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

Gap Analysis - Identification of Gaps in Evidence-Based Nursing Education in Kazakhstan

WP2.2 Efficiency and quality by evidence-based nursing

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Summary

The gap analysis report presents the knowledge and attitudes of academics towards evidence-based nursing (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 evidence-based nursing (EBN) which are presented in the conclusion part.
The gap analysis aims to provide information on existing evidence-based nursing competence conditions in the curriculum, content of course descriptions, syllabus of academic and applied bachelor's and master's degree in nursing. The content of the curriculums and course descriptions (State educational standards – SCES) and syllabuses for academic and applied bachelor's and master's degrees was analysed and compared. The analysis of the content for the academic bachelor's degree has shown that in this moment and structure only 3 subjects in Kazakhstan's regular education practice correspond to the National educational Standard requirements/suggestions. SCES plans for 6 subjects related to EBN. The analysis of master's degree curriculums has shown that 2 faculties out of 4 include all 7 subjects that are required/suggested by SCES. Subjects do not have the content which would correspond to EBN in full hours/credits. However, the subjects do have specific fragments of content that have a direct/significant relation to EBN content.

Furthermore, major priorities for the advancement of EBP in the education process for nursing students were determined.

1 Theoretical background

Evidence-based practice is a life-long problem-solving approach to the delivery of health care that integrates the best evidence from well-designed studies and integrates it with a patient's preferences and values and a clinician's expertise, which includes internal evidence gathered from patient data (Melnyk, et al., 2014). As the authors (Ely et al., 2005; Pravikoff, 2005; Titler, 2009; Melnyk, et al., 2012; Heikkila at al., 2016) establish, the main barriers for implementing EBP are high time requirements, inadequate EBP knowledge and skills, rigorous teaching process, organizational culture, lack of mentors and resources, the resistance of leaders or colleagues, poor English language skills, a heavy workload, lack of internet access or database access and the lack of time to read the research, critically appraise evidence and implement new ideas in the workplace. Similarly, Kamalbekova and Kalieva (2015) find that the barriers are similar in evidence-based medicine (lack of funding, no access to reliable sources of information and websites, outdated research methodology skills, the lack of skills for critical evaluation of information, a tradition of authoritarian relationships, use of experience, etc,). The knowledge of evidence-based medicine and the skills required to search for scientific data, evaluate its validity, and transform scientific data into practical solutions are necessary for health care workers in their daily activities. This culture needs to be rooted in modern medical education.

Even though multiple positive outcomes are the result of evidence-based care, including improvements in healthcare quality, safety, and costs, it is not consistently delivered by clinicians in healthcare systems throughout the world (Melnyk at al., 2018a). Since becoming independent, Kazakhstan has undertaken major efforts in reforming its post-Soviet health system. Two comprehensive reform programmes were developed in the 2000s: the National Programme for Health Care Reform and Development 2005-2010 and the State Health Care Development Programme for 2011-2015 Salamatty Kazakhstan. Changes in the provision of health services included a reduction of the hospital sector and an increased emphasis on primary health care. However, inpatient facilities continue to consume the bulk of health financing. Partly resulting from changing perspectives on decentralization, levels of pooling kept changing. After a spell of devolving health financing to the rayon level in 2000-2003, beginning in 2004 a new health financing system was set up that included pooling of funds at the oblast level, establishing the oblast health department as the single-payer of health services. Since 2010, resources for hospital services under the State Guaranteed Benefits Package have been pooled at the national level within the framework of implementing the Concept of the Unified National Health Care System. Kazakhstan has also embarked on promoting evidence-based medicine and developing and introducing new clinical practice guidelines, as well as facility-level quality improvements. However, key aspects of health system performance are still in dire need of improvement. One of the key challenges is regional inequalities in health financing, health care utilization, and health outcomes, although some improvements have been achieved in recent years. Despite recent investments and reforms, population health has not yet improved substantially (Katsaga, et al., 2012).

The quality of scientific research in Kazakhstan remains poor, which is partly due to years of underinvestment in facilities and equipment (Ministry of Health, 2004). The National Programme of Health Care Reform and Development for 2005–2010 envisages the development of medical science through the following activities:

- development and application of modern technologies for disease prevention, early detection, treatment, and rehabilitation;
- fundamental and applied medical research in areas identified by the Ministry of Health;
- strengthening the links between medical research and its practical applications in the health sector;
- development of international partnerships;
- integration of medical science, education, and practice;
- monitoring and evaluation of health reform initiatives;
- implementation of evidence-based medicine (Kulzhanov & Rechel, 2007).

Kamalbekova and Kalieva (2015), conducted a study at the Medical University of Astana, where the Scientific and Educational Center of Evidence-Based Medicine was established in 2010 with the help of a corresponding World Bank project. The participants of the study were the faculty trained in evidence-based medicine at the "Introduction to Evidence-Based Medicine" workshop

between 2010 and 2015. There was a total of 16 workshops carried out during the period and 323 employees were trained. All participants were asked to complete a questionnaire twice: before the training – pre-training (to determine the initial knowledge level of a participant) – and after the training – post-training (to determine the acquired level of knowledge and solicit feedback). Questionnaires were prepared to make sure most questions before and after the training were identical. Thus, it provided a clear picture of the effectiveness of training. Questions in the survey were open-ended to allow the respondents to express their views freely and fully. Only 30-35% of respondents gave correct answers to the questions on understanding EBM, understanding study designs, and randomization. There were no correct or complete answers to the question regarding study classification. Again, 35% of respondents correctly answered the question about the stages of the decision-making process from the perspective of EBM, while 65% provided no answer. One fourth (25%) of the respondents preferred using printed literature. Very few respondents indicated Cochrane Library, Medline (PubMed), or Tripdatabasa as the preferred Internet sources of information, with 40% indicating Google and 60% indicating other sources. The results of the post-training survey showed that nearly 90% of the respondents correctly answered all questions. 56% of the respondents answered that they had not encountered any difficulties. The other 44% listed the difficulties associated with the implementation of evidence-based medicine: lack of understanding by students, low learning retention rates among students, too many questions from the students, difficult disputes and discussions. To the question: “Have you encountered difficulties in implementing the principles of evidence-based medicine in practical health-care?” only 37.5% of the respondents answered that they had not encountered difficulties. The remaining 62.5% of the respondents faced the problems and difficulties in implementing the principles of evidence-based medicine in their practice. These were implementation failure, lack of understanding on the part of colleagues, commitment to traditional obsolete methods of treatment, the discrepancy between some of the existing standards of diagnosis and treatment and principles of evidence-based medicine. 67% of the respondents answered that publication of articles and abstracts, including international publications and participation in development of clinical protocols are the part of the evidence based nursing implementation.

In an attempt to accelerate the implementation of evidence-based practice (EBP) across the United States, an invitational Interprofessional National EBP Forum to determine major priorities for the advancement of EBP was held during the launch of the newly established Helene Fuld Health Trust National Institute for Evidence-Based Practice in Nursing and Healthcare at The Ohio State University College of Nursing. Findings from a pre-Forum survey (n = 47) indicated ongoing low implementation of EBP in U.S. healthcare settings. These findings were shared with leaders from 45 organizations and agencies who attended the Forum. Breakout groups on practice, education, implementation science, and policy discussed the findings and responded to a set of standardized questions. High-priority action tactics were identified, including the need for: (a) enhanced reimbursement for EBP, (b) more interprofessional education and EBP skill building, and (c) leaders to prioritize EBP and fuel it with resources. The delivery of and reimbursement for evidence-based care must become a main national priority. Academic faculties across all healthcare disciplines need to teach EBP, healthcare systems must invest in EBP resources, and payers must

attach reimbursement to evidence-based care. An action collaboration of the participating organizations has been formed to accelerate EBP across the United States to achieve the quadruple health care aims (Melnyk, et al., 2018a).

A cross-sectional descriptive study was conducted by authors (Melnyk, et al., 2018b) that gathered data from an anonymous online survey of practicing nurses throughout the U.S. Measures tapped EBP knowledge, beliefs, culture, mentorship, implementation, and reported competency for each of the 13 EBP competencies for practicing nurses and an additional 11 competencies for advanced practice nurses from his 2013 article (Melnyk, 2013). A total of 2,344 nurses from 19 hospitals or healthcare systems completed the survey. Overall, the nurses reported that they had not yet achieved competency in any of the 24 EBP competencies. Younger nurses and those with higher levels of education reported higher EBP competency ($p < 0.001$). The EBP competency scores were not significantly different between nurses in Magnet and non-Magnet designated organizations ($p = 0.28$). There were strong positive associations between EBP competency with EBP beliefs ($r = 0.66$) and EBP mentorship ($r = 0.69$), a moderate positive association between EBP competency and EBP knowledge ($r = 0.43$), and a small positive association between EBP competency and culture ($r = 0.29$).

There is a tremendous need to enhance nurses' skills so that they achieve competency in EBP to ensure the highest quality of care and best population health outcomes. Academic programs should ensure competency in EBP in students by graduation and healthcare systems should set it as an expectation and standard for all clinicians (Melnyk, et al., 2018b). Competence is defined as the ability to do something well; the quality or state of being competent (Merriam Webster Dictionary, 2012).

