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## THE EVOLUTION AND IMPLEMENTATION OF THE ADVANCED PRACTICE NURSE MODEL IN DEVELOPED AND DEVELOPING COUNTRIES. LITERATURE REVIEW

**Meruyert B. Bolatova**<sup>1</sup>, <https://orcid.org/0000-0002-7152-7104>

**Dariga S. Smailova**<sup>2</sup>, <https://orcid.org/0000-0002-7152-7104>

**Zhanar M. Zhumanbaeva**<sup>1</sup>, <http://orcid.org/0000-0001-8941-862>

**Gulnaz K. Kairatova**<sup>1</sup>, <https://orcid.org/1234-5678-9101-1121>

**Dinara S. Serikova-Esengeldina**<sup>1</sup>, <https://orcid.org/0000-0002-9470-9488>

**Merey M. Askarova**<sup>1</sup>, <https://orcid.org/0009-0002-6936-2010>

**Bibinur K. Sydykova**<sup>3</sup>, <https://orcid.org/0000-0002-7013-3461>

**Lyazat M. Aktayeva**<sup>4</sup>, <https://orcid.org/0009-0006-0950-678X>

**Zaure A. Baigozhina**<sup>5</sup>, <https://orcid.org/0000-0001-7098-6782>

**Rauana M. Kissina**<sup>1</sup> <https://orcid.org/0000-0002-1849-5596>

<sup>1</sup>Semey Medical University, Semey, Republic of Kazakhstan;

<sup>2</sup>Asfendiyarov Kazakh National Medical University, Almaty, Kazakhstan;

<sup>3</sup>Kazakhstan Medical University "KSPH", Almaty, Kazakhstan;

<sup>4</sup>the Republican Research Institute of Occupational Safety, Almaty, Republic of Kazakhstan.

<sup>5</sup>Astana Medical University the Department of Nursing, Astana, Republic of Kazakhstan.

### Abstract

**Introduction:** There has been exponential growth in demand for advanced nursing services worldwide. Experience from other countries demonstrates that the adoption of a patient-centered healthcare model is accompanied by an increase in the professional workload and functional responsibilities of nursing staff. According to the World Health Organization, a shortage of nursing staff is prevalent in most countries worldwide, but this problem is particularly severe in developing countries.

**Aim.** The experience of developing advanced practice nursing in developed countries around the world.

**Search strategy:** We studied publicly available articles covering 8 years in depth and using the following databases and specialized search engines: PubMed, Google Scholar, Cochrane Library, Web of Science, and Scopus.

**Results.** A review highlights that developing a positive professional environment is essential to maintaining healthy and safe working conditions for healthcare workers, including nurses. The safety and quality of healthcare delivery are directly impacted by this setting. Additionally, successful adoption of the advanced practice nurse model relies on a stable regulatory framework, a high standard of professional education, and effective collaboration across various disciplines. In nations that fulfill these prerequisites, the implementation of advanced practice nursing results in better clinical outcomes, greater access to healthcare services, and a decreased burden on the overall healthcare system.

**Conclusions.** Thus, international experience shows that the successful implementation of the advanced practice nurse model is possible with regulatory support, high-quality training, and a supportive professional environment, leading to improved access to and quality of healthcare.

**Keywords:** advanced practice nurse, barriers, working conditions, professional development, practicing nurse.

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### Резюме

## ЭВОЛЮЦИЯ И РЕАЛИЗАЦИЯ МОДЕЛИ МЕДСЕСТРЫ РАСШИРЕННОЙ ПРАКТИКИ В РАЗВИТЫХ И РАЗВИВАЮЩИХСЯ СТРАНАХ. ОБЗОР ЛИТЕРАТУРЫ

**Меруерт Б. Болатова**<sup>1</sup>, <https://orcid.org/0000-0002-7152-7104>

**Дарига С. Смаилова**<sup>2</sup>, <https://orcid.org/0000-0002-7152-7104>

**Жанар М. Жуманбаева**<sup>1</sup>, <http://orcid.org/0000-0001-8941-862>

**Гульназ К. Кайратова**<sup>1</sup>, <https://orcid.org/1234-5678-9101-1121>

**Динара С. Серикова-Есенгельдина<sup>1</sup>**, <https://orcid.org/0000-0002-9470-9488>

**Мерей М. Аскарова<sup>1</sup>**, <https://orcid.org/0009-0002-6936-2010>

**Бибінұр Қ. Сыдыкова<sup>3</sup>**, <https://orcid.org/0000-0002-7013-3461>

**Лязат М. Актаева<sup>4</sup>**, <https://orcid.org/0009-0006-0950-678X>

**Зауре А. Байгожина<sup>5</sup>**, <https://orcid.org/0000-0001-7098-6782>

**Рауан М. Кисина<sup>1</sup>**, <https://orcid.org/0000-0002-1849-5596>

<sup>1</sup> НАО «Медицинский университет Семей», г. Семей, Республика Казахстан;

<sup>2</sup> Казахский национальный медицинский университет имени С.Д. Асфендиярова, г. Алматы, Республика Казахстан;

<sup>3</sup> Казахстанский медицинский университет «ВШОЗ», г. Алматы, Республика Казахстан;

<sup>4</sup> РГП на ПХВ «Республиканский научно-исследовательский институт по охране труда», г. Астана, Республика Казахстан;

<sup>5</sup> НАО «Медицинский университет Астана», г. Астана, Республика Казахстан.

