, it is increasingly important to align national health policy with international standards, particularly the provisions of International Labor Organization Convention No. 149 and Recommendation No. 157. These instruments underscore the need to guarantee nurses' working conditions comparable to those of other professional groups, including fair remuneration, reasonable working hours, social protection, safeguards against occupational hazards, opportunities for career advancement, and participation in healthcare governance. Implementing the principles of decent work - balancing job responsibilities with adequate pay, occupational safety, and professional growth - is fundamental to maintaining a resilient and motivated nursing workforce capable of sustaining the effectiveness of national healthcare systems.

In recent years, Kazakhstan has undertaken a series of significant reforms aimed at modernizing the nursing profession. Multilevel educational programs have been developed and implemented, spanning from secondary vocational training to master's and PhD levels. New professional standards have been introduced, a sectoral qualifications framework has been established, and efforts are underway to implement clinical nursing guidelines and standard operating procedures. In 2024, a working group under the Ministry of Health of the Republic of Kazakhstan was established to develop the National Concept for the Development of Nursing until 2030. This policy document envisions a comprehensive reform designed to expand the scope of nurses' responsibilities, introduce principles of clinical leadership, promote independent nursing practice, and enhance the professional status of nurses. However, the results of the current situational analysis highlight the need for a systemic approach to transforming working conditions and labor relations within the sector.

International experience demonstrates that policies aligned with International Labor Organization Convention No. 149 not only improve nurses' working conditions but also enhance the overall quality of healthcare services, reduce occupational risks, increase job satisfaction, and lower staff turnover. In several countries - including Canada, Finland, the United Kingdom, and Australia - targeted strategies have been developed to retain nurses, strengthen their autonomy and engagement, and thereby improve the stability and resilience of the health workforce. These countries actively promote mechanisms for interprofessional collaboration, professional certification, participation in decision-making processes, and competency-based career advancement.

This issue has gained particular urgency in the wake of the COVID-19 pandemic, which exposed the vulnerabilities of healthcare systems, the inadequate protection of health workers, and the crucial role of a stable, professionally developed nursing workforce. The crisis also revealed regulatory gaps related to working time, social protection, insurance, and other

aspects of nurses' employment conditions - all of which underscore the need for a comprehensive reassessment of existing policy approaches.

The relevance of this study stems from the urgent need to build a robust evidence base to support informed managerial and legislative decisions regarding the regulation of nursing labor - particularly in light of Kazakhstan's commitments as a member of international organizations such as the International Labor Organization (ILO) and the World Health Organization ([WHO, 2020](#)). At present, there are no scholarly publications providing a comprehensive assessment of nurses' working conditions, labor relations, and professional development in Kazakhstan through the lens of international standards. This lack of empirical evidence hampers the substantiation of reforms and hinders effective dialogue among key stakeholders, including government bodies, trade unions, educational institutions, and the nursing workforce itself.

Accordingly, the examination of nurses' working conditions and labor relations in Kazakhstan within the framework of ILO Convention No. 149 and Recommendation No. 157 represents a critical task of both scientific and practical importance. The objectives of the present research are to:

- assess the degree to which existing working conditions align with international labor standards;
- identify key barriers within the systems of professional development and nursing workforce governance;
- evaluate factors influencing nurses' job satisfaction, motivation, and retention; and
- formulate policy recommendations to transform labor relations and integrate international standards into national practice.

The overarching aim of this study is to develop evidence-based recommendations for systemic decision-making directed toward creating an effective model for the advancement of nursing in Kazakhstan. This model should recognize the strategic role of nurses within the healthcare system and ensure decent work, continuous professional growth, and meaningful participation in healthcare quality management.

2. Literature review

Nursing professionals are among the occupational groups most vulnerable to psychological stress, fatigue, and burnout. Global evidence consistently shows that working conditions, exposure to occupational hazards, and a lack of institutional support are key determinants of nurses' well-being and performance. [Magalhães et al. \(2022\)](#) identified a strong association between burnout and heightened emotional demands during the COVID-19 pandemic. In a multicenter cross-sectional study, [Meng et al. \(2021\)](#) found that role

conflict and excessive workload were major predictors of depersonalization and reduced professional efficacy among nurse anesthetists.

Building on these findings, [Dos Santos et al. \(2022\)](#) demonstrated a significant relationship between poor sleep quality and professional burnout among nurses and nursing technicians, underscoring the importance of rest and recovery as critical components of occupational health. In a systematic review, [Cohen et al. \(2023\)](#) concluded that comprehensive interventions integrating workload regulation, peer support, and leadership engagement were the most effective in reducing burnout and improving well-being among healthcare professionals.

