

CONTINUOUS PROFESSIONAL DEVELOPMENT OF NURSES AND ICNP[®] INTRODUCTION IN POLAND

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Abstract

Objectives: The aim of the study was to explore Polish nurses' readiness to use the International Classification for Nursing Practice (ICNP[®]) as part of continuous professional development and life-long learning. **Material and Methods:** The study included 772 nurses, divided into 2 study groups. The first group comprised those who had participated in a course enhancing the knowledge and improving skills in the use of ICNP[®] terminology (N = 457). The second group comprised people who had not yet attended such a course (N = 315). **Results:** In the pre-course group, education correlated significantly with a general knowledge of ICNP[®] and its components, as the answers to 9 out of 13 questions revealed ($p > 0.05$). In the post-course group, such a correlation was observed in the answers to all the questions except the following: "Is it possible to implement ICNP[®] in your place of work?" ($\rho = 0.066$, $p = 0.137$). Statistically significant differences were found when it comes to the correlation of all 13 questions and the results with the overall level of knowledge of ICNP[®]. A higher level of agreement with the questions and a higher level of knowledge were observed in the post-course group. However, this did not apply to the following question: "Is it possible to implement ICNP[®] in your place of work?" ($Z = -0.06$, $p = 0.955$, $r = 0.002$). **Conclusions:** Effective pre- and postgraduate education prepares nurses for working with ICNP[®] terminology. In fact, IT tools, implemented into the education process, could help to develop skills and the understanding of how nurses can use ICNP[®] in the nursing process. There are some obvious difficulties with the practical implementation of ICNP[®] into clinical practice. *Int J Occup Med Environ Health.* 2020;33(3):353–63

Key words:

nursing education, continuing education, ICNP[®] research, IT, multi-professional, life-long learning

INTRODUCTION

Continuous professional development (CPD) ethically obligates all health professionals. Therefore, it ensures that their professional practice is up-to-date, and contributes to improving patient outcomes and the quality of care. Implementing classifications for nursing practice into IT systems started in the 1980s in the USA [1]. In Po-

land, the process of implementing IT solutions into nursing practice has been going on intermittently for about a dozen years, with 2009 being the most intensive period of acquainting nurses with communication using the International Classification for Nursing Practice (ICNP[®]) in the electronic health record (EHR). In that year, the first conference and workshops were organized in Poland to

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publicize information about the newest trends in this field, especially those related to the WHO recommendation to use ICNP® in teaching at the undergraduate level [2]. Without the standardization of nursing terminology, it is not possible to describe the patient in the EHR and to provide him/her with proper care, based on reliable data entered in real time. The implementation of ICNP® solves this problem. Thanks to standardized terminology, data collection and data analysis will make it possible to show the contribution of nursing practice into achieving the third goal: universal health coverage (UHC).

The goal of UHC has its foundation in the WHO Constitution of 1948, which declares health as a fundamental human right. According to the Health for All agenda initiated by the Alma-Ata Declaration of 1978, eHealth plays a unique and pivotal role in achieving UHC [3]. Of note is the fact that eHealth has experienced a period of significant development in recent years. The successful investment in eHealth requires far more than just the acquisition of technology. Professionals should use technology which is well recognized and implemented. Recording information using the EHR is of great importance in the clinical practice. According to the WHO, EHRs are not fully implemented in the EU regions. Only 59% of respondents have a national EHR system. This causes problems with communication between professionals and it could influence patient safety. Therefore, a systematic approach to the implementation of eHealth standards for data exchange is crucial and it needs to be adopted in each member state. It will not happen without the introduction of international standard terminology – semantic interoperability [4].

On the one hand, every healthcare system in Europe faces challenges in delivering efficient, high-quality, cost effective and safe care. On the other hand, the use of international standards in support of a national EHR system implementation is considered crucial for the development of high-quality care. The implementation of ICNP® to

the standard medical curricula could help achieve these goals. What is more, students should receive information on how eHealth can be used in EHRs to support their work functions and provide assistance to patients, and to increase the quality of care.

