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Derleme Makalesi– Review Paper

ELECTRONIC NURSING PROCESS PROGRAM IN NURSING CARE PLANNING: A SYSTEMATIC REVIEW

HEMŞİRELİK BAKIMINI PLANLAMADA ELEKTRONİK HEMŞİRELİK SÜRECİ PROGRAMI: SİSTEMATİK DERLEME

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Özet

Sağlık bakım alanlarında hemşirelik sürecinin daha etkin biçimde kullanılabilmesinin önündeki sorunların giderilmesinde teknolojik yaklaşımlar kullanılmaktadır. Hemşirelik sürecinin elektronik ortamda hazırlanması bu teknolojik yaklaşımlar arasında yer almaktadır. Bu çalışmada, hemşirelik bakımının planlanmasında elektronik hemşirelik sürecinin etkisini ortaya koyan çalışmaların sistematik olarak incelenmesi ve mesleki literatüre katkı sağlanması amaçlanmıştır. Çalışmada ‘’Web based Nursing Process’’, ‘’nursing process’’, “electronic nursing process”, ‘’nursing documentation system’’, ‘’mobile application for nursing process’’ anahtar kelimeleri ve bunların kombinasyonları kullanılarak 2005-2020 yılları arasında yapılmış çalışmalar taranmıştır. Literatür taraması için Pubmed, Cochrane, Scopus ve Ovıd veri tabanları kullanılmıştır Derleme kapsamına alınan 8 çalışmadan 4’ünde hemşirelik öğrencilerinin 4’nde ise hemşirelerin elektronik hemşirelik süreci doğrultusunda bakım planı hazırlamaları istenmiştir. Sonuçlar, elektronik hemşirelik süreci programının öğrencilerin ve hemşirelerin bakım planı hazırlama becerilerini ve yeterliliğini arttırdığını ve klinik uygulamada stres ve anksiyete düzeylerini azalttığını göstermektedir. Hemşirelerin elektronik hemşirelik süreci programıyla ilgili genelde olumlu geri bildirimlerinin olduğu görülmektedir. Elektronik hemşirelik süreci programının, hem katılımcıların bilgi ve beceri performanslarını iyileştirmede hem de hemşirelik bakımını planlamada yeterliliği artırmada etkilidir. Ayrıca katılımcıların sistemden memnuniyetlerinin yüksek olduğu görülmektedir. Daha fazla karşılaştırılmalı deneysel çalışmalar önerilmektedir.

Anahtar Kelimeler: Hemşirelik süreci, elektronik hemşirelik süreci, hemşirelik dökümantasyon sistemi

Abstract

Technological approaches are used to eliminate problems that prevent the nursing process to be used more effectively in healthcare areas. Preparing the nursing process on electronic media is among these technological approaches. This study aimed to provide a systematic review on studies that reveal the effect of the electronic nursing process on nursing care planning and contribute to the relevant literature. Studies conducted between 2005 and 2020 were reviewed using the following keywords and their combinations; “web-based nursing process,” “nursing process,” “electronic nursing process,” “nursing documentation system,” and “mobile application for nursing process.” The PubMed, Cochrane, Scopus and Ovid databases were used for the literature review. In four of eight studies included in this review, nursing students were asked to prepare the care plan in line with the electronic nursing process while nurses were asked to do the same thing in the remaining four studies. The results show that the electronic nursing process program may increase the students’ and nurses’ ability and competence to prepare the care plan and reduce their stress and anxiety levels in clinic work practices. It is seen that nurses mostly have positive feedbacks about the electronic nursing process program. The electronic nursing process program is effective both in improving the participants’ knowledge and skill performances and increasing their competence in planning nursing care. Additionally, the participants are highly satisfied with the system. An electronic nursing process program has positive contributions to the quality of nursing care. It was seen that students who used electronically supported practice had better NP preparation skills in comparison to those who used conventional practices.

Keywords: Nursing process, electronic nursing process, nursing documentation system.

