Pro In Ca

Promoting the Innovation Capacity of Higher Education in Nursing During Health Services' Transition

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«*Promoting the Innovative Capacity of Higher Education in Nursing during Health Services' Transition» (ProInCa)*

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Background

The project **"Promoting the Innovation Capacity of Higher Education in Nursing during Health Services' Transition" ProInCa** was co-funded by the ERASMUS+ KA2 Capacity Building in the Field of Higher Education programme. The wider objective of the project was to develop the sustainable innovation capacity of Kazakhstan's Medical Universities for the modernization of nursing. The project plan was written in the autumn of 2016 and the project was implemented during 15.10.2017 - 31.01.2021.

The ProInCa project consortium (Figure 1.) consisted of four European and five Kazakhstani higher educational institutions, namely JAMK and LAB Universities of Applied Sciences, Finland; Hanze University of Applied Sciences Groningen (Hanze), Netherlands; Angela Boškin Faculty of Health Care (ABFHC), Slovenia; Astana Medical University (AMU), Karaganda Medical University (KMU), Nazarbayev University (NuSOM), Semey Medical University (SMU), and West Kazakhstan Medical University named after Marat Ospanov (WKMU), Kazakhstan. The project also had 13 official associated partners, including Astana, Turkestan multidisciplinary, and West Kazakhstan higher medical colleges, Temirtau and Ekibastuz medical colleges, four hospitals, and the national association of nurses ""Paryz"". The list of project team members can be found in Appendix 1. The project was coordinated by JAMK and supported by the Ministry of Education and Science and the Ministry of Healthcare of the Republic of Kazakhstan.

Figure 1. ProInCa partners at the kick-off event

To achieve the main objective of the project, the following four specific aims were recognized in the project plan:

1. Development of mechanisms for collaboration and knowledge sharing between academic national and international nursing community and society;
2. Learning from best practices on implementing evidence-based nursing in nursing research, education and practice to promote the efficiency and quality of health;
3. Strengthening higher education institutes' role in building evidence-based nursing research activities in health services to promote quality and safety of health care system;
4. Promoting the capacity and system of nursing leadership and management in health care transition to improve the quality of health care system.

These four specific aims were planned to address the four main problems in the Kazakhstani Medical Universities' nursing education and nursing practice: the lack of collaboration and knowledge sharing between the higher education institutions, the health service sector and the international nursing research community; the lack of capacity of higher education institutions' teaching staff in teaching evidence-based nursing, nursing research, and nursing management; the absence of nursing research; and the undeveloped leadership in nursing.

To achieve these objectives and to ensure their sustainability, the international innovation triangle (Figure 2.) approach was used throughout the project. The trinity of nursing education, research, and practice meant that in all activities, the active involvement of representatives of all interested parties such as medical universities and colleges, hospitals and clinics, and professional associations was made possible. All the activities were open to nurses and nurse leaders from practice, nursing associations, other medical universities providing nursing education, higher medical colleges, and representatives of Ministries. The innovation triangle of the ProInCa

projects has evidence-based nursing as its core. It highlights that evidence-based nursing develops and exists only when nursing education, clinical practice, and research are collaborating.
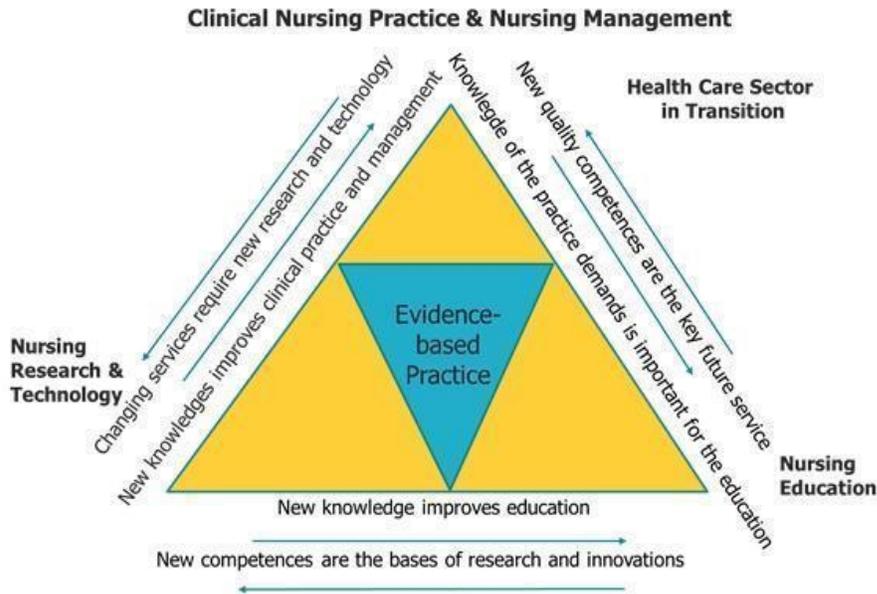
Figure 2. ProInCa innovation triangle

The project partners started their work in the autumn of 2017 with a kick-off event organized at Nazarbayev University School of Medicine in Nur-Sultan, Kazakhstan. The event was opened with welcome speeches from the Ambassador of Finland in Kazakhstan, the Provost of Nazarbayev University, and a representative of the Ministry of Healthcare of the Republic of Kazakhstan (Figure 3). The three-day event successfully launched the project activities and gave the project partners as well as the associated partners from the Kazakhstani healthcare sector an opportunity to jointly plan the project implementation.

Figure 3. Moderators of the kick-off having their opening speeches

During the first project year, the project partners learned from European best practices in three es organized in the Netherlands, Finland, and Slovenia. In 2019, in altogether five master classes organized in Kazakhstan, capacity building materials for nursing leaders and updated educational materials on bachelor and master levels for evidence-based nursing and nursing research disciplines were piloted and finalized. In addition, the content and functionalities of the Center of Nursing Excellence e-platform were designed together with European and Kazakh experts. In May 2019, the project organized an international scientific conference "Development of nursing in Kazakhstan through strengthening institutional collaboration" (Figure 4.) at NUSoM, where over 150 project participants and stakeholders from education, science, and practice gathered to discuss the status and prospects of nursing in Kazakhstan and to share best practices from the project. In the conference resolution (ProInCa, 2019), participants agreed on six areas in which institutional collaboration would enhance the development of nursing in Kazakhstan as well as ten resolutions to achieve this development.

Figure 4. The audience at the ProInCa mid-conference

During the final project year, the COVID-19 pandemic meant that the project team had to revise their plans to implement important project activities in Kazakhstan. Instead of face-to-face workshops and conferences, team members rose to the challenge and organized several successful online events utilizing Zoom and other online communication platforms. Although this new way of working presented some challenges due to technical issues and time-difference between the project countries, it also opened new possibilities to include even more stakeholders to project activities. After the successful first online workshop "Evidence-based nursing – introducing best practices", it was clear that with careful planning of both interesting content and fluent technical implementation of online activities, the pandemic could not put a stop to the ProInCa project.

The culmination of the year 2020 was the international final conference "Innovations in Nursing Education, Research, Leadership and Clinical Practice", which was organized in Zoom in December and attended by over 180 participants. During the first day of the conference, welcome greetings and keynote speeches were given by project coordinators (NUSoM and JAMK) and important national and international stakeholders such as representatives from the ministries of Healthcare and Education and Science of Kazakhstan, respectively. Among the most awaited keynotes was the presentation from the President of the International Council of Nurses, Annette Kennedy, who emphasized the importance of nurses in the fight against COVID-19 and urged nurses in the

audience to be proud of their chosen profession. The main goal of the two-day event was disseminating the results and impact of the project; this was achieved by presentations, interactive panel and roundtable discussions, practice workshops and an electronic poster session. After the successful conference, the main achievements and discussions were recorded in the conference resolution (ProInCa, 2020; Appendix 3).

The main results of the project

As the largest workforce group of health care, nurses comprise an important component of the healthcare system to meet the need for quality healthcare services. In this regard, one of the main areas in the policy documents for the development of health care in Kazakhstan is the strengthening of the nursing service. In the framework of the health care reform in Kazakhstan, the ProInCa project played an active role in the implementation of international best practices in the field of nursing.

Within the ProInCa project:
- The Center of Nursing Excellence (CNE) was created with five regional centers. The CNE has an online platform at www.nursekz.com, which brings together all stakeholders in nursing: medical universities and colleges, hospitals and clinics, national and regional associations of nurses, teachers, researchers, practicing nurses, managers, etc. This platform comprises all the needed information for nursing specialists: clinical protocols and guidelines, methodical recommendations, training materials, statistics, information about research projects, a database of national experts, contacts, useful links, etc. It also contains a blog for nursing leaders and a forum for exchanging opinions and ideas.
- Methodological recommendations for medical universities on nursing research infrastructure (*http://proinca-nursing.kz/wp-content/uploads/2020/01/d2.3.1-report-of-the-nursing-research-infrastructure-in-the-republic-of-kazakhstan.pdf*) and prioritized focus areas for nursing research (*http://proinca-nursing.kz/wp-content/uploads/2020/01/d2.3.2-report-on-recommendations-to-medical-universities-for-creation-of-nursing-research-agenda.pdf*) have been developed with the purpose of creating new research programs in nursing.
- Educational programs for bachelor's degree in such courses as "Basics of Evidence-Based Nursing Practice" and "Evidence-Based Nursing Practice" as well as for master's degree in the course "Implementation of Evidence-Based Nursing Practice" were created. Teaching materials in Kazakh, Russian and English are freely available at the CNE website at https://nursekz.com/.
- Educational modules for masters' degree courses "Research projects and development projects in nursing" and "Methodology of qualitative and quantitative research in nursing" were developed. Instructions how to apply these in nursing research courses in the applied and academic bachelor's degrees education were provided. Teaching materials in

Kazakh, Russian and English are freely available at the CNE website at https://nursekz.com/.

- Teaching and learning materials for the capacity building of nursing leaders were developed under four themes: Setting direction, Managing services and driving results, Professionalism and ethics, and Leading people and teams. Materials in Russian and English are freely available at the CNE website at https://nursekz.com/.
- The Association of Nursing Leaders of Medical Organizations of the Republic of Kazakhstan is ready to be registered.
- A pool of national academic experts on the areas of evidence-based nursing, nursing research, and nursing leadership and management was prepared and more than 500 nurses and nurse students from all regions of the country participated in trainings of ProInCa or used the materials in their studies and thus improved their professional capacity.
- New Erasmus+ CBHE project "Accelerating Master and PhD level nursing education development in the higher education system in Kazakhstan – AccelEd" was initiated to continue the work of developing nursing education in Kazakhstan.

Impact of the project

At the individual level, the project provided project team members and other participants many practical and theoretical skills and improved their professional prospects. All project team members were able to improve their communication and ICT skills in both academic and administrative settings, for example by learning to conduct online webinars for large audiences by utilizing Zoom, Cisco Webex, GoToMeeting platforms and other online technologies. In addition to the project team members, these technologies were successfully adopted by nursing teachers and practicing nurses as well. Most of the practicing nurses from Kazakhstan who took part in the educational activities of the project worked with programs such as Zoom, Moodle, etc. for the first time and noted them as efficient and resource-saving applications.

In addition to the skills listed above, the project participants and stakeholders, including teachers, undergraduates, and doctoral students have gained confidence in academic English as well as experience of participating in international scientific conferences and master classes. They have also acquired skills in conducting qualitative research in nursing. This is a noticeable rise of professional growth, which will let project participants from the Kazakhstani side to work more confidently with foreign partners in the field of nursing research and evidence-based practice. Furthermore, in Kazakhstan, nursing teachers in medical universities have traditionally been mainly doctors, and the project provided a golden opportunity to visit leading European nursing organizations to see how the teaching is organized there and to acquire personal contacts with

foreign nursing experts for further long-term cooperation. As proof of the importance and applicability of the skills gained during the project, two master graduates from AMU were successfully employed at the Higher Nursing College as teacher and head of the department, respectively, after being trained in the project. Furthermore, one of the project team members from KMU was invited to the position of vice-dean of the school of nursing after her successful work in the project.

From an interview with Zhanar Dostanova, Master of Science in Nursing:

"This project gave me the opportunity to participate in many master classes, not only in Kazakhstan, but also abroad. I received a lot of useful information about leadership in nursing, which I use today in my daily practice. As a teacher of nursing, it is very important for me to possess leadership qualities in order to properly plan, organize, monitor and control the educational process. The skills I have learned help me teach nursing leadership to my students; they are future nurses. I met many specialists, both from Kazakhstan and from other countries, and this is a new opportunity to exchange experience and information. The ProInCa project helped me improve my English to the level of understanding and communication, for which I am very grateful! I hope that the goals set within this project will be achieved, and we, in turn, will make every effort for this! "

The project has also increased the collaboration between the higher education institutions and nursing practice by engaging nurses in project activities and sharing best practices in multidisciplinary teams. Thanks to the project, a mechanism has been created for the inclusion of the practical sector of nursing in Kazakhstan into the topical global problems of the nursing process. It includes exchanges of research results within the framework of quarterly webinars, seminars, and scientific and practical conferences conducted by ProInCa partners. According to the results of an expert assessment carried out by university teachers and chief specialists of health departments in nursing, the awareness of senior and chief nurses as well as deputy directors of medical organizations in nursing about the main global trends in the development and reform of nursing care has increased.

To ensure a wide impact on the world of work, the development of educational programs, recommendations, and the definition of priorities for research in the field of nursing were based on the results of discussions of practical health problems. Close cooperation in mixed teams during the project made it possible to establish personal professional contacts between

representatives of educational and healthcare organizations as well as professional associations from different regions of Kazakhstan. Practicing nurses took actively part in the trainings of the project, thus gaining skills in conducting research projects in nursing as well as knowledge of the leadership and management system. Consequently, at the University Medical Center clinics, nurses initiated five research projects in accordance with the priority topics for the healthcare system: 1) Guidelines and best practices for providing oriented care for patients with vascular catheters; 2) Reducing the potential risks during the provision of nursing care associated with mechanical ventilation of newborns, 3) Overcoming the communication barrier in the professional activities of nurses, 4) Improving the quality of teaching materials based on the needs of the postoperative period of cataract patients, and 5) Improving nursing care for children diagnosed with Autism. Some of these projects were presented in the electronic poster session of the project's final conference "Innovations in Nursing Education, Research, Leadership and Clinical Practice" in December 2020 and the presentations can be found on the project's website.