It is common knowledge that investing in eHealth education should also focus on those who design eHealth solutions, experts on eHealth and managers of eHealth programs. In the future, nurses can assume such roles in Poland, thus it is also important that they know that the use of international standard terminology can support the national EHR. According to a recommendation introduced in Poland, the EHR should use ICNP® for the implementation of nursing data sets. In many countries, ICNP® is an innovation in nursing [4,5]. In addition, this terminology was recognized as international standard terminology which helps nurses communicate in between professions. In general, ICNP® is a standardized terminology used to represent nursing diagnoses, interventions and (care recipient) outcomes.

Developments in teaching nurses eHealth standards vary in Poland, especially in the case of ICNP® [6]. There are no eHealth competences for nurses in the nursing curricula in the national teaching standards. Nursing is the only medical profession in Poland without eHealth competences in the national teaching standards [7]. Many activities which help nurses develop these skills are available in life-long learning (LLL). In Poland, these kinds of courses are organized by nursing organizations and nursing leaders in cooperation with the International Council of Nurses (ICN)-Accredited Centre for ICNP® Research and Development at the Medical University of Lodz, Łódź, Poland. During these courses, nurses are taught to understand the international standard terminology and develop the nursing process with the use of ICNP®. A few nursing departments have started teaching students ICNP® while raising different nursing subjects. The first one was the Medical University in Gdańsk, then the Medical Universities in Łódź,

Szczecin, Lublin, Kraków and many other cities, though in slightly different ways.

In 2009, the Polish Nurses Association gave nurses recommendations on eHealth and a very important direction on using the international standards for the EHR, which is ICNP®. Until now, about 8000 nurses have received different levels of eHealth competences. The ICN-Accredited Centre for ICNP® Research and Development uses CPD to implement ICNP® in Poland. Because ICNP® is an innovation in Poland, the only way of implementing it is to disseminate information using CPD. Another important task of CPD is to help secure patient safety in the context of cross-border mobility. This issue has been presented in the following legal instruments: in the Council Recommendation on patient safety [8], including the prevention and control of healthcare associated infections, in Directive 2011/24/EU on patients' rights in cross-border healthcare [9] and, most recently, in Directive 2013/55/EU amending Directive 2005/36/EC on the recognition of professional qualifications [10] according to which "Member States shall ensure, by encouraging continuous professional development, that health professionals are able to update their knowledge to maintain safe and effective practice" [11].

In fact, ICNP® helps nurses develop clinical nursing pathways to prepare safe care at the national level. The only way to ensure patient safety is to communicate with the use of the EHR while CPD and LLL can help nurses develop in this direction. The EU supports this kind of learning and its policies are increasingly interested in CPD and LLL for health professionals since these help to ensure that professional practice is up-to-date, as well as to increase public confidence in the professions and improve patient outcomes [12].

Systematically maintaining, improving as well as continuously acquiring and reinforcing the life-long knowledge, skills and competences of health professionals is crucial to meet both patients' needs and individual professional

learning needs. Apart from recognizing the variety of competences needed to practice high-quality care delivery, this term also acknowledges the multi-disciplinary context of patient care. Nursing innovation is a fundamental source of progress for healthcare systems around the world. The delivery of healthcare depends to a great deal on nurses who can assess, diagnose, plan, implement and evaluate care needs for individuals, families, groups, or communities [13]. Undoubtedly, ICNP® can help in this process. The Ministry of Health is now implementing ICNP® in the Hospital Information Systems (HIS) in 13 hospitals in Poland. Within this project, training courses for nurses are being organized to teach how to use the ICNP® dictionary and prepare nurses for the change. Therefore, the aim of the study was to explore Polish nurses' readiness to use ICNP® as part of CPD and LLL.

MATERIAL AND METHODS

The study was conducted in 2016 among nurses from hospitals cooperating with 2 Polish institutions that train nurses: the Faculty of Medicine and Health Sciences, Andrzej Frycz Modrzewski Krakow University, and the Department of Health System Development, Medical University of Lodz. A condition for the possibility of conducting the training was the agreement with the ICN-Accredited Centre for ICNP® Research and Development at the Medical University of Lodz, concluded in June 2016. The study included 772 nurses, divided into 2 study groups. The first (post-course) group comprised those who had participated in a course enhancing the knowledge and improving skills in the use of ICNP® terminology (N = 457). The second (pre-course) group consisted of a randomly selected comparable number of nurses from project cooperating hospitals who met the inclusion criteria and did not yet participate in the training (N = 315).

