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## **ProInCa**

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

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### **D2.3.1**

## **Report of the nursing research infrastructure in the Republic of Kazakhstan**

**WP2.3 Establish HEI research program and networking in nursing**



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## Summary

WP 2.3.1 concentrates to support the development of nursing research infrastructure in Kazakhstan. Kazakhstani medical universities' technical and administrative staff in the libraries, ICT, and university administration learned from the best practices of European partner universities by benchmarking. Research in nursing as an activity in the field of medical science has relatively recently been introduced in the Republic of Kazakhstan. Its place in mainstream Kazakhstani medical science is not yet fully defined, and research has not been fully developed. Nursing research worldwide has great potential, and their results have a positive effect on public health. In this regard, it can be argued that the universities of Kazakhstan, the Ministry of Health, and the Ministry of Education set real tasks to develop and standardize research and prepare infrastructure and personnel for research work in the field of nursing education.

Based on benchmarking between Kazakhstani and European universities, five recommendations have been found for the development of nursing research infrastructure in Kazakhstani medical universities. The statuses of nursing research infrastructure in Kazakhstani medical universities were largely similar and the researchers were able to identify many gaps that need to be addressed to develop the nursing research. Universities should invest in the procurement of material base (nursing specific databases, journals, books, eBooks) and software for analysis of qualitative data necessary for nursing research. Universities should join and participate to the international nursing community and networks of education and research and increase long-term cooperation with international universities in order to be able to plan and implement nursing research. In addition, they should 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. Finally, they should pay more attention to the strategic planning of the university in order to provide systematic support for nursing research through a university foundation.



# 1 Introduction

Scientific nursing practice is based on a body of knowledge that is continually changing with new discoveries and innovations. Research provides evidence-based information that supports nursing practice. A scientific approach to nursing work demonstrates to society the desire of professionals to improve nursing for the benefit of patients. Therefore, scientific research in nursing is extremely important for changing the status of the nursing profession. Scientific research in the field of nursing is a new, but at the same time, an important direction to the development of the healthcare system in the Republic of Kazakhstan. In comparison with medical science, nursing is considered a relatively young science, which is at the stage of formation. Its development is associated with understanding the content of the professional activities of the nurse, creating a fundamental scientific basis for nursing. The academic nurses' role expectations include conducting research, implementing evidence-based practice, and disseminating results. In addition, these expectations include teaching, and mentoring health care professionals. (Albert & Siedlecki 2008; Jeffs, Smith, Beswick, Maoine, & Ferris 2013)

Research infrastructures consist of research libraries, hardware, data networks, databases, collections, and related services. Scientific research infrastructures are often collective and international. (Finnish Academy 2013) Research infrastructures are characterized by extensive international co-operation. For this reason, the development of research infrastructures is one of the European Union's research policy priorities. Infrastructure is a prerequisite for top-ranking research, and it offers co-operative opportunities for foreign and domestic researchers. (European Strategy Forum on Research Infrastructure 2013) Success in research is a major component in the various indicators of overall university/higher education institutional performance.

The research infrastructure of a university requires periodical assessment. Academic quality is born by improving and renewing the activities. The aim of self-assessment was to find out what kinds of infrastructure services are available to support nursing researchers in universities. The purpose of this research is to support the development of the nursing research infrastructure in Kazakhstan by identifying the European successful factors and writing recommendations for developing the infrastructure for nursing research in medical universities.



## 2 Nursing, nursing science, and nursing research

WHO (2018) defines nursing as an integral part of the health care system. It encompasses the promotion of health, prevention of illness, and the care of the physically and mentally ill, disabled, and dying people. Traditionally, nursing has been defined as a verb, meaning what nurses do. Nursing can be defined as actions taken by nurses on behalf of or in conjunction with the person, and the goals or outcomes of nursing actions (Fawcett 2000, 5) or a process of action, reaction, and interaction. Some would define it as the study of a particular type of nurse-client interaction, others as use of a particular theoretic model or philosophy and, others, as using a specific methodology. (King 2000, 2) The universal health coverage approach aims to promote strong, efficient, well-run health systems through the promotion of people-centered care by applying a broad range of nursing interventions which include health promotion, disease prevention, rehabilitation, and palliative care. (WHO 2012) This implies provision of a continuum of health interventions throughout the life course. Therefore, it is critical to invest in all areas of nursing workforce development. (WHO 2016, 11)

Nursing science is an independent science and it is vital to the practice of professional nursing. Nursing science has a big impact on current nursing practice. In addition, it has a big influence on the future of professional nursing practice. (Tingen et al. 2013, 167.) Polit and Beck (2006, 4) define nursing research as a systematic inquiry. It is designed to develop knowledge about issues of importance to nurses, like nursing practice, nursing education, and nursing administration. Qiu (2008) states that nurses use research to provide evidence-based care that promotes quality health outcomes. The aim of nursing research is to develop better care standards and applications for patients and families. Nursing research results are expressed in the form of nursing monographs, papers, investigation reports, or research reports. They have three components: innovation, scientificity, and transformability. They are the main driving force in the development of nursing science. (Qiu 2008.)

Nursing students are the future professionals of the nursing profession. They participate more and more in nursing research and share results to the practice. Thus, nursing research should be the foundation of comprehensive and evidence-based practice which can happen only with increased exposure to nursing research. (Tingen et al. 2009, 170.)



Research is becoming more and more important in relation to education in all areas but above all in nursing education. Universities want to deliver more benefit for society by bringing together education, research, and professional practice. Therefore, it is important to add support for nursing research. More cooperation between different staff units is needed: Finance, Human Resources, Marketing and Communication, Facilities, Staff unit Education and Research, and IT. Factors such as nurses involved in research, staff education which focuses on research, staff which supports developing research projects from a clinical question support successful strategies of nursing research (Logsdon et al. 2017).

### 3 Infrastructure supporting nursing research in universities

Research, development, and innovation are the most important components of the infrastructure of any science. There is no single accepted definition for the term "research infrastructure". Farago (2014) writes that this consists of a review of publications, reports, permanent institutions, long-term projects, best practice and excellence, and factors that support nursing research. In general, it can be said that research infrastructures are the backbone of science (Scott 2015). At their best, research infrastructures are dynamic and open physical or virtual research community structures where support staff supports the researcher. This enhances the basis for research, bolsters research expertise (Finnish Academy 2013) and supports career framework. In addition, these infrastructures support academic careers (Strickland 2017). All research should take into account compliance with good reference technique, which is one way to prevent plagiarism. This does not only mean the writing, but the entire research. (Löfström 2011.)