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1. INTRODUCTION

Care, which forms the basis of nursing, adopts a systematic approach to ensure that the healthcare needs of a patient are met, and they receive the best care for these needs. This systematic approach is the nursing process (NP) (Bozkurt et al., 2017, pp.45-48; Çiçek and Özdemir, 2016, pp.4-11). Documentation of NP is an important part of clinical documentation. Documentation is important for effectively communicating among health staff and the quality of care (Mahler et al., 2007, pp.274-282). In previous years, NP has been documented in a paper-based manner. However, it was determined that nurses often encounter problems in data collection, diagnosis determination and evaluation processes while preparing NP(Andsoy et al., 2013, pp.1-7; Mahmoud and Bayoumy, 2014, pp.300-315; Zaybak et al., 2019, pp.271-276).

Nursing care plans and patient records have started to be transferred to the computer environment as a result of development of technology in recent years (Rouleau et al., 2017, pp.122). The time spent on writing and the burden of stationery have decreased with the use of computers, and the time spent on patients has increased. Nursing care plans have been aimed to be standardized with electronic systems (Bernhart-Just et al., 2010, pp.345-352). Such a system provides a large database by enabling patient records to be recorded regularly. These records are also regarded as legal documents to protect the nurse (Carrington and Tiase, 2013, pp.136-143; Dubois et al., 2013, pp.7).

The knowledge and skills that nurses should have to use the nursing process are acquired in nursing education (Can and Erol, 2012, pp.12-19). However, studies have reported that students, who received NP training with the conventional method and who prepared NP, encountered problems in their knowledge and practices related to the care plan (Can and Erol, 2012, pp.12-19; Keski and Karadağ, 2010, pp.41-52).

Lately, web-based teaching methods have been used in teaching NP. Evident changes in medical and healthcare practices have caused more use of e-learning methods in nursing education (Monteiro, 2016, pp. 19-27). Studies have reported that web-based teaching increases students' performances and decreases stress (Chan et al., 2016, pp.31-40; Edeer et al., 2019, pp.541-547; Öztürk et al., 2014, pp.79-87). Students prepared better care plans on electronic media and stated positive opinions (Basit and Korkmaz, 2020, pp.4-19; S. Y. Kim et al., 2016, pp.396-407; Zaybak et al., 2019, pp. 271-276). Studies conducted with nurses have also found that nurses gave positive feedbacks about preparing care plans on electronic media (Bernhart-Just et al., 2010, pp.345-352; H. Kim, 2005, pp.979-990). This study aimed to provide a systematic review on studies that reveal the effect of NP prepared on electronic media on nursing care planning and contribute to the relevant literature.

2. METHOD

2.1. Design

An extensive literature review was conducted, according to the guidelines proposed in the PRISMA statement. The PRISMA Statement was published in 2009. It consists of a checklist and a flow diagram for transparent reporting of systematic reviews and meta-analyses (Moher et al., 2009, pp.873-880). The studies included in this study were examined by each researcher. There was no disagreement between the researchers. The study protocol was recorded on PROSPERO (registration number: CRD42020215968).

2.2. Inclusion Criteria

Studies on electronic nursing processes,

Studies conducted between 2005 and 2020,

Studies whose full texts were available.

2.3. Exclusion Criteria

Systematic reviews, case reports, editorial letters and studies that were not compatible with the objective.

2.4. Data Collection

The literature review was conducted between June and July 2020. The literature review was carried out on the PubMed, Cochrane, Scopus and OVID databases. Studies conducted between 2005 and 2020 were reviewed using the following keywords and their combinations; "web-based nursing process," "nursing process," "electronic nursing process," "nursing documentation system," and "mobile application for nursing process." The study used the EndNote X9 program to eliminate duplications. With the reviews conducted using the keywords, 21981 studies were reached. Among these studies, 1106 were excluded due to duplication. 20413 studies were also excluded since their full texts were not available. Of the remaining studies, 454 reviews and reports were not compatible with the objective of the study. After the evaluation of the inclusion and exclusion criteria, eight studies that were compatible with the objective of the systematic review were reached (Figure 1).

2.5. Study Selection and Data Exclusion

Study headings obtained with the review were evaluated by one researcher, and a sample of excluded headings was checked by the second reviewer. Potentially relevant full texts were evaluated by both researchers, and any kind of contradiction was resolved by discussion.