The diagnostic poll method was applied, using a research questionnaire prepared by the researchers on the basis of the literature on the subject; the questionnaire was tested

to assess its reliability. The questionnaire was used among the participants of a course organized by the ICN-Accredited Centre for ICNP® Research and Development at the Medical University of Lodz, its evaluation was based on a pilot study conducted in 2012 among the participants of the courses organized by that Centre in cooperation with the Pomeranian Medical University. The questionnaire had 2 parts. The first one included closed-ended questions about personal data and professional qualifications. The second part had 13 questions with a 5-degree Likert scale (from 1 – “I strongly disagree” to 5 – “I strongly agree”) which estimated the respondents’ opinions and knowledge about the usefulness of implementing ICNP® into nursing practice.

Following the pilot study, the final version of the tool was produced and used in other studies conducted in 2012–2016, including the study presented in this article. The analysis of its reliability was indicated by the Cronbach’s α index – the aim was to verify the internal consistency of the used tool. The coefficient was $\alpha = 0.91$, which proves high internal consistency of the tool assessing the knowledge of ICNP®.

Research questionnaires were distributed in the paper form with explanations regarding the survey methodology. They were forwarded directly to the participants by authors representing the Faculty of Medicine and Health Sciences at Andrzej Frycz Modrzewski Krakow University. The return of the questionnaire in the post-course group was 93% and in the pre-course group 81%.

Statistical analyses were performed with the use of IBM SPSS Statistics 24. The analysis of basic descriptive statistics, the analyses of frequency and the analyses of correlations with Spearman’s ρ , as well as the Mann-Whitney U test were conducted using the program. Normality of distribution of the studied variables was assessed using the Kolmogorov-Smirnov test and its results suggest that the distributions are inconsistent with normal distribution. Statistical significance was determined at $p < 0.05$.

Ethical approval

Institutional ethical approval was not required for this study.

RESULTS

Most of the respondents were women: 95% in the post-course group and 97.1% in the pre-course group. The respondents were mostly aged 41–50 years (43% in the post-course group and 32% in the pre-course group), and the second largest age group consisted of people aged 21–30 years (Table 1).

The study analyzed the relationship between the educational level and knowledge of ICNP®. The educational level in the pre-course group statistically significantly correlated with a general knowledge of ICNP® and its components, as answers to 9 questions revealed. As for the remaining 4 questions: “Is it possible to implement ICNP® in your place of work?,” “Are you ready to use a standardized classification of nursing practice based on ICNP®?,” “Are you ready to develop detailed care plans in accordance with ICNP®?,” and “Do you agree that ICNP® is necessary for functioning in cross-border healthcare?,” the correlations were statistically insignificant ($p > 0.05$) (Table 2).

The educational level in the post-course group statistically significantly correlated with all the questions answered by the respondents, except the following: “Is it possible to implement ICNP® in your place of work?” ($\rho = 0.066$, $p = 0.137$). All links were positive and their power was low. This means that the higher the educational level in the studied groups, the higher the level of the respondents’ agreement with the statements contained in the questions (Table 2).

The statistical significance indicating whether the ICNP® course statistically significantly diversifies the sample in terms of the level of knowledge of ICNP® was verified using the Mann-Whitney U test. The results showed statistically significant differences when it comes to all 13

Table 1. Sample characteristics of the pre-course and post-course group of 772 nurses from hospitals cooperating with 2 Polish institutions that train nurses: the Faculty of Medicine and Health Sciences, Andrzej Frycz Modrzewski Krakow University, and the Department of Health System Development, Medical University of Lodz, Poland