The research, development, and innovation activities have expanded significantly over the years. This makes it possible to deliver more benefit to society by bringing together education, research, and professional practice. RDI activities concern a large proportion of personnel in one way or another. The aim of research and development work is to produce new knowledge and competence that is significant for working life and its application in the regional innovation network. (Kristensen et al., 2016) WHO (2016, 22) has stated that it is important to support infrastructure.



Research activities can be measured in the number of scientific articles (alone or co-written by several researchers) and where the article has been published. It is valued that universities support publication and enhance the research environment. It adds to the reputation of universities. (Logsdon et al. 2017) The publication of scientific articles is one way to evaluate, giving information about the level of higher education (cf. ranking list). An article published in the most prestigious journal in its field is also the most quality scientific publication. (Taylor & Braddock 2007.) In Finland Publication Forum evaluates domestic and foreign academic publication channels. There are three levels of classifications; journals, serials, and conferences. Level one includes peer-reviewed publication channels that specialize in the publication of scientific research outcomes and have an editorial board of experts of the discipline. The Expert Panels judge that the highest levels are two and three, and this is awarded to a limited number of academic journals, conferences, and book publishers (Jyfo 2018.)

Nursing research requires state-of-the-art infrastructures, which are fast and safe to use. Nursing research activities strengthen the credibility of the profession in relation to working life and students, and gives the opportunity to foresee the future development of working life and needs in terms of the content of training. Research has become more and more important in relation to education. (Kristensen et al. 2016.) Kristensen and colleagues (2016) also state that there is a need to bridge the gap between research and practice since in healthcare research, results diffuse only slowly into clinical practice.

The important quality elements of nursing infrastructure are: support staff; facilities as well as up-to-date tools (Cornelius et al., 2007), for example ICT-tools; soft wares and databases which promote nursing research and international collaboration with other researchers (Rouleau, Gagnon, & Côté 2015). The world's largest nursing database is CINAHL (Cumulative Index to Nursing and Allied Health Literature). It is a source of full text for nursing and allied health journals. CINAHL includes nursing interventions, management, education, theory, and history. In addition, it includes allied health topics such as physical and occupational therapy. Nursing research can be found from PubMed-database, which is a freely accessible search engine. From this database, one can find scholarly journal articles about health and medicine, nursing, audiology, and biology. This database includes the MEDLINE database, but has newer content and additional life science journals. Up-to-date information on the effects of interventions in



health care are available from Cochrane Library. EBSCO-database (eBook Clinical Collection) is the leading provider of e-journals and eBooks, magazine subscriptions, research databases, and a discovery service for academic and public libraries. Bala and colleagues (2018) have written that different databases and softwares of ICTs are extremely powerful and uncontroversial in higher education's research function.

In addition to the aforementioned, the library services have an impact on quality. It is essential that students and staff have access to books. These training materials have many demands. They should include information, which is organized and presented in a way that facilitates learning. Good technical design enhances student access and understanding, and motivates students to read the material (Flink 2013). Researchers can develop their skills by using library services (hardware, software, books or e-books, and support and instructions for searching information from different databases) and by accessing high quality material such as international journals (Research information networks 2010; The Swedish research council's Guide to infrastructures, 2012).

Another quality assessment element of nursing research is how universities/higher education institutions are linked to innovation and working life and how they collect relevant information regarding the impact of research, development and innovation, and how the information is used in the development of these activities and the staff in these organizations (Finnish Education Evaluation Center 2018). Universities that have a high proportion of staff and students from overseas offer students a broader and more international education. This affects international students and researchers who have become an important economic factor in the survival of universities. (Taylor & Braddock 2007.) Collaboration with companies, public administrations, third sector actors, and other educational institutions strengthens the workplace orientation. Moreover, it strengthens internationality and provides the opportunity to acquire the necessary expertise outside of the university/higher education institution. (Finnish Education Evaluation Center 2018.)



## 4 Methods

The purpose of this research was to find out what kinds of infrastructure services there are in universities in *ICT-Services, International Support Services, Library Services, The Research, Development and Innovation Activities (RDI) and Financial Services* available to support nursing researchers through the research lifecycle. The aims of this study are to support the development of nursing research infrastructure in Kazakhstan by identifying the European successful factors and to draw recommendations for developing the infrastructure for nursing research in medical universities.

Benchmarking is a tool for improving performance. It is a systematic process of comparing practice to best practice with other organizations. (Scott 2015; Reh 2017.) The results from benchmarking highlights areas of strengths and weaknesses. In addition, it provides an incentive to change, and assists in setting targets. In other words, benchmarking can be defined as a learning process structured to enable those engaging in the process to compare their infrastructure services with each other's. (Stella & Woodhouse 2007.)

Four medical universities from Kazakhstan and three universities from the EU (two from Finland and one from The Netherlands) participated in this study. Benchmarking started with the creation of questionnaires for five main areas that will be indicators of support for the development of nursing research. In order for all project participants to have a common vision of benchmarking, the explanatory notes on benchmarking were uploaded to Dropbox for public access.

All universities participated in the development of questions for self-assessment. In each institution, one responsible for one of the five areas of benchmarking was selected, to whom the questionnaire was sent. The data collection period was one week from February 27 to March 4, 2018. The questionnaire consisted of a broad range of questions: open, closed, filter questions, semi-closed questions, and all were translated to Russian, Kazakh, and English.

After the university answered the questionnaire, the answers were sent to two responsible universities: JAMK (Jyväskylä University of Applied Sciences) and KSMU Karaganda State Medical University). The next step after getting all the answers was an analysis of the



questionnaires received. JAMK wrote an analysis of the European universities, KSMU and JAMK together wrote an analysis of the data obtained from the Kazakhstani universities. After the analysis was carried out, all the results were sent to the university partners to ensure that each institution can evaluate its development in five areas of research and compare with other universities, and also to identify and study the best experience in a certain field. All participants had been invited to a joint Skype meeting in March to April 2018 to discuss about their own area with other participants from the same area. In the Skype meeting, it was explained what the benchmarking process is and

why this self-assessment was made. In addition, the code of conduct was discussed and all participants accepted that self-assessment information would not be given outside the partnering organization.

The last step was the creation of development plans. Kazakhstani and European higher education institutions were invited to make their development plans for five particularly relevant areas of infrastructure for the development of research in nursing. The subject of the study was the vision that these universities have about areas that need to be developed. The main points of the development plan were: to note two main tasks that need to be developed, and it was also necessary to describe the steps to achieve the objectives. These development plans were then returned to JAMK and KSMU by the end of June. Recommendations for nursing research infrastructure were drawn from self-assessments, data from Skype discussions as well as from development plans, which each university wrote for their own university including all five service areas. The recommendations were discussed in a Project management group with members of management of each university and agreed upon. Lastly, all partners had the opportunity to comment on the report to guarantee its trustworthiness.