Although there is a general expectation of healthcare systems globally for nurses to engage in EBP, much uncertainty exists about what exactly that level of engagement encompasses. Lack of clarity about EBP expectations and specific EBP competencies that nurses and APNs who practice in real-world healthcare settings should meet impedes institutions from attaining high-value, low-cost evidence-based health care. The development of EBP competencies should be aligned with the EBP process in continual evaluation across the span of the nurses' practice, including technical skills in searching and appraising literature, clinical reasoning as patient and family preferences are considered in decision making, problem-solving skills in making recommendations for practice changes, and the ability to adapt to changing environments (Burns, 2009).

Recently, work has been conducted to establish general competencies for nursing by the Quality and Safety Education for Nurses (QSEN) Project. This is a global nursing initiative whose purpose was to develop competencies that would "prepare future nurses who would have the knowledge, skills, and attitudes (KSAs) necessary to continuously improve the quality and safety of the healthcare systems within which they work" (QSEN, 2013).

This project has developed competency recommendations that address the following practice areas:

- Patient-centred care;
- Teamwork and collaboration;
- Evidence-based practice;
- Quality improvement;
- Safety;
- Informatics.

Also, the competencies related to the academic setting have been developed. The National League for Nurses (NLN) developed competencies for program levels within nursing education. Definitions, guides to curriculum development, and criteria for use in developing certification and continuing education programs are a focus for faculties and administrators in academic settings (NLN, 2013).

The aim of Melnyk, et al., 2014 was to develop a clear set of competencies for both practicing registered nurses and APNs in clinical settings. These competencies can be used by healthcare institutions in their quest to achieve high performing systems that consistently implement and sustain evidence-based care.

Kazakhstan describes a need for a training system of nursing care specialists at all levels under European directives (Governmental regulation RK no. 752, dated 30 June 2014, regarding the passage of the plan of action on the realization of the concept for making Kazakhstan one of the 30 most developed states in the world for 2014-2020, cited in Heikkila at al., 2016). Nurse educators have a pivotal role in supporting students as they access, understand and evaluate research and encourage its utilisation in practice (Wilson, et al., 2015). Wilson, et al. (2015) also establish that more highly educated and certified RNs had higher EBP readiness ratings as measured by the self-reported ability, desire, and frequency of behaviour. Nurses with a bachelor's degree or higher reported fewer barriers to EBP.
The purpose of Heikkila, et al. (2016) study was to describe and compare the current state of EBP from the point of view of Kazakh nurses and nurse educators and to seek information about nurses' and nurse educators' awareness of, knowledge of, and attitudes toward EBP and to explore the factors that influence the adoption of EBP in Kazakhstan.

Evidence-based practice competencies as established by Melnyk, Gallagher-Ford, and Fineout-Overholt in 2013 for practicing registered professional nurses are:

1. Questions clinical practices to improve the quality of care.
2. Describes clinical problems using internal evidence.* (internal evidence* = evidence generated internally within a clinical setting, such as patient assessment data, outcome management, and quality improvement data).
3. Participates in the formulation of clinical questions using the PICOT* format. (*PICOT = Patient population; Intervention or area of interest; Comparison intervention or group; Outcome; Time).

4. Searches for external evidence* to answer focused clinical questions. (external evidence* = evidence generated from research)
5. Participates in the critical appraisal of pre-appraised evidence (such as clinical practice guidelines, evidence-based policies and procedures, and evidence syntheses).
6. Participates in the critical appraisal of published research studies to determine their strength and applicability to clinical practice.
7. Participates in the evaluation and synthesis of a body of evidence gathered to determine its strength and applicability to clinical practice.
8. Collects practice data (e.g., individual patient data, quality improvement data) systematically as internal evidence for clinical decision making in the care of individuals, groups, and populations.
9. Integrates evidence gathered from external and internal sources to plan evidence-based practice changes.
10. Implements practice changes based on evidence and clinical expertise and patient preferences to improve care processes and patient outcomes.
11. Evaluates outcomes of evidence-based decisions and practice changes for individuals, groups, and populations to determine best practices.
12. Disseminates best practices supported by evidence to improve the quality of care and patient outcomes.
13. Participates in strategies to sustain an evidence-based practice culture.

Evidence-based practice competencies for practicing advanced practice nurses:

***All competencies required from practicing registered professional nurses plus*:**
14. Systematically conducts an exhaustive search for external evidence* to answer clinical questions. (external evidence*: evidence generated from research)
15. Critically appraises relevant pre-appraised evidence (i.e., clinical guidelines, summaries, synopses, syntheses of relevant external evidence) and primary studies, including evaluation and synthesis.
16. Integrates a body of external evidence from nursing and related fields with internal evidence* in making decisions about patient care. (internal evidence* = evidence generated internally within a clinical setting, such as patient assessment data, outcome management, and quality improvement data)
17. Leads transdisciplinary teams in applying synthesized evidence to initiate clinical decisions and practice changes to improve the health of individuals, groups, and populations.
18. Generates internal evidence through outcome management and EBP implementation projects to integrate best practices.
19. Measures processes and outcomes of evidence-based clinical decisions.
20. Formulates evidence-based policies and procedures.
21. Participates in the generation of external evidence with other healthcare professionals.
22. Mentors others in evidence-based decision making and the EBP process.
23. Implements strategies to sustain an EBP culture.

24. Communicates the best evidence to individuals, groups, colleagues, and policymakers.

In an attempt to accelerate the implementation of evidence-based practice in nursing across Kazakhstan, we are addressing teacher needs by analysing the State educational standards (SCES) for bachelor's and master's degrees in nursing and the current curriculums available for ENP. We conducted a gap analysis between both and established grounds for preparing study materials for Kazakhstan teachers to teach EBN.

Goal: A gap analysis will compare the present state of competency development to the level required by the SCES (State general education standards) standard. We need to determine the main priorities for the advancement of EBP in the education process for nursing students. We aimed to find strengths in competency domains and deficiencies in nursing curriculums.

Tasks:

1. To carry out a systematic literature review of the best EBN practices in Kazakhstan.
2. To conduct non-experimental qualitative research by analysing the presence of evidence-based practice competencies in Kazakhstan's common educational standards for higher education.
3. To perform a content analysis of the syllabuses of 5 Kazakhstani universities at the master's and bachelor's degree levels. The medical colleges refused to take part in the research, so no data is analysed at the level of applied bachelor's degree in nursing.
4. To carry out a gap analysis between curriculum content analysis and SCES analysis to assess core competency development in the curriculum (Fater, 2013).

2 Best practices of EBN implementation in Kazakhstan

Kazakhstani authors of the GAP analysis carried out a literature review to search, analyse and synthesise data about the experiences of EBN implementation into academic and research processes, as well as routine clinical practice. The following clinical question had been developed for this purpose: "What approaches based on evidence-based nursing principle led to the improvement of nursing education, clinical practice, and science in Kazakhstan?"

2.1 Material and methods

The aim was to find nursing specialists' evidence-based approaches in Kazakhstan.
The scope of the search is the implementation of evidence-based nursing principles in education, clinical practice, and science. What evidence-based nursing and nursing research approaches used by nursing specialists in Kazakhstan led to improvements in nursing education, clinical practice, and science? The following list of keywords was used to search through databases: see Table 1.

Table 1. List of keywords and their synonyms

Nursing	Evidence	Education	Competences	Kazakhstan
Nurse	Research	Learning	Professional	Republic of Kazakhstan
Nurses	Science	Teaching	Clinical competence	Kazakh
Nursing students	Methodology	Academic		Central Asia
Nurse practitioners	Evidence based nursing	Program		
Nursing personnel	Evidence-based nursing	Training		
		Activity		
		literacy		
		Work shop		

The following information sources were used for literature review: databases, websites, search systems, electronic versions of Kazakhstani and Independent Countries Union's peer-reviewed journals, and sources available in the Semey State Medical University. Criteria for inclusion were: Kazakh, Russian, or English language of publications; publication date between January 2009 and October 2018; availability of full text. Table 2 shows the available sources that were used, search syntaxes and the number of links.

Table 2. Sources, search syntaxes and the number of links

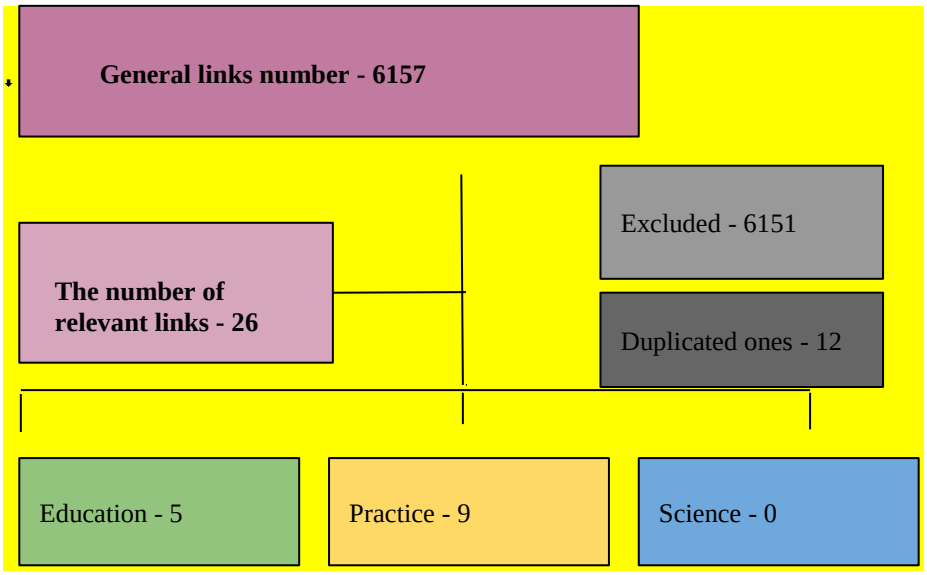
Source	Search syntaxes	Number of links/Number of relevant links
Source	Search syntaxes	Number of links/Number of relevant links
www.ncbi.nlm.nih.gov/pubmed	("Nursing"[Mesh]) AND "Kazakhstan" [Mesh]	1/1
	(("Nurses" [Mesh]) AND "Research" [Mesh])AND "Kazakhstan"[Mesh]	0
	(("education"[Subheading] AND "Nursing"[Mesh]) AND "Kazakhstan"[Mesh]	0
	("Nursing"[Mesh]) AND "Central Asia" [Mesh]	5/1
	Nursing AND Kazakhstan	18/2
https://link.springer.com/search	Nursing AND Kazakhstan	137/1