2.6. Quality Evaluation

Methodological quality evaluation of the studies included in this study was carried out by two independent researchers according to the critical appraisal checklists of the Joanna Briggs Institute (JBI) based on the study type. For each item in the JBI checklists, the answer "Yes" is regarded as one point, while "No," "Unspecified" and "Not Applicable" are regarded as zero points. The score on the Critical Appraisal "Checklist for Experimental and Quasi-Experimental Studies" varies between 0 and 9, while it is between 0 and 13 points in the Critical Appraisal "Checklist for Randomized Controlled Studies." High total scores indicate that the methodological quality of the study is high. The randomized controlled studies by Bruylands et al. (2013, pp.163-170), Lee and Noh (2016, pp.35-42) and Basit and Korkmaz (2020, pp.4-19) had 11 points, while the quasi-experimental studies by Zaybak et al. (2019, pp.271-276) had 8

points and Kim (2005, pp.979-990) and Mahler et al. (2007, pp.274-282) had 6 points, Kim (2016, pp.396-407) had 8 points, and the prevalence study by Bernhart et al. (2010, pp.345-352) had 6 points.

3. RESULTS

Nursing students in four of the eight studies and nurses in the remaining four studies were asked to prepare the care plan in line with the electronic nursing process (ENP). The abstracts and analyses of the studies are presented in Table 1 under the headings of study, subject, design, intervention and comparison. The studies conducted with students are explained in Table 2 under the headings of study, nursing process implementation skills, knowledge, satisfaction, self-efficacy, participants opinions, and stress and anxiety. The studies conducted with nurses are explained in Table 3 under the headings of study, outcome indicator scores, nursing diagnosis and participant opinions.

Kim (2005, pp.979-990) aimed to determine the nursing diagnoses, outcomes and interventions of patients by developing and implementing a NANDA, NOC and NIC (NNN) linked ENP program for inpatients at an orthopedic surgery clinic. 35 diagnoses (28 actual and 7 risk diagnoses) out of 58 nursing diagnoses appeared on the NANDA list. The most common nursing diagnoses were acute pain (28%), physical mobility distortion (15.6%), abasia (8.7%), chronic pain (5.5%) and disuse disorder (5.0%). This program helped nurses' NP practices be more effective. Additionally, nurses had significantly higher outcome indicator scores after the implementation of nursing interventions (H. Kim, 2005, pp. 979-990).

Mahler et al. (2007, pp.274-282) aimed to evaluate the effectiveness of an ENP documentation system software. The study was carried out on four services and focused on care planning on 2000 cases for 18 months. The pretest was conducted for two months before the introduction of the software. Three months after the introduction of the software, the initial test was carried out, and the second test was conducted after the initial test. After the implementation of the system, a significant increase of documented problems, outcomes and planned interventions was stated in all four wards at the second measurement ($p=0.000$). The number of the executed interventions documented also increased significantly in three of the four wards ($p\leq0.004$), thus leading to more transparency of the nursing care delivered (Mahler et al., 2007, pp.274-282).

Bernhart et al. (2010, pp.345-352) aimed to define a frame model for integration of NP to a clinical information system. Their study examined the effect of using NANDA, NIC and NOC terminologies on electronic media. After entering patient information into the system, the system automatically extracted nursing diagnoses. After the nurse determined the diagnoses, it was automatically seen in the NOC system. When the nurse accessed each NOC, NICs that were suitable for the NOC were displayed. Moreover, the system provided various scales and measurement methods for the assessment of patients. Nurses stated that the system decreased paperwork and increased the effectiveness of NP documentation by providing a common language in nursing documentation with the use of standardized concepts in comparison to paper-based documentation. Nevertheless, nurses made criticisms that the electronic system would cause confusion because it was too detailed. Nurses also suggested that there should be

the option to add free text information at some points in the system, and in-service training should be provided to use this system (Bernhart-Just et al., 2010, pp.345-352).

