

THE VIEWS OF A GROUP OF NURSING STUDENTS ON NURSING INFORMATICS AND COMPUTER USE*

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Abstract:

This research was planned to determine the views of the nursing students about the nursing informatics and the use of computers. The universe of the study was formed by 580 students who were studying in the Nursing Department of Adnan Menderes University Aydın School of Health in the 2013-2014 academic year. By using an interval of 95% confidence known universe interval sampling method, it was projected to reach 232 students. Data were collected with the "questionnaire" which was prepared according to the literature by researchers. The questionnaire consisted of 22 questions about the descriptive characteristics of the students, their computer usage status as some questions were taken from the questions used by Turhan and Kose in their studies, and the views of the students about nursing informatics. Data were analysed by using SPSS 15.0, and percentage tests, mean and chi-square test were used in the analysis of the data. The percentage of the first grade students finding the use of technology unnecessary in nursing practice was found to be higher compared to the students in other grades in a statistically significant way. The percentage of the fourth grade students finding the use of computers in the health care system as adequate was found to be higher compared to the students in other grades in a statistically significant way

Key-words: *Nursing students, nursing informatics, computer use*

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Introduction

Nowadays, information and communication technologies have developed rapidly and this growth has led to changes in institutions, which is an integral part of social life. With this change, the institutions in the health sector had to make use of information technology for the evaluation of data, to expand its service area, increasing productivity, reducing costs, and improve the health care services and make better use of the resources [6, 13].

Nursing informatics technologies with unique knowledge and its use in the field of nursing practice emerged the concept of nursing informatics. Graves and Corcoran (1989) defined the nursing informatics as a combination of nursing science, computer science and information science to assist processing and management of nursing knowledge, nursing information and nursing data on the purpose of supporting nursing practice and providing nursing care [11]. According to Turhan and Kose (2010),

Turley says nursing informatics is the intersection of cognitive, computer science and information science in nursing. The International Medical and Nursing Informatics Association, defines the nursing informatics as; "The integration of communication technology, information processes, information management and nursing information to nursing to support the health " [15].

It was stated that nursing informatics; which was recognized as a new area of expertise in 1992 by the American Nurses Association (ANA), would provide decision and support system to nurses for evaluation and development processes of tools, applications, steps and plans in patient care and other nursing applications by providing data management possibility. At the same time nursing informatics is conducted as a certification program by the American Nurses Credentialing Centre [3, 4, 8]. Nursing informatics supports the communication of nurses with other health disciplines, patient care coordination and management, and the management of information

relating to patient care and the nursing process [2, 5, 6, 14].

Although nursing education is a health discipline which consists of theory and practice, it is also a developing profession, open to change and it has to continue its development. Nursing students should capture the innovations in the era and international professional standards, accomplish their development through technology and they are required to achieve these requirements in an appropriate manner in accordance with their education policies [1]. For this purpose, as a first step, determination of the vision and thinking about the use of computers in nursing education and practice, and making the necessary adjustments in line with the data obtained is extremely important [10, 12]. It has been reported that using computers has some disadvantages such as reducing communication with healthy/sick individuals, causing violation of the privacy of individuals and nurses may also have the inability to use computers due to the lack of knowledge and skills. Koc (2006) in his study on students' use of computers reported that students thought this would violate patient privacy in patient care, and also reported that students thought that you need to know how the computer program is written to use the computer [12]. Also in the same study, 79.7% of the students stated that using computers did not take a lot of time of the nurses and reduced their work load; 84.4% of them stated that individuals have more spare time with the help of the computers, and 82.8% of them stated that using computers reduced the repetition of work [12]. In study made by Turhan and Kose (2010), participants were undecided about the violation of privacy issue. They also noted that using computers provided the opportunity to spend more time in communicating with the patient [15].