The importance of psychosocial risks in nursing is widely acknowledged, as healthcare professionals are routinely exposed to a range of biological, chemical, ergonomic, and psychological hazards. Addressing these risks effectively requires embedding occupational safety principles within organizational culture, alongside systematic inspections and ongoing professional development initiatives. [Hiestand et al. \(2023\)](#) observed that chronic fatigue, musculoskeletal pain, and depression remain widespread among intensive care nurses, underscoring the urgent need for preventive mental health initiatives and ergonomic workplace design.

Recent research has also highlighted the relationship between organizational culture and burnout. There is a clear link between burnout and presenteeism among healthcare workers, demonstrating that emotional exhaustion adversely affects productivity and the quality of patient care. [Tatli et al. \(2024\)](#) found that deficiencies in occupational health and safety (OHS) systems contribute to organizational myopia, thereby increasing the risk of workplace accidents in Turkish healthcare institutions. Collectively, these studies reinforce the ILO's position that the concept of decent work must encompass not only fair remuneration and working time but also occupational safety and psychological well-being.

The interconnection between nurses' remuneration, working conditions, and motivation has been extensively investigated, particularly in low- and middle-income countries (LMICs). In a scoping review, [Macey et al. \(2022\)](#) reported that inadequate staffing, limited access to advanced training, and insufficient resources in critical care settings undermine healthcare delivery and elevate stress levels among nurses. Likewise, [Imam et al. \(2023\)](#), in a systematic review, confirmed that missed nursing care in LMIC hospitals is primarily driven by staff shortages, excessive workloads, and a lack of continuing education - rather than by negligence or individual failure.

In Ghana, [Opoku et al. \(2023\)](#) found that fewer than half of healthcare workers demonstrated high levels of occupational safety knowledge, and less than 30% had received formal OHS training. Similarly, [Amna and Rehman \(2025\)](#) observed that

although 74% of nurses in Pakistan exhibited general awareness of safety measures, only 45% possessed advanced knowledge - underscoring the need for structured, continuous OHS education programs.

In the broader socio-economic context, [Konlan et al. \(2023\)](#) examined the factors driving nurse migration in low- and middle-income countries (LMICs) and found that low wages, limited career opportunities, and lack of professional recognition are the main push factors compelling nurses to seek employment abroad. This trend mirrors the challenges observed in Central Asia, where salary dissatisfaction and restricted opportunities for career advancement contribute to workforce attrition.

Further evidence underscores the relationship between organizational culture, workplace safety, and job satisfaction. [Kanungo et al. \(2024\)](#) identified high levels of exposure to chemical agents and ergonomic stressors in pathology laboratories, emphasizing inadequate ventilation and insufficient risk monitoring as critical issues. While [Aluko et al. \(2016\)](#) found comparable results in Nigeria, where high theoretical awareness of occupational risks did not consistently translate into safe workplace practices due to weak enforcement mechanisms.

These findings resonate with the situation in Kazakhstan, where a persistent mismatch between job responsibilities and remuneration, coupled with limited access to professional training, undermines the sustainability of the nursing workforce. The convergence of data from LMICs clearly demonstrates that nurses' working conditions have a direct impact on the quality of care, workforce stability, and social equity - core tenets of the ILO's Decent Work framework.

At the policy level, ILO Convention No. 149 and Recommendation No. 157 serve as key international instruments for advancing the professional status and improving the working conditions of nursing personnel. These frameworks emphasize fair remuneration, occupational safety, opportunities for career development, and nurses' participation in health governance. International evidence indicates that countries that have adopted and operationalized these standards - such as Finland, Canada, and Australia - have achieved higher levels of nurse retention, job satisfaction, and overall workforce stability ([WHO, 2020](#)).

Empirical research further reinforces the connection between policy alignment and occupational safety outcomes. Proactive safety indicators - organizational, behavioral, and systemic - significantly reduce occupational injuries when integrated into management systems. Similarly, [Che Huei et al. \(2020\)](#) systematized risk control strategies for healthcare professionals in Taiwan, recommending the combined use of engineering and administrative controls along with personal protective measures to mitigate exposure to workplace hazards. In a retrospective analysis, [Magalhães et al. \(2022\)](#) found that reduced

participation in medical examinations was associated with higher rates of sick leave, underscoring the importance of strengthening occupational health surveillance and preventive monitoring.

The influence of organizational culture is further supported by [Özdemir and Alkan \(2023\)](#), who identified a significant correlation between a strong safety culture and reduced musculoskeletal pain among healthcare professionals. Similarly, [Mersal et al. \(2025\)](#) demonstrated that in Saudi Arabian hospitals, robust hazard control systems mitigated the negative effects of ergonomic, physical, and psychological risks. [Wagner et al. \(2025\)](#) also found that a positive safety climate in German outpatient care was closely associated with managerial support and job satisfaction.