	Nursing AND Evidence AND Kazakhstan	99/1
https://scholar.google.com/	Nursing AND Evidence AND Kazakhstan	5820/2
https://elibrary.ru	Nursing AND Evidence AND Kazakhstan	34/1
https://www.medsestre.ru/	Home page-information resources-materials of conferences	0
Nauka I Zdravoohranenie	Nursing, nurse, nursing specialist, evidence based medicine, evidence based nursing, research, competences, education, education program	1/1
Vestnik ZKGMU		13/1
Vestnik KazNMU		23/14
Meditsina		1/1
Mejirbike isi		0/0*
Meditsina I Ekologiya		2/0
Astana Meditsinalyk Zhurnaly		3/0
Meditsinskaya sestra		0/0*
Sestrinskoe delo		0/0*

* - the sources had been included in the research protocol, but were not available while writing the protocol

Picture 1 presents the algorithm for selecting papers to be included in the review.

Picture 1: "Paper selection for inclusion in the review"



2.2 Results

The greatest number of papers found belonged in the "Practice" block. It is necessary to highlight that results of this direction are contradictory in character. Khabiyeva (2017) shows the results of a survey among 100 nursing specialists in Almaty city's medical and preventive organizations. It has been discovered that the respondents felt that they are not ready for innovative changes in healthcare and that there is no developed detailed strategy for innovative management (Хабиева, 2017) on the behalf of administration. On the other hand, it is hard to discuss the acceptability of new approaches in nursing processes when there is a lack of basic material resources. In their research, Utepbergenova and co-authors (2017) investigated the satisfaction with material and technical workplace equipment in Almaty and Astana among nurses at the primary health care level (n = 253). One out of five nurse expressed dissatisfaction with the lack of personal computers and 30.44% complained about the lack of stationary (Утепбергенова, et al., 2017). Observation of nursing processes at the City Cardiological Center in Almaty led the authors to the opinion that the standard nursing actions could be expanded when it comes to patient condition assessment as well as in the patient rehabilitation measures development. The researchers emphasized that these requirements could be used for nurses only when a planned, scientific-based approach was used for nursing care optimization (Камалиев & Альмуханова, 2015).

The literature contained positive examples of using evidence-based approaches in nursing. Research by Iskakova, et al. (2015) presented the successful activities in "Demey" capital's centre of family medicine. To implement patient-centred approaches, nurses have studied knowledge and skills of communication psychology (Iskakova, et al., 2015). Another study carried out by Iskakova et al. (2016) surveyed the nurses in independent and traditional practices (a total of 168 nurses). The results revealed a statistically significant difference between the rates of readiness of community nurses for healthy children at the age of 1 in both groups (70.2% in the group of independent consultants against 51.4% in the group of traditional consultants; $p = 0.019$). In traditional practices only 27.9% of respondents were willing to study healthy lifestyle in a school, while 73.7% of nurses in independent practice was prepared to do so $p < 0.001$).

An interesting study was carried out in the area of palliative care nursing. In their observation paper, Kunirova, et al. (2018) described the method for training 200 health care specialists, including nurses, at ELNEC (End of Life Nursing Education Consortium) courses and seminars. However, the authors did not provide data about the education results or their dissemination.

The lack of information could be covered by the paper by Ferrel, et al. (2010). Authors monitored educational seminars on palliative care for nurses that was carried out in Austria in 2006 and 2008. The single Kazakhstan representative among the 317 nurses from other countries took part in the first seminar only. After returning home, the nurse read the lecture in the health care organization where she worked and a translation of the seminar's materials had been prepared. At the same time, a nurse from Slovenia, who was also the only representative of her country, tried to implement the results of training in practical and educational processes. She organized master classes on the

ELNEC program, had been involved in the workgroup for palliative care optimization at the Ministry of Healthcare in Slovenia and included the seminar materials in the educational course of Nursing College in Ljubljana.

Another example of successful utilization of the evidence-based approach in practice was the implementation of the Guideline for postpartum haemorrhages management in a prenatal centre in South Kazakhstan. One of the key results was the decrease in hysterectomy rates from 23.7% to 8.1% for women experiencing haemorrhages during the postpartum period (Nadisauskiene, et al., 2016). A rich source of information was the program of organizational techniques optimization in nursing at the University Clinic of Kazakh National Medical University named after S.D. Asfendiyarov in 2014. At the initiative of the university rector, professor A. A. Akanov, nursing powers had been expanded, a system of nursing audits was developed and 3 nursing guidelines were created and peer-reviewed (Губайдуллина & Фалеева, 2015).

As the example of using the principles of evidence-based nursing in education Riklefs, et al. (2018) shows the start of the ProInCa project in 2017, which aimed upgrade of the nursing education and increasing of the nursing status and role in the healthcare system. The research by Altynbekova (2016) highlighted the importance of strict competences at the levels of applied and academic bachelor's degrees in nursing and the forms of their evaluation.

The necessity of the knowledge and skills of evidence-based practice had been revealed in the research of Dauletyarova, et al. (2015). They studied 83 workers at the Maternity house #2 in Semey, 43 of whom were midwives. Most of the midwives (72.1%) were willing to attend the evidence-based practice courses. In general, the evaluation of knowledge of medical personnel showed that an unsatisfactory level of literacy in the questions of evidence-based practice was exhibited by 43.4% of respondents (Даулетьярова, et al. 2015).

The literature review revealed the following challenges: the lack of data on the implementation of evidence-based nursing in different fields and the contradictory character of findings. In addition, most qualitative and informative research was carried out by foreign authors, leading to the idea about the necessity of close partnerships with foreign clinical, educational and scientific centres. Authors of the review hope that working with foreign colleagues on some projects (ProInCa, Kazakhstani-Finnish master level courses in nursing) will help optimize the quantity and quality of nursing research, build the leadership capacity in nursing and increase the number of stakeholders in evidence-based nursing.

3 The analysis of SCES in Kazakhstan – competencies

Common educational standards of higher education in Kazakhstan were analysed using non-experimental qualitative research analysing the presence of evidence-based practice competencies.

Aim: to study the presence of evidence-based practice competencies in SCES of Kazakhstani nursing programs

Using the same keywords (evidence-based, nursing, practice, competences, research, critical thinking and science) and analysing the curriculums of bachelor's and master's degree study programs in nursing education (hours, type of subject, elective and compulsory courses, credit points, content description, etc) we were looking for subjects related to the EBN practice competencies.

Using the State obligatory standards and the model of professional training programs (2015) and changes (2017) by the Ministry of Health of the Republic of Kazakhstan in Order No. 471 issued by the Minister of Health of the Republic Of Kazakhstan on 29 June 2017, we determined how a bachelor's degree in nursing is organized.

The master's degree-level program in nursing has 2 directions: scientific-pedagogical and profile one as determined by Order No. 647, dated 31 July 2015: "Postgraduate education for medical specialties". It is important to say that in this document all medical specialties share the same competencies and requirements for completing the master's program. In response, a workgroup had been created in 2017 to develop a new educational standard for nursing at the master's degree level. However, it has not been signed and registered by the Kazakhstan Ministry of Education yet.

Table 3. Nursing programs in Kazakhstan

Curriculum	Duration	The requirements for enrollment	Document
030205 4 «Nursing» Qualification "Applied nursing"	3 years 6 month	General education or technical and professional education	Order № 471 from 24.07.17
030205 4 «Nursing» Qualification "Applied nursing"	1 year 6 month	Technical and professional education on specialty 0302000- «General practice Nurse» «Specialized nurse» or 0301000 «Therapy» with qualification «Paramedic», with certificate of specialist «Nursing» and 3 year work experience	Order № 471 from 24.07.17
5B110100 «Nursing»	4 years	General education or technical and professional education	Order № 471 from 24.07.17
5B110100 «Nursing» (short track)	3 years 10 month	Technical and professional education on specialty «Nurse» with work experience 3 years. «Nursing» Qualification "Applied nursing"	Order № 471 from 24.07.17

Further qualitative content analysis was carried out to specify the evidence-based nursing practice competencies at all levels of nursing education. The same keywords were used for content analysis: evidence-based, nursing, practice, competences, research, critical thinking and science. We found 1 competency at the level of applied bachelor's degree and 2 competencies at the academic bachelor's degree level. Both directions of studies at the level of master's degree have 4 competencies related to evidence-based practice (see table 4).