## 5 European successful factors for nursing research infrastructure

### 5.1 ICT Services

The European universities' strengths of ICT services is that staff have high ICT capacity and they have access to many basic IT infrastructure, software installations, workstations, and operating system installations. In addition, user support is readily available through many channels such as



online, telephone, e-mail, or self-service, and it is available nearly all the time. European universities have opportunities for developing their ICT services by dedicating more services to researchers in the context of their research and cooperating more between different staff units to support researchers.

European universities' ICT services have available the latest statistical and qualitative analysis software for all staff and students with full licenses (e.g. SSPS), basic tools (e.g. Word processing, Spreadsheets, Database software, Demonstration software, Graphics software, and Atlas.ti) and cloud service (Google Drive, Microsoft OneDrive, Funet Filender, Azure, Office365 and Sharepoint Online). Universities also have communication technologies like Skype, Skype for business, Yammer, Google Hangouts, Adobe Connect, Chat, and Office 365 as well as electronic dictionaries for students and staff.

Concerning plagiarism in universities, measures taken against it do not only apply to scientific publications, but also to theses and exams. In practice, students send a message to the plagiarism address of the thesis tutor, and attaches their thesis and its appendices to the message. The student sends the thesis to the plagiarism detection system only once, when the work is finished. It takes the plagiarism detection system about twenty-four hours to check the text, after which it sends the original thesis and a report of the findings to the thesis tutor. The student cannot access the report. It goes directly to the thesis tutor and, if necessary, the student can contact him or her for questions. This process is written open for students and staff.

Network and Internet connections work fast in European countries. Extra, the software for nursing students, has a platform where students can learn inside a “realistic” hospital world. There is also the Exam application, which is a flexible way of taking exams. The Exam allows students to take exams independently using a computer in a video-monitored room. Students can take exams in the Exam studio when they choose to, during the library's opening hours.

## 5.2 International Support Services

The European university's strengths of International Nursing Support Services are skills of advice, networking as well as cultural knowledge exchange, support services for RDI, and a highly qualified staff. In addition, members of staff are fluent in English, even though it is not the



native language for all of them. The EU universities or their staff belong to different international networks of nursing.

The European university has memberships in nursing associations also in national networks such as workgroup member or scientific committee advisory:

- European Society of Cardiology
- Nordman Network
- European Nursing Module
- COHEHRE
- Research Committee International Family Nursing Association
- Research and Education Committee & Scientific Committee of the North American Nursing Diagnosis Association International (NANDA-I)
- The Honours Society Sigma Theta Tau International (STT-I)
- The Association for Common European Nursing Diagnoses, Interventions and Outcomes (ACENDIO) / E-health workgroup

The European university has a large variety of agreements with international partners with benefit. The universities cooperate in research in nursing diagnoses, family care acute care, research and development projects, which they do together with other countries. Moreover, cooperation includes field exchange among students and teachers. The universities cooperate with international universities and hospitals by teaching, joint degrees, intensive programs, research, exchange of staff and students, staff development, cooperation agreements, organizing student exchange, funding strategy, implementation of research in education, healthcare, and society. The results from European universities show that universities send nursing teachers as visiting professors to foreign universities for many European countries but also to Kazakhstan. They also invite professors and teachers from different European countries.

The university in Europe encourages the staff to participate in international research and collaboration. They support staff to keep oral or poster presentations of evidence of good practices and share information in national seminars or international conferences. The topics of international conferences have been Advanced Practice Nursing, The practice of patient centered care, Nurses perception of the Results of a Competence-Based Training in Family Health, and Modern times in Modern Nursing Documentation. The topics of national seminars have been International literature and national nursing. The University strategic plan offers financial opportunities to participate in conferences in other countries. Working hours are allocate to the yearly work plan (traveling, housing and daily allowances).



### 5.3 Library Services

The European university's strengths in library services is that they have nursing specific databases, e-journals, and books, and the library staff is highly educated. Other strengths of the libraries is that they cooperate with others. It is possible to jointly acquire data systems and databases, distribute interlibrary loans, and contribute to societal decision-making in different organizations. They also cooperate with international publishers, other suppliers, and are part of a worldwide network of libraries.

In European libraries, many databases are available and a growing number of e-materials, which provides up-to-date and current information for nursing research. Some of them are open access and other are licensed. The students can search both printed and electronic nursing books and nursing journals from databases, such as EBM Guidelines, Medline (EBSCO), PubMed, Cochrane

Library, Elsevier Science Direct, and Nursing and Allied Health Sciences. There are also full-text databases, such as CINAHL/EBSCO. In addition, universities have national databases, for instance, Finland has Terveystietti ('health gate'), which provides reliable, independent, up-to-date information on health and illness. Libraries in European universities have available the newest information about nursing in many ways (books, journals, e-material and different databases). Compared to Kazakhstani universities, libraries in European universities have many English books and e-books (Figure 1).

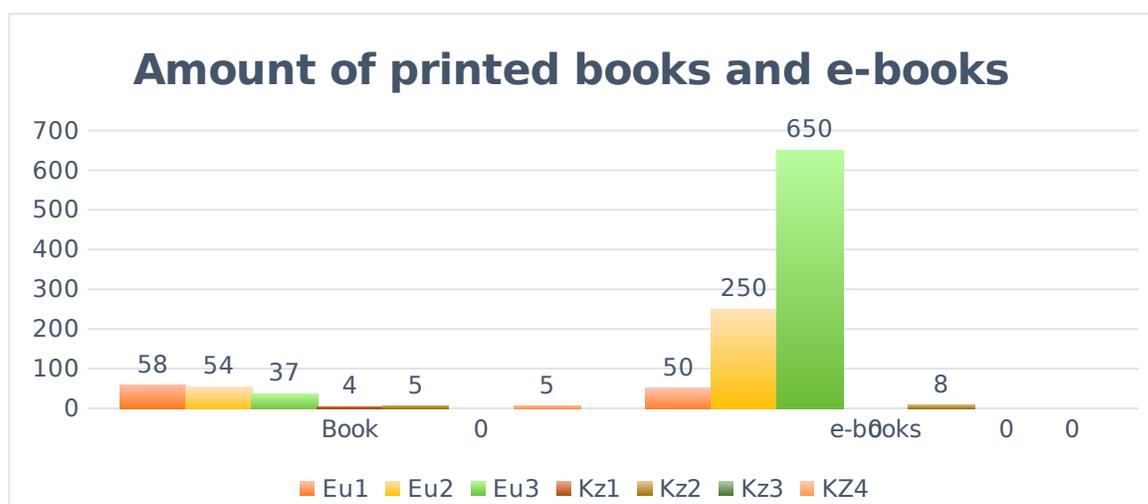


Figure 1. Printed books and e-books on nursing research/methodology in English

The nursing books describe different methods and measurements of nursing research. Books in English guide how to utilize nursing research and how to do a systematic literature review or how evidence-based nursing is connected to research. In addition, the libraries have books on the domestic language as well as e-books of nursing research methods, measurements, analyses methods, conceptual models of nursing, and the research process in nursing. There is also material how to develop a program of research in nursing.