Today, for professional health care, nurses who can decide by using the evidence-based information technology are needed. Newly educated nurses are expected to have knowledge relating to information technology and the necessary skills and the critical thinking skills, and integrate the nursing and informatics competencies to these characteristics [15]. Nurses who are an important part of the health sector should implement the science of nursing informatics taking part in this change and development in an effective way. Based on the

requirements of this section, this research was planned to determine the views of the nursing students about the nursing informatics and the use of computers.

Material and Method

The universe of the study was formed by 580 students who were studying in the Nursing Department of Adnan Menderes University School of Health in the 2013-2014 academic year. By using an interval of 95% confidence known universe interval sampling method, it was projected to reach 232 students. However, missing and misfiled out questionnaires caused a 0.1 incorrect pattern effect and 253 students were reached. Required permission from the Institutions and verbal consent from the students were taken prior to the study. Data were collected with the "questionnaire" which was prepared according to the literature by researchers. The questionnaire consisted of 22 questions about the descriptive characteristics of the students, their computer usage status as some questions were taken from the questions used by Turhan and Kose (2010) in their studies, and the views of the students about nursing informatics. Data were analysed by using SPSS 15.0, and percentage tests, mean and chi-square test were used in the analysis of the data. The study is limited to the institutions where the study was made and the questionnaire used in the study [15].

Independent variables of the study were grade and the average daily use of computers, the dependent variables were the opinions of the students regarding the use of computers in nursing care, the contribution of the grade level of the students and their daily use of computers to the autonomy of nursing, the use of technology in nursing practice, the views of the students about the adequacy of the use of computers in the health care system and the necessity use of informatics technology in nursing practice, average daily time they spent using the internet days, and their views on the computers making it easier for the creation of nursing standards.

Results

69.2% of the students were female, 30.8% were male, and their mean age was 20.81 ± 1.72 . 39.5% of the students were first grade students, 66.4% of them had a personal computer, and 59.7% had Internet access.

Computer Use in Nursing Care				TOTAL
GRADE	Necessary	I have no idea	Unnecessary	
	1. st Grade	4 (4.0%)	16 (16.0%)	80 (80.0%)
2. nd Grade	3 (7.3%)	13 (31.7%)	25 (61.0%)	41 (100%)
3. rd Grade	8 (16.3%)	12 (24.5%)	29 (59.2%)	49 (100%)
4. th Grade	6 (9.5%)	13 (20.6%)	44 (69.8%)	63 (100%)
TOTAL	21 (8.3%)	54 (21.3%)	178 (70.4%)	253 (100%)

Table 1. Comparison of Grade Levels of Students with Their Views Regarding Computer Use in Nursing Care

When the grade levels and the views of the students regarding the use of computers in nursing care were compared; the percentage of the first grade students finding the use of computers

unnecessary in nursing care was found to be higher compared to the students in other grades in a statistically significant way ($\chi^2=12.542$, $p=0.05$).

Computer Use on Nursing Autonomy				TOTAL
GRADE	Effective	I have no idea	Ineffective	
	1. st Grade	34 (34.0%)	38 (38.0%)	28 (28.0%)
2. nd Grade	15 (36.6%)	20 (48.8%)	6 (14.6%)	41 (100%)
3. rd Grade	7 (14.3%)	19 (38.8%)	23 (46.9%)	49 (100%)
4. th Grade	11 (17.5%)	19 (30.2%)	33(52.4%)	63 (100%)
TOTAL	67 (26.5%)	96 (37.9%)	90 (35.6%)	253 (100%)

Table 2. Comparison of Grade Levels of Students with Their Views about the Impact of Computer Use on Nursing Autonomy

When the grade levels and the views of the students about the impact of computer use on nursing autonomy were compared; the percentage of the fourth grade students finding the use of

computers ineffective on nursing autonomy was found to be higher compared to the students in other grades in a statistically significant way ($\chi^2=24.135$, $p=0.000$).