**Введение:** Во всем мире наблюдается экспоненциальный рост спроса на услуги передовой сестринской практики. Анализ международного опыта показывает, что реализация модели медицинской помощи, ориентированной на потребности пациента, сопровождается возрастанием профессиональной нагрузки на медицинских сестер, а также расширением спектра их функциональных обязанностей. Согласно данным Всемирной организации здравоохранения, дефицит медицинских сестер наблюдается в большинстве стран мира, однако наибольшую остроту эта проблема приобретает в развивающихся государствах.

**Цель:** Изучение опыта развития расширенной практики медицинских сестер в развитых странах мира.

**Стратегия поиска:** Изучены статьи, находящиеся в открытом доступе, глубиной за 8 лет, с использованием следующих баз данных научных публикаций и специализированных поисковых систем: PubMed, Google Scholar, Cochrane Library, Web of Science, Scopus.

**Результаты.** Проведенный нами обзор научной литературы показывает, что положительная профессиональная среда имеет решающее значение для обеспечения здоровых и безопасных условий труда медицинских работников, включая медсестер, что напрямую отражается на качестве и безопасности медицинской помощи. Кроме того, успешная реализация модели медсестры расширенной практики возможна только при наличии устойчивой нормативно-правовой базы, высокого уровня профессионального образования и эффективного междисциплинарного взаимодействия. В странах, где эти условия соблюдены, расширенная практика приводит к улучшению клинических результатов, увеличению доступности услуг и снижению нагрузки на систему здравоохранения.

**Выводы.** Таким образом, международный опыт свидетельствует, что успешная реализация модели медсестры расширенной практики возможна при наличии нормативной поддержки, качественной подготовки и благоприятной профессиональной среды, что приводит к повышению доступности и качества медицинской помощи.

**Ключевые слова:** медсестра расширенной практики, барьеры, условия труда, развитие профессий, практикующая медсестра.

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Түйіндеме

## **ДАМЫҒАН ЖӘНЕ ДАМУШЫ ЕЛДЕРДЕГІ КЕҢЕЙТІЛГЕН ТӘЖІРИБЕЛІК МЕЙІРГЕР МОДЕЛІНІҢ ЭВОЛЮЦИЯСЫ ЖӘНЕ ЖҮЗЕГЕ АСЫРЫЛУЫ. ӘДЕБИЕТТІК ШОЛУ.**

**Меруерт Б. Болатова<sup>1</sup>**, <https://orcid.org/0000-0002-7152-7104>

**Дарига С. Смаилова<sup>2</sup>**, <https://orcid.org/0000-0002-7152-7104>

**Жанар М. Жуманбаева<sup>1</sup>**, <http://orcid.org/0000-0001-8941-862>

**Гульназ К. Кайратова<sup>1</sup>**, <https://orcid.org/1234-5678-9101-1121>

**Динара С. Серикова-Есенгельдина<sup>1</sup>**, <https://orcid.org/0000-0002-9470-9488>

**Мерей М. Аскарова<sup>1</sup>**, <https://orcid.org/0009-0002-6936-2010>

**Бибінұр Қ. Сыдыкова<sup>3</sup>**, <https://orcid.org/0000-0002-7013-3461>

**Лязат М. Актаева<sup>4</sup>**, <https://orcid.org/0009-0006-0950-678X>

**Зауре А. Байгожина<sup>5</sup>**, <https://orcid.org/0000-0001-7098-6782>

**Рауан М. Кисина<sup>1</sup>**, <https://orcid.org/0000-0002-1849-5596>

<sup>1</sup> «Семей медицина университеті» КеАҚ Семей қ., Қазақстан Республикасы;

<sup>2</sup> С.Ж.Асфендияров атындағы Қазақ ұлттық медицина университеті, Алматы қ., Қазақстан Республикасы;

<sup>3</sup> ҚДСЖМ" Қазақстандық Медицина Университеті, Алматы, Қазақстан Республикасы;

<sup>4</sup> «Еңбекті қорғау жөніндегі Республикалық ғылыми-зерттеу институты" ШЖҚ РМК, Астана қ., Қазақстан Республикасы;

<sup>5</sup> «Астана медицина университеті» КеАҚ, Астана қ., Қазақстан Республикасы.

**Кіріспе:** Бүкіл әлемде мейіргер ісінің озық қызметтеріне сұраныстың экспоненциалды өсуі байқалады. Халықаралық тәжірибені талдау пациенттің қажеттіліктеріне бағдарланған медициналық көмек моделін іске асыру мейіргерлердің кәсіптік жүктеменің ұлғаюымен, сондай-ақ олардың функционалдық міндеттерінің спектрінің кеңеюімен қатар жүретінін көрсетеді. Дүниежүзілік денсаулық сақтау ұйымының мәліметтері бойынша, мейіргерлердің тапшылығы әлемнің көптеген елдерінде байқалады, бірақ бұл мәселе дамушы елдерде ең өткір болып табылады.