Table 4. Evidence-based practice competencies at all levels of nursing education

Curriculum	Competences
030205 4 «Nursing» qualification «Applied bachelor»	PC-2 Research and evidence based nursing: planning and performing research in nursing , presenting the research results and implementing them in clinical practice, making decisions based on EBN PC-2.1 Interpretation of information and making decision on the basis of EBN, critical evaluates the information in the area of biomedical and nursing research, focused on development of advanced nursing technologies, making decisions on EBN. PC-2.2 Planning and carrying out the nursing research projects: demonstrates creativity in the planning of nursing research projects with further development, improvement of methodical documents on forming and realizing the nursing services PC-2.3 Effective dissemination of research results: Perform the effective scientific presentation of research results and implementing them into the clinical practice, present the different types of presentations and disseminates the research results to the different auditoriums.
5B110100 «Nursing» Academic bachelor	PC-1 Demonstrates the advanced skills of safe patient centered nursing care using modern methods based on the principles of **evidence-based medicine**, is responsible for independent decision-making, actions and their documentation. PC-2 Scientific approach and evidence-based nursing practice Demonstrates management skills and organization of research in the field of nursing, is able to seek, apply and critically evaluate evidence-based information, develop standards and guidelines for the development of clinical practice, based on the principles of evidence-based medicine, for the implementation and evaluation of results. PC-2.1 Interpretation of information and decision making on the basis of evidence: able to critically evaluate and integrate information and evidence, make an informed decision, conduct a clinical assessment of planning, implementation of decisions based on the results of social, medical and nursing research for the implementation of evidence-based nursing practices PC-2.2 Planning and implementation of research projects in the field of nursing: identifies modern nursing problems of nursing practice, is able to plan research and implement research projects in the field of nursing to improve the provision

	of nursing services at different levels, taking into account the special needs of health care PC-2.3 Development of guidelines and standards for practice based on the principles of evidence-based medicine: demonstrates the skills of summarizing and integrating the results of scientific research with clinical experience and patient values, demonstrates the use of nursing research results in clinical practice and is able to develop clinical guidelines for patient care and advanced evidence-based nursing care methods
6M110300 «Nursing» Scientific pedagogical	1. Apply scientific methods of knowledge in professional activities 2. Critically analyze existing concepts, theories and approaches to the study of processes and phenomena 3. Has the skills of research activities in solving standard scientific problems 4. Competent in the field of research in health care and scientific and scientific educational activities in universities 5. To know the methods of qualitative and quantitative research 6. To combine the results of the experimental scientific and analytical work in the master thesis, article, report, analytical letter.
6M110300 «Nursing» profile	1. Apply scientific methods of knowledge in professional activities 2. Critically analyze existing concepts, theories and approaches to the study of processes and phenomena 3. Has the skills of research activities in solving standard scientific problems 4. Competent in the field of research in health care and scientific and scientific educational activities in universities 5. To know the methods of qualitative and quantitative research 6. To combine the results of the experimental scientific and analytical work in the master thesis, article, report, analytical letter.

To see the development of these competencies, we reviewed the subjects that develop the competencies.

In SCES 2017 for **applied bachelor's degree,** we found 16 subjects with a total of 44 credits and 1,980 hours that are related to evidence-based practice competencies and can be observed in Table 5. The **academic bachelor's degree SCES requires EBP competencies across 19 disciplines with a total of 72 credits and 3,240 hours (see table 6).**

Table 5. The subjects that make up EBP competencies according to SES 030205 4: "Nursing" qualification "Applied bachelor's degree"

Competence code	Discipline index	Discipline name	Independent work of student	Classroom hours	Simulation	Practice	Hours credits
PC2	SD01	Nursing profession in Healthcare system of KZ	45	60	15	60	180/4
PC2	OPD 01	Anatomy, physiology, pathology	30	15	90	-	135/3
PC2	OPD 02	Pharmacology, pharmacotherapy and medical calculations	30	30	30	-	90/2
PC2	SD 07	Nursing aspect of reproductive health	30	15	18	72	135/3
PC2	SD09	Gerontological nursing	20	15	20	80	135/3
PC2	SD11	Social significant diseases	30	30	60	60	180/4
PC2	SD12	Mental health and addiction	30	30	30	45	135/3
PC2	SD16	Patient education	30	15	-	45	90/2
PC2	SD 19	Principles of planning and carrying out the nursing research	45	45	-	-	90/2
PC2	CP 05	Practice Nursing in primary medical help	-	-	-	180	180/4
PC2	Sd22	Biostatistics	45	45	45	-	135/3
PC2	SD23	E health system	-	-	45	-	45/1
PC2	SD 24	Thesis performing	180	-	-	-	180/4
PC2	SD 26	Evidence based nursing practice	-	-	-	180	180/4
PC2	SD 27	Registration and presenting the thesis	90	-	-	-	90/2

Table 6. The subjects that make up EBP competencies according to SES 5B110100: "Nursing" "Academic bachelor's degree"

Competence code	Discipline index	Discipline name	Independent work of student	Classroom hours	Simulation	Practice	Hours credits
PC1	OOD 04	Kazakh /Russian language	90	180	-	-	270/6
PC1	OOD 05	Informative-communication technologies	45	90	-	-	135/3
PC1	BDO 03	Anatomy physiology pathology	75	150	-	-	225/5
PC2	BDO 04	Basis of evidence based nursing	20	25		90	135/3
PC1	BDO 05	Basis of surgery	10	10	10	60	90/2
PC 2	BDO 06	Nursing care at acute and emergency conditions	20	15	10	90	135/3
PC 1 PC2	BDO 06	Basis of child diseases	20	15	10	90	135/3
PC 2	BDO 08	Basis of obstetrics and gynecology	20	15	10	90	135/3
PC 1 PC 2	BDO 08	Propaedeutic of internal diseases	30	30	15	150	225/5
PC 1	BDO 10	Home nursing	30	30	15	150	225/5
PC1 PC2	BDO 11	Social significant diseases	30	45	-	150	225/5
PC1 PC2	BDO 13	Nursing care in Gerontology	15	15	15	135	180/4
PC 1	BDO 14	Nursing care at chronic diseases	20	15	10	90	135/3
PC1 PC2	PDO 01	Nursing in therapy	30	30	15	150	225/5
PC1 PC2	PDO 02	Nursing in primary care	30	30	15	150	225/5
PC1 PC2	PDO 03	Management in nursing	20	25	-	90	135/3
PC1	PDO 04	Specialized nursing care	20	15	10	90	135/3

PC 2	PDO 06	Organization of research in nursing	20	15	10	90	135/3
PC 1	PDO 07	Palliative care	20	15	10	90	135/3

In SES of a master's degree from 2015, there are 8 credits and a total 360 hours of EBN competence disciplines. This SES was revised in 2017-2018 by an expert group from JAMK and HAMK universities of applied science. However, official documents have not been published and disseminated yet.

Table 7. The subjects that make up EBP competencies according to SES 6M110300: "Nursing" Scientific pedagogical"

Discipline index	Discipline name	Independent work of student	Classroom hours	Simulation	Practice	Hours credits
IFN5201	History and philosophy of science	30	15	-	-	2/45
Bio5206	Biostatistics	30	15	-	-	2/45
DMSP 5301	Evidence based medicine in nursing practice	30	15	-	-	2/45
OMNISD 5304	Basis of research methodology in nurisng	30	15	-	-	2/45

It is obvious there are more than enough hours and credits available to build the competencies for evidence-based practice in state educational standards for nursing programs. To further analyse evidence-based practice competencies, we have carried out an analysis of syllabuses at the academic bachelor's and master's degree levels.

4 Syllabus analysis of academic bachelor and master of nursing study programs

Research goals: To study the existing status of evidence-based nursing competences in the syllabuses for academic and applied bachelor's and master's degrees in nursing.

Research activities:

1. Data collection from the following universities: Semey State Medical University, Karaganda Medical University, West Kazakhstan Marat Ospanov State Medical University, Astana Medical University, S. D. Asfendiyarov Kazakh National Medical University, South Kazakhstan State Pharmaceutical Academy, and the high medical colleges of Karaganda,

Kokshetau, Shymkent, Pavlodar, Astana, and Almaty. The syllabuses of the nursing program carried out at these universities were collected.

2. The collected data was analysed using the method of content analysis 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.
3. The results of the content analysis will be used for the gap analysis looking at the differences between the SCES and syllabuses.

Methods: qualitative summarized content analysis, gap analysis

To fulfil the first task, we sent out an official call for data collection to all universities and colleges. The following organisations did not agree to share the data and take part in further research: High Medical Colleges of Karaganda, Kokshetau, Shymkent, Pavlodar, Astana, and Almaty, South Kazakhstan State Pharmaceutical Academy.

We collected the syllabuses for the academic bachelor's degree from 5 universities (total number: 137) and the syllabuses for the master's degree from 4 universities (West Kazakhstan Medical University does not have a master's degree program) for a total of 35. The number of syllabuses shared by universities may be seen in Table 8.