Taken together, these studies confirm that aligning national occupational safety policies with the ILO framework produces measurable improvements in workforce health, job satisfaction, and organizational efficiency. However, in many developing countries - including Kazakhstan - legislative and institutional mechanisms remain fragmented, lacking full integration of *decent work* principles into healthcare governance.

Beyond individual studies, integrative and systems-based approaches have emerged as essential for understanding and improving nurses' working conditions. The hospitals providing adequate personal protective equipment (PPE) and comprehensive safety monitoring systems reported lower rates of burnout and higher levels of productivity.

[Ellahham et al. \(2020\)](#) discussed how cultivating a strong safety culture and leveraging artificial intelligence tools can reduce medical errors, emphasizing the central role of nurses in ensuring patient safety. At the macro level, [Corrocher et al. \(2024\)](#) and [Pinkawa and Dörfel \(2024\)](#) linked innovation and emotional labor research to workforce adaptation, demonstrating that balanced workloads and participatory governance foster resilience and motivation among healthcare professionals.

Collectively, these findings converge on a systemic understanding: ensuring decent work for nurses requires integrated reforms that combine occupational safety, fair remuneration, continuous professional learning, and empowerment within organizational and policy frameworks. Such approaches align with the ILO's Decent Work Agenda, which promotes the sustainability of the health workforce as a prerequisite for equitable and resilient healthcare systems.

Despite the expanding global body of research on nurse burnout, remuneration, and safety culture, most studies continue to address these dimensions in isolation. Very few integrate all three - working conditions, professional development, and social protection - within a unified analytical framework grounded in international labor standards.

Moreover, there is a pronounced lack of empirical research from Central Asia.

In Kazakhstan, no comprehensive study has yet assessed the extent to which national nursing policies align with ILO Convention No. 149 and Recommendation No. 157. The absence of integrated data on remuneration, occupational safety, and continuing education constrains evidence-based policymaking and limits the effectiveness of workforce reform.

Accordingly, the present study seeks to fill this gap by conducting a nationwide assessment of nurses' working conditions, labor relations, and professional development through the lens of international labor standards. By combining quantitative and qualitative data, it provides a scientific foundation for policy transformation aimed at ensuring sustainable and decent work for nursing personnel in Kazakhstan.

3. Methods

This study aimed to conduct a comprehensive analysis of the working conditions, labor relations, and professional development system of nursing personnel in the Republic of Kazakhstan, in accordance with the standards set forth in ILO Convention No. 149 and Recommendation No. 157. To ensure the reliability, representativeness, and scientific rigor of the findings, a multidisciplinary research design was employed, integrating quantitative and qualitative methods of data collection and analysis, alongside a thorough regulatory and analytical review.

3.1. Methodological framework of the study

The research methodology was grounded in the ILO's Decent Work conceptual framework and drew upon the core provisions of ILO Convention No. 149 and Recommendation No. 157, which address employment, remuneration, social protection, working conditions, professional training, and nurses' participation in decision-making. In addition, the study incorporated the WHO Global Strategic Directions for Nursing and Midwifery 2021–2025, the provisions of the Code of the Republic of Kazakhstan on Public Health and the Healthcare System, and the Healthcare Development Concept of the Republic of Kazakhstan until 2026.

The methodological approach was designed to provide a comprehensive analysis of both the actual situation at the institutional level (healthcare organizations) and the broader normative and organizational environment that either facilitates or constrains the effective realization of the nursing workforce's potential.

3.2. Stages of the study

The research was conducted in three key stages:

1. Analytical and theoretical stage – involved conducting a comprehensive literature review and an analysis of international and national regulatory documents relevant to nursing labor, working conditions, and professional development;
2. Empirical stage – focused on collecting primary data through surveys, semi-structured interviews, and focus group discussions with nursing professionals and key stakeholders;
3. Synthesis stage – encompassed statistical data processing, expert interpretation of the findings, and the formulation of evidence-based policy recommendations.

3.3. Review of regulatory and scientific literature

At the initial stage, a structured review of legal and regulatory acts governing the status, rights, and responsibilities of nursing personnel was conducted. Particular attention was devoted to the provisions of:

- ILO Convention No. 149 and Recommendation No. 157;
- the Code of the Republic of Kazakhstan on Public Health and the Healthcare System;
- professional standards, the sectoral qualifications framework, and educational programs in nursing.