At the individual clinics that are associated partners of the project consortium, a pilot project was also introduced to incorporate the new nursing management system with the expansion of the scope of practice and functions of nurses in accordance with the new position of extended practice nurse. From an interview with Dinara Shakenova, Director of the Nursing Development Department of the University Medical Center corporate fund:

"The pilot involved 463 patients, 148 medical workers. Thanks to the applied knowledge and skills in international approaches to leadership and management in nursing, inspiring results have been obtained: the percentage of patient satisfaction with the work of the new nurse in the majority of pilot departments has reached 70-100%".

The ProInCa project also contributed to the establishment of direct communications between the Association of Nurses of Kazakhstan ""Paryz"" and the International Council of Nurses (ICN), after a board member of ICN participated in the mid-conference of ProInCa. At the moment of writing, the preliminary work is underway to register "Paryz" as a collective member in the ICN. The leadership of "Paryz" notes that interaction with the ICN is already working ahead of the curve: prerequisites are being created for the introduction of a new philosophy of nursing and a code of professional rights and ethics for paramedics in Kazakhstan following the example of ICN.

Nationally, on the level of nursing education implementation, the impact of the project can be seen at the applied bachelor, academic bachelor, and master levels in the new methods and content in teaching nursing. The project influenced changes in the content and teaching methods

of courses in evidence-based nursing practice and science, nursing research methodology and nursing management and leadership at bachelor and master level. During the project, the staff of the Kazakhstani medical universities and higher medical colleges were acquainted with the best international practices in nursing education. The developed modules (leadership, qualitative research, development projects in nursing, evidence-based nursing practice) are provided in the new educational program of the academic bachelor's degree, which is included in the National Register of Educational Programs (ESUVO, 2019). When developing and implementing the above-mentioned programs, the project team focused on the key competencies of a new generation of nurses adopted by the International Council of Nurses, European Federation of Nurses, and European Union. The pedagogical recommendations of the national materials ensure their sustainability and use as they reflect the use of different teaching methods - blended learning, research-based learning (RBL), problem-based learning (PBL), case-based learning (CBL), and corresponding assessment methods – project assessment, cases, and tasks. E-learning and the use of Moodle were addressed in the project already during 2017-2019, which supported the staff members in adjusting to the change to online mode in their teaching due to COVID-19 in 2020.

Concerning the developed programs, the educational modules "Research projects and development projects in nursing" and "Methodology of qualitative and quantitative research in nursing" were developed for the first time in Kazakhstan for master's, applied and academic bachelor's degrees. Thanks to this, nursing educational programs reached a higher quality, innovative level and received a positive assessment from the experts of the Atameken Chamber of Entrepreneurs, after which the developed modules were successfully registered in the register of educational programs of the Republic of Kazakhstan. Moreover, the analysis conducted in 2017 on the Kazakhstani bachelor and master programs in the specialty "Nursing" showed the practical absence of a discipline, which is fundamental for this specialty – evidence-based nursing practice. The project has developed a coherent content and system of teaching evidence-based nursing, including both teaching methods and the practical use of skills in evidence-based nursing practice. Results are expected in spring 2021, at the end of academic periods with the graduation of experts with skills in evidence-based practice in nursing. Thus, the project supported the implementation of the tasks of the strategic development program of Kazakhstan and the state program "Densaulyk " on the introduction of innovative methods in ensuring public health and delegating several functional responsibilities from doctors to nurses**.**

On the university level, the impact can be seen in the changes concerning the restructuring of medical universities' faculties, infrastructure, and staff. With the support of the implementation of the project in medical universities, attention to nursing education has increased. Thus, separate faculties or departments of nursing have been opened as can be observed in the universities'

organizational structures and webpages. In addition, in several of the new faculties or departments, the Assistants were participants in the ProInCa project. All in all, the number of staff and the percentage of personnel with nursing education has increased.

During the project, the Kazakhstani medical university and higher medical college staff were also acquainted with the best international practices in nursing education. This has led to changes in the content and teaching methods of courses in evidence-based nursing practice and science, nursing research methodology, and nursing management and leadership at both bachelor and master levels. Based on the benchmarking study, recommendations were formed for the medical universities of Kazakhstan on the significant improvement of the research infrastructure. In this regard, the development plans of medical universities for the coming years (2021-2022) now include the expansion of the library fund through subscription to full-text publications on nursing science, the purchase of equipment, ICT facilities for research, and the equipping of laboratories for nursing.

At the structural level, the project has had an impact in the higher education system in Kazakhstan and helped raise the awareness and prestige of nursing as an independent profession. For example, a number of proposals from the ProInCa project team have been included in the Action Plan of the Ministry of Healthcare of Kazakhstan for the implementation of the main directions of development of nursing in Kazakhstan for 2020-2025 (Ministry of Healthcare of Kazakhstan, 2019), namely in the sections 1) introducing of a new management system in nursing, 2) revision of educational programs in accordance with European directives, 3) increasing the potential of nursing teachers, and 4) developing research activities for nursing professionals. In addition, the understanding of evidence-based nursing practice in health care has changed significantly through this project. It should be noted that before the start of the ProInCa project, the issues of evidence-based medicine in relation to nursing were not considered in Kazakhstan. Now, there is an understanding of what evidence-based nursing is and why it is needed in health care. Furthermore, the ProInCa project also supported the recognition of nursing as a science and the establishment of the state educational standard in 2020 that contains the full Lifelong Learning continuum for nurses up to level 8 (doctoral education) in the European Qualification Framework.

Concerning nursing research, the national priority areas for research in nursing, which were created in the framework of the project through a Delphi survey, have been acknowledged and the recommendations on the research priorities have been shared with the Department of Science and Human Resources of the Ministry of Healthcare and the medical universities in order to determine relevant topics for future nursing research projects. At the moment of writing, based on these national priorities, medical universities have developed the joint research projects

"Assessing nurses' actual and perceived knowledge towards self-care management of patients with type 2 diabetes mellitus", "Nursing Care for Patients with heart failure", "Palliative nursing care: Unclear managerial situation in SMU", "Changing the role of a nurse in the context of compulsory social health insurance (PHC site)" and others. Discussions between the Ministries were conducted on the possibility of indicating funding opportunities for nursing research from the annual competitions for national research grants.

Finally, the main achievement of the project that enables the sustainability of all its results is the established Center of Nursing Excellence (CNE). For Kazakhstan, the Center is a unique consortium and platform of collaboration that has no analogues today. The task, strategy, and content of the electronic platform, as well as the sustainability plan of the Center, were discussed with a wide range of stakeholders, which ensured a rapid growth of reputation of the CNE website as the design and content were improved during the project lifetime. Nursing practitioners from regions can find all the information they need on nursing, from contacts of experts and regulations of the Ministry of Healthcare to the international databases on nursing on this website. In order to continue the further development and ensure the continuity of the Center, a Memorandum between medical universities was signed on 26 February 2020 and a Consortium Agreement by the end of the project by 6 stakeholders. At the national level, this has made it possible to unite higher medical colleges, practical healthcare services, and universities in an informational and didactic space to improve the qualifications and erudition of middle-level medical workers.

The CNE activities are ensured through its five regional centers: Karaganda CNE Regional Office, West Kazakhstan CNE Regional Office, East Kazakhstan CNE Regional Office, South Kazakhstan CNE Regional Office, and Almaty Regional Office. The operation of the center has created an opportunity to diversify the ways of training nurses and influence the capacity building of nursing. All developed educational materials are accumulated on a single platform (www.nursekz.com), which is publicly available, provided free of charge and can be used by all interested parties in nursing. Today, the CNE has become a platform for interaction between nursing practice, nursing education, and scientific research. It brings together all interested parties on nursing: medical colleges and universities, hospitals and clinics, national and regional associations of nurses, teachers, researchers, practitioners, nurses, managers, and other related persons and organizations.

This book is intended for all those stakeholders and interested parties described above. It is written by the ProInCa project team members to shed light on the results and innovations achieved during the three project years and how they can be utilized in the further development

of nursing in Kazakhstan. In the next chapters you will find the activities and results described in more detail. We hope you will find them as useful and inspiring as we do!

1 Center of Nursing Excellence

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1.1 Needs and requirements analysis

The Center of Nursing Excellence (CNE) in Kazakhstan is developed within the ProInCa project. The CNE focuses on the transfer of research outcomes into nursing practice and the research ideas to the universities for research and educational purposes. It includes mechanisms for collaboration and knowledge sharing within the Centre of Nursing Excellence between the academic national and international nursing community (universities and other educational institutions) and society. These mechanisms involve the creation of an e-platform and formalized national and international networks and working groups.

In general, the use of e-platforms in international cooperation in nursing science contributes to improvement of nursing practice and the increase of evidence-based interventions in health care. Therefore, the e-platform is the heart of the CNE.

This chapter will describe the three main phases for the design, development, and ensuring the sustainability of the CNE e-platform and the CNE organizational structure.

The first step in designing and developing the CNE e-platform was conducting a needs and requirements analysis. The needs and requirements analysis consists of three main activities, which are:
1. Learning from good practices
2. Conducting a literature review and
3. Conducting a Delphi review for verification of the list of needs and requirements

The result was a verified list of needs and requirements for the e-platform of the CNE.

1. What can we learn from Good Practices?

Part of the needs- and requirement analysis is the analysis of good practices to see what we can learn from this for the development of the e-platform of the CNE.

The description of good practices is used to identify the needs and requirements for the CNE in Kazakhstan. The good practices are presented and discussed at the master class with project partners in April 2018 in Groningen and used together with the results of the literature review for further design of the CNE.

Good practices are defined as examples of e-platforms in nursing with the purpose of improving nursing quality by knowledge exchange and collaboration on an international or national level. The good practices include information and collaboration about evidence-based nursing practice and/or nursing research and nursing education.

In total, six good practices are selected: two on an international level, one from the Netherlands, one from Finland, one from Kazakhstan, and one from Russia.

Table 1. Examples of e-platforms in nursing at the international and national level

Country/region	Organizations	Internet address
Worldwide	International Council of Nurses (ICN)	*http://www.icn.ch*
	Sigma Global Nursing Excellence	*https://www.sigmanursing.org*
Netherlands	Vilans	*https://www.vilans.nl*
Finland	Nursing Research Foundation HOTUS	*http://www.hotus.fi*
Kazakhstan	Republic Public Association Specialists of Nursing ""Paryz""	*http://www."Paryz".kz*
Russia	Public organization "Russian Nurses' Association" (RNA)	*http://www.medsestre.ru*

The good practices have been analyzed on the following topics:
 A. Mission, vision, and goals
 B. Target groups, organizational structure, and funding
 C. Information on the internet/ e-platform

A. Mission, vision, and goals

All organizations must aim to advance the nursing profession, some at a worldwide level, others at a national level. Some focus more on the empowerment of nurses, professionals' rights (ICN and "Paryz"), others focus more on research, educating nurses, and evidence-based nursing.

B. Target groups, organizational structure, and funding

The organizations and their e-platform are very different. The differences have to do with the mission/vision and the goals of the organization, the target group, and the way it is organized and funded. Target groups vary from nursing organizations, individual nurses to nurses and other formal and informal caregivers. The funding can be by other organizations, by the government, or by individual membership payments. Some organizations have a complex structure with a board and different working groups with people responsible for different subjects or regions. Organizations can have people employed and/or run with volunteers.

For the CNE Kazakhstan, it is important to make choices about

- target groups and membership
- organizational structure
- funding
- connections with other organizations in Kazakhstan and worldwide ("Paryz", national and international universities, other professional nursing organizations, for example, ICN, etc.).

C. Information on the internet/ e-platform

Most organizations use internet pages with free information for everyone and information after login. Mostly educational materials, facilities for collaboration and discussion, and for example, the use of an online library can be found after log in. Information about the organization, different nursing topics, and evidence-based guidelines can be found on the open website or also after login (for example, Hotus and Vilans). Some provide information on nursing leadership (for example, ICN and Sigma), nursing research (Hotus), or different nursing topics. All organizations also organize activities for their members where nurses can meet each other, such as conferences, presentations, or regional working groups.

Master class: learn from good practices.

From 16th till the 20th of April 2018, a delegation from Finland and Kazakhstan visited Hanze University of Applied Sciences Groningen (the Netherlands). The goal of this master class was to learn from good practices, literature findings, experts, and site visits and use this information for the further design and development of the CNE in Kazakhstan. In an Agile/Scrum workshop, we worked on the first drafts for designing the e-platform.

During this master class in Groningen, the project partners agreed on the following **mission statement for the CNE** Kazakhstan:

The Center of Nursing Excellence in Kazakhstan contributes to the improvement of nursing practice by empowering nurses to enhance the quality of healthcare for the better health of individuals. The CNE brings theory to practice and enhances the development of nursing science, serving as a collaboration and networking platform between nursing practice, nursing education, and nursing research. The CNE actively collects, promotes, and shares evidence-based nursing clinical guidelines, educational materials for nursing and nursing research.

Figure 1. Participants of the master class at Hanze University of Applied Sciences Groningen (The Netherlands)

2. Conducting a literature review

The aim of the literature review was to determine what requirements are essential for this online CNE platform. The research findings generated a list of requirements that will contribute to further consideration by providing the input for a Delphi study.

The literature review had been conducted in an international collaboration of researchers from Hanze UAS (the Netherlands), AMU (Kazakhstan), and JAMK (Finland). A series of search terms was determined concerning e-platform or online environment, nursing, research or evidence, and education or learning. From these search terms, different search strings were developed to browse in the electronic databases IEEE, TRIP, EBSCO, ABI, PubMed, and CINAHL. Included studies

should concern nursing students or clinical nurses who participated in an online platform or learning program concerning research or evidence-based practice. The search strategy generated eight studies. The methodological quality of all included studies was good to excellent.