**Зерттеу мақсаты:** әлемнің дамыған елдеріндегі кеңейтілген тәжірибе мейіргерлерінің даму тәжірибесін зерттеу.

**Іздеу стратегиясы:** Ғылыми жарияланымдар мен мамандандырылған іздеу жүйелерінің келесі дерекқорларын қолдана отырып, 8 жыл ішінде ашық қол жетімді мақалалар зерттелді: PubMed, Google Scholar, Cochrane Library, Web of Science, Scopus.

**Нәтижелер.** Біз жүргізген ғылыми әдебиеттерге шолу көрсеткендей, оң кәсіби орта мейіргерлерді қоса алғанда, денсаулық сақтау қызметкерлері үшін салауатты және қауіпсіз жұмыс жағдайларын қамтамасыз етуде шешуші рөл атқарады, бұл тікелей денсаулық сақтау сапасына және қауіпсіздігіне әсер етеді. Сонымен қатар, деректерді талдау көрсеткендей, жоғары тәжірибелі мейіргер моделінің сәтті енгізілуі тек тұрақты нормативтік-құқықтық орта, жоғары кәсіби білім және тиімді салалараралық ынтымақтастық жағдайында ғана мүмкін. Осы талаптар орындалған елдерде жоғары тәжірибелі мейіргер қызметі клиникалық нәтижелерді жақсартып, қызметтерге қолжетімділікті арттырып, денсаулық сақтау жүйесіне түсетін жүктемені азайтады.

**Қорытынды.** Осылайша, халықаралық тәжірибе көрсеткендей, реттеуші қолдау, жоғары сапалы оқыту және қолайлы кәсіби орта болған жағдайда жоғары білікті мейіргер моделінің сәтті енгізілуі мүмкін, бұл денсаулық сақтау қызметтеріне қолжетімділікті және олардың сапасын жақсартуға әкеледі.

**Түйінді сөздер:** кеңейтілген мейіргер, көдергілер, еңбек жағдайлары, кәсіптерді дамыту, мейіргер тәжірибесі.

#### **Дәйексөз үшін:**

Болатова М.Б., Смаилова Д.С., Жуманбаева Ж.М., Кайратова Г.К., Серикова-Есенгельдина Д.С., Аскарова М.М., Сыдыкова Б.Қ., Ақтаева Л.М., Байгожина З.А., Кисина Р.М. Дамыған және дамушы елдердегі кеңейтілген тәжірибелік мейіргер моделінің эволюциясы және жүзеге асырылуы. Әдебиеттік шолу // Ғылым және Денсаулық сақтау. 2025. Vol.27 (6), Б. 220-230. doi 10.34689/SH.2025.27.6.024

#### **Introduction**

Global transformation of healthcare systems is marked by an increase in chronic diseases, shortages of medical staff, and the pressing need to ensure access to high-quality care that is why the development of the Advanced Practice Nurse (APN) role has become increasingly crucial. This model, introduced in response to evolving population needs and the pursuit of more efficient resource allocation, has gradually become a cornerstone of modern healthcare systems in developed countries. Advanced practice nurses possess in-depth clinical expertise and expanded authority in diagnosis, treatment, and patient management. They play a vital role in primary healthcare, disease prevention, and the coordination of interdisciplinary collaboration.

In many countries, nurses make up half of all health care professionals and have a vital role in how health actions are organized and applied, both at the front-line and managerial levels. They are often the first and sometimes only health professional a patient will see, and the quality of their initial assessment and subsequent care is vital to strong health outcomes [62].

One of the priority tasks for the development of nursing services in the Republic of Kazakhstan is to strengthen the role of nurses in the healthcare system. This includes expanding their clinical authority and emphasizing the importance of their independent professional activities. Nurses play a key role in the prevention of chronic non-communicable diseases, making their independent practice

an important component of the functioning of practical healthcare [63, 28].

The growing need to prevent health problems and pandemics, as well as to reduce health inequalities, and ongoing changes in population structure, are affecting healthcare worldwide. There is a need to expand the diversity of career opportunities for nurses [24] and to retain nursing staff in health care [49, 17]. In addition, it is necessary to improve the professional competence of nurses and introduce advanced nursing practices to ensure and improve the quality and accessibility of health care. The development of advanced nursing practice roles is part of the WHO Global Strategy on Human Resources for Health: Workforce 2030 [12, 61, 25].

**Aim** to study the experience of developing advanced practice nurses in the developed countries of the world.

#### **Search strategy**

We studied publicly available articles covering 8 years in depth and using the following databases of scientific publications and specialized search engines: PubMed, Google Scholar, Cochrane Library, Web of Science, and Scopus.

*The information search was conducted by keywords:* advanced practice nurse, barriers, nursing care, independent nursing appointment, and nurse practitioner.

*Inclusion criteria:* Publications of the level of evidence A, B: meta-analyses, systematic reviews, cohort, and cross-sectional studies.

The exclusion criteria were conference materials, collections of abstracts containing a limited amount of information, articles with paid access, and articles published before 2015.