In parallel, an analytical review of scientific publications on the research topic for the period 2014–2024 was carried out using the databases PubMed, Google Scholar, Scopus, and CINAHL. The following keywords were applied: nursing personnel, working conditions, occupational burnout, decent work, advanced practice, trade union, occupational health, and safety. A total of more than 600 publications were examined, of which 29 were selected for inclusion in the analytical section based on their methodological rigor, thematic relevance, and alignment with the study's objectives.

3.4. Online survey

To obtain quantitative data on the current state of nurses' working conditions and professional development in Kazakhstan, an anonymous online survey was conducted. The questionnaire, developed using Google Forms, consisted of 24 questions grouped into the following thematic categories:

- General socio-demographic data (age, region, education level, years of experience);
- Characteristics of working conditions (work schedule, workload, protection from occupational hazards, availability of personal protective equipment);
- Assessment of wages and social benefits;
- Access to free training opportunities;
- Indicators of occupational burnout;

- Attitudes toward ILO Convention No. 149 and its potential ratification.

The survey was posted on the official page of the AQNIET Trade Union and distributed via messenger channels of regional coordinators. It was conducted on 9 September 2024, over a single working day (from 10:00 to 18:00, Astana time). Rationale for the one-day survey design. The decision to conduct data collection within one day was based on both practical and methodological considerations. First, coordination with the AQNIET Trade Union enabled the mobilization of a large number of respondents within a short timeframe, ensuring high engagement while minimizing survey fatigue. Second, concentrating responses within a single day reduced the likelihood of duplicate entries and minimized the potential influence of external events or information that might bias respondents' attitudes. Third, this approach provided a real-time "snapshot" of the nursing community's situation at a specific point in time, establishing a baseline for future comparative studies.

However, it is acknowledged that a one-day survey may limit representativeness in capturing the diversity of the nursing workforce across regions and healthcare settings. Participation depended on internet connectivity and the responsiveness of trade union networks, potentially leading to the overrepresentation of nurses from urban or better-connected areas.

In total, 3,320 nurses participated in the survey, of whom 3,142 completed the questionnaire in full. This high response rate was largely attributable to the active involvement of the AQNIET Trade Union and the relevance of the topic to the professional community.

3.5. Interviews with key experts

To obtain qualitative insights, semi-structured interviews were conducted with representatives of the Ministry of Health of the Republic of Kazakhstan, heads of healthcare organizations, and leaders of trade unions. In total, 15 interviews were held, each lasting between 30 and 60 minutes. All interviews were conducted online via the Zoom platform, and participants provided written informed consent prior to participation.

The interview guide focused on the following key areas:

- practical challenges faced by nurses in their daily professional activities;
- the extent to which national standards align with international labor and professional practice frameworks;
- prospects for expanding nurses' roles and introducing elements of independent practice;
- barriers to the ratification of ILO Convention No. 149;

- necessary measures to enhance nurses' professional status, motivation, and participation in healthcare governance.

3.6. Focus groups and round table

Three focus group discussions were conducted with practicing nurses, mid-level managers, and college educators. Each focus group consisted of 8 to 12 participants and followed a structured discussion guide addressing the following topics:

- everyday challenges encountered in the work process;
- experiences with professional training and continuing education;
- opportunities for career advancement;
- barriers and concerns related to transitioning to advanced nursing practice.

The findings from these discussions were synthesized and incorporated into the study's conclusions. In addition, a round table was organized to discuss a post-stratification action plan and to coordinate efforts related to the ratification of ILO Convention No. 149 with healthcare and labor authorities.

3.7. Data processing and analysis

Three focus group discussions were conducted with practicing nurses, mid-level managers, and college educators. Each focus group consisted of 8 to 12 participants and followed a structured discussion guide addressing the following topics:

- everyday challenges encountered in the work process;
- experiences with professional training and continuing education;
- opportunities for career advancement;
- barriers and concerns related to transitioning to advanced nursing practice.

3.8. Study limitations

Several limitations of this study should be acknowledged. The one-day online survey format, while effective for rapid and large-scale data collection, may have limited representativeness by excluding nurses in remote or rural regions with restricted internet access. In addition, participation was voluntary and mediated through trade union networks, which could have introduced self-selection bias, as nurses who were more professionally engaged or motivated by the study's topic may have been overrepresented.

Another potential limitation involves social desirability bias, as respondents might have provided answers they perceived as socially acceptable or aligned with professional norms -

particularly regarding attitudes toward management practices or international standards.

Finally, the study did not include an in-depth regional comparative analysis. Future research should therefore incorporate longitudinal data collection and mixed sampling methods (both online and offline) to enhance data coverage, representativeness, and the robustness of cross-regional comparisons.