Concerning the essential requirements for an e-platform for developments in nursing science and nursing research education, nine categories were identified: platform users or targets and scope, platform structure and content, educational content and materials, knowledge acquisition and achievement of learning outcomes, communication, interaction and feedback, nursing skills, usability, management, and infrastructural and technological support.

Some of these requirements are obvious, but others are less evident and allow further consideration to achieve consensus. Therefore, it was recommended that these requirements would be included as statements to be discussed in the Delphi study.

3. Conducting a Delphi review for verification of the list of needs and requirements.
To verify the list of requirements for the e-platform, we conducted a Delphi study. The Delphi method is a way of building consensus among experts. For the verification of the list of requirements for the e-platform, a panel of experts was established, including respondents originating from Kazakhstan, Finland, and the Netherlands. Since the e-platform should correspond with the needs concerning Kazakh nursing developments, 75% of the experts were from Kazakhstan. Experts in the field of education, research, clinical practice, and information technology, as well as professional leadership and the government, were included. These experts either were participants in the ProInCa project activities or connected to the project as associated partners or international project members. The inclusion criteria for experts were that they should be professionally related to the field of nursing and have adequate understanding or experience in at least one of the following four domains: nursing education on vocational, bachelor, or master level, nursing research, digital knowledge sources in the field of nursing, or digital knowledge sources in the field of online collaboration.

The Delphi study included two rounds of questionnaires and contained statements concerning e-platform requirements. For the first round, a list of 62 statements was composed based on the requirements resulting from the literature review and the input from other ProInCa project activities. These statements were clustered according to four groups: *content requirements*, *functional requirements*, *usability requirements*, and *technical requirements*. Experts were asked to give their opinion on the importance of the requirement statement. The Delphi study generated a list of 52 essential requirements and 15 useful requirements with a high level of

consensus. The list of requirements is used for the design and the development of the CNE e-platform.

1.2 Design and development of CNE and e-platform

An essential step in the design and development of the CNE and e-platform process was the master class on "Development of the e-platform for the Center of Nursing Excellence (CNE)" in April 2019 at Astana medical university. The master class gathered more than 30 individuals involved in nursing, nursing education, and nursing research for the development that will have great importance for the nursing profession in Kazakhstan. During the master class in April, the purpose of the e-platform and the collaboration, information sharing, and learning environments for distance education are discussed. International experts from Hanze (The Netherlands), LAB, and JAMK (Finland) shared their best experiences of international practices and e-learning in nursing. During the week, several workshops were organized to develop the service and educational materials and to discuss questions related to the organization and maintenance of the CNE.

Figure 2. Participants of the master class discussing the first version of the e-platform for the CNE, April 2019

Participants were excited about the master class. "It is important that at last, we have a common platform for collaboration in nursing. I will actively participate in the dissemination and further development of the CNE," tells Gulnur Nadirbekova, Nur-Sultan, Chief Nursing Officer JSC "National Research Cardiac Surgery Center." "This has been an important week for nursing, and it is interesting to participate in the development work," adds Kamarova Aisulu, Karaganda vice-dean of Public Health and Pharmacy School. "Materials on CNE on evidence-based nursing; nursing research and nursing leadership are very interesting for the master students, nurses and teachers as well. CNE will be a strong tool in the development of the nursing profession," says Sholpan Batarbekova and Alexandra Belyatko, master students of nursing science at Astana Medical University.

Figure 3. Participants of the master class "Development of the e-platform for the Center of Nursing Excellence (CNE)" with certificates.

The CNE e-platform will include a website with information open for visitors to facilitate knowledge sharing in the field of nursing. Also, it will include a part that requires a login after which participants have access to educational materials and provides opportunities for collaboration. Therefore, the CNE e-platform is built on two parts. Both parts will be accessed through the internet address https://nursekz.com/. It includes:

1. A website for presenting general information about the CNE

This is developed in word press. The website will contain general information about nursing in Kazakhstan and information about evidence-based nursing, clinical nursing guidelines, nursing leadership, and nursing research.
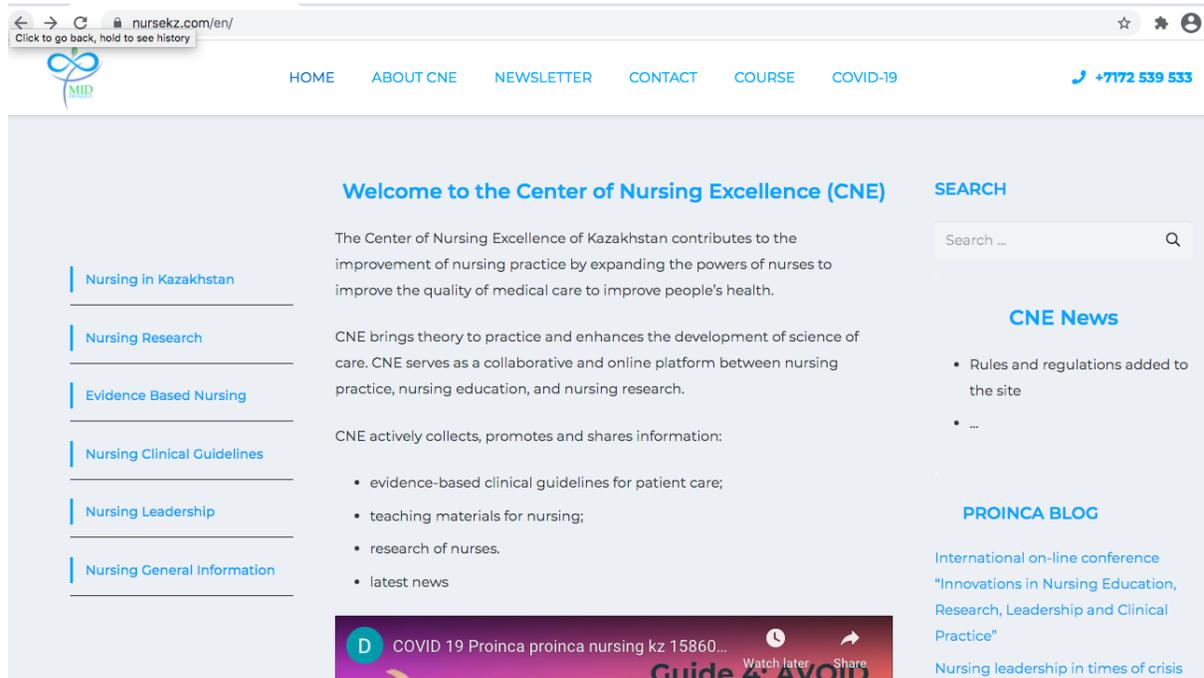
Figure 4. Home page of CNE website https://nursekz.com/

2. An e-learning and collaboration environment

This is developed in Moodle and can be easily found and also be entered through the internet on https://nursekz.com/. Within each course, the developers/teachers can decide how to organize the learning processes and collaboration between the participants of the course. Moodle has plug-in options to realize this.

The first courses have been developed within the ProInCa project about the topics: evidence-based nursing, nursing research, and nursing leadership. The CNE Moodle environment is also used to train teachers for working with the clinical nursing guidelines in Kazakhstan that have been developed in another project. The Moodle environment can be used for other courses in the future as well.
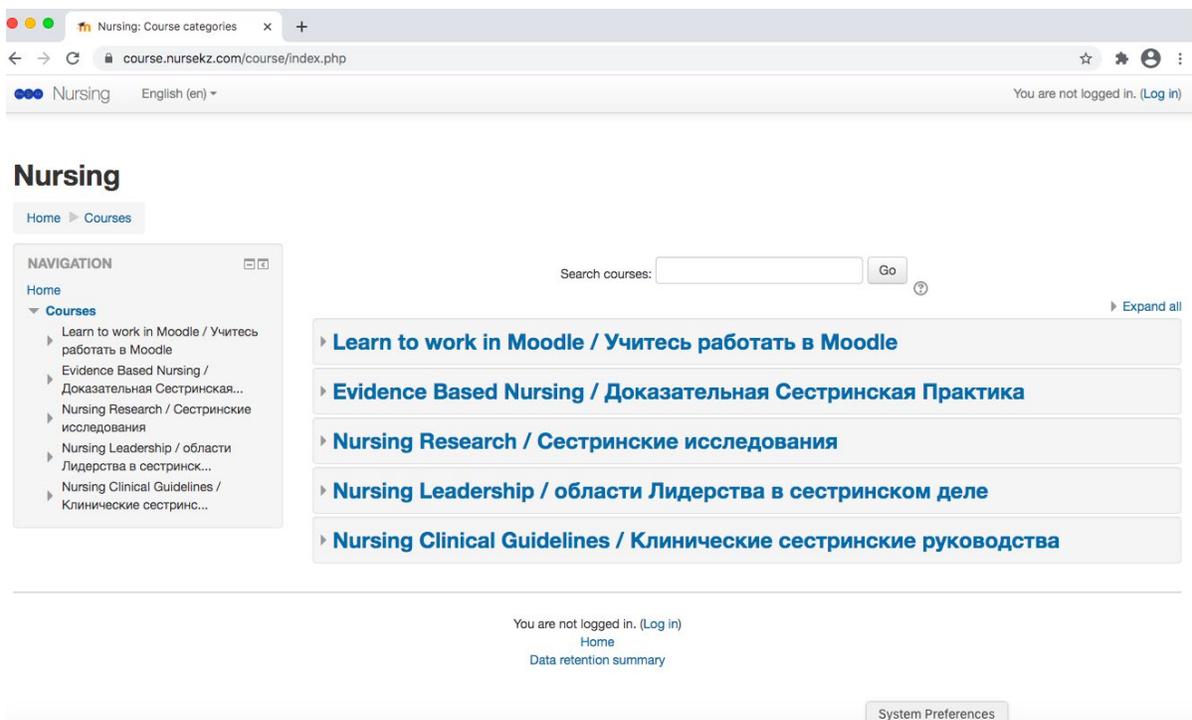
Figure 5. CNE e-learning courses

Service level agreement

The quality of the service level of the e-platform will be ensured by a Service Level Agreement (SLA). The SLA describes precisely what are service hours, support hours, availability, reliability, and other relevant parameters. These parameters and performance incentives/penalties, which have been described in the agreement, use to ensure the quality of the e-platform.

The CNE office commits to keep the quality by organizing its maintenance with proper personnel and resources. The CNE office has the service desk functionality. The service desk has relevant applications to ensure the maintenance of the CNE service requests. The CNE office ensures this level of service to the partners and users of the CNE e-platform. The two main services of the e-platform: website and Moodle environment, are described here.

Enrollment and management of the courses

Enrollment of the courses should be simple. Short video instruction is placed on https://nursekz.com/. In the Moodle environment, there is access to a course for teachers to develop and edit courses. All courses, except one of the clinical guidelines, have free access. All the materials of the courses about evidence-based nursing, nursing research, and nursing leadership can be used and downloaded for educational purposes as well.

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1.3 Piloting and securing sustainability of CNE

The e-platform was developed through an agile development process, which means that during the development process, feedback rounds are included regularly. Updates and next versions were regularly based on the results of the activities in the needs and requirements analysis phase, the feedback from the ProInCa's project members, and feedback from the participants of the master classes.

Piloting the e-platform included several activities and is closely connected to other project activities, such as master class and the activities for quality assurance.

Table 2. The main activities on piloting the e-platform

Activities	When	Outcomes
Masterclass Development of the e-platform for the Center of Nursing Excellence	April 2019	Feedback on the draft website and use of Moodle environment
Train the trainers master class	November 2019	Feedback on the website and the use of the e-platform by teachers and other participants
Feedback project participants	Ongoing	Project participants have been asked several times to give their feedback and add changes to their part on the website in specific and the whole website in general.
External assessment	2020	A questionnaire was developed for external assessment. This was sent by the different universities to the end-users. They were asked to give feedback on the website.

Master class train the trainers
From the 28th of October till the 1st of November 2019, the "train the trainers" master class was held at Astana medical university. During the master class, the participants got a deeper understanding of the platform and were prepared to train others in wider use of the e-platform. This master class is closely related to the piloting of the e-platform because feedback from the participants is used for improvement and further development of the e-platform. Participants in this master class were mainly from the ProInCa partner universities. These universities are responsible for the wider use of the e-platform in their regions.

During this master class, the participants worked on the further development of the e-platform and the organizational structure of the CNE. The e-platform at www.nursekz.com will contain a lot of information and courses for nurses, nursing students, and nursing teachers. During the master class, new content has been developed and added. The website (www.nursekz.com) contains information about nursing in Kazakhstan, including an overview of laws and regulations, evidence- based nursing, clinical nursing guidelines, nursing research, and nursing leadership. Also, some general nursing information and a calendar with nursing conferences and activities can be found here. More content will be added, and all information will be available in Russian, Kazakh, and English. A web designer will make the website more attractive.

During the master class, the participants also discussed the organizational structure of the CNE with five regional offices. The CNE will be organized as a network organization, and universities, colleges, clinics, and other organizations will contribute to the CNE and collaborate to build the e-platform and bring the information to nursing practice. The CNE is preparing five regional working groups. These working groups will play a key role in delivering information to practice and connect local nurses, nursing students, nursing teachers, and nursing researchers to the CNE.

Figure 6. Participants of the "train the trainers" master class

Sustainability of CNE and the e-platform

The sustainability plan is developed in close cooperation with the partners. A good and sustainable organizational structure of the CNE is needed to ensure the long-term sustainability of the CNE and the e-platform. There are three development phases of the CNE:

- Phase 1 - Establishment period (2018-2020)
- Phase 2 - Development period (2021-2022)
- Phase 3 - Sustainability period (2023-2025)

Each phase includes a wide range of activities divided between the Central and Regional Offices of the CNE.