Most of the libraries' journal publications are international, although all European universities also have national publications. Journals include rehabilitation counseling, occupational therapy, evidence-based nursing, education, mental health and nursing research. List of nursing **journals published** in English:

- American Journal of Nursing
- American journal of occupational therapy
- British Journal of Nursing
- Evidence-based nursing
- International nursing review
- Journal of advanced nursing
- Journal of applied rehabilitation counseling
- Journal clinical nursing
- Journal of nursing education
- Journal of psychosocial
- Nursing and mental health services
- Nursing research

Online journal are international in Libraries. Online journals concern different illnesses like urology or mental health and different ages like child health. In addition, journals concern Evidence-based Nursing, Nursing ethics and nursing research, public health or trauma, holistic, clinical and emergency nursing. List nursing **online journals** in English:

- Advances in Nursing Science
- ACCNS Journal for community nurses
- Aging and mental health
- Ambulatory Child Health
- American Journal of Nursing
- American Journal of Public Health
- BMC nursing
- British Journal of Nursing
- Clinical Nursing Research
- Evidence-based nursing
- Journal of Clinical Nursing
- Journal of Community Nursing
- Journal of Emergency Nursing
- Journal of Holistic Nursing
- Journal of Trauma Nursing
- Nursing Ethics
- Nursing Science quarterly
- Nursing research
- Pediatric Nursing
- Urologoc Nursing



In Europe, libraries have staff specialized in information searching. They assist staff and students to search for both printed and electronic books, journals, and standards from the database. Students have the opportunity to participate in the open information seeking training both during studies as well as after graduation.

## 5.4 The Research, Development and Innovation Activities (RDI)

The European university's strengths in research, development, and innovation activities are experience and knowledge of regional, national, and international project development and cooperation with the funding application services team and project management services team. In addition, strengths include active collaboration with partners and businesses. The activities follow a practice-based, development-focused, and applied approach, leading to concrete results.

European universities have a strategic partnership agreement with regional public health and social services. Universities have meetings where the thematic areas for RDI collaboration for the coming years are set. Nursing experts in European universities have strong networks with local hospital and other healthcare providers. Long-term cooperation is based on mutual interest. The European universities offer different research and development project training for staff members. RDI support services frequently offer training in project planning and management and offers information about coming and open project calls. They also organize workshops based on the staff's needs, e.g. for project funding. RDI support services experts are involved in project planning and assist, for example, with budget planning and with technical aspects of project proposals as well as with financial reports of projects. Each focus group has monthly RDI meetings and in addition to that, RDI support services organizes monthly RDI meetings.

For each project to be launched, a contact person for project management services team is appointed who takes care of project management (guidance, project finance monitoring, case and document management, payment claims, archiving) and project accounting (accrued income and expenses, co-financing, budgeting, economic forecasts, assisting in audits). In addition, the team takes care of the project salaries (handling working time, loggings, project salary allocations, project salary reports for payment claims, and other salary calculations) and project



communications (posters, logos). During and at the end of the projects, the staff who have been involved in them, publish articles, most of which are published in international publications.

All universities have created general instructions for creating and implementing research and development projects, and they have taken note of ethical questions concerning research addressed.

## 5.5 Financial Services

The strengths of the financial services in European universities are systematic, trained, and organized support staff teams for attracting outside funding. In addition, they have high project management to ensure proper project management of outside funds. The staff has knowledge of subsidy conditions and actual possibilities, financial experience with education and research projects, and a high degree of automated and digitized processes (to provide financial information any time anywhere). European universities have three to four persons who advise staff in budgeting and are specialized in project accounting for research or development projects. In addition, they have the possibility to invest in research on co-financing in the field of nursing.

European universities have various mechanisms to support the development of the academic career of employees, and they encourage employees to continuously develop on all fronts, offering employees and their managers plenty of support and the use of facilities. The universities offer various employment opportunities in the field of Research and Development and RDI preparation funding to prepare new applications. Staff members are encouraged to participate in seminars, workshops, and courses that increase the knowledge in this area. European universities do not provide grants for research in the field of nursing but in some cases, full-time employees have the right to use 40 hours per year to develop their own skills.

In Europe, the Ministry of Health and other government bodies provide grants for projects in the field of nursing. In addition, there are various projects and programs currently underway in the Ministry of Social Affairs and Health (MSAH). For instance, many government key projects are implemented by MSAH, such as services to be based on customer needs, health and wellbeing will be fostered and inequalities reduced, and a program to address child and family services will be implemented. Other topics addressed by the ministry include the development of home care



for the elderly, enhancing informal care in all age groups, and career opportunities for people with partial work ability. In addition, in some countries (e.g. Finland), projects may also be funded with national development programs. Funding from the Structural Fund Programmes of the EU will also be used to decrease social inequality. Particular attention will be paid to promoting the health and well-being of the unemployed and those with partial work capacity. In addition, Finland can offer regional funding mechanisms and funding from the Structural Funding from the EU.

## 6 The current situation of the nursing research infrastructure in Kazakhstan

### 6.1 ICT Services

All the medical universities in Kazakhstan that participated in this analysis provide basic software for researchers: a word processing program; a spreadsheet; a demonstration software, which is a software program or utility, used for creating, editing, and maintaining database files and records. This type of software allows users to present information in graphic form. Almost all medical universities in Kazakhstan provide researchers with graphics software and SSPS. In one of the universities (West Kazakhstan State Medical University), there is a program for carrying out qualitative content analysis (Atlas.ti). The most common communication technology used is Skype. In medical universities, electronic dictionary service ABBYY-lingvo is available for employees and students that is a fast and easy way to access dictionary content for a variety of languages.