3.9. Rationale for methodological choice

A combination of quantitative and qualitative methods was employed to ensure both the breadth of coverage - through large-scale survey data - and the depth of understanding of contextual factors obtained from interviews and focus group discussions. This triangulated methodological approach enabled the identification of not only statistical patterns but also the underlying mechanisms that shape nurses' working conditions, professional development, and participation in the healthcare system.

4. Results

4.1. Descriptive overview

The final analytical dataset included 3,142 nurses representing all regions of Kazakhstan. The sample was predominantly female (96.1%), with an average age of 43.3 ± 8.7 years and a mean length of service of 20.4 ± 10.1 years. Most respondents (77.4%) held a secondary vocational qualification, 12.0% an applied bachelor's, 9.1% an academic bachelor's, and 0.5% a master's degree.

Across all respondents, the mean monthly salary amounted to 410.7 ± 117.2 USD, with a median of 391.5 USD and a range from 151 USD to 1,244 USD. A total of 67.6% of nurses reported dissatisfaction with their pay, and only one-third (32.4%) expressed satisfaction.

4.2. Inferential statistics

Salary Satisfaction and Workplace Location. The relationship between salary satisfaction and workplace location was statistically significant ($\chi^2(4) = 52.94$, $p < 0.001$, Cramér's $V = 0.13$). Satisfaction was highest in villages (49.8%) and district centers (40.3%), while lowest in regional cities (27.2%). These results indicate a weak but meaningful association between location and perceived fairness of remuneration.

Differences in Salary by Location. A one-way ANOVA based on group means and standard deviations showed a statistically significant effect of location on salary levels ($F(4, 3137) = 21.00$, $p < 0.001$, $\eta^2 = 0.026$). Post-hoc inspection confirmed that nurses employed in towns of regional subordination earned significantly less ($M = 384.3$ USD) than those in republican cities ($M = 430.4$ USD)

or district centers ($M = 427.9$ USD). Although the effect size was small, the direction of difference was consistent across regions.

Salary and Job Satisfaction. A Welch's t-test revealed that nurses who reported being satisfied with their work received significantly higher pay ($M = 429.4 \pm 116.6$ USD) than those dissatisfied ($M = 401.6 \pm 116.4$ USD; $t = 6.25$, $df \approx 2000$, $p < 0.001$, Cohen's $d = 0.24$). While statistically significant, the small effect size suggests that job satisfaction depends on broader factors beyond remuneration - such as workload, recognition, and autonomy.

Salary Structure and Organizational Type. Cross-tabulation of salary ranges confirmed heterogeneity across both location and type of medical organization. The χ^2 tests were significant for both comparisons:

Table 1: Inferential statistical tests for key associations ($n = 3,142$)

Test	Statistic	df	p-value	Effect size
χ^2 : Salary satisfaction \times location	52.94	4	< 0.001	$V = 0.13$
ANOVA: Salary \sim location	F = 21.00	(4,3137)	< 0.001	$\eta^2 = 0.026$
Welch t-test: Salary (satisfied vs dissatisfied)	t = 6.25	≈ 2000	< 0.001	$d = 0.24$
χ^2 : Salary bracket \times location	344.83	36	< 0.001	$V = 0.166$
χ^2 : Salary bracket \times organization type	331.09	27	< 0.001	$V = 0.187$

A one-way ANOVA showed statistically significant differences in average monthly salary by location ($F(4, 3137) = 21.00$, $p < 0.001$, $\eta^2 = 0.026$). Nurses in towns of regional subordination earned significantly less than those in republican cities. These differences are visualized in [Fig. 1](#).

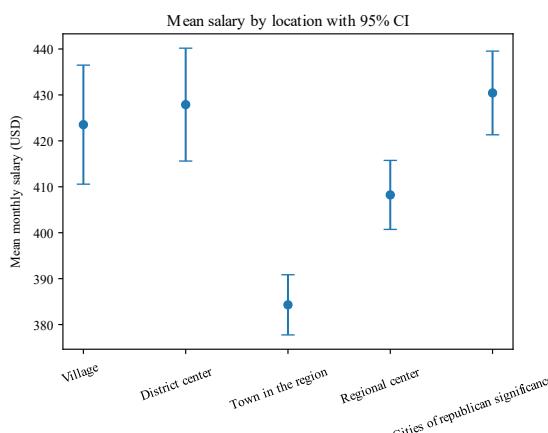


Fig. 1: Mean monthly salary by location with 95% confidence intervals ($n = 3142$)

Overall, the results demonstrate statistically significant disparities in nurses' remuneration and satisfaction across different types of healthcare organizations and geographic locations in Kazakhstan. Although effect sizes were small, the consistent direction of differences indicates structural inequalities rather than random variation. These findings highlight that remuneration and job satisfaction are influenced not only by economic factors but also by organizational and regional contexts that shape working conditions and professional motivation. The identified patterns provide a solid empirical basis for the subsequent discussion on how systemic reforms - guided by the

$\chi^2(36) = 344.83$, $p < 0.001$, Cramér's $V = 0.166$ (salary \times location),
 $\chi^2(27) = 331.09$, $p < 0.001$, Cramér's $V = 0.187$ (salary \times organization type).