Computer Use in Nursing Practice				TOTAL
GRADE	Necessary	I have no idea	Unnecessary	
	1. st Grade	11 (11.0%)	15 (15.0%)	74 (74.0%)
2. nd Grade	11 (26.8%)	13 (31.7%)	17 (41.5%)	41 (100%)
3. rd Grade	10 (20.4%)	10 (20.4%)	29 (59.2%)	49 (100%)
4. th Grade	11 (17.5%)	7 (11.1%)	45 (71.4%)	63 (100%)
TOTAL	11 (11.0%)	15 (15.0%)	74 (74.0%)	100 (100%)

Table 3. Comparison of Grade Levels of Students with Their Views about Use of Technology in Nursing Practice.

When the grade levels and the views of the students regarding the use of technology in nursing practice were compared; the percentage of the first grade students finding the use of

technology unnecessary in nursing practice was found to be higher compared to the students in other grades in a statistically significant way ($\chi^2=16.839$, $p=0.01$).

GRADE	Computer Use in Health Care System			TOTAL
	Adequate	I have no idea	Inadequate	
1. st Grade	35 (35.0%)	39 (39.0%)	26 (26.0%)	100 (% 100)
2. nd Grade	8 (19.5%)	18 (43.9%)	15 (36.6%)	41 (% 100)
3. rd Grade	20 (40.8%)	20 (40.8%)	9 (18.4%)	49 (% 100)
4. th Grade	32 (50.8%)	20 (31.7%)	11 (17.5%)	63 (% 100)
TOTAL	95 (37.5%)	97 (38.3%)	61 (24.1%)	253 (% 100)

Table 4. Comparison of Grade Levels of Students with Their Views about the Adequacy of the Use of Computers in the Health Care System

When grade levels and the views of the students on the adequacy of the use of computers in the health care system were compared; the percentage of the fourth grade students finding the

use of computers in the health care system as adequate was found to be higher compared to the students in other grades in a statistically significant way ($\chi^2=12.563$, $p=0.05$).

GRADE	Use of Informatics Technology in Nursing Practice			TOTAL
	Necessary	I have no idea	Unnecessary	
1. st Grade	7 (7.0%)	13 (13.0%)	80 (80.0%)	100 (100%)
2. nd Grade	3 (7.3%)	15 (36.6%)	23 (56.1%)	41 (100%)
3. rd Grade	4 (8.2%)	11 (22.4%)	34 (69.4%)	49 (100%)
4. th Grade	3 (4.8%)	20 (31.7%)	40 (63.5%)	63 (100%)
TOTAL	17(6.7%)	59 (23.3%)	177 (70.0%)	253 (100%)

Table 5. Comparison of Grade Levels of Students with Their Views about The Necessity of The Use of Informatics Technology in Nursing Practice

When the grade levels and the views of the students on the necessity of the use of informatics technology in nursing practice were compared; the percentage of the first grade students finding the

use of informatics technology unnecessary in nursing practice was found to be higher compared to the students in other grades in a statistically significant way ($\chi^2=13.086$, $p=0.04$).

Average daily time spent using the internet	Effect of Computer on Creating Nursing Practice Standards			TOTAL
	Eases	I have no idea	Does not ease	
Less than 1 hour	17 (17.7%)	10 (10.4%)	69 (71.9%)	96 (100%)
1 hour and more	9 (5.7%)	23 (14.6%)	125 (79.6%)	157 (100%)
TOTAL	26 (10.3%)	33 (13.0%)	194 (76.7%)	253 (100%)

Table 6. Comparison of Average Daily Time Students Spent Using the Internet with Their Views on the Computers Making It Easier for the Creation of Nursing Practice Standards

When the grade levels and the views of the students about the average daily time they spent using the internet days, and their views on the computers making it easier for the creation of nursing practice standards were compared; the percentage of students thinking computer usage makes it easier for the creation of nursing practice standards was higher in the students using computer less than 1 hour (daily average) than the

students using computer 1 hour and more (daily average) ($\chi^2=18.418$, $p=0.01$).