Bruylands et al. (2013, pp.163-170) examined the effect of using an electronic documentation and training program on the quality of nursing care. The Guided Clinical Reasoning (GCR) training program was implemented. The study included three groups. The evaluation was made at three measurement points and was rated using the "Quality of Nursing Diagnoses, Interventions and Outcomes" (Q-DIO). The GCR program had a positive effect on the quality of NP when applied for one year. The researchers also stated that they were unable to validate the positive and permanent effect of this documentation on the quality of care although an electronic documentation system was used without GCR. The electronic documentation system could help optimizing NP, but it was lacking in critical thinking and guided clinical reasoning (Bruylands et al., 2013, pp.163-170).

Lee and Noh (2016, pp.35-42) examined the effect of an ENP system on the level of stress and anxiety experienced by nursing students during clinical practice. Students were divided into the experiment and control groups. A pretest was conducted on both groups. The experiment group received a 60-minute-long education program about NIC, NOC and NANDA after the pretest, and they had the opportunity to practice on the ENP system for 20 minutes. After this practice, the experiment and control groups were applied the posttest at the end of the second and fourth weeks. The experiment group had significantly lower levels of stress and anxiety at the end of the second and fourth weeks ($p < .00$). However, in the control group, this difference was only found at the fourth week (Lee and Noh, 2016, pp.35-42).

Kim et al. (2016, pp.396-407) aimed to determine the effectiveness of an ENP system on the ability to prepare NP and satisfaction. Nursing students were first asked to use a paper-based documentation system. Later, they were enabled to use the ENP system. The students were asked to prepare NP using ENP in line with previously developed scenarios. The students' recordability, ease of learning, system convenience and satisfaction levels related to the ENP system were measured. Third-year students' ability to practice NP increased from 2.1 to 3.15 after they used the ENP system. Senior students' ability to practice NP increased from 2.93 to 2.98 after they used the ENP system. The ENP system caused a significant increase in the ability to practice NP. The students' mean satisfaction score was found as 2.78±0.81 (min 1- max 4.31). The students stated that being able to see nursing diagnoses and interventions needed using keywords on the system and choosing the statements that they needed while preparing NP from the list were the strengths of the system. Additionally, the students suggested "adding evaluation statements," "improving free text input and output methods" and "improving system flow" (S. Y. Kim et al., 2016, pp.396-407).

Zaybak et al. (2019, pp.271-276) examined the effect of web-based education on nursing students' learning about NP. Nursing diagnoses and the descriptive characteristics and etiological factors of these diagnoses were transferred to the computer environment. A list of nursing interventions was also formed. The conventional method was applied in the control group. The students in the intervention group were also enabled to benefit from the NP practice program created on electronic media while preparing NP. The participants in the intervention group were asked to prepare a care plan during clinical practice as in the control group. There

was no significant difference between the mean knowledge scores of the groups while there was a significant difference between the groups in terms of data collection ($x2=14.486$, $p<0.05$) and determining nursing diagnoses ($x2=23.647$, $p<0.05$) (Zaybak et al. 2019, pp.271-276).

Basit and Kormaz (2020, pp.4-19) examined the effect of NP teaching performed on electronic media on senior nursing students' ability to prepare care plans. The experiment and control groups were given case analysis as the pretest. Students in the experiment group watched theoretical videos and various case analyses related to NP through a distance learning system. In the evaluation of the study, all students prepared a care plan for the posttest case (the same case was used for the pre- and posttests). All students filled the Self-Efficacy Form (posttest) on the same day. As a result, the experiment group had significantly higher data collection ($t=-3.838$.$p=.00$), planning ($t=-3.839$; $p=.00$) and total ($t=-2.246$; $p=.03$) posttest scores in comparison to the pretest. The intervention group also had significantly higher planning ($t=-2.045$; $p = .04$) and total ($t=-2.334$; $p=.02$) posttest scores in comparison to the control group. The experiment group considered themselves sufficient in terms of preparing a care plan. More than half of the students in both groups were able to determine the diagnoses of acute pain, ineffective airway hygiene, lack of self-care in bathing, risk of falling and risk of infection (Basit and Korkmaz, 2020, pp.4-19).