The modal income range was 414–619 USD, accounting for 64.7% of respondents. Nurses in inpatient facilities were overrepresented in the upper mid-range brackets (518–619 USD), whereas those in primary health care and dispensary services clustered in the lower mid-range (311–516 USD).

The key outcomes of inferential analyses are summarized in [Table 1](#), which presents the results of statistical tests applied to assess the associations between salary, workplace characteristics, and job satisfaction.

Table 1: Inferential statistical tests for key associations ($n = 3,142$)

Test	Statistic	df	p-value	Effect size
χ^2 : Salary satisfaction \times location	52.94	4	< 0.001	$V = 0.13$
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χ^2 : Salary bracket \times organization type	331.09	27	< 0.001	$V = 0.187$

principles of decent work and international labor standards - can address existing disparities and improve workforce sustainability.

5. Discussion

5.1. General interpretation of key findings

This study reveals that the working conditions and professional development system of nurses in Kazakhstan remain constrained by structural and institutional barriers. The key finding - limited autonomy, excessive administrative control, and insufficient resource allocation - explains why nursing continues to function as a subordinate rather than an autonomous component of healthcare governance.

Compared with findings from [Magalhães et al. \(2022\)](#), who reported similar hierarchical pressures in Latin American and European hospitals, the persistence of a vertical administrative culture in Kazakhstan reflects a legacy of centralized management rather than an outcome of recent reform failures.

The practical implication is clear: unless the administrative model transitions toward shared governance and nurse-led decision-making, healthcare modernization goals will remain unattainable. This gap between reform rhetoric and workplace reality also mirrors the "implementation deficit" observed in many LMICs ([Macey et al., 2022](#); [Imam et al., 2023](#)).

5.2. Professional status and social visibility

The data show that nurses in Kazakhstan continue to experience professional invisibility, both in institutional governance and in patient

perception. This mirrors international evidence ([WHO, 2020](#)) showing that physician-dominated models marginalize nurses' clinical voices.

Theoretically, this reflects what organizational sociology terms a status hierarchy, where occupational prestige determines participation in decision-making. In OECD countries that institutionalized Advanced Practice Nursing models, such as Canada or Australia, this hierarchy was mitigated through competency-based licensing and professional self-regulation ([Konlan et al., 2023](#)).

The "so what" implication is that Kazakhstan's reforms must extend beyond declarative recognition of nurses' status. The creation of professional councils, participation in standard-setting, and co-management mechanisms are essential to transform social visibility into institutional authority.

5.3. Overload and institutional vulnerability

Another central finding concerns chronic work overload: over 70% of respondents report systematic overtime, multitasking, and staff shortages. This corresponds to the high-demand-low-control" model ([Corrocher et al., 2024](#); [Pinkawa and Dörfel, 2024](#)), where employees face excessive demands with limited influence over work processes.

Theoretical explanations point to inadequate workforce planning and the absence of labor standards regulating nurse-to-patient ratios - an issue repeatedly documented in LMICs ([Imam et al., 2023](#)).

Practically, such an imbalance leads to emotional exhaustion, burnout, and declining quality of care, as also demonstrated by [Dos Santos et al. \(2022\)](#) and [Cohen et al. \(2023\)](#).

The "so what" dimension lies in policy design: the implementation of staffing norms and participatory scheduling systems could directly reduce psychosocial risks and strengthen institutional resilience.

5.4. Psycho-emotional state: burnout as a systemic issue

The study's most alarming result is that over 40% of nurses exhibit signs of professional burnout. In theoretical terms, burnout functions as both a psychological symptom and an organizational indicator of systemic dysfunction. International studies ([Meng et al., 2021](#)) show that burnout correlates strongly with lack of autonomy, inadequate recognition, and absence of coping mechanisms.

In Kazakhstan, the concentration of burnout among younger nurses (under five years of experience) reveals a pattern of early demotivation. The explanation lies in unmet expectations: despite professional education, nurses encounter rigid hierarchies and limited progression, leading to disillusionment.

The implications are significant. Burnout undermines care quality, increases absenteeism, and accelerates attrition - a trend confirmed globally ([Tatli et al., 2024](#)). Establishing psychological support services, mentoring systems, and well-being programs is thus not merely a social measure but an economic necessity to retain skilled staff.