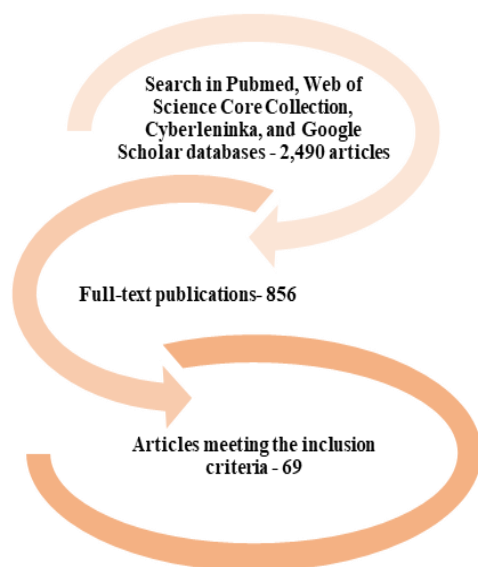


Figure 1. Article selection algorithm.

#### Research results.

#### Becoming an advanced practice nurse in developed and developing countries.

Health systems continue to transform and expand access to healthcare and improve the quality of health services and health outcomes for populations around the world [40]. In many countries, the role of non-physician service providers, such as Advanced Practice Nurses (APNs), has been introduced to achieve universal health coverage [10, 64] and improve patient health outcomes [51, 54, 32, 21]. However, the implementation of APNs in many countries faced difficulties and thus required actions to promote proper implementation [52, 4, 18]. An international study aimed to assess the implementation of advanced practice nursing rules worldwide found large differences in educational requirements, rules, and scope of practice in 26 countries in North America, Europe, Asia, South America, and Africa [20]. Out of the 16 countries that have implemented the role of nurse practitioner (NP), only 9 countries have regulated the role of NP. Only six of the thirteen countries that have adopted the role of clinical nurse specialist (CNS) have regulated it [18]. Out of the 10 countries that have implemented common APN roles, without specifying whether this applies to NP or CNS, only 5 countries have regulated APNs [18].

According to the World Health Organization (WHO), it was estimated that there will be a shortage of 7.2 million health workers to deliver healthcare services worldwide, and by 2035, the demand for nurses will reach 12.9 million [65]. The inadequate supply of nurses has notably created many negative impacts not only on RNs but also on patient health-related outcomes and on efforts to fight disease and improve health, resulting in increased workload for nurses and, later, decreased quality of nursing care [22, 35].

In response to the growing need for greater access to healthcare amid declining resources, more than 70 countries have implemented or plan to implement advanced

nursing practices (International Council of Nurses [ICN]) [26]. The ICN defines APNs as those who have acquired, through master's- or doctoral-level education, complex decision-making skills, as well as advanced clinical expertise and competencies to provide direct patient and family care [23]. CNS and NP are included in this definition; their roles and responsibilities depend on the healthcare setting in which they are integrated. While APNs typically work autonomously, make diagnoses, prescribe new medications, and serve a broad patient population, the scope of practice of a CNS is more specialized and assumes that an initial medical diagnosis has been made; it also includes a large proportion of non-clinical responsibilities, such as research and education [53].

The social and economic environments have an impact on population health (Scanlon & Reinisch, World Health Organization). Countries identified as low-income countries (LICs) or lower-middle-income countries (LMICs) have insufficient healthcare resources and, as a result, have poorer population health outcomes. Nurses working in Advanced Practice Nursing or Advanced Nursing Practice roles can provide a wide range of care and treatment services and are an example of developing a workforce role that can address health care disparities. These nurses go by many role titles and have different skills, education, and regulatory requirements [66].

The first advanced nursing roles were developed in the US and Canada in the late 1960s/70s, in the UK in the 1980s, and in other high-income countries in the 1990s and beyond [26]. Subsequently, this advanced role continued to develop worldwide, albeit at varying speeds, often due to a recognized need to increase the number of practicing physicians in areas with insufficient resources and underserved populations. From the outset, nurses were used to provide primary health care, traditionally in underserved areas and for vulnerable populations. Their role has now been expanded to include other types of primary health care services [50], and this change has been implemented in several countries around the world [25].

Advanced Practice Nursing is currently expanding across the world. The APN's role is characterized by its heterogeneity, as the policies and strategies for its implementation differ depending on the country [26]. In Spain, some autonomous communities have included APNs in health care, mainly to deal with chronic diseases: the APN for Urgent Care of Minor Illnesses in Catalonia or the Advanced Clinical Nurse in the Basque Country [31]. In Andalusia, one of the largest communities in Spain, there are APN roles in six areas: diabetology, stomatherapy, oncology, palliative care, chronic wounds, and case management [27]. The latter is the most well-known by the population, as its functions are more established, and it was the first advanced practice nursing role on a regional and national level [33].

Internationally, APNs are recognized as generalist or specialized nurses who have completed a master's degree required for expert and enhanced clinical practice, including complex decision-making in managing patient care (International Council of Nurses [ICN]) [29]. The World Health Organization (WHO) has advocated for the expanded use of APNs across countries to strengthen their nursing workforce, increase access to care, and improve

the quality of care. In a recent review of the international literature, a substantive increase in the number of countries investing in advanced practice nursing roles over the last decade was noted, especially in high-income countries [10]. However, many countries, including France, are in the early stages of advanced practice nursing role development and implementation. The introduction of new healthcare providers, including APNs, is a complex process. Barriers to the effective implementation of advanced practice nursing roles are extensive and widely reported, even in countries where the roles are well established [6].