Organizational structure - Central and Regional offices

The CNE is a network organization. Universities, colleges, clinics, and other organizations can contribute to the CNE collaboration to build the e-platform and bring the information to nursing practice. The governing body of the CNE is the Council of the Consortium, represented by the rectors of the partner universities and presidents of "Paryz" Nursing Association and Association of medical colleges. The structure of the CNE consists of Central and Regional CNE Offices. Central CNE Office is a coordinating office of CNE managed by Astana Medical University, Nazarbayev University School of Medicine.

There are five regional CNE offices managed by West-Kazakhstan Medical University, Semey Medical University, South-Kazakhstan Medical Academy, Karaganda Medical University, Kazakh National Medical University, respectively.
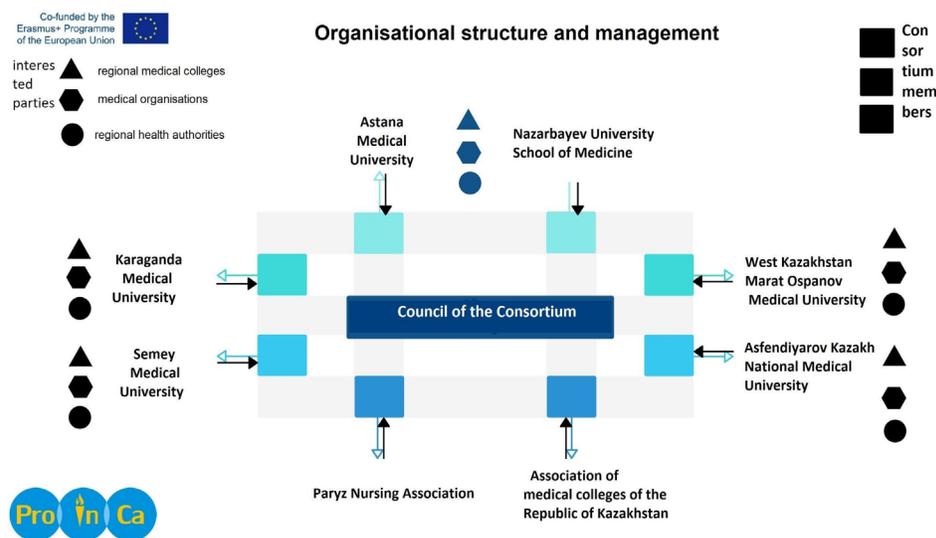

Figure 7. CNE organizational structure and management

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These regional offices play a key role in delivering information to practice and connect local nurses, nursing students, nursing teachers, and nursing researchers to the CNE. The regional CNE offices are aimed to develop courses in the following areas: research in nursing, implementation of scientific principles for obtaining evidence-based nursing, nursing in oncology, nursing in primary healthcare, nursing leadership, palliative care, nursing care plans, nursing diagnoses, nursing pharmacology, standard operational procedures and skills in nursing.

The main directions of activity of the regional offices of the CNE have been determined as follows:
- communication functions in the region among local stakeholders in nursing;
- organization of events (round tables, seminars) for information exchange, cooperation, and training;
- collection (on the platform www.nursekz.com), promotion and distribution of relevant and evidence-based nursing materials;
- the dissemination of information regarding nursing education, research, and practice;
- dissemination of clinical guidelines and tools for nurses;
- support of connecting nurses in their professional fields.

1.4 Achieved results and impact

As mentioned above, for the healthcare system of Kazakhstan, the Center of Nursing Excellence is a unique facility that has no analogues today. The CNE provides a permanent platform for nursing stakeholders (universities, medical organizations, professional associations, nurses, etc.) to make their strong cooperation and collaborations to enhance nursing and enforce the quality of patient-centered care. Also, Kazakhstani nurses, especially from remote regions, can find all the relevant and up-to-date information they need on nursing, from regulations to international databases on nursing in the CNE website.

The development of the CNE contributes to the wider objective of the project to develop the sustainable innovation capacity of Kazakhstan's medical universities for the modernization of nursing. The CNE provides an e-platform and organizational structure for collaboration and knowledge sharing between the academic national, and international nursing community and society. The website and learning environment on *www.nursekz.com* will provide up-to-date nursing-based knowledge and information.

The Ministry of Healthcare of Kazakhstan has recognized the importance of this initiative to establish the CNE and included it in their Action Plan for the implementation of the main directions of development of nursing in Kazakhstan for 2020-2025 (Ministry of Healthcare of

Kazakhstan, 2019). Further support for the CNE comes through the Consortium, which consists medical universities, national association "Paryz", Republic Center for Health Development. Nowadays, this Consortium agreement is under signing procedure.

During the project period, several meetings, master classes, and workshops involving around 100 representatives from medical organizations, regional health authorities, medical colleges, and universities from all regions of Kazakhstan were conducted, where direct contacts with each other were established for further collaboration.

The establishment and operation of the CNE had a beneficial effect on improving the quality of education in the specialty "Nursing" at the bachelor's and master's degrees in medical universities of the country since all the developed educational materials in the field of nursing are accumulated on a single platform (https://nursekz.com/), which is located in an open-source, free of charge, and used by all nursing stakeholders.

The development of CNE has a significant impact on the capacity building of the administrative and teaching staff of Kazakhstani universities. Teachers and university employees improved their language skills, particularly improved academic English through correspondence with European members of foreign universities, preparation of reports, educational materials, translation of materials from English into Russian and vice versa for the content of the CNE platform (www.nursekz.com). Moreover, it should be noted that the CNE developers enhanced the following behavioral skills: communication, planning, analytical and conceptual thinking, flexibility, time management. Research skills acquired in conducting qualitative research in nursing. The CNE administrators mastered ICT skills, such as, methods of conducting online webinars for large audiences, acquired skills in working with Zoom, Cisco Webex, Skype platforms, as well as technical skills in working with the WordPress and Moodle program. In addition, they were enriched with the experience of participation in international scientific conferences and master classes, which contributed to the development of scientific skills. This is a noticeable increase in professional growth, which will allow CNE developers to work more confidently in the field of nursing research and evidence-based practice with foreign partners.

The international collaboration started during the project deepened and led to joint new Erasmus+ CBHE project, "Accelerating Master and PhD level nursing education development in the higher education system in Kazakhstan – AccelEd", where Center of Nursing Excellence plays a crucial role and contributes to the improvement of nursing practice by expanding the skills and capacities of nurses to improve the quality of healthcare.

2 Evidence-based nursing

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The" Efficiency and Quality by Evidence-based Nursing" within ProInCa was developed based on needs analysis conducted in November 2016, in Nur-Sultan, by project stakeholders and participating Kazakhstani Medical Universities. The group identified 35 statements concerning issues around developing evidence-based nursing (EBN) in collaboration with healthcare facilities and medical universities. These statements were grouped into three main topics:

1. lack of knowledge and methodology of evidence-based nursing among Universities' teaching and training staff;
2. lack of infrastructure for teaching and training staff for building creating systematic evidence-based knowledge capacity building;
3. missing linkages between evidence-based nursing and health care facilities addressed by cooperation with health care facilities management.

The idea was to build staff members' capacity that teach EBN in medical universities, higher medical colleges, medical colleges, or healthcare facilities. By the adaptation of recognized best practices of implementing EBN to Kazakhstan national context, the working group of EBN creates the link among research, education, and healthcare facilities.

2.1 Gap analysis on evidence-based nursing

The gap analysis report presents academics' knowledge and attitudes towards EBN and existing data on the subject (discipline) of evidence-based practice/nursing across all bachelor's and master's degree nursing departments in Kazakhstan medical universities. Part of the report also includes recommendations for developing national educational materials on EBN, presented in the conclusion part.

The gap analysis aimed to compare the present state of competency development and to identify the main priorities for the advancement of EBN in the education process for nursing students. Subsequently, a series of activities were carried out as part of the gap analysis such as:

1. Collection of data (syllabi) from participating universities: Semey State Medical University, Karaganda Medical University, West Kazakhstan Marat Ospanov State Medical University, Astana Medical University, and the high medical colleges of Kokshetau, Kyzylorda, Pavlodar.
2. The collected data were analyzed using content analysis and by carrying out an automated and manual search using the following keywords: evidence-based nursing, evidence-based medicine, critical thinking, research methodology, research in nursing, evidence-based nursing practice in their syllabi.

The analysis identified a need for competency development. Upon reviewing three bachelor's and master's degree-level programs described in State Educational Standards and after comparing them to the available data from the collected syllabi, we established that:
1. There is a significant difference between what is defined (in the context of EBN) in State Educational Standards and what is described as content in the existing syllabi.
2. The teaching of evidence-based practice (usually mentioned as evidence-based medicine) is evident only in some programs. Teaching methods are not consistent with assessment methods.
3. Generally, there is a significant lack of EBN content that would ensure students' acquisition of competence in the EBN field of knowledge. There are numerous competency domains deficiencies in nursing curriculum.

2.2 Learn the best practice of EBN implementation in education, practice and research and prepare national educational materials on EBN

The activities herein are from the workshop conducted, the development of national educational materials, and pilot testing.

Figure 1. Workshop on "Efficiency and Quality by Evidence-based Nursing"

In 2018, from November 12 to 16, a 5-day workshop was held in Slovenia for Kazakhstani teachers and staff who teach EBN. The workshop's idea was to build the capacity of teachers and staff involved in teaching EBN in their institution. A total of 13 participants joined the workshop representing four Kazakhstani universities (Semey Medical University, Astana Medical University, Karaganda Medical University, and West Kazakhstan Medical University) and four European universities (JAMK University of Applied Sciences, LAMK University of Applied Sciences, HANZE University of Applied Sciences, Angela Boškin Faculty of Health Care).

The aim of the master class was to learn from best practices on implementing evidence-based nursing, nursing research, education, and practice. The master class program included presenting the European best practices and presentation of existing EBN curriculum content, discussions, and group work. By experiencing European good practices and a joint development process through master class activities, first the important topics of EBN were identified and a national set of educational materials were developed. The materials were designed explicitly for applied bachelor, academic bachelor, and master levels of nursing education. Moreover, the national educational materials consist of lecture guides, practical hours, tasks, instructions, and independent student work ideas. Furthermore, the educational materials contain topics related to:

1. Principles of evidence-based practice
2. Evidence-based practice ethics

3. Concept of nursing research
4. Levels of evidence
5. Nursing databases for evidence-based information
6. Clinical nursing guidelines

Following the EBN workshop in Slovenia, the national educational materials were piloted to four medical universities and one high medical college in Kazakhstan. Interestingly, the pilot testing indicated an improved knowledge among the students in EBN basic principles, ethics, methods, and processes. Similarly, it showed the students' willingness to use the evidence-based practice tools. But areas, such as, access and acquisition of evidence, application to patient care, and overall use of EBN stayed almost at the same level as prior to piloting. Reasons for that being the absence of participant's clinical experience and level of English language as barriers for reading the scientific evidence (Figure 2.).
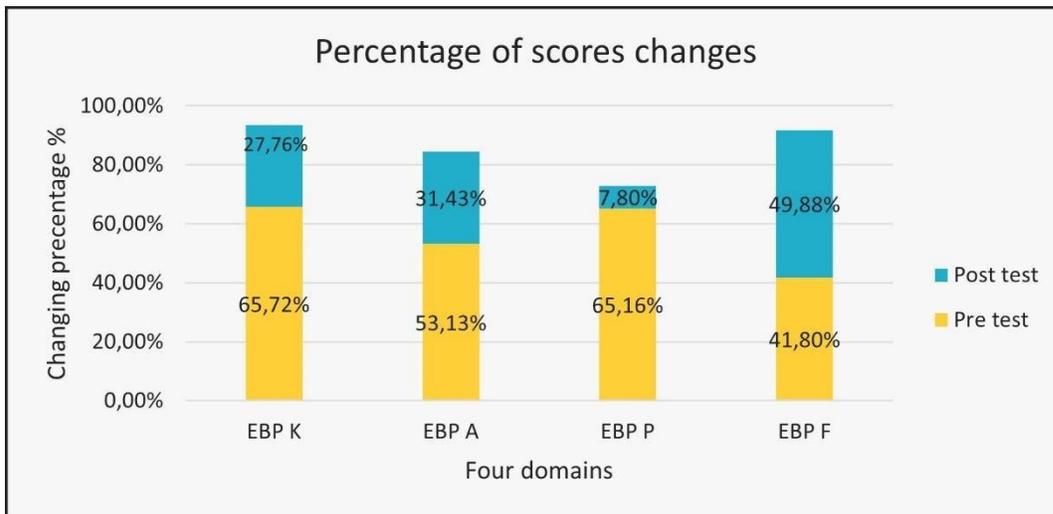

Figure 2. Percentage of scores changes after using the EBN learning materials (Kassym et al., 2020)

EBP= evidence-based practice
K= knowledge
A= attitude
P= practice use
F= future use