Variable	Participants (N = 772)			
	pre-course group (N = 315)		post-course group (N = 457)	
	n	%	n	%
Sex				
female	306	97.1	434	95
male	9	2.9	23	5
Age				
21–30 years	98	31.1	123	27
31–40 years	58	18.4	86	18.8
41–50 years	101	32.1	186	40.6
51–60 years	54	17.1	59	12.9
>60 years	4	1.3	3	0.7
Work experience				
<1 year	32	10.2	28	6.1
1–5 years	39	12.3	96	21
6–10 years	31	9.9	27	5.9
11–20 years	66	21	84	18.4
21–30 years	95	30.3	206	45.1
>30 years	51	16.3	16	3.5
Education				
secondary	49	15.4	27	6
higher professional	0		0	
bachelor's degree	175	55.7	188	41.1
master's degree	85	26.9	183	40.1
doctoral degree	2	0.7	29	6.3
student	4	1.3	30	6.5

questions. This also applied to the results for the overall level of knowledge of ICNP®. A higher level of agreement with the questions and a higher level of knowledge applied to the post-course group. However, this did not apply to the following question: “Is it possible to implement ICNP® in your place of work?” ($Z = -0.06, p = 0.955, r = 0.002$). These differences are mild in their power (Table 3).

DISCUSSION

In the research literature on implementing electronic documentation for nursing practice, attention is paid to the duration of the education process in this field; the duration of the education process has a positive influence on approving electronic documentation by nurses. Furthermore, nurses with longer experience had a positive attitude to-

Table 2. Correlations between education and the knowledge of ICNP® in the pre-course group and the post-course group of 772 nurses from hospitals cooperating with 2 Polish institutions that train nurses: the Faculty of Medicine and Health Sciences, Andrzej Frycz Modrzewski Krakow University, and the Department of Health System Development, Medical University of Lodz, Poland

Questions assessing the respondents' opinion and knowledge*	Pre-course group (N = 315)		Post-course group (N = 457)	
	Spearman's ρ	significance	Spearman's ρ	significance
Do you recognize the need to introduce a standardized classification of nursing practice based on ICNP® in Poland?	0.193	0.001	0.274	<0.001
Are you sufficiently prepared for working with a computer for the purpose of keeping electronic nursing records?	0.151	0.008	0.194	<0.001
Is it possible to implement ICNP® in your place of work?	0.071	0.212	0.066	0.173
Are you ready to use a standardized classification of nursing practice based on ICNP®?	0.035	0.545	0.145	0.003
Are you ready to develop detailed care plans in accordance with ICNP®?	0.016	0.785	0.171	<0.001
Do you agree that ICNP® describes and defines autonomous actions of nurses?	0.172	0.002	0.239	<0.001
Do you agree that ICNP® offers an opportunity for a realistic evaluation of the quality and funding of nurse's work?	0.185	0.001	0.246	<0.001
Do you agree that ICNP® will increase patient safety?	0.171	0.003	0.210	<0.001
Do you agree that ICNP® can facilitate organizational, management and control activities?	0.132	0.021	0.272	<0.001
Do you agree that ICNP® gives a chance to conduct scientific studies in the field of nursing?	0.240	<0.001	0.121	0.012
Do you agree that ICNP® will improve the level of communication within the profession and among medical staff?	0.188	0.001	0.208	<0.001
Do you agree that ICNP® is necessary for the functioning of expert systems and clinical decision support systems?	0.169	0.003	0.148	0.002
Do you agree that ICNP® is necessary for functioning in cross-border healthcare?	0.101	0.077	0.190	<0.001
Knowledge of ICNP®	0.207	<0.001	0.275	<0.001

* Authors' translation from Polish.

wards this kind of a change [14]. Further research has also shown the impact of demographic factors [15]. Computer skills are also important, as they allow nurses to use computers. Nurses indicate that e-documentation causes difficulties in capturing the "essence of nursing." This happens especially in the early stages of using it [16]. The above-mentioned results may be related to them using a different classification which did not consist of nursing terminology

in the form of a conceptual dictionary, but only of diagnoses and interventions. The classification recommended by the international nursing community comprises terminology that allows the description of the patient's situation in more detail. Research in this field is being conducted in Poland, but its assessment will be possible only after the introduction of the EHR, as only then will it be possible to analyze the data collected by the IT systems.