Anti-plagiarism programs used in Kazakhstani medical universities are antiplagiat.ru and Turnitin. There is a mandatory procedure against plagiarism for all educational and methodical publications, diploma and dissertational works that are analyzed through the program once. The authors present the corresponding certificate at the meetings of academic councils of universities. However, there is seldom a described systematic process of detection and prevention of plagiarism. This procedure is carried out only at KSMU. A system for reviewing publications and organizing the preparation of research proposals, such as PURE, has not been introduced at universities. Pure facilitates an evidence-based approach to the institution's research and collaboration strategies, assessment exercises and day-to-day business decisions.



Cloud services that are available for use in universities are Google drive and One Drive. The benefit of these information and communication technologies is free access to databases, which are not dependent on time and place, but at the same time, difficulties in work hinder the use of the full potential of ICT.

Considering plans to develop **information and communication technologies** to support the development of nursing, one of the problems that we could point out is the language barrier. One participant proposes to solve this problem by creating electronic translators for researchers. The same university speaks of the need to create a national database of nursing research. The technical component of this issue is, namely, to increase the level of computerization and the efficiency of the use of computer technology in the activities of the university.

As a summary, it can be concluded that regarding the ICT technology support services for nursing research technology and the use of software, the medical universities are at different levels. In consequence, the potential support that ICT services could provide to research in medical universities in Kazakhstan is heterogeneous. To support the research of nursing, universities need to purchase a software program for qualitative content analysis (either Atlas.ti or Nvivo) as well as the nursing literature database CINAHL.

## 6.2 International Services

An analysis of the current situation of international cooperation has shown that none of the universities of Kazakhstan are part of the international networks of the nursing association, namely, different illness associations (e.g. Society of Cardiology) or different associations which involve scientists of nursing research and teachers of academic nursing education. There is a real problem in the implementation of cooperation between Kazakhstan and foreign universities due to the absence of agreements on cooperation in the field of nursing. At the time of the survey, no university belonged to the international network of nursing. Cooperation agreements on nursing development with JAMK and LAMK (Finland) are held by two universities of KSMU and AMU, concluded within the framework of the project “ProInCa - Promoting the Innovation Capacity of Higher Education in Nursing during Health Services Transition”. The aim of this cooperation is



to develop the sustainable innovation capacity of Kazakhstani medical universities for the modernization of nursing.

Support for the participation of employees in international conferences by the medical university is expressed in the provision of financial resources for sending employees to participate in them. In 2017, Kazakhstani universities did not participate in any international conferences in the field of nursing, but two universities (KSMU and AMU) took part in the VIP-day “Education in health care. The Power of Nurses: Energy for Healthcare Modernization”, organized by JAMK University (Finland) in Jyväskylä, as part of the international exhibition EXPO-2017.

At the national level, in conferences in the field of nursing in 2017, only an employee from AMU participated in the International scientific-practical conference "Integration, partnership, innovations in medical education and science" in the city of Aktobe (Kazakhstan) with an oral presentation. Every year, Kazakhstani medical universities organize international scientific and practical conferences of young scientists. Usually, it is a general conference with a section for Nursing.

In all Kazakhstani medical universities, there is an experience of exchange for students specializing in nursing and for training of undergraduates in foreign universities. However, teachers from five medical universities in Kazakhstan have no system for acting as visiting professors or teachers to foreign universities. The invited professors or teachers are accepted by all universities in Kazakhstan, where the survey was conducted. In AMU, this is a professorship from the HAMK University (Häme University of Applied Sciences). Speaking of cooperation with international universities or hospitals, this is manifested in the form of internships for staff and students in foreign organizations and visiting professors. In AMU, this is within the framework of the academic mobility of teachers and students under the Erasmus + program in 2017, Associate Professor of the Department of Obstetrics and Gynecology and Chief Specialist of the Educational and Methodological Center Jyväskylä University of Applied Sciences (JAMK).

Also, a teacher from HAMK held a master class on the theme: "Master's work in Finland" on October 2017 in AMU 2017; third year students in the specialty of nursing were trained at Lahti University of Applied Sciences (LAMK) during three (3) months; and two (2) nursing and public



health undergraduates were trained in three Finnish universities (LAMK, HAMK JAMK). In KSMU, seven (7) students in the specialty of nursing have completed an internship at the Novosibirsk State Medical University in the short period of 2015.

As a summary, it can be concluded that the Kazakhstani medical universities should actively enter the international arena in the field of nursing research and become members of international associations in the field of nursing. In addition, they should implement the development of the international support service: the creation of national and international networks between universities and other educational organizations. A plan is needed to use the indicators, for instance, the place of a university in the world academic rating of universities, as an assessment of the effectiveness of international activity. Regarding the analyses of development plans, the universities stressed the need to develop international academic cooperation so as to create favorable conditions for the integration of the educational system of the Republic of Kazakhstan with the educational systems of other states on an equal and mutually beneficial ground.

### 6.3 Library Services

Among the databases available in Kazakhstani, medical universities acquired databases such as Springerlink, where one can find medical documents as well as Sciencedirect, a science, health, and medical journal with full text. In addition, the following databases are available in Kazakhstani medical universities: DynaMed, Epigraph, Med line, Scopus, Web of knowledge, Elsevier, Web of Science, EBSCO, eBook Clinical Collection, Cochran Library, and "EBSCO" Scientific & Medical Art Imagebase. However, none of the universities has databases on nursing like CINAHL.

Some of the Kazakhstani medical universities do not have a direct subscription to international nursing journals in English, but they have a subscription to the abstract and citation database Elsevier Scopus. One of the reasons is the language barrier for students, teachers, and researchers in the field of nursing. Only one Kazakhstani medical university (AMU) has electronic international journals, such as BMC Nursing, Journal of Compassionate Health Care, and Evidence-Based Practice. Only one book on nursing research and methodology is available in English in Kazakhstani medical universities. That book provides new information to keep nurses



up-to-date, communicate the findings of research studies, and develop the scientific base for the nursing profession. An analysis of the current situation on most of the books is that they consist of clinical skills of nursing, basics of management, or theory of nursing. Some of medical universities have books in Russian and Kazakh but those books do not guide students in nursing research and methodology.

As a summary, it can be concluded that the strengths of the libraries of the Kazakhstani medical universities include the methodological assistance provided by the research managers and library staff in the search for materials, both from the internal resources of the library and from the electronic databases of foreign publishers. However, analyzing the plans for the development of the list and quality of libraries supporting research in the field of nursing, there are many issues, which should be developed: expanding the repertoire of purchased printed publications and electronic books in the state and English languages, and expanding the subscription to international journals in the field of nursing. In all medical universities of Kazakhstan, there is an overinvestment in printed books, while the level of evidence and usefulness of these books for nursing is negligible. There are also no specialized databases and electronic, printed journals on nursing, which complicates research activities.

