Research article

Nursing informatics in nursing education

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Abstract

Objective: In this study, it is intended to provide a conceptual framework on the nursing informatics methods used in nursing education. **Method:** Abstracts of articles published in the last five years with the key words "nursing informatics" and "nursing education" in Pub-Med database were screened. 46 out of 213 study abstracts were examined. **Results:** Nursing informatics methods used in nursing education can include the methods used in the nursing profession and those used only for training. Nursing informatics methods can take advantage of various hardware and software tools. Nursing informatics methods used in nursing education may include: The e-learning/ distance learning/ online education for use in course management systems, virtual classrooms, online tutorials. The, podcasts, database using, social software, social media, Second Life (SL), Web quest, problem-based learning integrated nursing informatics, cloud computing, e-health, information technology (IT) applications/ health informatics/ clinical information systems, road-map guided Excel VBA for formal and distance education usage. PDA-assisted simulated clinical experiences, human patient simulation, simulation scenario, electronic health records (EHR)/ electronic health records for nursing education (EHRNE) software program, tele-health applications, personal phones /smart phones, personal digital assistants / personal response systems, incident event reporting system for usage in clinical/laboratory practices. **Conclusion:** Actively using the nursing informatics methods in nursing education is required for aligning. There are many tools which can be used to this end.

Keywords: Nursing, informatics, education.

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1. Introduction

Changes in the health sector in the present world have given quality data documentation, cost effective care and efficiency prominence. Rapid developments in the technology have played a significant role in these changes. In addition, the advancements in the field of information technologies have paved the way for easy and fast access to the correct information and generating, processing and conveying of the information have become easier. As a consequence of these developments, the concepts of health informatics, medicine informatics and nursing informatics have gained even more importance and have become highly controversial topics. There exist different definitions as regards to the nursing informatics:

- Use of information systems/computer technology in all fields of nursing [1].
- It is a field in which how nursing data are obtained, conveyed, stored and managed and transformed into information and knowledge are studied [2].
- Nursing informatics is a specialty which integrates the data, information and knowledge into the concept of "nursing-computer-information" for use in the nursing practices [3].

IMIA-NI, a Special Interest Group on Nursing Informatics of IMIA, has been trying to respond to the needs of nurses in terms of nursing

informatics since 1983. With the acceptance of nursing informatics as a specialty by the American Nurses Association (ANA) in 1992, the studies in the field have gained impetus. Trainings were launched as undergraduate, postgraduate and doctoral programs as well as certification programs and various courses throughout the world.

Since the rate of households having access to internet is 49.1 % in Turkey, it is clearly seen that the half of the community have access to internet [4]. Nursing informatics, too, is new and not common just as the computer use of the public. In Turkey, the works related to the nursing informatics mainly include the electronic records and nursing care guidelines in the healthcare facilities. Commonly, the nursing education program includes a course focused on the basic computer skills at the bachelor's degree. Additionally, the course of "Nursing Informatics" is provided as an elective course in some universities. There are not any masters and doctoral programs in the field of nursing informatics but the master programs in the field of Health Informatics accept the graduates of nursing. Furthermore, distance education or use of informatics in education is limited. In order to improve the use of nursing informatics in education in Turkey, the use of nursing informatics throughout the world should be examined. Thus, the aim of this study is to provide a conceptual framework on the nursing informatics methods used in nursing education.

2. Material and method

This is a descriptive study carried out by screening the articles published in this field between 2009 and 2013 on the basis of the key words of "nursing informatics" and "nursing education" over PubMed in November 2013. With the aim of up-to-date results in the research, the studies conducted in the last 5 years were included in the present study. 213 articles were reached when a literature review was made by using the key words of "nursing informatics" and "nursing education" in the database of PubMed. 167 (irrelevant topic/lack of abstract) out of 213 articles published between 2009 and 2013 were excluded from the sample. 46 studies which had abstracts

constituted the research sample. Reviewing only the abstract texts of the articles and carrying out the review only via PubMed are the limitations of the research.