Table 3. Differences regarding the level of knowledge of ICNP® in 2 groups of nurses (N = 772) before and after the course enhancing the knowledge and improving skills in the use of ICNP® terminology, in 2016, Kraków and Łódź, Poland

Questions assessing the respondents' opinion and knowledge*	Pre-course group (N = 315)		Post-course group (N = 457)		Z#	p#	r#
	M	SD	M	SD			
Do you recognize the need to introduce a standardized classification of nursing practice based on ICNP® in Poland?	3.41	1.12	3.89	1.15	-6.51	<0.001	-0.234
Are you sufficiently prepared for working with a computer for the purpose of keeping electronic nursing records?	3.24	1.24	3.86	1.16	-7.08	<0.001	-0.255
Is it possible to implement ICNP® in your place of work?	3.12	1.02	3.09	1.22	-0.06	0.955	-0.002
Are you ready to use a standardized classification of nursing practice based on ICNP®?	2.78	1.19	3.47	1.14	-7.77	<0.001	-0.280
Are you ready to develop detailed care plans in accordance with ICNP®?	2.68	1.11	3.34	1.12	-7.84	<0.001	-0.282
Do you agree that ICNP® describes and defines autonomous actions of nurses?	3.44	0.91	3.80	0.99	-5.83	<0.001	-0.210
Do you agree that ICNP® offers an opportunity for a realistic evaluation of the quality and funding of nurse's work?	3.37	1.00	3.69	1.20	-4.94	<0.001	-0.178
Do you agree that ICNP® will increase patient safety?	3.19	0.97	3.49	1.14	-4.49	<0.001	-0.162
Do you agree that ICNP® can facilitate organizational, management and control activities?	3.42	0.93	3.70	1.14	-4.79	<0.001	-0.172
Do you agree that ICNP® gives a chance to conduct scientific studies in the field of nursing?	3.66	0.83	4.13	0.91	-8.15	<0.001	-0.293
Do you agree that ICNP® will improve the level of communication within the profession and among medical staff?	3.31	0.93	3.66	1.09	-5.38	<0.001	-0.193
Do you agree that ICNP® is necessary for the functioning of expert systems and clinical decision support systems?	3.34	0.85	3.72	1.02	-6.14	<0.001	-0.221
Do you agree that ICNP® is necessary for functioning in cross-border healthcare?	3.38	0.85	3.80	1.01	-6.95	<0.001	-0.250
Knowledge of ICNP®	3.26	0.70	3.66	0.83	-7.98	<0.001	-0.287

* Authors' translation from Polish.

Mann-Whitney U test.

In times of progressing globalization and computerization of all aspects of life, implementing a clear and unambiguous language that describes the scope of nurses' activities is required by modern nursing education and practice. Having systems of the nursing terminology classification in the electronic form is undoubtedly a major development in the field of nursing, and an essential element that supports planning, managing and taking care of both patient and staff safety. In order to meet these expectations, in 2010, the ICNP® Council supported by key international bodies, including the WHO, the ICN and the European Federation of Nurses Associations, produced a recommendation regarding the implementation of ICNP® into education standards for the first- and second-degree nursing studies, as well as postgraduate education of nurses and midwives [17]. The ICN-Accredited Centre for ICNP® Research & Development at the Medical University of Lodz, the Polish Nurses Association, the National Centre for Health Information Systems, the Ministry of Health, and the Polish Chamber of Nurses and Midwives work on popularizing ICNP® in Poland [18].

The first studies describing the application of ICNP® in Polish education were conducted and presented by Zarzycka and Górajek-Jóźwik [19] in 2004. Despite the absence of details describing the actual scope of applying nursing taxonomies, the studies are a major contribution in the description of the existing realities of teaching Polish nurses. The aspects of implementing the recommendations of the ICNP® Council and the Regulation of the Minister of Science and Higher Education of 9 May 2012 concerning the education standards for the faculty of medicine, dentistry, pharmacy, nursing and midwifery [20], as presented by Grabowska [21], are key for presenting the current scopes of activity of selected Polish universities that provide degrees in nursing. The analysis presented by the author concerns the scope and quality of ICNP® application in teaching the basics of nursing at 23 Polish higher education institutions. None of the respondents (univer-

sity representatives) declared a high level of satisfaction with the achieved educational goals and results regarding ICNP®, whereas the majority of the respondents indicated the need for further courses/workshops for teachers [21]. A satisfactory evaluation of the level of satisfaction and preparation for working with ICNP® after the courses described in this report confirms the need for CPD and delivering current knowledge.