2.3 Adaptation of recognized best practices to Kazakhstan national context

In 2020, one master class and one symposium were conducted online as part of the EBN work activities. First, the 3-day online master class (Figure 3) was held on April 21 to 23, 2020, with the title of "Evidence-based nursing recognized best practices implementation." The master class aimed to support cooperation and knowledge exchange between education, research, nursing practice, and the introduction of evidence-based nursing practice in Kazakhstan. For three days, European and Kazakh experts delivered lectures regarding national teaching materials on evidence-based nursing practice and conducted practical online training. In total, more than 170 participants from all regions of Kazakhstan took part in the master class. Upon completion of the event, certificates were issued.
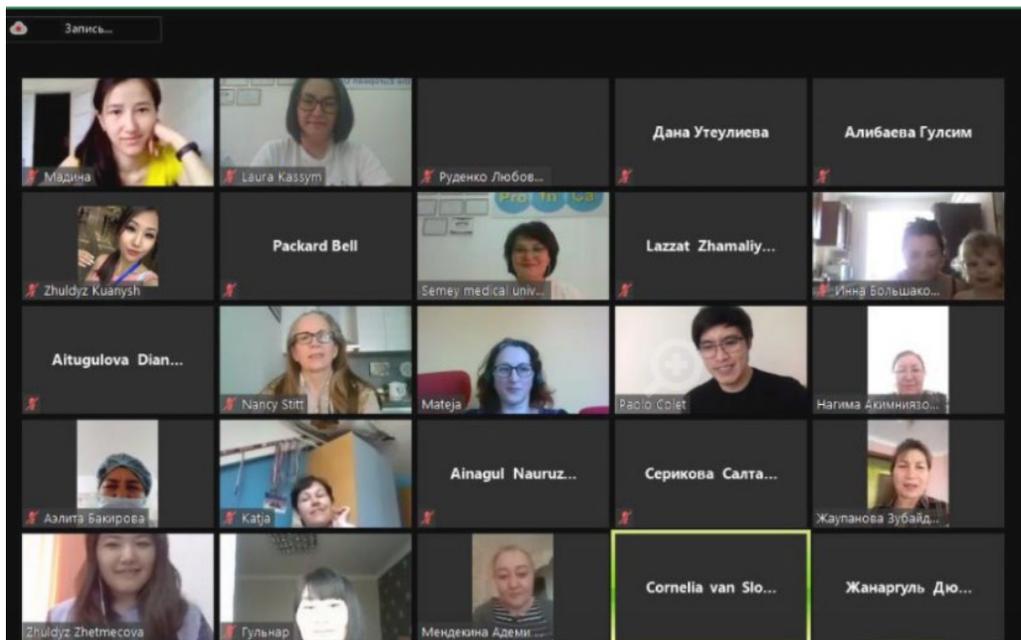
Figure 3. Master class on "Evidence-based nursing recognized best practices implementation"

Second, an online symposium (Figure 4) was held on October 22, 2020, with the title "Moving forward to efficiency and quality by evidence-based nursing." The symposium aimed to create a venue for the presentation of advances and best practices in EBN in Kazakhstan. Also, it provided a forum for creating collaborative links between academics and nursing professional practitioners and policymakers, aiming for a long-term sharing of knowledge and discussions in the development of EBN practice in Kazakhstan. During the symposium, participants shared their initiatives, strategies, and challenges in achieving healthcare efficiency through evidence-based nursing implementation. After the symposium, a resolution was formed.

Active participants from these two events, and some other distinguished authors prepared articles for a book with the title "Evidence-based practice: moving forward to implementation in nursing." which was published in Kazakh, Russian an English language, and at the end of the book there is also resolution from symposium (Bahun, et al., 2021).
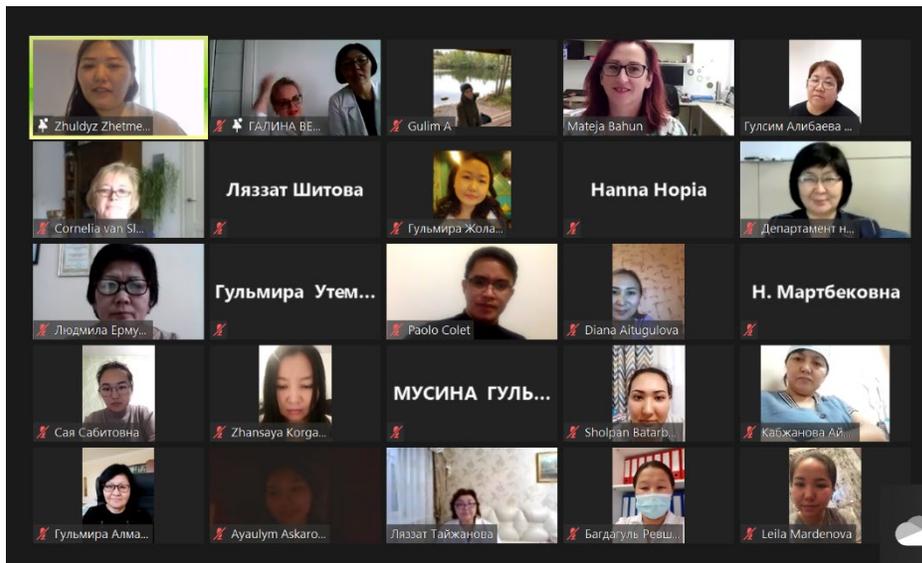
Figure 4. Symposium on "Moving forward to efficiency and quality by evidence-based nursing"

2.4 Achieved results and impact

Evidence-based practice is based on the latest evidence in the field of nursing. With the focus group conducted at the planning stage of the project, lack of English language knowledge was identified as one of the barriers. Interestingly, during the project's execution, and with written and oral communication with European partners and the development of joint materials, the participants note positive dynamics in developing language skills for finding information and reading scientific articles.

The participation of university professors gave impetus to the development of professional skills, that is, teaching nursing practice based on evidence and recent findings research. Overall, national educational materials were developed with examples of teaching, and assessment methodologies, which would undoubtedly serve as a tool in influencing teaching and assessment methods.

Moreover, the project had positively impacted the content and methodology of teaching evidence-based nursing. Until 2107, the educational program Nursing at the level of undergraduate education (bachelor's degree) discipline "Basics of evidence-based medicine" had a 3 credit/135 hours course. While at the postgraduate education (magistracy) discipline, "Basics of evidence-based nursing in medicine" had a 2 credit/90 hours course. As a result of the project and a changed in State Educational Standard in Bachelor of Health educational programme of Nursing, and with the introduction of leveling up to a diploma education (bachelor's degree), two courses, the "Basics of evidence-based nursing practice" has 5 credit/150 hours in the first year and "Evidence-based nursing practice" in the fourth year. Volume at the level of postgraduate education (magistracy) of the course " Implementation of Evidence-Based Nursing Practice " is 2 credit/90 hours.

Additionally, we developed and tested the training materials for the course "Basics of evidence-based nursing practice " 5 credit/150 hours for 1st study year and "Evidence-Based Nursing Practice" for 4th study year of bachelor level "Nursing" program. From April 2019 to December 2019, educational courses were held at selected universities using training materials that were corrected and supplemented after receiving feedback from direct stakeholders (students and teachers themselves). Importantly, nursing students and nursing teachers from medical universities and colleges are involved in the development of the educational materials. Overall, there are around 16 educational materials developed and are available for free at the Center of Nursing excellence website.

A positive response was noted from participants during the master class on "Evidence-based nursing recognized best practices implementation." The master class evaluation showed a 4.77 average on a 5-point scale, indicating that the event was very good and useful. Similarly, with the symposium on "Moving forward to efficiency and quality by evidence-based nursing." The evaluation indicated a 4.8 average on a 5-point scale, indicating a very good and useful event.

Furthermore, 170 teachers were trained on educational events on evidence-based nursing. Out of 170, eighty-eight are already using the materials in their teaching practice. Students who were trained using the developed materials indicated a willingness to use evidence-based practices in their future careers and improve nursing care quality in clinical settings.

3 Strengthening nursing research in Kazakhstan

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In November 2016, the project stakeholders and Kazakhstani medical universities identified the main problems in developing nursing research in Kazakhstan. These were identified as the lack of technology and infrastructure for nursing research, the lack of joint (medical universities and healthcare facilities together) the prioritization of the nursing research and strategy, and the lack of faculty staff capacity for conducting nursing research and development activities. Consequently, the aim in the ProInCa-project was to strengthen the role of medical universities in building evidence-based nursing research activities in healthcare services. This is important in order to promote the quality and safety of the healthcare system. Next, we will describe the activities, results, and impact of the project in supporting the development of the nursing research infrastructure in Kazakhstan as well as the nursing research agenda in medical universities by learning from the international best practices on nursing research as well as by building the joint capacity of the medical universities and health facilities in nursing research.

3.1 Supporting the development of Nursing research infrastructure in Kazakhstan

The aim of this activity was to examine the infrastructure and services that medical universities provide to support researchers in the field of nursing. In 2018, five Kazakhstani universities described their infrastructure and services for nursing research in five different areas: information communication technology (ICT) service and software, internationalization services and collaboration, library services, research, development, and innovation (RDI) activities and services, and financial and administrative support services. These were compared with the European best practices. Based on this, five recommendations (Järvinen et al., 2019) for the development of nursing research infrastructure in Kazakhstani medical universities were outlined:

MEDICAL UNIVERSITIES SHOULD CONSIDER TO....

Invest in the procurement of study materials (nursing specific databases, journals, books, eBooks) and software for the analysis of qualitative data necessary for nursing research

Join the international nursing community and networks for education and research

Increase long term cooperation with international universities in order to be able to plan and implement high quality nursing research

Collaborate in systematic capacity building of administrative and teaching staff on nursing science, project management, English and ICT skills in order to cost effectively organize training programs

Strategic planning of the university should provide systematic support for nursing research through a university foundation.

Figure 1. Recommendations for the development of nursing research infrastructure in medical universities

The collection of information for the analysis began with the creation of questionnaires targeting five main areas of research infrastructure, which were determined based on descriptions of the Finnish Academy (2013) and Research Information Network (2010). According to the European Strategy Forum on Research Infrastructure (2016), adopting a scientific approach in nursing requires investments in associated methods and instruments.

ICT services and software

All the medical universities provided basic software for researchers: a word-processing program, spreadsheet and presentation software, and a software program for creating, editing, and maintaining database files and records. Moreover, the universities also provided cloud services; specifically, OneDrive and Google Drive. Skype was the most common communication technology platform used. All the publications, including diplomas and dissertations, were analyzed using an anti-plagiarism program; this represented a mandatory procedure for the prevention of plagiarism. The strength of the ICT in the universities was free access to databases, irrespective of the time or place. However, none of the medical universities provided specific software for the efficient analysis of nursing research data (qualitative and quantitative) or e-platforms for collaboration in multicenter international research projects.

Internationalization support services

Medical universities were not members of any international nursing networks or nursing education or research communities that comprise nursing researchers and teachers of academic nursing education. However, the medical universities organized annual international scientific and practical medical conferences for young scientists in the field of nursing. All the analyzed Kazakhstani medical universities had accommodated exchange students in the field of nursing and had undergraduates doing their training in foreign universities. The universities would have been able to invite professors or teachers in the field of nursing, but this was not implemented and there seemed to be lack of a systematic approach in this regard.

Library services

The medical university libraries had an extremely limited number of English-language books and eBooks concerning nursing research methodology. Furthermore, none of the universities had subscribed to international English-language nursing journals. Only one Kazakhstani medical university offered access to the international electronic journals BMC Nursing, Journal of Compassionate Health Care, and evidence-based practice. Most of the databases available for access were medically focused, such as Springerlink, DynaMed, Epigraph, MEDLINE, Scopus, Web of Knowledge, Elsevier, Web of Science, EBSCO, the eBook Clinical Collection, the Cochrane Library, and the EBSCO Scientific & Medical Art Imagebase. None of the analyzed Kazakhstani medical universities had nursing-specific databases such as Cumulative Index to Nursing and Allied Health Literature (CINAHL).

Research, development, and innovation activities

The medical universities' research activities focused on areas such as medicine, nursing, public health, dentistry, biology, pharmacy, hygiene, epidemiology, and pharmaceutical-production

technology. The data regarding the number of researchers in the field of nursing showed an increasing trend from 2016 to 2017. The main researchers in the field of nursing were students, undergraduates, and their scientific leaders. In the medical universities examined, the nursing studies were solely based on the framework of writing and defending dissertations or diplomas for bachelor and master level programs. There were no separate nursing studies as such. Theses concerned current nursing-related challenges in Kazakhstan, such as rehabilitation nursing care, patient education regarding self-management, and the delegation of physicians at the primary health-care level.

Financial support services

The universities provided funding, from state funds, to support training in academic bachelor and master level programs and participated in the joint financing of research projects. In each medical university, there were specialists who were responsible for compiling the budgets for research projects, as well as accounting specialists. Private organizations and possible grant sources, such as European Union funds, represented the external sources of funding for nursing research. Research in various fields was financed (e.g., through grants) by the universities themselves, the Ministry of Healthcare, the Ministry of Education and Science, and the National Agency for Technology Development, as well as by the Science Foundation of the Ministry of Education and Science. Competition commissions considered applications for research in certain fields. Furthermore, to develop financial and administrative services, to share experiences with international partners, to develop advice systems for activities such as writing projects, and to calculate funding, universities were searching for investors and partners to co-finance nursing research.

The objectives and goals of the project (projection) imply a relationship between the level of the infrastructure of universities and the volume and quality of the research they undertake. The development of research directly depends on the potential and level of growth of the research infrastructure. The research infrastructure has significant effects on the implementation of nursing research. Based on the European best practices and the analysis of the current situation in Kazakhstan in 2018, the researchers were able to identify many gaps that need to be addressed to develop the nursing research in Kazakhstani medical universities. During the project lifetime, the universities have made many changes, for example added English language e-journals and increased the funding for nursing in the university budget. However, medical universities should still place greater emphasis on the strategic planning of nursing research to ensure systematic support. The current level of development of the materials and technical research infrastructure of nursing science in the Republic of Kazakhstan does not allow conducting nursing research at global level. Changes take time and universities should continue the development of the nursing

research infrastructure. To date, the fruit of labor of the project is establishing positive collaboration between the academic and practical fields of nursing as well as with international partners. In the future, as the main participants in nursing research, medical universities need to develop strategic plans for the development of nursing.