## 6.4 The Research, Development and Innovation Activities (RDI)

Research activities in Kazakhstan medical universities are carried out in the main areas of health: medicine, dentistry, biology, pharmacy, hygiene and epidemiology, pharmaceutical production technology, public health, and nursing. Topics of research are approved at the meetings of the Academic Councils. The main researchers in the field of nursing are currently students, undergraduates and their scientific leaders, e.g. teachers, associate professors, and university professors. The data on the number of studies in the field of nursing for 2016, 2017 are shown below. (Figure 2)

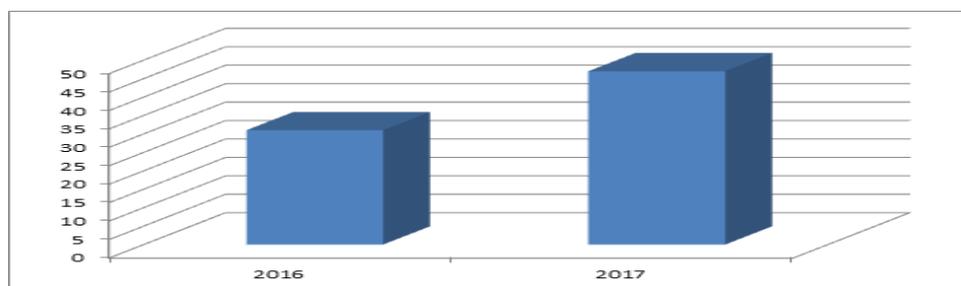


Figure 2. The number of studies in the field of nursing for 2016, 2017 in Kazakhstan in five medical universities.

Nursing studies are organized at universities only in the framework of writing and defending diplomas or dissertations at the level of bachelor and master's programs, there are no separate studies. On average, studies on nursing have 3–10 researchers each, mainly studying bachelor and master's program subjects, and the teachers and faculty members are involved as supervisors. Theses address the current problems of nursing in Kazakhstan, such as the delegation of certain powers of a general practitioner at the level of primary health care, nursing care in the rehabilitation period, and the education of patients in self-help methods for various conditions. Funding is provided by the university from the funds of the state order for training in the academic baccalaureate and magistracy. Ethical issues are resolved in local ethical committees, established

and operating in universities. Introduction of the results of scientific research into clinical practice is documented by the following documents: implementation certificates, patents, instructions, methodical recommendations, and others. Employers' comments are periodically submitted to meetings of the universities clinical councils, which include the heads of medical organizations of cities and regions.

The medical universities of Kazakhstan closely cooperate with the Department of Public Health and its subdivisions in the regions, as well as with regional health departments. Hospitals and other health institutions are the clinical and educational bases of universities, where all contracts of cooperation are decided; In addition, practitioners of practical public health are included in the state attestation commission, clinical council, and employers' council. Scientific research is initiated by universities and all clinical bases are involved in the research process. It is also important for universities to provide access to databases, statistical medical reports for scientific analysis, laboratories, and equipment. In all universities of the country, there are provisions for scientific activity, methodical instructions for conducting scientific work as well as instructions for writing implementation acts and patents.

Various training programs have been created for university staff. JAMK, for instance, created the course "Assessing needs assessment in phone advice". The training is carried out according to the modules of compulsory competence: an effective teacher, communicator, scientist / researcher, educational program developer, information and communication technology user, and expert in



evaluation. Among them is the mandatory cycle of advanced training, "Skills in scientific research" (54 hours), management of scientific research, biostatistics in cohort and cross-sectional studies, ethics, and proper clinical practice. A separate department, the Department of Human Resources Management, handles training of university staff. Education is planned in accordance with the plans of the departments and personal plans of teachers. The support of the university in scientific research consists of grant financing and support of library resources. Annually, a competition is held for university grants scientific projects, both among students' research projects, and among the projects of the faculty, which is at least 1 million Kazakhstani tenge. The Regulation on labor remuneration, approved by the Governing Council, is being implemented, in which the employees' rights to receive salary supplements for successful scientific activity are fixed.

Analyzing the development plans for RDI, it can be concluded that to begin with, it is necessary for the nursing specialists to teach research and methodological skills. Supporting the capacity of nurses in nursing research is an integral part of achieving the goal of developing nursing research. To support this, it is necessary to train nursing specialists in writing and publishing articles, which would increase the interest of the scientific community in the research of nursing.

The opportunities for the development of RDI in the field of nursing are: improving the system of nursing education, increasing the level of implementation of nursing research, writing projects and articles with a high impact factor in the presence of a foreign consultant, and the active participation of researchers in competitions for internal grants.

## 6.5 Financial Services

According to the replies, all medical universities in Kazakhstan participate in the joint financing of research projects but data on the volume of investment in co-financing have not been provided, as it appears to be confidential information. In each Kazakhstani medical university, there are specialists who are responsible for compiling the budgets of research projects, as well as accounting specialists. Thus, public authorities, private organizations, possible grant sources, such as EU funds or others, are external sources of funding for research in nursing. One of the priorities is to support the academic career of employees. The instrument of such support is the





said that a primary database is being formed that will allow assessing the status of the research infrastructure in nursing care and will be sufficiently relevant for further activities. In the course of fulfilling the tasks of this project, a survey was conducted in which five Kazakh medical universities and three foreign universities took part. All participants had the option to participate in the planning of this research.

In December 2017, the first meeting of the coordinators and partners of the project was held (kick-of-meeting) where conducting the procedures, the rules for the survey, and the schedule of mailing questionnaires and deadlines with the participation of all universities partaking in the project were reviewed in detail. All partners have had the opportunity to affect the research plan, research areas, and research questions. In addition, all universities/higher education institutions had the opportunity to determine what benchmarking questions to use and help ensure that researchers are using questions that truly measure the issues of importance. The five benchmarking areas studied were selected in accordance with the recommendations of the Finnish Academy and universities in the United Kingdom (ICT-Services, International Support Services, Library Services, The Research, Development and Innovation Activities (RDI) and Financial Services). All the members accepted these areas.

Participation in the research was voluntary. According to sociological research, threats to reliability and credibility cannot be fully eliminated, but the researchers tried to minimize risks as much as possible. The analyses process was made open to all participants. After the benchmark questionnaire, a Skype meeting was held where all participants had the opportunity to answer questions and clear any possible misunderstandings. In addition, during that discussion, the participants from universities had the opportunity to ask questions from other participants, as recommended by Graneheim et al. (2004). In addition, during skype-meetings the participants had the opportunity to give feedback and suggestions to others.