Factors that influence role implementation include role clarity, interprofessional collaboration, stakeholder involvement, regulation, funding, APN readiness, and organizational leadership and preparation for the roles. Failure to address these factors means that patients, healthcare providers, and organizations do not benefit from the full impact of the roles and has implications for APN job satisfaction, recruitment, and retention. In France, the government recently approved the credentialing requirements and introduction of APNs in priority areas of need [37]. To achieve optimal utilization and impact, it is essential to monitor how advanced practice nursing roles are being introduced into practice settings and to address barriers to effective role implementation [9].

By the 2000s, every province in Canada had legally recognized the role of nurse practitioners, and their numbers began to grow rapidly [28]. In the United Kingdom, the first nurse practitioner training program was launched by the Royal College of Nursing in the early 1990s. In the following decades, the concept of advanced nursing practice spread throughout the United Kingdom: by 2018, a significant number of advanced practice nurses were already working in England, Scotland, Wales, and Northern Ireland, both in primary care and in specialized services. In continental Europe, the introduction of advanced nursing practice began somewhat later: one of the first countries was the Netherlands, where this model began to develop in the mid-2000s in response to a predicted shortage of doctors. Over the past 20 years, approximately 2,750 nurse practitioners have been trained and registered in the Netherlands (as of 2016), and they have become firmly integrated into the system, improving the quality of care by combining medical and nursing approaches. In Finland, a national initiative for advanced nursing practice was launched in 2016. In China, the development of advanced nursing practice is in its infancy and faces a number of structural and regulatory challenges [47]. In recent years, this practice has been successfully implemented in various countries, such as Germany, Australia, New Zealand, Nigeria, and others [38]. In many of these countries, the introduction of advanced nursing practice has involved significant changes in legislation and professional regulation, as well as reforms to professional practice requirements and educational programs for nurses.

Similarly, in the Pacific Island Countries (PICs), nursing shortages are becoming a widespread problem [19]. In the Solomon Islands, Papua New Guinea, and Vanuatu, the density of health workers per 1,000 populations (mainly nurses and midwives) is well below the minimum density threshold (4.45 per 1,000 population) for maintaining basic health services [55].

Nursing reform in Kazakhstan is being implemented in stages and is already showing concrete results. In the Republic of Kazakhstan, bachelor's degrees in nursing have been offered since 2014. Currently, 37 medical colleges that have received the status of higher colleges provide this training. Graduates who have completed the applied bachelor's program are bachelor's degree holders in nursing, ready to work independently with patients. In 2007, all medical universities in Kazakhstan introduced an academic bachelor's degree program in nursing, and master's degree programs in nursing and doctoral programs in nursing science are also being implemented [1].

In July 2018, a pilot project was launched aimed at introducing a new model of nursing services in medical organizations. As part of this project, specialists with applied and academic bachelor's degrees in nursing were given expanded professional powers, moving from being executors of medical prescriptions to equal participants in the treatment process. Based on the results of the trials, the pilot project was deemed successful, and since 2020, the model of expanded nursing practice has been actively implemented in the primary health care system throughout the country. Expanded nursing practice in Kazakhstan contributes to the redistribution of responsibilities between doctors and nurses, which optimizes medical care, increases its effectiveness, and improves patient satisfaction. The introduction of this model brings the national healthcare system closer to international standards and contributes to raising the status of the nursing profession [13].

#### **Factors causing a shortage of nursing staff.**

There are many factors affecting the healthcare system as a result of nursing shortages. These include a decline in the number of nursing students enrolled in nursing programs and an increase in early retirement due to health problems [1, 67]. However, one of the main factors reported in many countries is inadequate workforce policy and planning [48].

In countries such as Tonga, Samoa, and Fiji, the main factors causing nursing shortages are the very high rates of migration of nurses to other countries, particularly Australia and New Zealand, in search of better working conditions and other opportunities. This has created problems and gaps that needed to be identified to better understand the extent of the nursing shortage and address it quickly and effectively [7].

In Vanuatu, nurses make up only 58% or 12.0 per 10,000 populations, which is below the WHO-recommended ratio of 45 nurses per 10,000 populations. According to the annual report of the Vanuatu Ministry of Health (MoH) (2018), the number of nurses retiring will continue to increase over the next 10 years, but will be disproportionate to the number of qualified nurses graduating from the Vanuatu College of Nursing Education (VCNE), which will pose a serious challenge for the Vanuatu Ministry of Health in filling vacant positions. This will place a greater burden on nurses, which will affect their productivity. This study aims to examine nurses' perceptions of the impact of the nursing shortage and their productivity in providing quality care in the Republic of Vanuatu in 2020 [2].

In many countries, healthcare systems face serious challenges due to a persistent shortage of qualified medical

personnel [5]. The key factors contributing to this problem are limited investment in professional education, training, working conditions, remuneration, and management [41]. As a result, there is an acute shortage of specialists, high staff turnover, premature termination of professional activity, and significant internal and international migration of healthcare workers.

The World Health Organization currently considers nurses to be an important resource for meeting the growing needs of the population for accessible and quality healthcare. The modern healthcare system focuses on training a new generation of nurses [36], improving the regulatory framework, creating conditions for the full realization of their professional potential, and effective management of nursing practice [3].