3.2 Supporting the development of research focus areas on nursing

To support the development of a nursing research strategy in medical universities in the Republic of Kazakhstan, four recommendations (Figure 1.) were created (Heikkilä & Hopia, 2019). Medical universities should take these recommendations into consideration when designing actions to develop specific nursing research agendas and establish overall nursing research priorities in Kazakhstan.
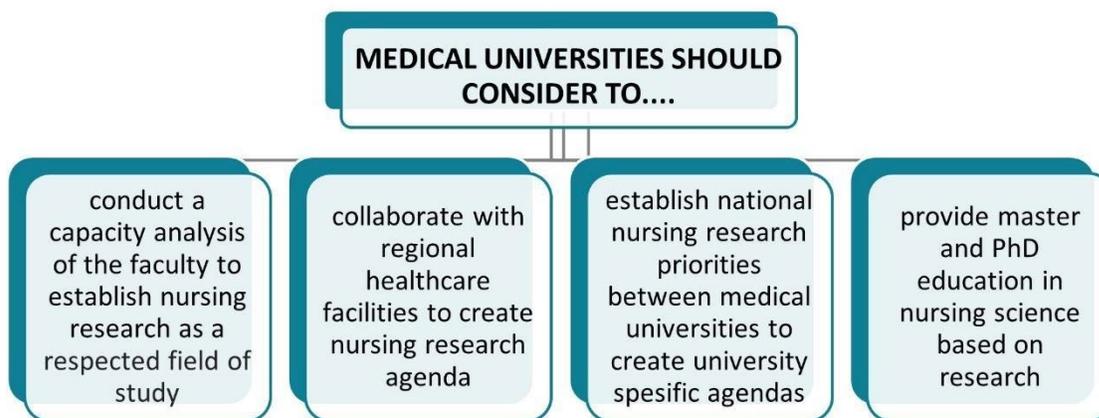
Figure 2. Recommendations for medical universities

Scientific background work

These recommendations are based on a rigorously conducted selection process consisting of four phases. This scientific background work for the recommendations is illustrated in Figure 2. The work started with a thorough analysis of international publications and strategy documents of nursing research and nursing research priorities and ended up with a three-round Delphi study. In the Delphi study, Kazakhstani healthcare experts from different sectors were asked to prioritize nursing research topics throughout three rounds.

The response rate varied in the different rounds from 65 (42 %) respondents in the first round, to 55 (23 %) in the second and to 48 (21 %) in the third round. It is worth noting that the response rate of healthcare providers from clinical practice was good: in round 1, almost half of the

respondents (49 %) represented clinical practice, in round 2 nearly third (27 %), and in the last round 40 %. Overall, 168 experts critically evaluated and prioritized the suggested nursing research topic statements.

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┌─────────────────────────┐     ┌─────────────────────────┐     ┌─────────────────────────┐
│ Analysis of 91          │     │ Focus group interviews  │     │ Candidate set of 81     │
│ international            │     │ with 58 Kazakhstani     │     │ nursing research        │
│ publications on nursing  │ ──▶ │ experts in 6 cities     │ ──▶ │ statements for a pilot  │
│ research priorities and 17│     │                         │     │ online Delphi study     │
│ policy and strategy      │     │ Analysis of Kazakhstan's│     │                         │
│ documents of nursing and │     │ healthcare development  │     │                         │
│ midwifery                │     │ program                 │     │                         │
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│ A 3-stage Delphi study  │     │ After four phases, 20   │
│ conducted among 168     │     │ research topics were    │
│ Kazakhstani healthcare  │ ──▶ │ determined as the       │
│ administrators, educators│     │ highest priorities of   │
│ and professionals       │     │ nursing research        │
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Figure 3. Scientific background work for recommendations

Important nursing research topics

Approximately three quarters (range 63-77 %) of the respondents believed the most important nursing research areas that should be studied at the moment are the following:

1. critical care nursing and emergency nursing,
2. stroke and heart failure nursing care,
3. oncology nursing,
4. quality improvement in nursing,
5. professional development,
6. health promotion and disease prevention and
7. nursing education.

Moreover, multidisciplinary and inter-professional collaboration in nursing science research, seriously ill patients and their quality of life, and patient outcomes and outcomes of nursing intervention research were rated as nursing research areas that should be investigated within the next few years in Kazakhstan.

In Figure 4., all the 20 nursing research topics that were rated by a timeframe priority in the last

round of the Delphi study are shown. In terms of these topics, it should be borne in mind that a huge amount of academic research concerning them has already been published globally. However, as indicated by the Kazakhstani Delphi study respondents, all the nursing research topics described in Figure 4. are worth studying in nursing science in the Kazakhstani setting. This requires that medical universities cooperate with each other and, moreover, with their regional healthcare facilities to determine the actual local and national nursing research priorities. Medical universities also need to review the capacity of their faculty members to create a university specific nursing research strategy.
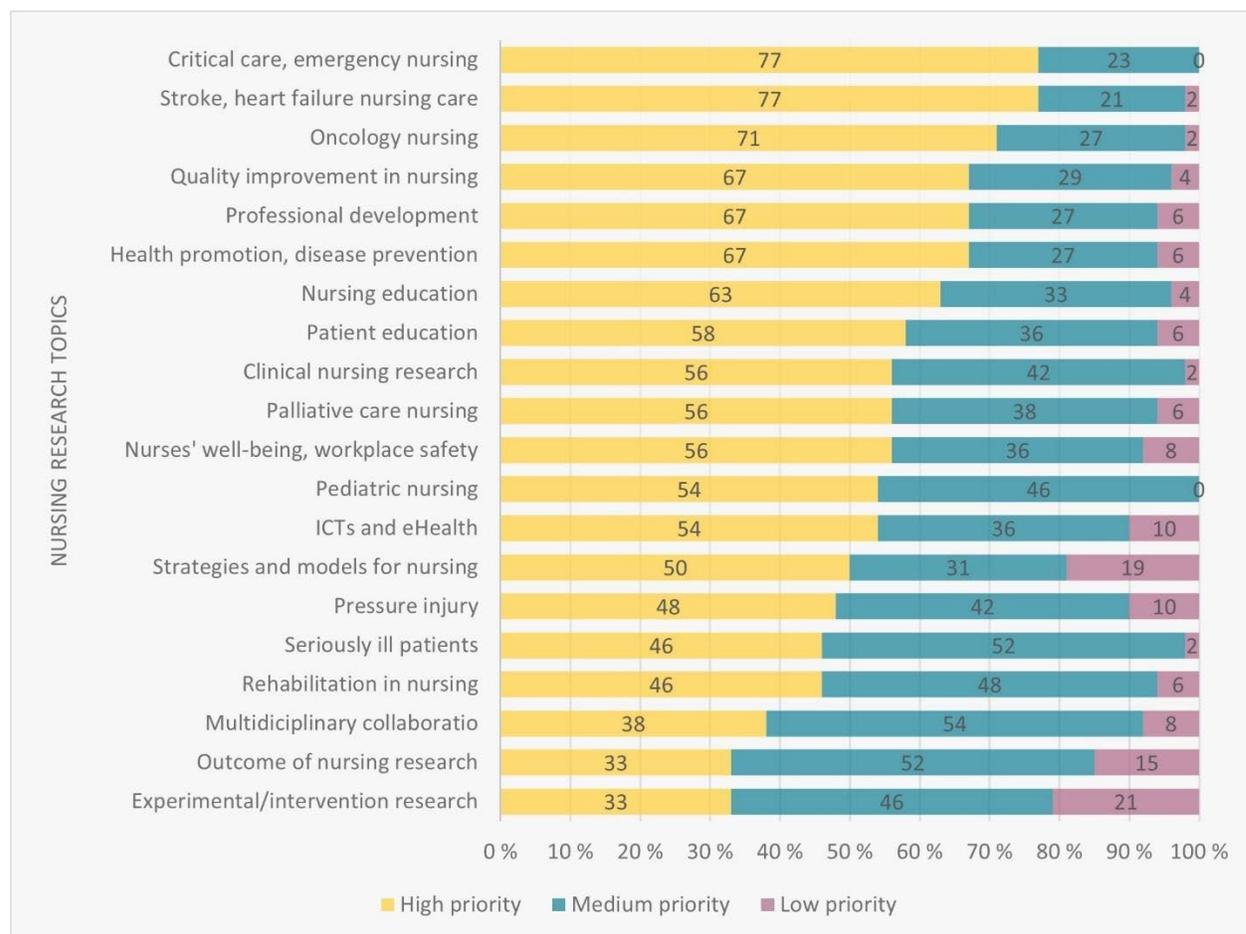

Figure 4. Nursing research topics rated by a timeframe priority

Due to the early stage of nursing science development in Kazakhstan, it is crucial that there is a full understanding among faculty staff members of medical universities and experts from different healthcare fields what kinds of topics are covered by nursing science. It is equally essential that those nursing research topics arise from nursing practice and thus are truly valued by the healthcare providers. Therefore, collaboration with local and regional healthcare

institutions is vital. Through systematic collaboration between universities on the national level and between healthcare facilities and universities on the regional level, a relevant and aligned nursing research strategy in Kazakhstan can be created in the future. By creating robust strategies for nursing research, nursing science can become a respected field of study in higher education in Kazakhstan. In addition, a carefully planned and sound nursing research strategy enables novel researchers to publish their studies on highly respected international nursing science journals. It can also open doors for Kazakhstani academics to join global nursing science communities.

To track the changes in the status of nursing research during the project implementation, an assessment was carried out through telephone interviews with the partner universities of the project as well as through face-to-face interviews at other universities in Kazakhstan in October 2020. The situation with nursing research in universities was generally similar to the first interview (2018), but some progress is noticeable. Current nursing research topics are devoted to the study and improvement of nursing care, nursing education, and the role of nursing personnel in helping patients with various illnesses. Most universities conduct research on professional development, nursing education, improving the quality of nursing and health promotion, and disease prevention. However, the research paradigm is not always based on nursing science, but on public health or medicine. Concerning the research methodology, there are also some indications of qualitative methods used in addition to quantitative research methods.

3.3 Building the joint capacity in nursing research

As part of the development of national educational materials during 2019, two master classes were organized at Nazarbayev University School of Medicine (NUSoM): "Qualitative research and Development projects in Nursing" and "Piloting the materials on Qualitative research and Development projects in nursing ". Both events were organized by JAMK University of Applied Sciences (Finland) and Karaganda Medical University (Kazakhstan). The purpose of the first master class was to increase the potential of medical schools / the faculties of the medical universities and colleges of the Republic of Kazakhstan for nursing research. During the first master class, two nursing research courses for the Educational Standard in Nursing were developed. The developers were the participants of the master class, including the project partners and other stakeholders, mainly teachers of nursing from the medical universities and colleges of Kazakhstan. The work of the master class was structured so that the participants were divided into two groups, the first engaged in qualitative research, the second in development projects in nursing. Each working group had their own facilitator from the European universities sharing her expertise during the work process.

Figure 5. Participants with certificates from the first master class

Figure 6. Participants with certificates from second master class

Based on the results of the master classes, two courses for the master-level were created (see Figure 7.). In addition, recommendations on how to adjust training material for academic and applied bachelor levels were developed during the master classes. The first course "Research and development projects in nursing" contains six themes: 1) Purpose, task, and objectives of a project in health care and nursing science, 2) Design and methods of project, 3) Structure of science project, 4) Data collection and analysis, 5) Ethics, and 6) Project management. The "Methodology and methods of scientific research in nursing" course contains six more detailed themes as well: 1) Philosophical background, 2) Data collection, 3) Data analysis, 4) Documentation/reporting Qualitative Research, 5) Trustworthiness, and 6) Research ethics of Qualitative Research. All materials are freely available on the CNE Moodle e-platform (*https://course.nursekz.com/*).
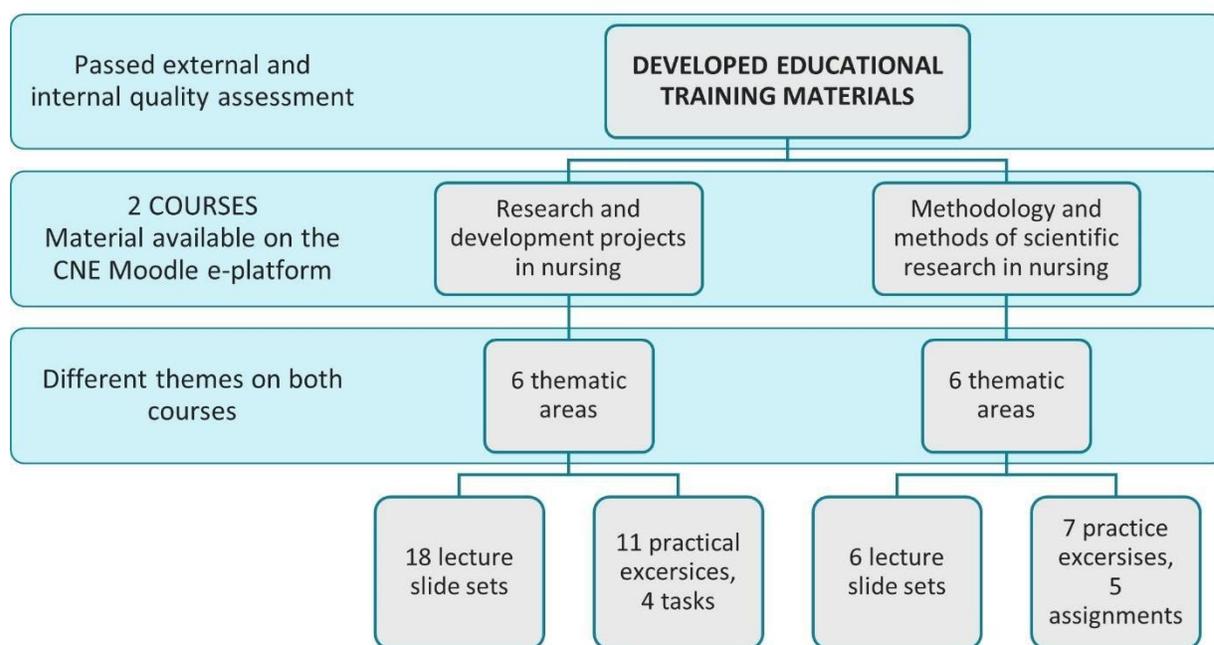

Figure 7. Results of the two master classes

Twenty teachers from medical universities and higher medical colleges piloted the educational materials in the second master class in the autumn of 2019. The work was built on the principle of "student-teacher" meaning that the university responsible for the teaching materials presented the developed materials, after which the rest of the participants had the opportunity to give feedback to improve the materials. A thorough discussion on the content of the created materials was conducted with participants in this pilot phase. Experts from JAMK, LAB and HANZE also provided feedback concerning the material. Based on discussions and comments, the materials were customized to be relevant to the end-users. To ensure compliance with the

Bologna process, the level (European Qualification Framework level 7 for master or level 6 for bachelor) of the materials was reviewed in connection with the Kazakhstani State Educational Standards of Master in Nursing, Academic Bachelor in Nursing, and Applied Bachelor in Nursing. This was done by giving detailed advice about how and which of the materials can be used in different courses.