After meeting, all universities had the opportunity to create their own development plans which they were required to send to JAMK and KSMU. The researchers from those units summarized development issues together, which added to trustworthiness. Moreover, the researchers wrote recommendations together to the Kazakhstan medical universities without being able to identify the universities in question.



## 8 Discussion

European universities have available to them the latest tools with full licenses to support nursing research, such as statistical and qualitative analysis software like SPSS and team collaboration tools. Rouleau et al. (2015) wrote that by using collaboration tools, the researchers (staff and students) could share the information and good practices of nursing. For nursing research, it is important that staff has good work and learning environments, access to free articles in the nursing database, and electronic dictionaries of English. In universities around Europe, the staff has high ICT capacity.

There is a need to develop internationalization in Kazakhstan universities, which will increase the potential of bachelor and master's teachers in the specialty of nursing, introduce joint educational programs, participate fully in international associations in the field of nursing, and create conditions for the professional development of nurses, with the possibility for exchange experiences. Of importance is the participation of teachers and students in the specialty of nursing in international and national scientific and practical conferences.

For university and nursing researchers, it is important to belong to national and international networks. These networks present the opportunity to hear the newest information about nursing trends as well as the opportunity to participate in different forums to discuss nursing and share their experience. Cooperation can be based on nursing research and nursing development projects or agreements, such as an exchange between a nursing student and teacher. Participation in these networks is the best way to exchange cultural knowledge. Finnish Education Evaluation Center (2018) has stated that the quality elements of nursing research are how universities/higher education institutions link the innovation and the work life.

Libraries can share the newest information. The material in libraries should be available in the national language as well as in English. Libraries should have different materials for nursing research methods, such as printed and e-books (e.g. nursing research/methodology in English for applied bachelor (Appendix 4) and academic bachelor (Appendix 5), journals and nursing databased with licenses), and guidance in information searching. Busby (2004) has written that a researcher needs support to disseminate and publish their own thesis. It is useful if library



workers are specialized in social and health care and nursing and that they are able to teach the information seeking process.

Nursing research activities need cooperation between different staff units, such as: Finance, Human Resources, Marketing and Communication, Facilities, Staff unit, and ICT. Universities in Europe collaborate closely with the key social and health care actors. It could be more beneficial for society to bring together education, research, and professional practice, as Kristensen et al. (2016) has expected. She has also stated that nursing research activities give the opportunity to foresee the future development of working life and strengthen cooperation with working life and research because in healthcare research, results diffuse only slowly into clinical practice.

Staff must be more aware of opportunities to find additional funds to improve financial positions in the field of nursing. Financial experience with education and research projects grows after each project. The support for university staff can be co-financing the preparation for research projects or advice for staff in making budgets for research and development projects (personnel that are specialized in project bookkeeping). It helps to have personnel with high level expertise in financial and administrative issues who can take care of the following:

1. Project management (guidance, project finance monitoring, case and document management, payment claims, archiving etc.)
2. Project accounting (accrued income and expenses, co-financing, budgeting, economic forecasts, assisting in audits etc.)
3. Project salaries (handling working time loggings, project salary allocations, project salary reports for payment claims, other salary calculations), and
4. Project communications (posters, logos etc.)

For each project to be launched, a contact person should be appointed from the project management services team. Still, few study organizations have fellowships, intern programs, or a stable budget for nursing research, so measures of support are needed to develop a culture of research (Logsdon et al., 2017).

Kazakhstani medical universities have good potential and background for the development of nursing research. Currently, the health care system of the Republic of Kazakhstan is in a period of active reforms. The republic is carrying out planned sighting work for the reform of nursing. State programs and road maps, coupled with the capabilities of medical universities, can and will lead domestic nursing studies to the world stage. It is the nursing staff that constitutes the most



numerous part of the medical staff, which has a huge potential for the development of nursing research. But there is a nuance of the fact that in the Republic of Kazakhstan, nursing is developing not as an independent discipline, but as an auxiliary part of medicine, based on traditions, not on science.

Medical universities have a good resource base for information retrieval. All medical partner universities have a national subscription to international medical databases. There are prepared library frames. However, there is also a weak side to libraries of medical high schools; for the development of nursing research, the Kazakhstani nursing world must communicate with the world stage of nursing research. This weak point is the very low subscription to international nursing electronic resources. But on the other hand, there is a positive side to the current situation, and that is the fact that experts see the problem and understand the need to solve it. Moreover, it was described as one of the steps for libraries to take to support research in the field of nursing.

The situation with the availability of paper resources in the Kazakh and English languages is also weak. Only books in Russian as a legacy of all post-Soviet countries are available in sufficient quantities. The language of communication also played a role since the participants did not share a native language. Concerning restrictions, it is also possible to add a different vision of nursing (when answering a questionnaire, a different concept of methodology, etc.). As mentioned earlier, Kazakhstan partners have an understanding and motivation to reform nursing. It is maintained at the level of authorized bodies: the Ministry of Education and Science and the Ministry of Health of the Republic of Kazakhstan, and is realized by all interested parties. In this regard, universities are positioning the task of actively joining the international community and working closely with experts in the field of nursing. At this stage, this could be a priority for Kazakhstani universities in the development of nursing education, particularly in nursing research.

Currently, none of the universities in Kazakhstan are members of the international nursing associations. Therefore, the universities have not concluded contracts or memoranda of cooperation in the field of nursing with educational centers or nursing schools in Europe. The first step in this direction is the ProInCa project. Its ultimate goal will be to promote innovation in the educational discourse of nursing, and this will require careful development of



recommendations, taking into account the specifics of the health care system in Kazakhstan. Another important aspect is the increased participation of university academic staff in promoting nursing research. It is relevant to attract the attention of university professors, masters, PhDs to participate in scientific forums, to broaden the communication with the expert community of the world. Currently, based on the survey data, the academic environment of Kazakhstan does not show keen interest in the topics of nursing research and cooperation in the fields of scientific forums.

Speaking of the funding of nursing studies in Kazakhstan, it should be noted that there are no separate articles providing for such financial support in the budgets of universities. However, the availability of state grants for training in the magistracy in nursing provides for the costs of the state and universities for scientific internships, the preparation of dissertation research in the framework of the topics of scientific research works of universities, including using the funds of internal scientific grants. Other sources are not involved. In our opinion, their search can be intensified, since there is a public demand for innovation and improvement of the quality of nursing care, which is impossible without good funding for scientific research in this area. Unfortunately, there are no obvious attempts at structuring financial support today. This is evidenced by the fact that in 2015–2017 in all Kazakhstani medical schools, the volume of investment in joint research in the field of nursing was 0 tenge.