#### **Legislative framework for the professional activities of nurses in the Republic of Kazakhstan.**

The Ministry of Health of the Republic of Kazakhstan has identified the reform of nursing as one of its strategic goals. This is evidenced by the policy documents adopted in the republic: the State Program for the Development of Healthcare in the Republic of Kazakhstan for 2020-2025, the Roadmap for the Modernization of Medical Education, aimed at developing nursing, and the Comprehensive Plan for the Development of Nursing in the Republic of Kazakhstan for 2020-2025 [11].

According to the order of the Ministry of Health of the Republic of Kazakhstan dated December 21, 2020, No. KR DSM -305/2020 "On the approval of the nomenclature of specialties and specializations in the field of healthcare, the nomenclature and qualification characteristics of healthcare workers' positions," the training of specialists in the specialty of "nursing" is carried out at the level of higher and postgraduate medical education, post-secondary medical education, technical and vocational education [18].

#### **Regulatory framework for the professional activities of advanced practice nurses in the Republic of Kazakhstan.**

The regulatory framework for the activities of advanced practice nurses (APNs) in the Republic of Kazakhstan is a key element in the transformation of the healthcare system, aimed at expanding the functions of mid-level medical personnel and improving the effectiveness of primary health care (PHC). The legislative framework defines the professional status, powers, and functional responsibilities of nurses, as well as the standards for their training, certification, and clinical practice.

The central regulatory document governing the activities of EPNs is the Code of the Republic of Kazakhstan "On Public Health and the Healthcare System" of July 7, 2020. For the first time at the legislative level, it establishes the status of an advanced practice nurse as a specialist with post-secondary or higher education in nursing and the right to practice nursing independently. According to Article 127, advanced practice nurses have the right to independently conduct clinical assessments of patients, formulate nursing diagnoses, develop and implement nursing intervention plans, and monitor their effectiveness based on clinical protocols and guidelines [56]. In order to implement the provisions of the Code, subordinate legislation was approved, specifying the functions and powers of nurses. In particular, Order No. KR DSM -199/2020 of the Minister of

Health of the Republic of Kazakhstan, dated November 23, 2020, approved the Rules for the Provision of Nursing Care, which officially enshrine the rights of MRPs to perform independent nursing interventions in accordance with clinical protocols and standards. Following this, Order No. KR DSM -305/2020 of December 21, 2020, established the position of APRN in the nomenclature of healthcare workers' positions and defined the qualification characteristics, educational requirements, and competencies [42].

An advanced practice nurse is a specialist with an applied bachelor's degree in nursing who has expanded clinical functions. Their activities include independent nursing consultations, dynamic monitoring, counseling, screening, vaccinations, and preventive measures, as well as participation in chronic disease management programs and the universal progressive model of patronage service (UPMS).

The regulatory framework continued to develop with the adoption of Order No. 49 of March 30, 2023, which approved the Standard for the Organization of Primary Health Care, and Order No. KR DSM-90 of August 24, 2021, which sets out the range of medical services provided by medical professionals with higher education. Order No. KR DSM -149/2020 of October 23, 2020, also defined the responsibility of primary healthcare providers for monitoring patients with chronic diseases, preventing complications, and reducing the frequency of hospitalizations [43].

However, despite the focus on internationally recognized models of nursing practice, the existing regulatory framework remains fragmented. Documents often contain only general provisions that do not reflect in detail the structure and algorithm of nursing care, without specifying a clear distribution of roles among members of the multidisciplinary team. This hinders the full implementation of the expanded functions of nurses in practice.

Of particular importance in the transformation of nursing is the maintenance of nursing documentation that reflects all stages of the nursing process, from assessing the patient's condition to analyzing the effectiveness of interventions. Systematic and accurate documentation helps ensure continuity of care, legal protection for medical staff, improved quality of medical care, and the development of clinical thinking and evidence-based decisions. In Kazakhstan, as part of standardization, the international CCC (Clinical Care Classification) classification was introduced, adapted to local conditions, containing 175 nursing diagnoses and 788 interventions. In addition, Order No. KR DSM-175/2020 of October 30, 2020, defined the forms of record keeping and instructions for filling them out for MRPs [54].

An analysis of the current regulatory framework suggests that, despite the existence of fundamental legal documents, the system for regulating the activities of MRPs requires further structural improvement. In particular, it is necessary to develop clearer standards for nursing care, algorithms for interprofessional interaction, and mechanisms for the implementation of clinical guidelines and electronic documentation. Currently, the legal status of MRPs does not fully ensure the implementation of the principles of autonomy and professional responsibility, which limits their potential contribution to the reform of primary health care.

### Educational programs

#### Contemporary transformations in the nursing education system in the Republic of Kazakhstan: regulatory guidelines and institutional changes.

In recent decades, education systems in many countries around the world have undergone significant structural and substantive changes. Kazakhstan is no exception: in line with global modernization trends, the national medical education system is undergoing active reform, with particular attention being paid to integration into the European educational space, including in the field of nursing training. Large-scale reforms have already been implemented to improve the quality of nursing training, develop clinical competencies, and expand professional autonomy.