Five **webinars** on nursing research and research methodology were conducted by experts from JAMK and KMU in the spring of 2020 on topics "Databases, literature acquisition, literature", "Research design", "Data collection", "Data analyses" and "Validity, reliability, trustworthiness". As a result, the research capacity of the participants (94) increased in the field of nursing research. They gained the skills of searching for information in the CINAHL database, which will be available at medical universities in Kazakhstan for academic staff and students in the future.

In October 2020, an **online seminar** "Topics of Nursing Research in Kazakhstan: Welcome to the Discussion!" was held by KMU. Lecturers from JAMK presented examples of nursing research in stroke rehabilitation and in diabetes counseling. After the examples, the participants were divided into several groups to identify the importance of the following topics in relation to their field: *"Nursing education", "Patient education in non-communicable diseases", "Clinical nursing guidelines and documentation", "Nurses' role and decision-making", "Nursing management and leadership" and "The essence of nursing care in different"'.*

The online **mini-conference** "Promoting Innovation and Research in Nursing" with 122 participants showed the genuine interest of the Kazakhstani stakeholders for discussion, thereby promoting nursing research in cooperation with medical universities and practical health care. The mini-conference gave the participants the possibility to present their nursing research by PowerPoint presentations or by abstracts. The abstracts were mostly from the field nursing science (68 %; n=13); however, almost one third were from the field of public health (26 %; n=5). It was notable that research on the role of nurses and the importance of nursing in clinical practice was growing in number. Almost in all the events, the participants were teachers in medical universities or higher medical colleges, undergraduate students, undergraduates, PhD students, nurses, or representatives of practical health care.

The active practical work to create **joint international nursing research plans** began in the late spring of 2020 after five webinars. Mutual coaching sessions were implemented to create a joint research plan in collaboration with at least two universities: one from Europe and one from Kazakhstan. Specialists from JAMK and LAB conducted coaching for the medical personnel of medical universities in Kazakhstan; KMU, NUSoM, SMU and AMU were tutored by JAMK and

WKMU by LAB. The goal was to develop five international nursing research project plans by the end of 2020.

SMU and JAMK experts jointly designed the research proposal *"Rural health care professionals' palliative care related knowledge and attitudes, and the perceived need for e-health support".* The participants from KMU and JAMK created the joint research proposal titled *"Nurses' role and participation in multidisciplinary stroke rehabilitation teams in Kazakhstan and Finland".* The participants from AMU and JAMK jointly created a research proposal *"Practices to prevent nurses' sharp object injuries in Kazakhstan and Finland".* The research proposal *"Diabetes mellitus type 2 self-management patient education in Kazakhstan and Finland"* was designed jointly by experts from NUSoM and JAMK. The research plan *"Nurses' involvement in anticoagulant therapy at different stages of the nursing process"* was created jointly by the WKMU and LAB experts.

3.4 Achieved results and impact

In connection with the main task "Strengthening the role of medical universities in the development of research activities in nursing in the health care system of Kazakhstan", a lot of analytical work was carried out in the benchmarking format study, the Delphi study, and other evaluations where the research methodology was followed with rigor. Based on benchmarking study, a report was prepared with a detailed justification of the problems in the state of the infrastructure of research work in universities, including issues of organization, financing, training, etc. The report formed the basis for the report presented at the Mid-conference of the project in Nur-Sultan, where research teams of universities as well as representatives of the Ministries of Healthcare and Science and Education were present. The infrastructural improvements that were recommended based on the benchmarking results were a subject of discussion in the departments and the schools of nursing of the partner universities. Strategic plans for the development of research practice in the nursing departments of the partner universities have been formed. In this regard, the plans for the development of medical universities for the coming years (2021-2022) now include the expansion of the library fund through subscription to full-text publications on nursing science, the purchase of equipment, ICT tools for research, and the equipping of laboratories for nursing.

One of the most important stages of the project was the Delphi study, which received a positive response in Kazakhstan among the scientific community of medical universities and higher medical colleges, as they actively participated in this survey. The result of this study was a set of verified recommendations on the priority areas of research in nursing. These nursing research topics introduced have received positive assessment and feedback from universities, research

institutes, and the Ministry of Healthcare of the Republic of Kazakhstan. This made it possible to draw the attention of the leadership of the Ministry of Healthcare and the Ministry of Education and Science, universities, and research institutes with a medical profile to the development of nursing research in the near future. These identified research topics make nursing research visible to the community as it can be summarized under topic areas. Furthermore, the prioritized nursing research areas make it possible for universities to target their research activities strategically and for the Ministry of Healthcare to follow the development of nursing science and research. At the end of the project, we can already see that some important nursing research areas are still without any research and that the research is starting to cluster around certain themes.

For the first time in Kazakhstan, educational modules "Research projects and development projects in nursing" and "Methodology of qualitative and quantitative research in nursing" were developed for the master's and applied and academic bachelor's degrees. Consequently, nursing educational programs reached a higher quality and an innovative level and received a positive assessment from the experts of the Atameken Chamber of Entrepreneurs, after which they were successfully recorded in the register of the educational programs of the Republic of Kazakhstan. It should be noted that the educational program "Nursing" at NCJSC KMU, which was updated taking into account the recommendations of the project researchers, received a prize in the independent rating of educational programs conducted in 2020 by the Association of Entrepreneurs of Kazakhstan "Atameken".

Through the project, a critical pool of teachers with basic competences to conduct nursing research, especially using a qualitative methodological approach, were trained. Involvement in the project increased the awareness and commitment of the participants and managers as well as stakeholders to research work in nursing, allowed them to master the skills of qualitative research and to gain confidence in working with literature, as well as provided them with skills in the international scientific environment in the field of nursing. The final project activities to create joint international nursing research project plans allowed the Kazakhstani university teachers to apply the gained theoretical knowledge into practice.

The strengthened role of medical universities in building evidence-based nursing research activities in healthcare services can be verified by the growing interest of nurses to participate in initiating and conducting nursing research activities. Furthermore, the participation of nurses and nurse managers in project activities increased over the three years. Nurses were also eager to present their research activities in the forums that the project offered for collaboration and knowledge sharing. The nursing research activities of universities increased. Nursing teachers and undergraduates had a unique opportunity to visit leading European nursing organizations

(centers, clinics, foundations) through which they acquired personal contacts with foreign nursing experts for further long-term cooperation.

The ProInCa team members learned to master the methods of conducting online webinars for large audiences and acquired the skills of organizing scientific and practical conferences on online platforms. On the individual level, several persons involved in project activities gained such competency, motivation, and confidence that they were enrolled in PhD studies. Currently, these members of the project team comprise the main pool of experts in nursing research at Karaganda Medical University, which is assessed by the university leadership as noticeable progress. This opens new possibilities for the accelerated development of both scientific research in general and the development of the school of nursing education of this university. Project stakeholders are now fully fledged participants in international nursing research activities.

4 Modernization of nursing leadership

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Järvinen Sari, *Specialist, PhD, RN, JAMK University of Applied Sciences, Finland*

Figure 1. Master Class "Leadership in Nursing" Intensive workshop II, 25.2.-1.3.2019. (Photo: Hannele Tiittanen.)

One of the objectives of ProInCa project was to promote capacity and system of nursing leadership and management in health care transition through collaboration of HEI's and health care facilities. Modernization of nursing leadership is important in order to improve the quality of the healthcare system.

In the ProInCa project, the nurse leaders' (chief and senior nurses) leadership and management competencies were developed, so that they could act as change agents in their organizations. Two intensive workshops were implemented, and the leadership training materials and leadership tools were produced for the nurse leaders' and university teachers' use to promote the leadership capacity building in health care organizations, and medical universities when teaching academic bachelor and master students in nursing. The leadership modernization aims at strengthening the nurse leaders' role and position on a structural level.

4.1 Capacity and system reform study

The aim of the capacity and system reform study (Huotari & Tiittanen, 2020) was to find out nursing leaders' competencies of nursing leadership and management in Kazakhstani healthcare facilities. The literature review of international nursing leadership models was done for defining the leadership competences used in the study. Six leadership competency domains were condensed into: *Setting direction*, *Managing services and driving results*, *Leading people and teams, Enhancing nursing professionalism and ethics, Communication and team collaboration skills,* and *Self-leadership*. Based on these competency domains the questionnaire was created and sent electronically and in paper version for the respondents to assess their own leadership competencies. The data was collected in spring 2018, most of the respondents were senior nurses, almost 60 %, rest were chief nurses and chief doctors, altogether 252 respondents.

The results showed that the managers have some or good competency level in all leadership competency domains. Most challenging domains and statements were related to the enhancement of nursing professionalism and ethics, and the ability to apply the nursing reform in service development, as only half of the respondents had good or excellent competency in these domains. The results showed that almost half of the respondents were not familiar with the nursing reform described in the Comprehensive Plan of Nursing Care Development in the Republic of Kazakhstan until 2020. However, the respondents assessed having a good or excellent competency to apply national health care legislation and regulations.

Respondents had also a possibility to answer open-ended questions about what changes would be needed for the role and managerial structure of nursing management. It was brought out that the level of nursing education should be higher, and the nursing leadership education needs to be strengthened. In addition, international cooperation was wished for. Respondents also emphasized the more independent role of the nurse, and possibilities for more independent decision making and nurse and doctor partnership. Also, better payment for nurses was seen as a possibility to raise the profile of the nursing profession.

The respondents in the leadership competence study assessed their own competencies, which can encourage leaders to reflect and consider their own leadership competencies and development needs, which is also desirable. Yet, it was not a purpose in this study to identify good or poor leadership skills, but to give an overview of what nursing leadership competences need to be focused on and developed in health care organizations for the benefit of the nursing profession and the nursing reform in Kazakhstan.

National and organizational cultures are influencing the use of the competency scale, and self-assessment is always a context-specific tool. It is good to notice that the respondents may assess their competencies better than they are, if it is not socially acceptable to talk about their own weaknesses or lack of competencies. On the other hand, a respondent may reflect one's own competencies too critically. Therefore, the results must be critically reflected as the nursing profession, nursing education and nursing leadership in Kazakhstan are seen areas to develop. Medical universities are in an important role in this development process for strengthening and enhancing nursing leadership research, nursing leadership profession and nursing leadership education. Competence development of chief and senior nurses will empower as well as support the structural changes in healthcare organizations.

4.2   Promoting the system development of nursing leadership

The capacity and system of nursing leadership and management in health care transition through collaboration of higher education institutions and health care facilities was also promoted in the ProInCa project. An important activity to support this aim was to build up the innovative teaching and learning materials and participatory solutions for nursing leadership education in medical universities and Higher Medical Colleges. The materials were produced mainly during the two joint intensive weeks in 2018 in Lahti, Finland, and 2019 in Nur-Sultan, Kazakhstan. In addition, the materials have been assessed internally and externally, and finalized in 2020. During the intensive weeks, the nurse educators and chief and senior nurses (altogether 70 participants) were trained in order to promote the collaboration between the higher education and healthcare settings. During the training sessions the participants worked in mixed groups to facilitate the discussion and knowledge sharing about the changes in nurse leaders and advanced nurses' roles and responsibilities in healthcare. Meeting persons from different organizations made it possible to network and share good practices and solve problems related to the leadership and management issues together.

Figure 2. Master Class "Leadership in Nursing" Intensive workshop II, 25.2.-1.3.2019. (Photo: Hannele Tiittanen.)

Nursing leadership teaching and learning materials were divided under four topics, which are based on the leadership competency survey done in spring 2018: Setting direction, Managing services and driving results, Professionalism and ethics, and Leading people and teams. Nursing leadership materials consist of 11 PowerPoint presentations, 41 additional learning and teaching materials, including exercise handbook, leadership tools, and reading materials to support the nursing leadership training and development. Materials internal and external evaluation received good feedback. Materials are available in the CNE Moodle environment in English and in Russian at *https://course.nursekz.com*.

Improved competences and relevance for the labour market on nursing leadership and management are needed. Developed nursing leadership materials are one step to support the ongoing development process. As a conclusion, it is necessary to provide flexible further education possibilities to the chief and senior nurses to upgrade their degrees and competences. Nursing leadership discipline should be established to the medical universities and nursing leadership research programmes should be started, as well as international cooperation to join the international nursing leadership communities. In addition, the cooperation between the

medical universities and nursing leadership practice should be developed to support the evidence-based nursing practice implementation to improve the quality of nursing care.

4.3   Systematic managerial support for new advanced roles in nursing

A good way to support the new advanced roles of nurses is to use social media. **The nursing leadership blog** was established to support structural changes needed in healthcare and the role change in nurse leaders' and advanced nurses' positions and responsibilities. The blog can be found at the CNE site (https://nursekz.com/en/blog-for-nursing-leadership-2/).

As it is not possible to meet face-to-face frequently, especially during the pandemic, the logical place to meet and share the ideas and to disseminate the best practices seems to be the internet. Blogs provide a platform for chief and senior nurses as well as for the nursing leadership educators to support professional development, increase common knowledge utilization, and promote formal and informal professional communication and professional networking. Blog is not just sharing; it is also the place to work collaboratively (Frisch et al., 2014.).

A blog is a way to interact and learn in a social relationship. It gives a possibility for the people sharing the interest in a topic to collaborate, share ideas and experiences and solve problems. Blog can expand knowledge and expertise (Frisch et al., 2016). People reading the blogs can have a strong common interest which can build up a relationship where it is easy to interact online (Young, 2013). Writing a blog that promotes discussion is also a constant way to get comments and feedback of the presented ideas (Yessanova, 2016). Blogs which cover medical or health issues also provide a new way to share evidence-based health information to the public. Social media changes people's way to communicate and maintain their health (Flury, 2017.) Blogs have become the public face of medicine and healthcare and are a new way to affect people's health behavior. The importance of the medical and health blogs to share information will grow as the internet has become available for an increasing number of people (Lagu et al., 2008).