4. DISCUSSION

The nursing process is a process that involves the data collection, diagnosis, planning, practice and evaluation stages and enables providing nursing care systematically. The nursing process is intended to provide qualified and individualized care services (Audrey et al., 2016, pp.143-295; Joseph, 2017, pp.318-322; Nettina, 2015, pp.753-758). Therefore, teaching NP is of great importance. Conventional teaching methods and case analyses are used in teaching NP (Basit and Korkmaz, 2020, pp.4-19). However, students and nurses accept the importance of NP but report that they encounter various problems at different stages of NP in the literature (Banamwana and Smith, 2015, pp.76; Hagos et al.,2014, pp.3-6; Hakverdioğlu Yönt et al., 2014, pp.39-42; Kaya et al., 2010, pp.24-33). These problems might be induced by limitations due to NP education. International NP terminologies should be formed, and new methods should be used in nursing education to resolve these problems (Can and Erol, 2012, pp.12-19; Keski and Karadağ, 2010, pp.41-52). One of the new methods in NP education is preparation of an ENP supported with web-based education.

Sufficient knowledge levels of students and their ability to successfully conclude any situation may increase their self-confidence levels (Eraydın and Karagözoğlu, 2017, pp.44-56). If students feel self-sufficient in preparing NP in line with patients' care plans, this may help them increase their self-confidence. Students' self-sufficiency was evaluated in a study (Basit and Korkmaz, 2020, pp. 4-19). A Self-Competence Form that was developed by the researchers in line with the literature was used. The study found that the students in the experiment group felt adequate about all statements except sorting nursing diagnoses according to their importance. This was explained by that the students felt prepared to start the profession since they were senior students.

Preparing a care plan for patients in line with NP is a fundamental component of clinical practice. Nursing students reported that they experienced more stress and anxiety in clinical practice when they were unable to practice NP correctly (Kim et al., 2011, pp.337-345). There is a study that evaluated the effect of practicing NP at clinical practice on students' stress and anxiety (Lee and Noh, 2016, pp.35-42). The study found that the students in the experiment group who used an ENP system had significantly lower levels of stress and anxiety. However, variables such as the effectiveness of the study, the students' levels of satisfaction and competence were not examined in their study. Therefore, it is not possible to evaluate the effectiveness of the created ENP system in terms of learning.

It is important to get feedback from students to see the superiorities and shortcomings of a system. While some studies examined the level of satisfaction with a system, some other studies reflected students' recommendations about the system. In the study by Zaybak et al. (2019, pp.271-276), students reported that preparing NP on electronic media is more practical and useful. They stated that this was due to the fact that nursing diagnoses were selected from available diagnoses in the system on the electronic media while they were selected from written sources in the conventional method. Kim et al. (2016, pp.396-407) reported that ENP helped their participants create NP records on their own (S. Y. Kim et al., 2016, pp. 396-407). It was also seen that the participants were highly satisfied with the system (S. Y. Kim et al., 2016, pp.396-407; Zaybak et al., 2019, pp.271-276). Evaluating the shortcomings of a system ensures improvement. Only in one study conducted with students, feedback about the shortcomings of a system was received. In the aforementioned study, students suggested free text entry and correction of the system flow (S. Y. Kim et al., 2016, pp. 396-407). More studies should be carried out on this topic.

Considering studies on teaching and preparing NP electronically, it was observed that a common system was not used. Relevant studies also found that ENP has different effects on students. Using different software in ENP programs used in web-based education and their effectiveness are different indicator that there is no common educational process, and differences in education may affect the learning of NP. The number of relevant studies is quite low. Thus, it is important that this number should be increased to reveal the advantages and disadvantages of ENP in education and preparing care plans. Previous studies found that ENP programs supported with web-based education are effective in understanding the stages of the process, they decrease students' levels of anxiety and stress, and students' satisfaction levels are high. However, no data were presented about the continuity and effectiveness of the education provided. Additionally, the studies did not provide information about whether this education was effective alone or it should be used along with conventional education methods. These pieces of information are considered important in terms of forming NP education. Moreover, studies conducted with students have shown the effects of preparing care plans with ENP education on nursing students' critical thinking and academic performance. Future studies may examine the critical thinking, clinical decision-making skill levels and academic performances of students who prepare NP on electronic media.