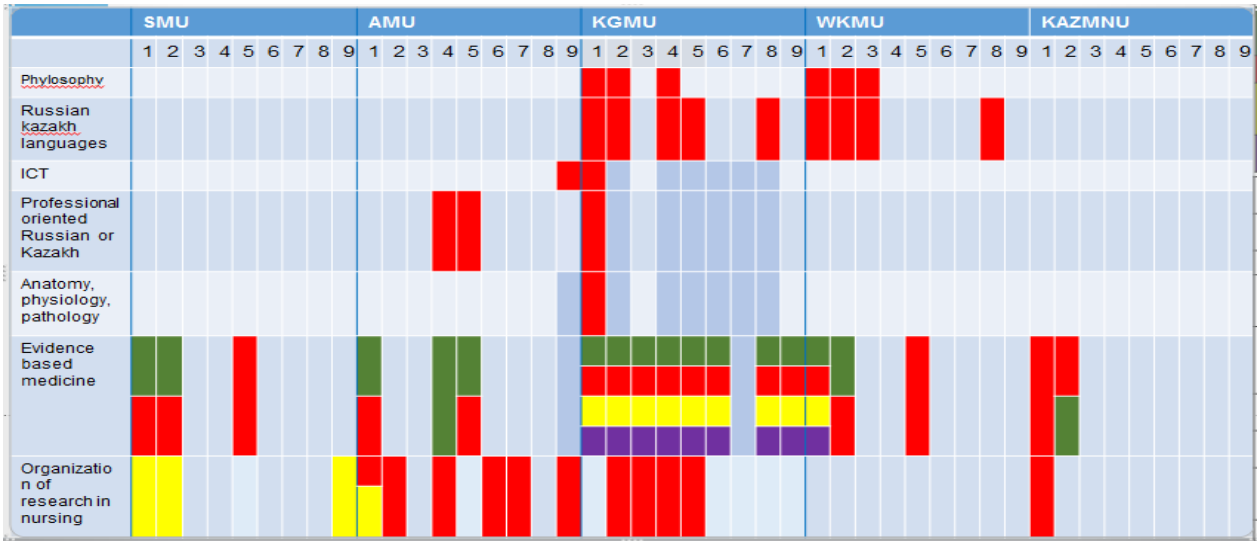
Table 8. The data (number of syllabuses) distribution by university

High medical organisation	Astana medical university	Karaganda state medical university	Semey state medical university	West Kazakhstan Medical University by name of M.Ospanov	Kazakh national medical university by name of Asfendiyarov
Number of syllabuses Bachelor degree	37	23	27	27	23
Number of syllabuses	9	8	10	No data	8

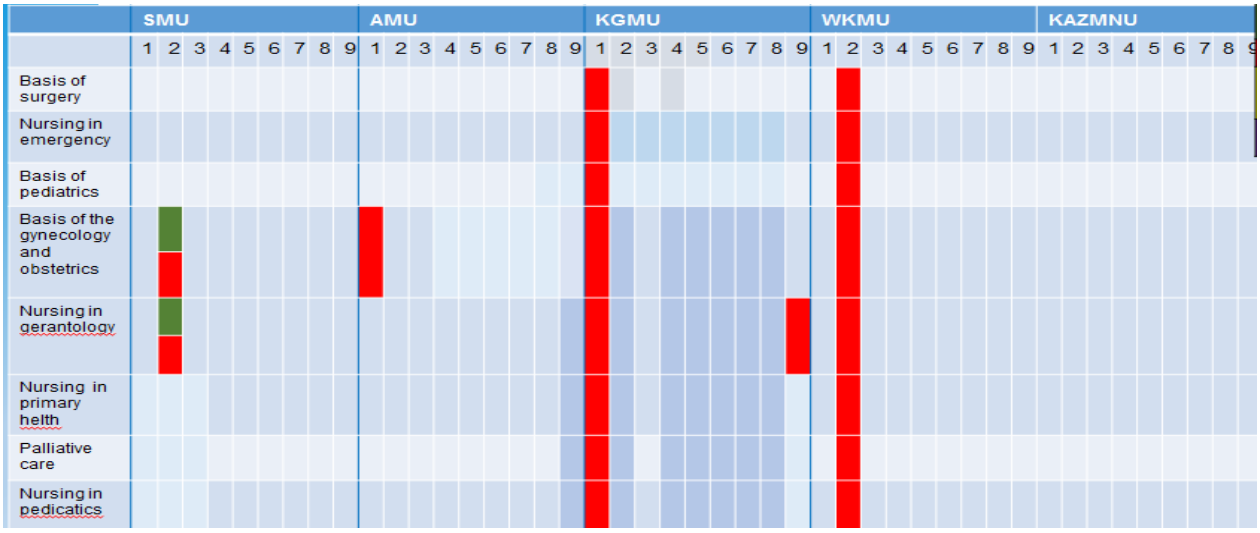
The content analysis of syllabuses at the level of academic bachelor's degree showed the following findings:

The most used keyword is "research" and is present in almost all syllabuses. It is important to note that the keyword is present only among learning outcomes and has no logical continuation throughout the syllabus. The keywords "evidence-based nursing", "critical thinking" and "research methodology" were present in only 2 disciplines: "Evidence-based nursing" and "Organization of research in nursing", while clinical subjects make no mention of it in any syllabuses section (see pictures 2-4).

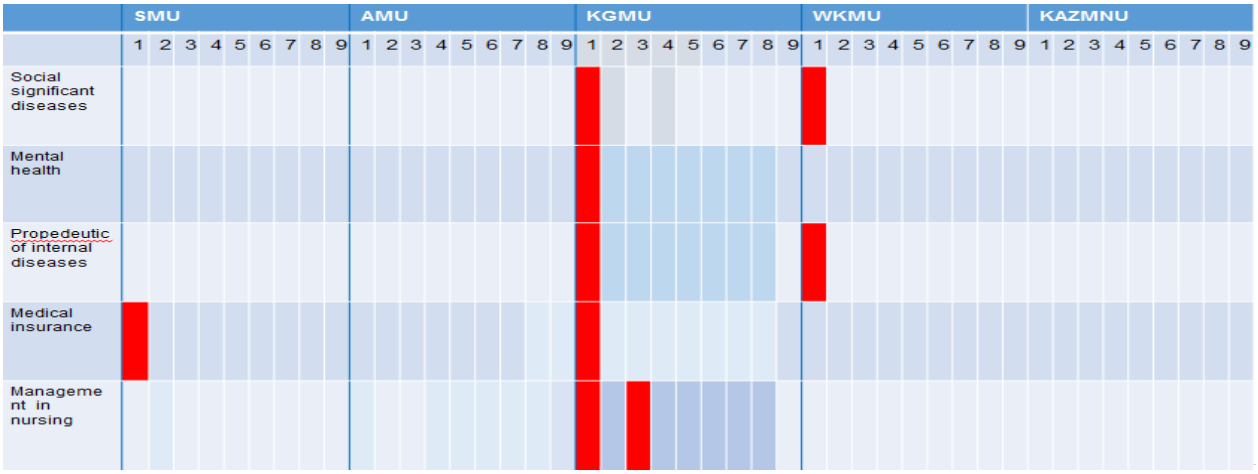
Picture 2: The results of the content analysis of syllabuses at the level of academic bachelor's degree



Picture 3: The results of the content analysis of syllabuses at the level of academic bachelor's degree (count)



Picture 4: The results of the content analysis of syllabuses at the Academic Bachelor's degree level (count)



Legend: ***SMU*** *– Semey State Medical University,* ***KSMU*** *– Karaganda State Medical University,****MUA*** *- Astana Medical University,****WKMU*** *– West Kazakhstan Marat Ospanov State Medical University,* ***KazNMU*** *– Asfendiyarov Kazakh National Medical University*

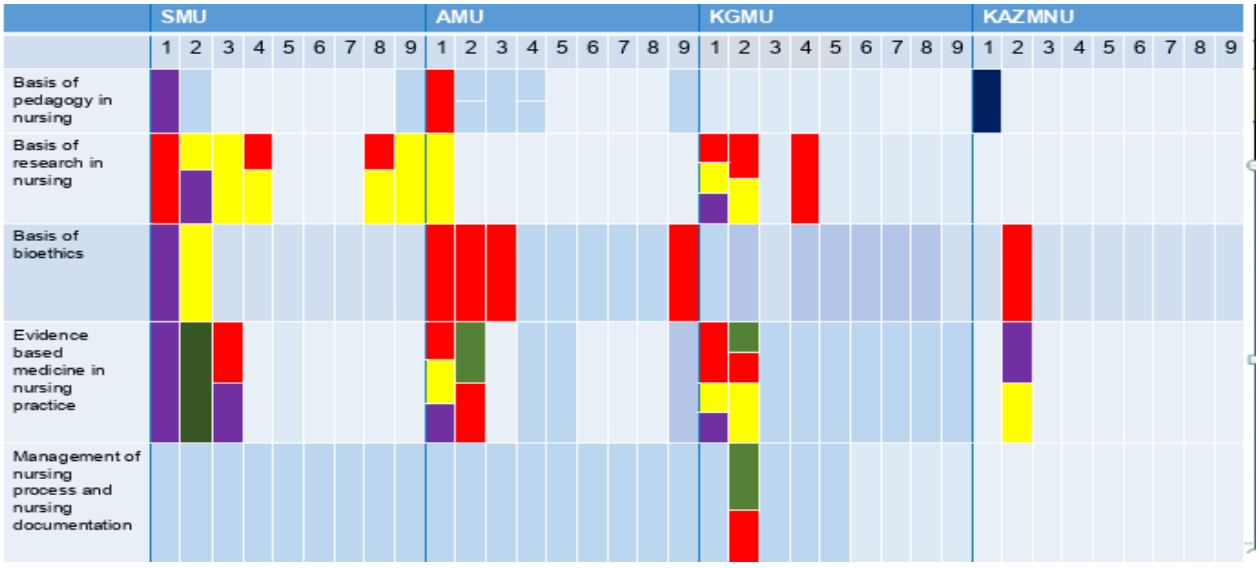
The parts of a syllabus: 1 - Learning outcomes; 2 - Practical classes; 3 – Lectures; 4 - Student independent work; 5 - Student independent work with a teacher; 6 - Methods of education; 7 - Methods of assessment; 8 - Control methods (Assignments); 9 - Literature