The modernization of the nursing education system in Kazakhstan covers all levels and is focused on compliance with international standards, including quality control of educational programs, the development of practice-oriented training models, and the formation of human resources for the practical healthcare system. Such processes reflect the global trend of raising the educational level of nursing staff -from secondary technical education to bachelor's, master's, and doctoral programs, which significantly expands the professional and career opportunities of specialists [44]. At the same time, despite significant successes, several systemic problems and challenges remain relevant, affecting the quality of nurse training in the country [45].

Table 1.

#### Key problems in the nursing training system.

|                                                                               |                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Educational programs not meeting modern clinical practice requirements</b> | In many institutions, curricula do not reflect current advances in medical science, technological innovations, and changing patient needs, which reduces the relevance of the knowledge gained.                                                                                |
| <b>Insufficient involvement of nurses in teaching.</b>                        | Often, the educational process is carried out by doctors who do not have specific training in nursing. The lack of teachers with clinical experience in nursing practice in educational institutions hurts the training of future specialists.                                 |
| <b>Limited opportunities for clinical practice.</b>                           | Students often face a shortage of training facilities and clinical placements, which makes it difficult to develop practical skills, especially in a real medical setting.                                                                                                     |
| <b>Low social and professional status of nurses</b>                           | The lack of prestige associated with the profession, limited career advancement opportunities, low salaries, and a weak incentive system are leading to a decline in interest among young people and creating the risk of a future shortage of personnel.                      |
| <b>Limited resources for professional development.</b>                        | The rapid development of medicine requires regular updating of knowledge and skills, but the current system of postgraduate education does not always provide accessible and effective opportunities for continuing professional development (CPD), especially in the regions. |
| <b>Adverse working conditions.</b>                                            | High workload, staff shortages, inadequate material and technical resources, and emotional burnout affect both professional stability and the quality of medical care.                                                                                                         |

A comprehensive approach is needed to overcome these challenges, involving the improvement of educational programs, strengthening cooperation between educational institutions, health care providers, and professional associations, creating incentives for professional growth, developing mentoring, and improving working conditions for nurses.

Thus, the implementation of comprehensive reforms in nursing education in Kazakhstan represents a systematic and strategically significant step towards the formation of a sustainable, competent, and patient-oriented nursing service capable of responding adequately to modern healthcare challenges.

#### Barriers.

Globally, barriers exist for advanced practice nurses (APNs) to practise to the full extent of their education and scope of practice (SOP) because of problems with legislation, role ambiguity, autonomy, and resistance to roles [57]. Kandrack, Barnes, and Martsof [27] mention the limited APNs practice in many states of the United States (US) because of such SOP regulations that impose restrictions on nurse practitioner practice and prescriptive authority to protect the quality of care. These authors also observe that no differences were found in the quality of care provided by APNs in those US states without these restrictions. Similar to the US, SOP regulations in South Africa by the South African Nursing Council [39] govern the authority related to prescriptive and practice authority,

which explains the extent to which professional nurses can independently diagnose, treat, and prescribe to patients. In the South African LMIC context, regulations and resources are not very adaptable, especially in areas of service delivery, where physician availability is juxtaposed with the needs of the growing population [15]. In the Western Cape, South Africa, national budget constraints compelled the Provincial Department of Health (WCDoH) to improve staff productivity and efficiency to safeguard health service delivery and patient care [61].

However, as with international experience, several systemic barriers need to be removed, including the standardization of educational standards, strengthening the legal status of nurses, introducing effective quality assessment mechanisms, and promoting the model through public information campaigns.

One of the key barriers to the full implementation of advanced nursing practice in Kazakhstan is the low public awareness of nurses' functional capabilities in independent practice. Patients do not always understand the role and authority of advanced practice nurses, which leads to low attendance at such consultations and reduced confidence in their professionalism. The historically established stereotype of nurses as assistants to doctors makes it difficult to accept the new model of nursing services. However, gradually informing patients and the active work of nurses themselves to explain their competencies will help to change this situation. This is confirmed by the results of

both this study and foreign publications, which emphasize the importance of educational work among patients [46].

Another significant limitation remains the unadapted working environment, which affects the efficiency of nurses' work. In particular, problems with the integration of medical information programs have been identified, which significantly complicates record keeping and increases the workload on specialists. Another important problem is the lack of separate rooms for private consultations, which hinders confidentiality and full interaction with patients. Resolving these issues could significantly improve the quality and convenience of nurses' work. Similar organizational barriers have previously been identified in other countries undergoing the adaptation of advanced nursing practice [8].

#### Working conditions.

Creating an optimal working environment for nurses is an important task not only for managers and supervisors, but also for those who determine national health policy [14]. Policy-makers must make systemic changes that prioritize the well-being of nurses. Necessary changes include increasing salaries and improving working conditions, providing opportunities for professional development and recognition, expanding nurses' rights and opportunities to provide medical care, and using technology to support nurses better [59]. McHuge et al. explain that pay is important for good nursing outcomes, but working conditions and staffing are even more important [30]. There are also large differences within Europe: pay levels in some Western countries are three times higher than in Eastern countries [58]. In the Slovenian example, salary was important, but not as important as career advancement and education opportunities. Respondents felt that their career advancement was hampered [16]. Gender inequality and structural racism persist in the European healthcare sector and contribute to the shortage of nurses. The gender pay gap in the European healthcare sector is 20%. In addition, women in healthcare, especially in nursing, face other inequalities, such as difficulties in balancing childcare and work, higher health risks, and insufficient visibility of women in leadership positions [69].