Medical and health blogs also allow physicians and nurses to share their personal stories, knowledge and experiences in healthcare. In their study, Lagu et al. (2008) have looked at the content of weblogs that health professionals have published. Many of them were related to the patient cases and the relationship with the physician and patient. About half of sampled blogs brought out some aspects of the healthcare system, these discussions ranged from a variety of topics from health insurance to ethical issues like malpractice or end-of-life decision making. Blogs can bring out the positive elements as well as challenges facing the health care and healthcare professions. It is important to remember that authors who write the blog are always

representing themselves as models of their profession and healthcare and that employer's and colleague's reputation needs to be respected. Especially important is to remember the confidential issues concerning the patient information (Lagu et al., 2008; Price, 2010). It is easy to start writing blogs. Blog needs an interesting topic and clear purpose, positive and encouraging approach in a text. Blogs are not just written texts, it is possible also to include photographs, videos, or audio clips to the blog. Writing a leadership blog would also be a perfect assignment for the Master of nursing students as a part of their leadership studies. In a table 1, the popular nursing blogs are collected as an example and to be followed.

Table 1. Popular nursing blogs for nurse leaders.

Blog	www-address	Description
Nursing Times (UK)	*https://www.nursingtimes.net/*	The most-visited nursing website in Europe, leading source of nursing news. Includes CPD, clinical research and innovation to support nurses' careers.
BMJ Evidence-Based Nursing (UK)	*http://blogs.bmj.com/ebn/*	This is the blog of the EBN journal, which analyzes and discusses events, news and latest research of nursing which utilizes the personal clinical experience of nurses and applies a multi-step approach to collect evidence, analyze, then evaluate and disseminate the results.
Advances in Nursing Science Blog (US)	*https://ansjournalblog.com/*	The scholarly blog for Advances in Nursing Science, the purpose is to advance the development of nursing knowledge and to promote the integration of nursing philosophies, theories and research with practice. Published by Lippincott, Williams & Wilkins.
Nurse Leader Insider (US)	*http://strategiesfornursemanagers.com/* 🡒 *http://strategiesfornursemanagers.com/newsletter_archives.cfm?oc_id=868*	Expert advice from nurse leaders around the US as well as best practice strategies on nurse recruitment, retention, burnout, and leadership communication. The blog publishes a weekly newsletter which includes articles from several different nurse contributors.
The Nurse Leader Blog (US)	*https://www.aapacn.org/aapacn-blog*	The blog provides educational resources, updates on healthcare legislation, and a large network of healthcare professionals in long-term and post-acute care communities. The blog belongs to The American Association of Directors of Nursing Services (AADNS).
Emerging RN Leader (US)	*https://www.emergingrnleader.com/about-2/)*	Thoughts, ideas and views for example on nurse leadership strategies, best practices on conflict

		management, and professional development. Personal blog by **Dr. Rose O. Sherman**
Diversity Nursing Blog (US)	*https://blog.diversitynursing.com/blog/topic/nurse-leadership*	A blog, job board, forums, podcasts, and more. Its aim is to address the growing demand for nurses across the country by connecting registered nurses with employers while increasing diversity in both the employee and student nurse populations. The Diversity Nursing blog is a great resource for news and insights related to the nursing community, with a particular focus on diversity, inclusion, and cultural competence.

Another important way to support structural changes needed in healthcare and the new roles of nurse leaders and advanced nurses' positions and responsibilities is the **association of nurse leaders**. An association is an organization or group of individuals affiliated with one another sharing a common purpose, interest, or mission and exist for the mutual enrichment and advancement of their membership. Professional Associations are organizations that are established to further specific professions and the interests of those who work in them (ASHA).

The common benefits professional associations are providing for their members are for example following (ASHA):
- Learning possibility: courses or professional development activities available for members either online or in person.
- Knowledge sharing: the collective body of knowledge resources produced by the association, usually such as publications, research, or websites.
- Membership community: possibilities for members to communicate and share ideas, including for example online forums, social media, conventions, and meetings
- Advocacy: the political or lawmaking influence that associations exert on a local or national level aiming at to support the work of their members. Advocacy can take a variety of forms, for example lobbying, creating policy documents, providing specialized or technical information.

During the ProInCa project the association of nurse leaders was prepared and initiated, and the association is ready to be registered. The purpose of the **Association of Nursing Leaders of Medical Organizations of the Republic of Kazakhstan** is to promote leadership positions in nursing. It also aims to promote the development of a nursing management system, develop leadership competencies, and to increase the level of nursing professionalism in the field of

leadership in nursing. The new association will need members as soon as it is registered, the number of members makes it strong to achieve its purposes.

4.4   Achieved results and impact

The impact of the Modernization of nursing leadership was achieved partly during the ProInCa project time, the wider impact will be seen in the future. ProInCa has facilitated the modernization of nursing leadership, the main beneficiaries of the implemented activities have been health care service providers, medical universities, higher medical colleges, and medical colleges in Kazakhstan.

Figure 3. Master Class "Leadership in Nursing" Intensive workshop II, 25.2.-1.3.2019. (Photo: Hannele Tiittanen.)

Producing the leadership training materials for the medical universities and higher medical colleges and training the nursing educators has increased the capacity of nursing educators, which will benefit not just themselves, but especially the nursing students in bachelor and in masters' levels when studying leadership courses. In addition, the chief and senior nurses attending the intensive week trainings have improved their leadership skills, which will benefit their

organizations and facilitate the changes in nurse leaders and advanced nurses' roles and responsibilities in health care facilities. What is also particularly important is that the participants from the health care organizations and educational institutions have had a possibility to network and discuss together during the intensive week trainings. Common working has increased the understanding of both sides, and the connections between the people have been created. Common working and discussions have also improved educators, chief and senior nurses' self-confidence, and empowered their nursing identity. This is important in order to strengthen the nursing status in health care organizations, educational institutions and in a society. The strengthened nursing profession is related to the women's position in labor markets as it also reflects to the general level in a society for the women's labor market position. Health care is a labor-intensive sector with a lot of women working. Women's new roles in health care and possibilities to new leadership positions are valuable examples to encourage young women to apply to nursing education and have a career as a nurse, also as a leader.

To support the well started change in health care organizations and educational institutions, the following recommendations are suggested:
- Medical universities provide flexible further education possibilities to the chief and senior nurses to upgrade their degrees and competences.
- Nursing leadership discipline should be established to the medical universities and nursing leadership research programs should be started to strengthen the nursing leadership and management education, and to support the independent role development of chief and senior nurses.
- International cooperation should be developed in medical universities to join the international nursing leadership communities, also grants for the international benchmarking and exchange programs should be targeted for the nursing leadership educators.
- Cooperation between the medical universities and nursing leadership practice should be developed to support the evidence-based nursing practice implementation and the cooperation based on the knowledge triangle to increase the abilities for innovative solutions in nursing practice.

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Appendix 2 Deliverable reports and publications

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Resolution of the of the Final Conference of the ProInCa Project "Innovations in Nursing Education, Research, Leadership and Clinical Practice in Kazakhstan", December 10-11, 2020

On December 10-11, 2020, was held the final international conference "Innovations in Nursing Education, Research, Leadership and Clinical Practice in Kazakhstan", organized within the 3-year ProInCa project - "Promoting the Innovative Potential of Higher Education in Nursing for Health Care Reform," co-funded by Erasmus +.

Representatives of the Kazakh Ministries of Health, Education and Science, the Republican Center for Health Development, regional health organizations, and university clinics, national and regional associations of nurses, medical universities, higher medical colleges, medical colleges, practicing nurses and students, as well as international experts from Finland, the Netherlands and Slovenia attended the conference. To the participants were presented the main results of the 3-year project. Also, there were discussed issues of ensuring the sustainability of the results obtained and other topical issues of the development of nursing in Kazakhstan.

Greetings to the conference participants were made by: Mr. Massimo Pignatelli, Vice President for Medicine, Nazarbayev University, Dean of the School of Medicine; Ms. Soili Mäkeläinen-Buhanist, Ambassador of Finland to Kazakhstan; Tasbulatova Shaizada, Director of the National Office of the Erasmus + Program in Kazakhstan; Mendalieva Rauza, Chief Manager of the Department of Higher and Postgraduate Education of the Ministry of Education and Science of Kazakhstan.

Key reports were presented at the plenary session:

- "Status and perspectives of nursing in Kazakhstan" (Gulnaz Tanatarova, Director of the science and human resources Department, Ministry of Health, Kazakhstan)
- "Results and impact of the ProInCa project" (Johanna Heikkilä, ProInCa project coordinator, JAMK University of Applied Sciences, Finland)
- "Leadership and collaboration is necessary to build a strong profession" (International Council of Nurses, President Annette Kennedy).

Within the conference, panel sessions, a round table, a training cafe, and a section of electronic posters were organized in an interactive and innovative format.

The main topics of discussion were:

- "Center for Nursing Excellence - a tool for collaboration and knowledge exchange between the national and international academic nursing community and society";
- "Strengthening cooperation between education, science, practice and the international academic community in the field of nursing";
- "Forecasts of research in the field of nursing in Kazakhstan - the ProInCa project is completed, what is ahead?"
- "Modernizing Nursing Leadership in Kazakhstan: What Does the Future Look Like?"
Based on the results of the discussion, the participants of the Conference made the following conclusions:

1. The ProInCa project contributed to the introduction of international best practices in nursing in Kazakhstan. So, within the framework of ProInCa:

- The Center for Excellence in Nursing was created with an online platform (www.nursekz.com) and its regional offices based on medical universities (NAoE "Astana Medical University", NAoE "Medical University of Karaganda", NAoE "Semey Medical University", NAoE " ZKMU named after M. Ospanov ", South Kazakhstan Medical Academy, Kazakh National Medical University named after D. Asfendiyarov)
- A pool of national experts and trainers in education, science and nursing practice was prepared.
- Educational programs and modules on evidence-based nursing practice, leadership, research in nursing were developed for the master's, applied and academic bachelor's levels, etc.

2. The main directions of activity of the regional offices of the Nursing Excellence Center have been determined:

- communication functions in the region among local stakeholders in nursing;
- organization of events (round tables, seminars) for information exchange, cooperation and training;
- collection (on the platform www.nursekz.com), promotion and distribution of relevant and evidence-based nursing materials;
- the dissemination of information regarding nursing education, research and practice.
- Dissemination of clinical guidelines and tools for nurses.
- Support of connecting nurses in their professional fields.

Progress is noticeable in some areas of research in nursing: a number of master's theses are being carried out, research is being carried out by undergraduate students of universities and clinical research is carried out jointly with stakeholders. Research topics in the field of nursing are

devoted to the study and improvement of the process of nursing care, nursing education, the role of nursing staff in helping patients with various nosologies. Research with the use of qualitative methods has become more widespread, as evidenced by interviews with specialists from nursing schools in October this year.

At the same time, the problems of infrastructure for scientific research, joint projects, interaction between universities and the health care system, higher colleges to promote research in nursing remain relevant. This gives reason to believe that these problems are barriers to the development of nursing science in Kazakhstan.

4. During the ProInCa project, nursing leadership modernization took a step forward, but the steps were small. While awareness of the importance of competent nursing leadership has increased, structures in healthcare organizations still need to strengthen the position and role of nursing leadership. Nurse leaders play a key role in healthcare by becoming change managers and developing quality nursing care.

Considering the above, the participants in the Conference propose:

1. Apply to the Ministry of Health of the Republic of Kazakhstan:

- on providing support in ensuring sustainable development of the Nursing Improvement Center and its regional offices created on the basis of medical universities (NJSC "Astana Medical University", NJSC "Karaganda Medical University", NJSC "Semey Medical University", NJSC "ZKMU named after M. Ospanova ", South Kazakhstan Medical Academy, Kazakh National Medical University named after D. Asfendiyarov).

2. Recommend to medical educational institutions:

- to actively implement methodological recommendations and educational materials obtained within the bounds of the ProInCa project to develop the competencies of nurses in the field of evidence-based nursing, research and leadership (at all levels of education).

To advance research in Nursing:
3. Apply to the Ministries of Education and Science, Health:

- on considering the possibility of increasing the state order for the training of bachelors, masters and doctors of philosophy in the field of nursing;
- on the approval of national research priorities in the field of nursing and the allocation of scientific grants within these priorities.

4. Recommend the leadership of universities in Kazakhstan

- to consider the development of research in nursing as a priority for the next five years;
- to include in development plans articles for financing research infrastructure in nursing (expanding access to full-text editions in English, allocating internal grants, targeted funding projects);

5. Recommend the health departments of the regions of Kazakhstan, universities, colleges, republican clinics to use the sites of the regional offices of the Center for Nursing Excellence to initiate joint research projects, including on the basis of clinics and hospitals, in primary health care institutions, research centers.

6. Based on the potential created by the ProInCa project, partner universities to strengthen scientific links by concluding bilateral and multilateral memoranda and agreements on mutual assistance in conducting joint scientific research.

To promote leadership in nursing:
7. Apply to the Ministry of Health of the Republic of Kazakhstan, health departments of the regions:
- on assisting in strengthening the role and responsibilities of nursing leaders and advanced nurses in health care organizations through the provision of a regulatory framework;
- on providing support to medical organizations in their structural changes for the introduction of new leadership positions for nurses, subject to compliance with current legislation;
- on providing the opportunity for chief and senior nurses to attend international conferences on nursing leadership and receive grants for leadership training abroad;
- support universities in organizing flexible and accelerated training programs for chief and senior nurses with the purpose of raising their level to academic bachelor's, master's and PhD degrees in nursing
- consider recognizing a professional association of nursing leaders that will support nursing leaders in their work to share best practices and improve nursing practice.

International conference participants

"Innovation in Nursing Education, Research, Leadership and Clinical Practice in Kazakhstan"

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