5.5. Compensation issues and perceived social inequity

The survey revealed that over 70% of nurses are dissatisfied with their pay and the lack of compensation mechanisms. This finding aligns with organizational justice theory, which posits that perceived inequity reduces engagement and trust ([Dahleez and Aboramadan, 2025](#)).

Comparatively, LMIC studies ([Konlan et al., 2023](#); [Macey et al., 2022](#)) confirm that low remuneration is the main driver of nurse migration and reduced morale. In rural Kazakhstan, where salaries often fall below the subsistence minimum, inequity is intensified by the absence of housing and remoteness allowances.

Theoretically, wage dissatisfaction signals a disconnection between labor value and social recognition.

Beyond economic frustration, it generates moral disengagement and weakens loyalty to the public health mission. Therefore, introducing differentiated pay scales, performance-based bonuses, and transparent incentive systems is crucial to restoring fairness and motivation.

5.6. Professional development and educational deficit

Another significant finding concerns the lack of systematic access to continuous education - over 60% of nurses had not participated in professional free training during the past two years. This educational gap parallels global patterns reported by the International Council of Nurses and ILO Recommendation No. 157, which call for institutionalized lifelong learning.

Compared with OECD countries, where up to 5% of the nursing education budget is allocated to leadership and innovation ([WHO, 2020](#)), Kazakhstan's continuing education remains fragmented and underfunded. Interviews with educators confirm the mismatch between curricula and practical needs - an issue also highlighted by [Kanungo et al. \(2024\)](#) in India and [Amna and Rehman \(2025\)](#) in Pakistan.

The theoretical explanation lies in the absence of a national competency framework. Without it, educational programs cannot adapt to evolving clinical roles.

Establishing a unified competency-based system will directly enhance nurses' professional identity and integrate Kazakhstan into the global nursing education space.

5.7. Awareness of ILO Convention No. 149 and international standards

A striking finding is that only 4.2% of respondents were aware of ILO Convention No. 149. This indicates not only low legal literacy but also the absence of institutional communication about international obligations.

Similar patterns are observed in LMICs with partial ratification of ILO standards ([Imam et al., 2023](#); [Konlan et al., 2023](#)), where a lack of awareness prevents bottom-up advocacy.

Theoretically, this represents a gap in norm diffusion: without domestic dissemination, international conventions remain symbolic. The practical implication is encouraging - once informed, over 85% of nurses supported the Convention, showing readiness for reform.

Raising awareness and institutionalizing professional registries, as practiced in Brazil, the Philippines, and Canada, could anchor Kazakhstan's reforms in the global Decent Work framework.

5.8. Recommendations and policy implications

Based on these findings, several interconnected policy actions emerge. Ratification of ILO Convention No. 149 would legitimize Kazakhstan's commitment to decent work and trigger legal harmonization in labor and health legislation. Developing a competency-based national qualifications framework would enable transparent career progression.

The establishment of a centralized professional development platform - offering international courses and certifications - could address the education gap. Integrating monitoring systems for well-being and psychological safety aligns with evidence from [Cohen et al. \(2023\)](#) and [Mersal et al. \(2025\)](#), where institutional surveillance reduced burnout and improved retention.

Finally, empowering trade unions and professional associations is crucial to enhancing collective representation and ensuring participatory reform. Together, these measures would transform nursing from an auxiliary occupation into a professional, autonomous pillar of Kazakhstan's healthcare system.

5.9. Study limitations

This study's limitations include reliance on self-reported data, uneven regional representation, and partial use of online interviews. However, triangulation of methods - surveys, focus groups, and expert interviews - and a large sample size of over 3,100 respondents strengthen validity.

Theoretically, self-assessment bias may lead to underreporting of dissatisfaction, suggesting that the actual prevalence of burnout and inequity could be even higher. Despite these constraints, the findings provide robust empirical evidence and a solid

foundation for policy design, particularly in developing a Decent Work model for nursing in Kazakhstan.

6. Conclusion

This study identified a wide range of socio-professional, organizational, and institutional challenges faced by nurses within Kazakhstan's healthcare system. The empirical findings - derived from a large-scale sociological survey, focus group discussions, in-depth interviews, and expert consultations - reveal a clear gap between the international standards for nursing established by ILO Convention No. 149 and Recommendation No. 157 and the current realities of practice in the country.