Picture 5: Keywords represented by colours

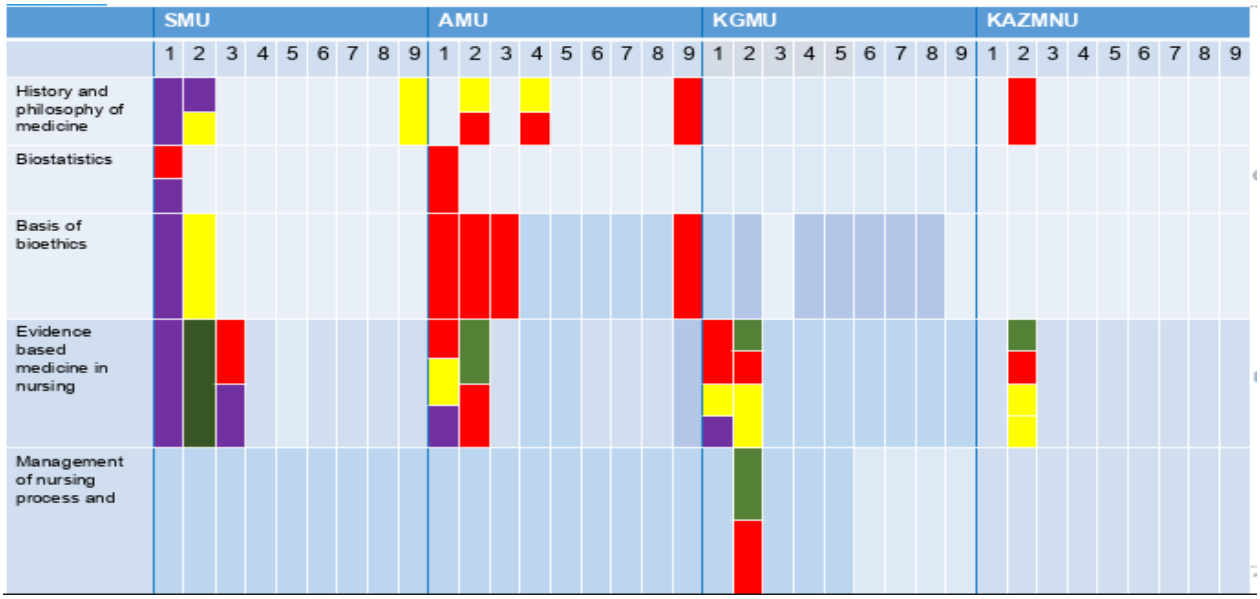
	Evidence-based nursing
	Research
	Research methodology
	Critical thinking

The results of the content analysis at the master's degree level are much improved when compared to the bachelor's degree level. Pictures 6 and 7 show that the most common keyword is research. This was expected. We also expected to find all 4 keywords in the syllabus for the "*Evidence-based medicine"* subject at all faculties. However, this was not the case as just one faculty (KGMU) covered all 4 keywords in the "*Evidence-Based Medicine"* subject. The 4 keywords were identified in 8 out of 9 syllabus elements. The remaining 4 faculties only used two keywords (evidence-based nursing and research) in the syllabus for their "*Evidence-based medicine"* subject.

Picture 6: The results of the content analysis of syllabuses at the Master's degree level



Picture 7: The results of the content analysis of syllabuses at the Master's degree level (count)



5 Gap analysis between the SCES and curriculum content at the Academic Bachelor's degree level

We used a method to assess core competency development in the curriculum (Fater, 2013) for the model to conduct our gap analysis. SCES (obligatory state standards for post-secondary education of applied bachelor specialty in nursing, No. 647, 2015) are national binding documents that define the disciplines, credit points, hours, competencies and other data necessary for the implementation of the academic bachelor's degree in nursing program. We have found that the available curriculums deviate from the standard.

Table 9. Curriculum 2017 SES

Curriculum 2017 SES			The key words what had been found			Comments
Philosophy	3/135	BC-1 Learning BC-2 Professionalism BC-3 Communication	KSMU	3/135	*Research*	*In the all syllabuses is the key word research - but no correlation with EBN*
Russian Kazakh language	6/270	BC-1 Learning BC-2 Professionalism BC-3 Communication PC-1 Clinical nursing care	KSMU	6/270	*Research*	
ICT	3/135	BC-1 Learning BC-2 Professionalism BC-3 Communication PC-1 Clinical nursing care				

Curriculum 2017 SES			The key words what had been found			Comments
Social significant diseases	5/225	BC-1 Learning BC-2 Professionalism BC-3 Communication PC-1 Clinical nursing care PC-2 Research and EBN PC 4 Health promotion	KSMU	3/135	*Research*	*In the all syllabuses is the key word research - but no correlation with EBN*
Mental health	4/180	BC-1 Learning BC-2 Professionalism PC-1 Clinical nursing care PC-5 Education and mentoring	KSMU	3/135	*Research*	
Medical insurance	2/90	БК-3 Коммуникации БК-4 Инновации ПК-3 Менеджмент и качество сестринских услуг ПК-4 Укрепление здоровье	KSMU SMU	3/135	*Research*	
Basis of evidence based nursing	**3/135**	**BC-1 Learning** **BC-4 Innovation** **PC-2 Research and EBN** **PC-3 Management and quality**	**KSMU** **SMU** **AMU**	**3/135**	***Research*** ***EBN*** ***Critical thinking***	***3 university called the subject the evidence based medicine in nursing*** ***In the description of the KSMU uses the term EBN*** ***SMU uses EBN*** ***AMU uses EBN and EBM***
Organization of research in nursing	**3/135**	**BC-4 Innovation** **PC-2 Research and EBN** **PC-3 Management and quality**	**KSMU** **SMU** **AMU**	**3/135**	***Research*** ***EBN*** ***Critical thinking***	*Post requisite of EBN* *In all universities*
Nursing in therapy	**5/225**	**BC-3 Communication** **PC-1 Clinical nursing care** **PC-2 Research and EBN**	-	-	-	***In the all syllabuses should be the key word EBN but no correlation with EBN***
Nursing in primary health	5/225	BC-1 Learning BC-2 Professionalism BC-3 Communications PCPC-2 Research and EBN PC-3 Management and quality -1 Clinical nursing care PC-4 Health promotion	-	-	-	

Curriculum 2017 SES			The key words what had been found			Comments
Management in nursing	3/135	BC-4 Innovations PC-1 Clinical nursing care PC-2 Research and EBN PC-3 Management and quality PC-4 Health promotion	-	-	-	
Nursing in emergency care	5/225	BC-1 Learning PC-2 Research and EBN PC-3 Management and quality	-	-	-	
Nursing in gerontology	4/180	BC-2 Professionalism PC-1 Clinical nursing care PC-2 Research and EBN PC-4 Health promotion PC-5 education and mentoring	-	-	-	

Table 10. Syllabus analysis of academic bachelor's programs and National Educational Standard

Curriculum analysis			SCES analysis		Commentary
subject	***Credits / hours***	***University***	***subject***	***Credits / hours***	
Information and communication technology	No data	KSMU	Ltd. 05 - Information and communication technologies (Model curriculum 5V110100 the specialty "Nursing" Duration of training: 4 years Academic degree: Bachelor of Nursing)	3/135	This subject Information and communication technologies in curriculums is described only in KSMU. There we can find content to correlate to EBN. In SCES this subject is also described, but in description it contains only data analysis from the point of view of understanding of data bases, analysis and data management, no correlation to ENP.

Curriculum analysis			SCES analysis		Commentary
			OOD4 - Information and communication technology - (reduced educational programs 5V110100 by specialty - "Nursing")	3/135	
Evidence based medicine	3/135	SMU, KSMU, AMU	BDO 04 - Evidence-based nursing (by speciality 5V110100 - "Nursing")	3/135	We found subject named Evidence based medicine in curriculums in three universities. In description of subjects the SMU is using terms EBN. In description of subjects the KSMU cuuriculum is not using any terms of nursing but only medicine. In description of subjects the MUA uses both expressions – EBM and EBN. In SCES the subject on all basis the names of subjects are EBN related.
			SD 26 - Evidence-based nursing practice (0302054 - "Nursing" Qualifications: "Applied Bachelor" (On the basis of general secondary education)	4/180	
			SD 11 - Specialized nursing care and evidence-based practice Model curriculum by specialty 030 200 0 - "Nursing" Qualification: "Applied Bachelor" (On the basis of technical and vocational education)	2/90	
Organisation of research in nursing	3/135	SMU, KSMU, AMU	PDO 06 - Organization of research in nursing (by speciality 5V110100 - "Nursing"	3/135	This is basic subject in association with EBN, it links to an subject in SCES. All three universities are using it.