Development of information systems technology has led to significant improvements in nursing care and the health system. One of these improvements is electronic nursing

documentation which will increase the quality of nursing services. Electronic nursing systems save nurses time and increase the quality of care (Azizi et al., 2012, pp.17-20; Hariyati et al., 2016, pp.136-142; Kelley et al., 2011, pp.154-162). These systems also have advantages such as reducing paper documentation, preventing duplications in documentation and increasing communication among healthcare personnel (Albuquerque et al., 2010, pp.98-103; Guite et al., 2006, pp.55; Haddad and Wickramasinghe, 2015, pp.25-33). Electronic documentation also allows conducting NP on computer-based media. Studies in the literature especially mention that NP is not integrated into documentation and running the process on paper requires time and effort. It is stated that using ENP might solve this problem (Ahmadian et al., 2017, pp.4625; Hariyati et al., 2016, pp.154-162; Klapper et al., 2001, pp.74-77; Ross et al., 2016, pp.146).

This study included four studies about the use of ENP (Bernhart-Just et al., 2010, pp.345-362; Bruylands et al., 2013, pp.163-170; H. Kim, 2005, pp.979-990; Mahler et al., 2007, pp.274-282). An NP computer program connected to NNN was used in some of the studies (Bernhart-Just et al., 2010, pp.345-362; H. Kim, 2005, pp.979-990). It was reported that the connections between nursing diagnoses, outcomes and interventions are useful for nurses and save them time. All four studies reported that there were significant changes in care plans, paperwork decreased, and NP and quality of nursing care increased. It was also stated that NP was standardized with ENP, and the effectiveness of NP documentation was increased by providing a common language. While Bernhart et al. (2010, pp.345-362) stated that ENP improves nurses' ability to prepare the nursing process and critical thinking, Bruylands (2013, pp.163-170) reported that ENP cannot replace critical thinking and clinical decision-making (Bernhart-Just et al., 2010, pp. 345-362; Bruylands et al., 2013, pp. 163-170).

However, the heterogeneity of sampling in the evaluation of ENP records complicates evaluating the effects of ENP. There is also no evidence on the long-term effects of ENP. Therefore, the long-term effects of ENP should be revealed, and studies should be carried out with homogeneous groups.

Additionally, no common software was used for ENP, and there were differences in the numbers of NIC, NOC and NANDA included in the studies. This indicates that NP is not standardized, and thus, different results arise.

5. CONCLUSION

In conclusion, an ENP program has positive contributions to the quality of nursing care. It was found that the computer programs created in the examined studies significantly reduced the paperwork in the system, standardized concepts and provided a common language in records, enabled nursing care to become more transparent, and it was faster and easier to access the information needed on the system. It was observed that electronic practices in NP significantly reduced nursing students' stress and anxiety levels in clinical practice. Moreover, it was revealed that nursing students had high levels of satisfaction in NP practices through the electronic-based system, and that it provided ease of learning. It was seen that students who used electronically supported practice had better NP preparation skills in comparison to those who used conventional practices.

It is considered that an ENP program will confuse nurses due to too much detail and will be regarded as a strange system by nurses who are not familiar with concept terminology. Nurses suggested that they should not be limited to the diagnoses uploaded to the web-based system while making diagnosis in planning patient care, they should be able to add free text information at some points, and the exit methods should be made easily. It was asserted that in-service training should be given to users before web-based practices are implemented in the clinical environment.

More experimental studies that can be compared to paper-based NP should be conducted to examine the effectiveness of the NP prepared on electronic media. Web technology should be integrated into the conventional education in the nursing curriculum. Nurses should be provided with education about preparing NP on electronic media. Studies that obtain nurses' and students' opinions on ENP systems should be carried out.

6. REFERENCES

Ahmadian, L., Dorosti, N., Khajouei, R., and Gohari, S. H. (2017). Challenges of using Hospital Information Systems by nurses: comparing academic and non-academic hospitals. Electronic physician, 9(6), 4625.