The main conclusions of the study can be summarized as follows:

1. Working conditions: persistent overwork, staffing shortages, unbalanced workloads, weak protection against professional burnout, and insufficient compensation mechanisms, particularly in rural areas.
2. Undervaluation of the nursing role: the majority of nurses perceive their professional activities as secondary within a physician-dominated hierarchy, lacking sufficient autonomy and participation in decision-making processes.
3. Limited opportunities for professional development: a shortage of educational programs, weak integration of international standards into training content, and the absence of institutional mechanisms for career advancement.
4. Low level of legal literacy: most respondents were previously unaware of ILO Convention No. 149, underscoring the need for broad information and awareness campaigns.
5. Positive response to international standards: more than 85% of participants expressed support for the ratification of the Convention and the incorporation of its principles into the regulation of working conditions and professional status.

The systemic deficiencies identified in this study undermine not only the quality of nursing care but also the overall resilience of Kazakhstan's healthcare system amid growing demographic, epidemiological, and workforce-related challenges. In light of these findings, there is a pressing need to transition from fragmented, ad hoc initiatives toward a comprehensive national strategy for the transformation and modernization of nursing in Kazakhstan. The study's recommendations include: Based on the study's findings, several interconnected policy actions are proposed to strengthen the institutional, professional, and social foundations of nursing in Kazakhstan. Each recommendation identifies potential implementing bodies and outlines suggested first steps to facilitate practical implementation.

1. Ratify ILO Convention No. 149 on Nursing Personnel

- Implementing body: Ministry of Health of the Republic of Kazakhstan.
- Establish an inter-ministerial working group to develop a comprehensive legal and socio-economic justification for ratification, including a comparative analysis of Kazakhstan's current legislative framework against the provisions of the Convention.
- Expected impact: Ratification would formalize Kazakhstan's commitment to the principles of decent work, initiate the harmonization of labor and healthcare legislation, and enhance the country's international standing in the protection of labor rights and the promotion of decent working conditions.

2. Create a Centralized Digital Platform for Continuous Professional Development

- Implementing body: Ministry of Health of the Republic of Kazakhstan and the Center for the Development of Human Resources, with technical and methodological support from international partners such as the WHO and the International Training Centre of the ILO.
- Design and pilot an integrated online platform that consolidates local and international training opportunities, certification modules, and academic mobility programs, including language preparation and clinical specialization tracks.
- Expected impact: The platform would help eliminate educational disparities, ensure equitable access to lifelong learning opportunities, and enhance the professional competitiveness of nurses in both national and global healthcare labor markets.

3. Integrate Monitoring Systems for Well-Being and Psychological Safety in Healthcare Institutions

- Implementing body: Ministry of Health of the Republic of Kazakhstan.
- Launch a pilot project in major hospitals to collect anonymized data on burnout levels, stress indicators, and job satisfaction using validated instruments referenced in [Cohen et al. \(2023\)](#) and [Mersal et al. \(2025\)](#). The project should establish a unified reporting mechanism for assessing psychosocial risks and guiding organizational interventions.
- Expected impact: Regular monitoring would support the implementation of evidence-based measures to enhance psychosocial well-being, reduce staff turnover, and strengthen resilience among healthcare workers, thereby improving the overall sustainability and quality of healthcare services.

4. Empower Trade Unions and Professional Associations of Nurses

- Implementing body: Trade Union (AQNIET) and the Ministry of Health of the Republic of Kazakhstan.
- Establish joint labor-management committees at institutional and regional levels to involve nurses in policy dialogues, workplace safety discussions, and collective bargaining processes concerning remuneration, professional recognition, and working conditions.
- Expected impact: Strengthening collective representation would promote participatory governance, enhance nurses' professional autonomy, and ensure their active involvement in decision-making processes shaping healthcare reform and workforce policy.

5. Develop a National Strategy for Nursing Leadership and Governance

- Implementing body: Ministry of Health of the Republic of Kazakhstan, in partnership with leading universities.
- First step: Draft and adopt a comprehensive strategic roadmap defining objectives for leadership development, research advancement, and policy integration, drawing on the WHO Global Strategic Directions for Nursing and Midwifery 2021–2025.
- Expected impact: Institutionalizing structured leadership pathways would elevate nursing from an auxiliary function to a professional and autonomous pillar of Kazakhstan's healthcare system, fostering innovation, accountability, and evidence-based management practices.
- Summary Impact: Together, these measures constitute a coherent reform framework that integrates legal modernization, educational advancement, institutional monitoring, and professional empowerment. Implemented collectively, they would elevate nursing to a fully recognized, self-regulated profession capable of driving innovation, enhancing the quality of care, and ensuring sustainable human resource development within Kazakhstan's healthcare system.

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Compliance with ethical standards

Ethical considerations

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. All participants were fully informed about the objectives and procedures of the research and

provided their voluntary informed consent prior to participation. The online survey was administered anonymously, with no personal or identifying data collected. All collected information remained strictly confidential and under the exclusive control of the author.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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