Table 10 contains the subjects from the assessable curriculums for the academic bachelor's degree in Kazakhstan universities that are linked to the subjects found in SCES. They are all comparable in the number of credits and the number of hours.

Table 11. Syllabus analysis in academic bachelor's programs with keywords for EBN and no direct relation to EBN

subject	Credits / hours	University	Subject in SCES
Philosophy	3/135	KSMU	Ltd. 02 – Philosophy DMS 01 - Core philosophy with Cultural Studies SED 01 - Fundamentals of Philosophy and Cultural Studies OOD1- Philosophy
Russian/Kazakh	6/270	KSMU, AMU	Ltd. 04 - Kazakh (Russian) language
Professional orientated Russian	2/90	KSMU	01 JRT - Professional Kazakh (Russian) language BDO 01 - Professional Kazakh (Russian) language BDO 02 - professional but Oriented Foreign Language
Anatomy/physiology/pathology	3/135	KSMU	CAP 01 - Anatomy, physiology and pathology HPD 02 - Anatomy, physiology and pathology BDO 03 - Anatomy, physiology and pathology
basic of surgery	3/135	KSMU	BDO 05 - Fundamentals of surgery DB3 - Nursing in therapy and surgery
nursing in emergency care	3/135	KSMU	SD 17 Urgent care SD 03 - Urgent nursing care BDO 06 - Nursing care for acute and urgent conditions
basic of pediatric	4/180	KSMU	SD 08 - Nursing in Paediatrics
basic of gynaecology and obstetrics	No data	SMU, KSMU	BDO 08 - Fundamentals of Obstetrics and Gynaecology SD 10 - Nursing in obstetrics and gynaecology KP 03 - The practice of "Nursing care for women and children"
propedeutics of internal diseases	5/225	KSMU	BDO 09 - Propedevtika Internal Medicine

subject	Credits / hours	University	Subject in SCES
social significant diseases	3/135	KSMU	BDO 11 - Socially significant diseases
psychiatric health and addiction	4/180	KSMU	SD 12 - Mental health and addiction SD 07 - Mental Health Nursing
nursing in gerontology	3/135	SMU, KSMU	BDO 13 - Nursing in Gerontology BD4 - Nursing in Gerontology and Geriatrics
medical insurance	2/90	KSMU	BDO 16 - Health insurance
nursing in primary care	3/135	KSMU	KP 01- Practice "Primary Health Care"
management in nursing	3/135	KSMU	PDO 03 - Management in nursing PD03 - Management and quality in nursing PD1 - Management and quality in nursing
palliative care	3/135	KSMU	SD 13 - Palliative care PDO 07 - Palliative care
paediatrics in nursing	4/180	KSMU	SD 08 - Nursing in Paediatrics

The analysis of the academic bachelor's degree level shows that only 3 subjects in Kazakhstan's education practice respond to the National educational Standard requirements/suggestions. SCES plans for 6 subjects related to EBN. At the academic bachelor's degree level 3 medical faculties include 2 subjects related to EBN. Only one faculty out of these 3 also includes the third subject related to EBN. None of these 3 subjects have the content which corresponds to EBN requirements in full hours/credits. However, the subjects do have specific fragments of content that have a direct/significant relation to EBN content. The details can be seen in Table 6.
In Table 7, we listed the subjects in the syllabus and regular education process that include keyword "EBN". These 17 subjects include the keyword but have no direct/significant relation to EBN content.

6 Gap analysis between the SCES and curriculum content at the Master's degree level

The content of the educational program for graduate medical specialties coded as " 6M11 "Health care and social security (medicine)"for scientific and pedagogical studies" (Appendix 2 to the state compulsory Magistrates standard medical specialties).

Table 12. SCES determinants for a master's degree (6M110300 Nursing)

Name of disciplines and activities	The volume of credits */hours 1credit 45 hours			Form of control
	1 year	1,5 year	2 years	
IFN History and philosophy of science The philosophy and methodology of science as a branch of philosophy. Science in the emergence of culture and civilization of science. The main stages of the historical dynamics of science. The structure of scientific knowledge. Scientific revolutions. Scientific rationality. Features of the present stage of development of science. Science as a social institution Science in the structure of modern scientific knowledge. The history of formation of the social sciences, culture, history and man. Current philosophical problems of specific sciences.			*2/90*	*exam*
BIo biostatistics Introduction to biostatistics. Basic concepts of probability theory. Evaluation of a set of parameters. Fundamentals of statistical hypothesis testing. Studying the relationship between the quantitative and qualitative traits. Bases ANOVA. Parametric and nonparametric tests. Standardization method, its value and use. Correlation analysis. This graphic image in a statistical study. The use of computer technology in the processing of statistical data. The use of measurement scales in biomedical experiments. Aggregate estimates. Integrated assessments. Analysis of the use of statistical methods in articles and theses studies. Standardization method, its value and use. Statistics of public health. health system statistics. Statistics for biomedical research.	*1/45*	*1/45*	*2/90*	*exam*
OBi Basics of bioethics Introduction to Bioethics. Ethical and legal support for biomedical research involving human subjects. Documents regulating the ethical conduct of biomedical research involving human subjects. International regulations. The establishment and activities of the Ethics Committee. Standard operating procedures. Phase I clinical studies of drugs. Design research and ethical evaluation of biomedical research methods. Documentation of ethical review. The basic principles of conducting clinical trials. Informed consent. Questions of insurance protection of participants in biomedical research. Particularly vulnerable to biomodels Research on laboratory animals.		*1/45*	*2/90*	*exam*

Name of disciplines and activities	The volume of credits */hours 1credit 45 hours			Form of control
DMSP Evidence-based medicine in nursing practice The history of evidence-based nursing. Terminology, tools and methods of evidence-based medicine. Influence of nursing research in the medical practice. The positive impact of evidence-based nursing practice to patients. The steps of applying the scientific evidence in nursing practice. A critical evaluation of the results of nursing interventions carried out on the basis of the decision. A comparison of the nursing process and the scientific method of research. Methodology The research health information reliable sources and resources. Reading and analysis of scientific publications and research reports. Finding information on the Internet with the use of evidence-based medicine filters. Obstacles to the development of evidence-based nursing practice.	1 ****/45	2 ****/ 90	2 ****/90	*exam*
OMNI Basics of Research Methodology The national and international law in the field of research: QPBR, GLP, GLP, GCLP, etc. Scientific research in medicine.. Scientific and research programs by funding source. Finding and attracting grants. Writing scientific projects and grant applications. Research Methodology. Descriptive and analytical studies. A systematic review. A meta-analysis. Collection of information. Data processing. Analysis of the research and the formulation of conclusions and recommendations. Implementation of research results, the protection of intellectual property rights (patents). General requirements and rules of registration of scientific and research work. Reviewing research papers. Training of scientific materials for publication in the press. Publications in peer-reviewed journals, the general rules of writing articles assessing the methodological quality of the main types of research errors. Mechanisms for practical transfer of research results into practice and health policy.			*2/90*	*exam*
**** This profile discipline among the compulsory for the specialty 6M110300 - "Nursing";				

Duration of Master degree study programs differs according to the study aims, so degree program coded as “6M11 "Health care and social security (medicine)" for scientific and pedagogical studies” is 2 years and degree program coded as “6M11 "Health care and social security (medicine)" for clinical practice studies” 1 and 1.5 year. Educational activities planned and organised based on model curriculums for their respective specialisation according to appendix 4-8 to this program.

6.1 Syllabus analysis at the master's degree level

Legend:
SMU – Semey State Medical University
KSMU – Karaganda State Medical University
AMU - Astana Medical University
WKMU – west Kazakstan Marat Ospanov State Medical Univerity
KazNMU – Asfendiyarov Kazakh National Medical University