Albuquerque, J. G., Lira, A. L. B. d. C., and Lopes, M. V. d. O. (2010). Fatores preditivos de diagnósticos de enfermagem em pacientes submetidos ao transplante renal. Revista Brasileira de Enfermagem, 63(1), 98-103.

Andsoy, I. I., Güngör, T., Dikmen, Y., and Nabel, E. B. (2013). Difficulties experienced by nurses in using the care plan. Contemporary Medicine Journal, 3(2), 1-7.

Audrey, T., Snyder, S., Skiles, L., Spencer, H., and Torphy, M. D. (2016). KozierandErb's Fundamentals of Nursing, Concepts, Process, and Practice New Jersey: Julie Levin Alexander, 143-295.

Azizi, V., Lotfi, M., and Jalali, F. (2012). Designing of electronic health record software in the nursing and midwifery faculty of Tabriz. Research and Development in Medical Education, 1(1), 17-20.

Banamwana, G., and Smith, A. (2015). Evaluation of the use and value of nursing care plans in nursing practice at a referral hospital, Kigali, Rwanda: Nurses' perspectives. Rwanda Journal, 2(2), 76.

Basit, G., and Korkmaz, F. (2020). The Effect of Web-Based Nursing Process Teaching on Senior Nursing Students' Care Planning Skills#. International journal of nursing knowledge, 32(1), 4-19.

Bernhart-Just, A., Lassen, B., and Schwendimann, R. (2010). Representing the nursing process with nursing terminologies in electronic medical record systems: a Swiss approach. CIN: Computers, informatics, nursing, 28(6), 345-352.

Bozkurt, G., Düzkaya, D. S., and Terzi, B. (2017). Implementation of the Nursing Process. Clinical Decision Making Process. İstanbul: Nobel Medicine publishing, 45-48.

Bruylands, M., Paans, W., Hediger, H., and Müller-Staub, M. (2013). Effects on the quality of the nursing care process through an educational program and the use of electronic nursing documentation. International journal of nursing knowledge, 24(3), 163-170.

Can, G., and Erol, O. (2012). Nursing students' perceptions about nursing care plans: A Turkish perspective. International Journal of Nursing Practice, 18(1), 12-19.

Carrington, J. M., and Tiase, V. L. (2013). Nursing informatics year in review. Nursing administration quarterly, 37(2), 136-143.

Chan, A. W.-K., Sit, J. W.-H., Wong, E. M.-L., Lee, D. T.-F., and Fung, O. W.-M. (2016). Case-based web learning versus face-to-face learning: a mixed-method study on university nursing students. Journal of Nursing Research, 24(1), 31-40.

Çiçek, H. S., and Özdemir, L. (2016). Planning Nursing Care Incredibly Easy. Ankara: Nobel Medical Publisher, 4-11.

Dubois, C.-A., D'Amour, D., Pomey, M.-P., Girard, F., and Brault, I. (2013). Conceptualizing performance of nursing care as a prerequisite for better measurement: a systematic and interpretive review. BMC nursing, 12(1), 7.

Edeer, A. D., Vural, F., Damar, H. T., Yasak, K., and Damar, M. (2019). The Effect of Web-Based Preoperative and Postoperative Patient Care Education on Nursing Students: A Randomized Controlled Study. CIN: Computers, informatics, nursing, 37(10), 541-547.

Eraydın, Ş., and Karagözoğlu, Ş. (2017). Investigation of self-compassion, self-confidence and submissive behaviors of nursing students studying in different curriculums. Nurse education today, 54, 44-50.

Guite, J., Lang, M., McCartan, P., and Miller, J. (2006). Nursing admissions process redesigned to leverage EHR. Journal of Healthcare Information Management, 20(2), 55.

Haddad, P., and Wickramasinghe, N. (2015). The use of a nursing informatics system as an exemplar to investigate business value of IT in healthcare. Health and technology, 5(1), 25-33.

Hagos, F., Alemseged, F., Balcha, F., Berhe, S., and Aregay, A. (2014). Application of nursing process and its affecting factors among nurses working in mekelle zone hospitals, Northern Ethiopia. Nursing research and practice, 3-6.