Another interesting detailed elaboration by Grabowska [21] is an original implementation of ICNP® into the education process, based on a 10-year-long experience of the Medical University in Gdańsk. Using various methods and contents of education as well as teaching aids enables students to achieve all educational results included in the education standards for the basic nursing program. Forýs et al. [22] conducted their research among 316 hospital nurses; the research has shown that the nurses understand the need to introduce a standardized classification for nursing practice and they declared that they were prepared for work with computers in this field. At the same time, they indicated that they were not sufficiently prepared to administer patient documentation in accordance with ICNP®. It has also been shown that their educational level and participation in postgraduate courses are statistically significantly correlated with their general knowledge of ICNP®.

In other research conducted in 5 Polish hospitals, about three-quarters of the nurses who answered the question: "How important is teaching nurses for a successful implementation of electronic documentation" said that it was either important (65.4%) or very important (17.7%) [18]. The effectiveness of applying new forms of education is confirmed by a study conducted via the Moodle platform by Universidade Federal de Alfenas in Brazil in 2014. Research participants included nursing students and nurses. Initially, they had reservations about using ICNP® because they had had contact with other classifications during their studies: the North American Nursing Diagnosis

Association (NANDA), the Nursing Outcomes Classification (NOC) and the Nursing Interventions Classification (NIC). After completing the course, 70.6% of the respondents qualified their level of ICNP® knowledge as high and the classification itself was recognized as a tool for creating databases that meet educational and clinical needs, ensure a continuity of patient care and simplify work organization [23].

The experiences of the scientists from the Federal University of Paraíba in Brazil confirm the need for further continuation and developments of education in the scope of practical applications of ICNP® terminology, and for scientific research at the postgraduate level of nursing education. The ICNP® Research and Development Centre accredited in 2007 gave an opportunity to implement these tasks [24]. At the European level, it is difficult to disregard the contribution of the scientists and teachers of Sapienza University of Rome, under the direction of Julita Sansoni. Considering also the critical aspects of the development of the nursing classification, the researchers emphasize the significance of ICNP® as a reliable documentation of nursing practice, and a base for key economic and management analyses that give an opportunity for the professional development of nursing [25].

CONCLUSIONS

Effective pre- and postgraduate education prepares nurses for working with ICNP® terminology although further popularization of the classification is necessary. It is also advisable to develop IT tools supporting the education process of students and graduates. There are some obvious difficulties with the practical implementation of ICNP® into clinical practice.

Policy implications

The International Classification for Nursing Practice as an international standard of nursing terminology is an integral part of the global healthcare information infra-

structure, health practice and policy, which aim at improving healthcare in Europe as well as in the whole world. Strengthening education in terms of developing digital competences provides a response to the eHealth strategy for 2018–2020, introduced by the Ministry of Health in 2017, and a government program introduced by the Ministry of Science and Higher Education, which is to replace the curriculum of courses ordered for 2014–2020.

Using interoperable dictionaries which can be the basis of the information system as well as scientific research leading to clinical decisions and the development of nursing are important for shaping digital competences. Therefore, teaching ICNP®, which helps nurses use reference terminology, results in a high level of mutual understanding even between groups working in extremely different conditions and cultures. It also increases nurses' knowledge in terms of the relationship between nursing diagnosis, the interventions undertaken in order to solve problems, and their results – the effects of nursing work. Among the arguments in favor of implementing the classification are: the improvement of the quality of internal nursing communication, the comparison of data between various institutions, populations, geographical areas, as well as documenting and predicting future trends in caring for patients and allocating resources so that they meet patients' needs. As mentioned before, ICNP® can stimulate scientific research among Polish nurses and it can become an important factor affecting health policies at different levels, including knowledge resources in this significant area of care.

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