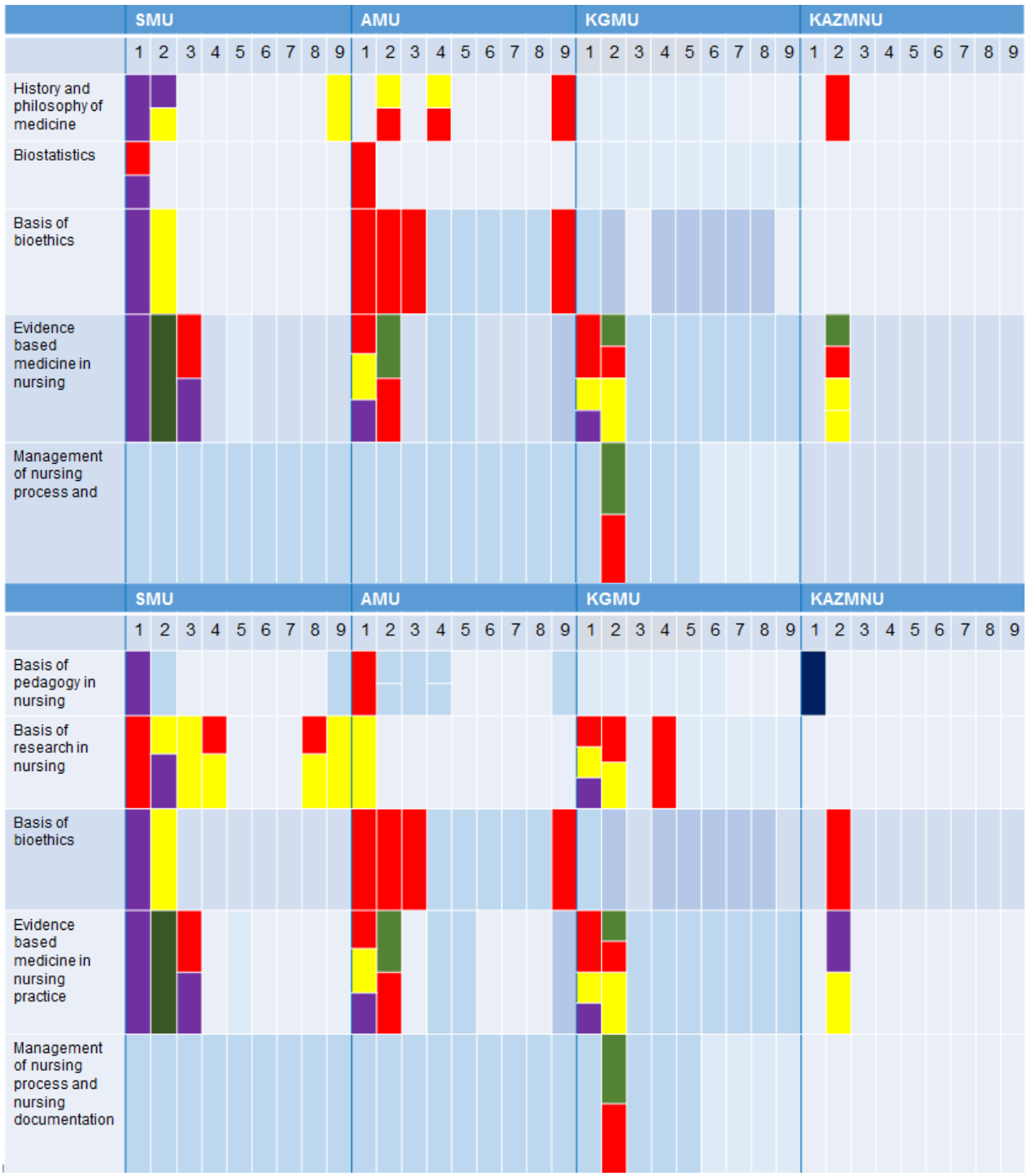
Keywords:

	Evidence-based nursing
	Research
	Research methodology
	Critical thinking

The syllabus parts:

1	Learning outcomes
2	Practical classes
3	Lectures
4	Student independent work
5	Student independent work with a teacher
6	Methods of education
7	Methods of assessment
8	Control methods (Assignments)
9	Literature

Picture 8: Presence of selected keywords



We can see in Picture 8 that "research" is again the most common keyword. This is what we expected at the master's degree level. We also expected to find all 4 keywords in the "*Evidence-based medicine in nursing"* subject syllabus at all faculties. But we saw a situation similar to the one at the bachelor's degree level. Only two faculties (AMU and KSMU) used all 4 keywords in the "*Evidence-based medicine in nursing"* subject.

7 Gap analysis between the SCES and curriculum content at the Master's degree level

Table 13. Syllabuses analysis at the level of master's degree

Curriculum analysis			SCES analysis		commentary
subject	***Credits / hours***	***university***	***subject***	***Credits / hours***	
History and philosophy of science	2	SMU, AMU	IFN History and philosophy of science	2/90	Credits 2= The content of the educational program pedagogical profile for people who have completed the profile master's degree and who wish to gain admission to teaching
Biostatistics	3	SMU, AMU	BIO Biostatistics	1/45 – 1 year	
				1/45- 1,5 year	
				2/90 - 2 years	
Basics of bioethics		SMU, AMU	OBI Basics of bioethics	1/45 - 1,5 year	
				2/90 - 2 years	
Evidence Based Medicine in Nursing Practice		SMU, AMU, KGMU	DMSP Evidence-based medicine in nursing practice Model curriculum by specialty 6M110300 - Nursing	1/45 - 1 year	
				2/ 90 - 1,5 year	
				2/90 - 2 years	
Organization of Nursing process and Documentation in Nursing		KGMU	Organization of the nursing process and documentation in nursing The content of the educational program for graduate medical specialties group 6M11 "Health care and social security	1	

			(medicine)" on scientific and pedagogical and profile directions		
				2	
				2	
Basis of Pedagogic methodology in Nursing		SMU, AMU	Ompsd? Basics of the methodology of teaching in nursing Model curriculum by specialty 6M110300 - Nursing	2 / – 2 years	
Basis of Research methodology in Nursing		SMU, AMU, KGMU	Omni sd5304 Basics of Research Methodology in Nursing	2/ – 2 years	

According to SCES, study at the master's degree level should contain 7 subjects related to EBN. A curriculum analysis at the master's degree level shows that there are 7 subjects related to EBN in regular education. 2 faculties include all 7 subjects, 1 faculty includes 3 subjects and the fourth faculty does not include any subjects related to EBN. The situation is similar to the one found with the curriculums at the bachelor's degree level - subjects do not have the content that would have corresponded to EBN requirements in full hours/credits. Only 2 subjects have specific fragments of content that have a direct/significant relation to EBN content (table 13).

8 Advancement of EBN in the education process and conclusions

The gap analysis provides valuable data about existing curriculums and for SCES revisions. Opportunities for competency development were identified. After reviewing three bachelor's degree-level programs from SCES (based on general secondary education, based on technical and vocational education, reduced educational programs with accelerated training period) and comparing them to the available data captured from curriculum analysis conducted by SSMU project partners we established that:

- There is a significant difference between the SCES and the existing curriculum content according to the available data.
- They only correspond to some programs.
- Generally, there is a significant lack of EBN content that would ensure that students acquire competence in EBN or EBP field of knowledge.

After reviewing the master's degree program, we found there is one study program for graduate medical specialties degree program coded as "6M11 "Health care and social security (medicine)" for scientific and pedagogical studies" for all specialities (nurses, dentists, public health and medicine workers). Given that the study program is harmonized with SCES and given that we have

not been able to obtain information on the necessary students' competencies, no further analysis and suggestions for improvements can be made.

The gap analysis served as a tool to determine the major priorities for the advancement of EBN in the education process for nursing students. Kazakhstan needs to enhance nursing departments' capacities and, most importantly, share the understanding of evidence-based nursing concepts and education at the level of higher education. (National) educational materials on EBN are needed for the advancement of EBN in the education process and an assessment of the current knowledge of teachers is required to determine their level and whether they are currently competent to teach EBN. Educating the teachers and providing them with the teaching content is the starting point for establishing and developing the EBN education process. By empowering teachers, we will be able to pinpoint existing strengths and deficits in the current curriculums.

Below is a list of identified content that should be implemented into the education process in Kazakhstan:

- Definition, principles, and development of evidence-based nursing, evidence-based medicine and evidence-based nursing practice in the clinical practice of the CIS and Kazakhstan.
- The concept of the design of nursing research; classification of nursing research; levels of evidence.
- Five stages of evidence-based nursing; finding information on the Internet and electronic databases; critical analysis of medical information; assessment of the methodological quality of clinical research in nursing.
- Ethics in evidence-based nursing and evidence-based nursing practice; the role and the rights of patients in research.
- Nursing databases.
- Clinical guidelines and standards for best nursing practices.
- Research types in evidence-based nursing (research hierarchy): a systematic review and meta-analysis.
- Ways of disseminating research results in nursing (standards, CRC, research papers, health technology assessment in nursing).
- Clinical nursing guidelines; the process of creating a clinical guideline; evaluation of clinical guidelines.
- Evidence level gradation recommendations: relative strengths and limitations of evidence types.
- Stages for planning and executing research in nursing.
- Research process in organizations.
- The history of the development of evidence-based nursing.
- The influence of nursing research on nursing practice.
- Formulation of the nursing problem on the principle of PICO.
- Pyramid of the hierarchy of levels of evidence.
- Steps for applying scientific evidence in nursing practice and a critical evaluation of the results of a nursing intervention performed based on the decision taken.
- Reading and analysing scientific publications and reports on scientific research.
- Obstacles to the development of evidence-based nursing practice.

- Nursing guidelines and evidence-based procedures.

This content is needed at the academic bachelor's degree and master's degree study level. Further development of nursing education will involve the interconnection of clinical practice, medical education, and research activities, which will provide a broad clinical base for conducting relevant scientific research with the rapid transfer of results to the practical health care environment. In Kazakhstan HEI's the majority of nursing care teachers are physicians, not nurses. Only 4% of teachers have a nursing care diploma, so the teaching of nurses is done by physicians. Serious problems exist in maintaining an efficient mechanism of interaction between a student, educational institution and clinical base. For the nursing profession, the scientific-research trajectory of post-university and continuous education is underdeveloped. There is a lack of training in nursing care research and evidence-based nursing practice based on applied research in nursing research. As stated in the project application, currently under 40% of nurses having higher education are employed and less than 70% of master's program graduates are employed in accordance with their profession and level of education.

Learning from international good practices will accelerate the development required for the reforms that are underway in Kazakhstan. The collaboration between the HEIs and their university clinics as well as with the health care industry can be developed based on the results achieved in Europe and evidence-based nursing research.

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