Hakverdioğlu Yönt, G., Korhan, E. A., Erdemir, F., and Müller-Staub, M. (2014). Nursing diagnoses determined by first year students: a vignette study. International journal of nursing knowledge, 25(1), 39-42.

Hariyati, R. T. S., Yani, A., Eryando, T., Hasibuan, Z., and Milanti, A. (2016). The effectiveness and efficiency of nursing care documentation using the SIMPRO model. International journal of nursing knowledge, 27(3), 136-142.

Joseph, J. (2017). The need of nursing care plans in hospitals. Indian J Basic Appl Med Res, 6, 318-322.

Kaya, N., Babadag, K., Kacar, G., and Uygur, E. (2010). Nurses' nursing model/theory, nursing process, and classification systems know and implication status. Maltepe University Journal of Nursing Science and Art, 3(3), 24-33.

Kelley, T. F., Brandon, D. H., and Docherty, S. L. (2011). Electronic nursing documentation as a strategy to improve quality of patient care. Journal of nursing scholarship, 43(2), 154-162.

Keski, Ç., and Karadağ, A. (2010). Nursing of Senior Nursing Students Examination of Knowledge Levels about the Process. HEMAR-G(1), 41-52.

Kim, H. (2005). Development and implementation of computerized nursing program programs for patients in orthopedic surgery. Journal of the Korean Academy of Nursing, 35(6), 979-990.

Kim, I.-S., Jang, Y.-K., Park, S.-H., and Song, S.-H. (2011). Critical thinking disposition, stress of clinical practice and clinical competence of nursing students. The Journal of Korean Academic Society of Nursing Education, 17(3), 337-345.

Kim, S. Y., Lee, I., Kim, S., Kim, K., Park, B., and Noh, Y. G. (2016). An Effect of the Application of Educational Electronic Nursing Record System for Nursing Students. The Journal of Korean Academic Society of Nursing Education, 22(3), 396-407.

Klapper, B., Schaeffer, D., Lecher, S., and Koch, U. (2001). Communication and cooperation between physicians, nurses and patients. Pflege aktuell, 55(2), 74-77.

Lee, E., and Noh, H. K. (2016). The Effects of a Web-Based Nursing Process Documentation Program on Stress and Anxiety of Nursing Students in S outh K orea. International journal of nursing knowledge, 27(1), 35-42.

Mahler, C., Ammenwerth, E., Wagner, A., Tautz, A., Happek, T., Hoppe, B., and Eichstädter, R. (2007). Effects of a computer-based nursing documentation system on the quality of nursing documentation. Journal of Medical Systems, 31(4), 274-282.

Mahmoud, M. H., and Bayoumy, H. M. (2014). Barriers and facilitators for execution of nursing process from nurses' perspective. International Journal of Advanced Research, 2(2), 300-315.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., and Group, P. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS med, 6(7), 873-880.

Monteiro, A. P. T. d. A. V. (2016). Cyborgs, biotechnologies, and informatics in health care–new paradigms in nursing sciences. Nursing philosophy, 17(1), 19-27.

Nettina, S. (2015). Nursing practice and the nursing process (Vol. 10th ed.): Waltham, MA: Wolters Kluwer Health, 753-758.

Öztürk, D. (2014). The Importance of Using Web Assisted Education in Nursing Education Journal of Ege University Nursing Faculty, 30(2), 79-87.

Ross, J., Stevenson, F., Lau, R., and Murray, E. (2016). Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update). Implementation science, 11(1), 146.

Rouleau, G., Gagnon, M.-P., Côté, J., Payne-Gagnon, J., Hudson, E., and Dubois, C.-A. (2017). Impact of information and communication technologies on nursing care: Results of an overview of systematic reviews. Journal of medical Internet research, 19(4), e122.

Şenyuva, E., and Taşocak, G. (2014). Implementation of web-based distance education in nursing education in Turkey: A sample lesson in patient education. International Journal of Distance Education Technologies (IJDET), 12(3), 1-13.

Zaybak, A., Handan, Ö., and Günay, İ. E. (2019). Analysıs Of Nurses Difficulties In The Nursing Process. Anatolian Journal of Nursing and Health Sciences, 19(4), 271-276.