There are a wide range of information and communication technology in all universities. This is a huge plus for elevating the communication of nursing research into the international space. The lion's share of information and communication technologies is free for students and university staff. The essence of the above is reduced to the fact that Kazakhstani universities have an excellent base for nursing studies. However, at the same time, there is no formed active nucleus that knows what nursing research is and can actively develop nursing research.

## 9 Recommendations for development of nursing research infrastructure in Kazakhstani Medical Universities

1. **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





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# Appendices

## Appendix 1, Questionnaires from five different areas

### ICT-SUPPORT SERVICES

Nursing research provides evidence-based knowledge and influences on nursing practice. Evidence-based nursing promotes quality health outcomes for individuals, families, communities and healthcare systems.

#### Software

1. What software's are there available for researchers in the University?

Word processing  
 Spreadsheets  
 Database software  
 Demonstration software  
 Graphics software  
 SPSS  
 Atlas.ti  
 Others, what:

2. What kinds of communication technologies are there available in your University?

Skype  
 Chat  
 Other, what:

3. What kind of electronic dictionaries are there available in your university for students and staff?

4. What kind of Plagiarism detection system is there available in your university?

Urkund  
 Other, what:

5. What is the procedure for preventing plagiarism and processing plagiarism charges?

6. Does your university has a system for maintaining an overview of publications and for organizing the preparation of research proposals (e.g PURE)?

Yes, what:  
 No

#### ICT Services

7. What kind of support does your university offer for working with different nursing databases?

8. What kind of cloud services are there available in your university?

Google drive  
 Other, what:

#### Summary of self-assessment ICT-service as a support service for nursing research

9. Strengths of ICT-service as support service for nursing research

10. Opportunities for the development the ICT-services as support service for nursing research



## INTERNATIONAL SUPPORT SERVICES

Nursing research provides evidence-based knowledge and influences on nursing practice. The aim of the international support services is to support nursing research and give guidance on matters related to student and staff mobility concerning nursing development and nursing care internationalization.

1. To which international nursing networks does your university belong?
2. Does your university have cooperation agreements for developing nursing?

Yes

No

If yes, describe the institutions, countries and aims of cooperation agreements

### **Collaboration with national or international nursing community**

3. How does your university support staff's participation in conferences?
4. In which international nursing conferences did your university participate in 2017? State the names of those conferences and the staff members' roles (participation or poster presentation or oral presentation)
5. In which national nursing conferences did your university participate in 2017? State the names of those conferences and the staff members roles (participation or poster presentation or oral presentation)
6. Does your university send nursing lecturers as visiting professors/lecturers to foreign universities?
  - Yes, to where
  - No
7. Does your university receive visiting professors/lecturers from different universities?
  - Yes, from
  - No
8. How does your university collaborate with international universities or hospitals?

### **Summary of self-assessment on international services/collaboration support services for nursing research**

9. Strengths of International support services for nursing research
10. Opportunities for development International support services for nursing research





23. Give examples what are the titles and authors of ten newest books?  
24. How many e-books on nursing research/methodology in Dutch does your library have access to (published after year 2000)?

Number of different books:

25. Give examples what are the titles and authors of ten newest books?

**Support services for nursing research**

26. Who teaches making searches from nursing databases?  
27. Who provides help in publishing thesis or articles about nursing?  
28. What kind of support does the library offer for nursing research in your university?

**Summary of self-assessment Library services for nursing research**

29. Strengths of Library services for nursing research  
30. Opportunities for development Library as support services for nursing research



## RDI SUPPORT SERVICES

Nursing research provides evidence-based knowledge and influences on nursing practice. Evidence-based nursing promotes quality health outcomes for individuals, families, communities and health care systems.

### Organization

1. Describe how nursing research is organized in your university?
2. What are the fields of science in your university?
3. How many people in your university are involved in nursing research?

### Ongoing nursing research and development projects 2018

4. Are there international nursing research or development or technology innovation projects in your university?

Yes

No

If yes, please describe each project shortly (content/partners/funding/funding source/duration).

5. Are there national nursing research or development or technology innovation project in your university?

Yes

No

If yes, please describe each project shortly (content/partners/funding/funding source/duration).

6. Are there regional nursing research or development or technology innovation projects in your university?

Yes

No

If yes, please describe each project shortly (content/partners/funding/funding source/duration).

### Nursing research, development and innovation

7. How does your university support nursing research development and innovation cooperation with health care services?
8. How does your university cooperate with local hospitals and other healthcare providers?

### Nursing research and innovation activities

11. Has your university created general instructions for creating and implementing research/development project?

Yes, topics:

No

12. What kind of research/development project training does your university offer for staff members ?

13. How is the education planned?

14. What kind of support your university offers for scientific writing?

15. What kind of support your university offers for utilizing research methods?

16. What kind of support your university offers for utilizing different development methods?

17. How and where are the ethical questions concerning research addressed?

18. How does your university collect feedback from the healthcare services on how applicable the research results were to clinical nursing practice?





## FINANCIAL AND ADMINISTRATIVE SUPPORT SERVICES

Nursing research provides evidence-based knowledge and influences on nursing practice. The aim of the financial and administrative support services is to support staff's postgraduate education and planning and implementing nursing research.

Benchmark Questionnaire in Webropol 27.2-4.3.2018

Date: \_\_\_\_\_

Organization: \_\_\_\_\_

Name/s: \_\_\_\_\_

Funding

1. Does your university offer co-financing for preparation research projects?

Yes

No

2. How much did your university invest in co-financing nursing research? Please state the currency.

Does your university have staff that advice staff in making budgets for research or development projects?

Yes, how many

No

Does your university have accounting personnel that are specialiced on project bookkeeping?

Yes, how many

No

3. From which outside sources does your university receive funding for nursing research?

4. What are the mechanisms in your university to support staffs academic career development? (e.g. human resource strategy/policy)

5. Does your university allocate funds for training staff to obtain a Master's degree or PhD in nursing?

Yes, how

No

6. Does your university award grants for nursing research?

Yes

No

7. Does the Ministry of Health or other governmental bodies

Yes *If yes describe what types and how they work* No

*Do the regional stakeholders have funding mechanisms that are applicable for nursing research or development projects?*

Yes. *If yes describe what types and how they work* No

### **Summary of self-assessment financial service and administrative support services for nursing research**

8. Strengths of Financial and administrative services as support service for research

9. Opportunities for development Financial and administrative services as support service