Beyond education and training, it is important to pay attention to nurses' working conditions, including high workloads, a lack of necessary resources, and unfavorable working conditions. These factors can negatively affect both the physical and emotional well-being of nurses and the quality of care they provide [34].

An effective solution to these issues requires a comprehensive approach that includes improving educational programs, introducing incentives for professional growth and career advancement, improving working conditions, and recognizing the contribution of nurses to the healthcare system. Working conditions and technical support must be improved to ensure high-quality medical care [60].

#### Conclusion

In conclusion, our article emphasizes that a positive professional environment is crucial for ensuring healthy and safe working conditions for healthcare workers, including nurses, to provide quality healthcare and patient safety. The vast majority of European countries are striving to accept nursing as a profession and as a science. There is still a shortage of nurses with bachelor's degrees and advanced practical skills, and clinical specializations for nurses are developing at the master's level. Attention should be paid to

the recognition of nurses as an equal workforce in the health care field, who should be able to improve their profession and have opportunities for professional development. Necessary changes include increasing salaries and improving working conditions, providing opportunities for advanced training and professional recognition, expanding the rights and opportunities of nurses to provide medical care, and using technology to support nurses better. The decline in interest in nursing education and the often stereotypical and condescending view of the role and work of nurses in the healthcare team should be a warning sign for everyone working on healthcare reform.

The better the working conditions for nurses, the higher the quality of their professional life. Managers and decision-makers can focus on improving working conditions for nurses, which could become a new approach for managers to improve the quality of nurses' professional lives and stabilize the nursing team.

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#### Contact information:

**Dariga S.Smailova** - Asfendiyarov Kazakh National Medical University, Almaty, Kazakhstan. Postal address: 050000, <https://orcid.org/0000-0002-7152-7104> E-mail: [smailova.dariga19@gmail.com](mailto:smailova.dariga19@gmail.com), Phone: + 705 555 8468

**Zhanar M. Zhumanbaeva** - Department of Nursing, NCJSC "Semey Medical University". Postal address: 071400, Republic of Kazakhstan, Abay region, Semey, st. Abay Kunanbaeva, 103, <http://orcid.org/0000-0001-8941-862> E-mail: [zhanar.zhumanbayeva@smu.edu.kz](mailto:zhanar.zhumanbayeva@smu.edu.kz), Phone: + 775 980 3208

**Gulnaz K. Kairatova** - Department of Public Health, NCJSC "Semey Medical University". Postal address: 071400, Republic of Kazakhstan, Abay region, Semey, st. Abay Kunanbaeva, 103, <https://orcid.org/1234-5678-9101-1121> E-mail: [gulnaz.kairatova@smu.edu.kz](mailto:gulnaz.kairatova@smu.edu.kz), Phone: + 747 425 2332

**Dinara S.Serikova-Esengeldina** - Department of Public Health, NCJSC "Semey Medical University". Postal address: 071400, Republic of Kazakhstan, Abay region, Semey, st. Abay Kunanbaeva, 103, <https://orcid.org/0000-0002-9470-9488> E-mail: [dinara.esengeldina@smu.edu.kz](mailto:dinara.esengeldina@smu.edu.kz), Phone: + 778 588 6986

**Merey M. Askarova** - master degree, Assistant of the Nursing department at NCJSC "Semey Medical University". Postal address: 071400, Republic of Kazakhstan, Abay region, Semey, st. Abay Kunanbaeva, 103, E-mail: [meri.sagadiyeva@smu.edu.kz](mailto:meri.sagadiyeva@smu.edu.kz) Phone: + 775 980 3208

**Bibinur K. Sydykova** - Head of the Department of Epidemiology, Evidence-Based Medicine and Biostatistics Kazakhstan Medical University "KSPH", Almaty, Kazakhstan <https://orcid.org/0000-0002-7013-3461> E-mail: [bibinursk@gmail.com](mailto:bibinursk@gmail.com), Phone: + 775 176 0441

**Lyazat Aktayeva** – Doctor of medical sciences, General Director of the Republican Research Institute of Occupational Safety, Almaty, Republic of Kazakhstan. <https://orcid.org/0009-0006-0950-678X> Phone: + 701 715 4132

**Zaure A. Baigozhina** - candidate of medical sciences, Associate Professor of the Department of Nursing, Astana, Republic of Kazakhstan. Postal address: 010000. <https://orcid.org/0000-0001-7098-6782> Phone: + 707 345 6305

**Rauana Kissina** - PhD student in Public Health, NCJSC "Semey Medical University". Postal address: 071400, Republic of Kazakhstan, Abay region, Semey, st. Abay Kunanbaeva, 103, <https://orcid.org/0000-0002-1849-5596> E-mail: [rauan.kisina@smu.edu.kz](mailto:rauan.kisina@smu.edu.kz), Phone: + 778 124 52 89

#### Corresponding author:

**Bolatova Meruyert** – PhD student in Public Health, Semey Medical University, Semey, Kazakhstan

**Address:** 071400, Semey, st. Abaya 103, Republic of Kazakhstan

**E-mail:** [meruyert.bolatova@smu.edu.kz](mailto:meruyert.bolatova@smu.edu.kz)

**Phone:** +77085303927