3. Results and discussion

Nursing informatics methods used in nursing education can include the methods used in the nursing profession and those used only for training. Nursing informatics methods can take advantage of various hardware and software tools. Nursing informatics methods used in nursing education include:

- e-learning/ distance learning/ online education for use in course management systems, virtual classrooms, online tutorials [5-9],
- podcasts, database using, social software, social media, Second Life (SL), Web quest, problem-based learning integrated nursing informatics, Cloud computing, e-health, information technology (IT) applications/ health informatics/ clinical information systems, road-map guided Excel VBA for formal and distance education usage [10-30],
- PDA-assisted simulated clinical experiences, human patient simulation, simulation scenario, electronic health records (EHR)/ electronic health records for nursing education (EHRNE) software program, tele-health applications, personal phones /smart phones, personal digital assistants / personal response systems, incident event reporting system for usage in Clinical/Laboratory Practices [31-50].

E-learning method can be used in the nursing education. Provided that e-learning method is used in nursing, pre-registrations should be taken from the students to determine whether they want to receive support in continuous education/e-learning. This support will enable the students make progress and be equipped with lifelong learning skills for providing reliable evidence-based care. It takes time to adapt the existing education methods and teaching strategies to e-learning for skill development [9]. In the study where problem-based learning and e-learning were used in the

clinical practices, nursing skills, learning outputs and peer support increased in the nursing students. Important outcomes of e-learning included peer support, feedback and guidance from the instructor [6].

Different methods can be used in teaching the nursing informatics. Road-map guided Excel VBA is an effective method that can teach the nursing informatics in a relative short time of 8 days [18]. A study on the use of Podcasts in the nursing education reported the need for further research. No difference was found between the groups where podcasts were used and were not used in terms of the cognitive scores and student relationships [28].

Social media may help nursing students in the nursing faculties better understand the topics and/or acquire professional communication skills and improve their skills in health policies, patient confidentiality and ethics and writing. Although there are some barriers in the use of social media in the nursing education, it can be integrated into the faculty education by using the appropriate pedagogical method [29].

In the study where a webquest assessment was made by the undergraduate students on the "Management of physical resources in nursing", it was found out that the webquest contributed to learning [24]. Information technology (IT) applications provide systematic approach and guidance. There is need for further research on the benefits of their use in the psychiatry nursing [19].

In a qualitative study, Electronic Health Record for Nursing Education (EHRNE), which is a program developed for simulation laboratory in nursing education, was used. In the interviews, the functionality, data management, timing and complexity and accessibility of EHRNE application were defined. With the integration of EHRNE program into the nursing curriculum, students have developed awareness for electronic documentation and learning in simulation laboratory has become easier [50]. Effectiveness of a program developed for permanent urine catheterization was assessed and it was reported to be effective in the success of the operation [46]. Additionally, it was reported that a virtual education program

prepared for teaching the neonatal resuscitation to the nurses facilitated learning on the part of the students [44].

Smart phones can be used in nursing education, as well [48]. In a research conducted on the use of smart phones in nursing education, phones included diagnosis, pharmacology and laboratory information in addition to an encyclopaedia and MEDLINE database. The research reported positive results such as cost and technological comfort level along with barriers for their use [49].

Use of electronic health records which have become increasingly popular should be taught to the nursing students [31, 32, 36, 37, 41, 45]. Using the same system as EHR system used in the clinics in nursing education facilitates adaptation [39]. In the clinical practices, one of the most important problems of the students is the reports which take a long time to prepare. Incident event reporting system is a system enabling the students to report the situations they encounter in the clinics and takes less time in comparison to traditional written documents [33]. Health informatics can be used as an interdisciplinary program [38].

Conclusion

Advancing technology requires active use of nursing informatics methods in nursing education for increasing the compliance with the science and health care systems. There exist many tools to be used in this respect. In nursing education, the use of informatics should be taught. Since the use of systems similar to those used in the clinics will increase the level of success, such methods should be preferred.

Informatics should be taught for use in the professional life in nursing education. Additionally, it is possible to make use of informatics to increase the level of success in nursing education. The use of distance education can be extended in the theoretical part of nursing education. Using informatics tools to reach trainers who act as clinic guides will increase the success of the practice. Use of simulation laboratory and various scenarios also enhance the application skill.

Numerous informatics tools have been developed for professional use in order to promote the development of knowledge/skills in nursing education. These tools can be enriched with various systems and programs. Lastly, the use of informatics should be extended to all the institutions in order to avoid of a gap in nursing education among the institutions.

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