Discussion

When the grade levels and the views of the students regarding the use of computers in nursing care were compared; the percentage of the first grade students finding the use of computers unnecessary in nursing care was found to be

higher compared to the students in other grades in a statistically significant way. In the study made by Erdemir, Hanoglu and Akman (2005) regarding the computer and internet use and the value of computer use in nursing, they reported that all of the nurses in their study thought computer use had a positive effect on the improvement of patients' quality of life [9]. In the study made by Koc (2006) which aimed to determine the views of the nursing students regarding computer use in nursing education and practice, 81.2% of the students supported the idea that computer is a part of nursing function and practice [12]. In the study made by Zayim, Akcan and Metres (2006) which aimed to examine the attitudes and competencies of the students regarding nursing informatics, 70.4% of the students supported the idea that the computer use improves the patient care [17]. In the study made by Turhan and Kose (2010) which aimed to evaluate the views of the nurses regarding nursing informatics, it was seen that the nurses did not support the idea that the use of technology is unnecessary in nursing practice [15]. 77.3% of the participants of the study made by Calik, Yeter and Degirmen (2007) to examine the multidisciplinary attitudes of the patient data creation team members in the surgical clinics regarding computer use stated that the ability to reach previous data improved the quality of the planned initiative, treatment and care for the patients [16]. Also in the same study, 76% of the team members expressed the opinion this provided the infrastructure for the development of the patient care standards. Our findings of this study do not seem to resemble the field findings. This is because the first grade students lacked of nursing knowledge and experience compared to the other grades, they have less application information related to the conduct of nursing practice and because they could not have been able to integrate the use of computers and the nursing care. However, the fourth grade students who were about to become nurses in a few months after graduation have expressed views similar to the field findings.

When the grade levels and the views of the students about the impact of computer use on nursing autonomy were compared; the percentage of the fourth grade students finding the use of computers ineffective on nursing autonomy was found to be higher compared to the students in

other grades in a statistically significant way. In the study made by Erdemir et al. (2005) regarding the computer and internet use and the value of computer use in nursing, they reported that %55.5 of the nurses stated that the computer use would not reduce the autonomy of the nurses [9]. In the study made by Turhan and Kose (2010) which aimed to evaluate the views of the nurses regarding nursing informatics, it was reported that the students did not agree with the idea that computer use reduced the autonomy of nurses [15]. In the study made by Yeter, Calik and Degirmen (2007) which was made to determine the attitudes of the professionals in medical surgery towards computer use in the aspect of "a holistic approach for the patient", it was reported that the participants stated that the computer use increased the workload and autonomy in the clinics [16]. In the study made by Zayim et al. (2006) which aimed to examine the attitudes and competencies of the students regarding nursing informatics, 37.9% of the students supported the idea that the computer use reduced the autonomy of nursing [17]. Our study findings are show similarity to the findings of Zayim et al., but they are not similar to the findings of other studies [9, 15, 16, 17]. This may be due to the views of the fourth grade students towards the autonomy of nursing and personal health care decisions of each patient. Furthermore, these final year students work at the internship program at the university as primary bedside nurses 24 hours a week, and this may have contributed to a stabilization of these ideas of the students.

When the grade levels and the views of the students regarding the use of technology in nursing practice were compared; the percentage of the first grade students finding the use of technology unnecessary in nursing practice was found to be higher compared to the students in other grades in a statistically significant way. In the study made by Koc (2006) which aimed to determine the views of the nursing students regarding computer use in nursing education and practice, 62.5% of the students supported the idea that computer use makes the nursing care and practice easier [12]. In the study made by Turhan and Kose (2010) which aimed to evaluate the views of the nurses regarding nursing informatics, it was seen that the nurses did not support the idea that the use of technology is unnecessary in nursing practice [15]. It was thought that our study

findings were not similar to the findings of other studies because of the first grade curriculum covering the basic nursing skills and this curriculum was not being applied in parallel with the nursing informatics. However, ANA, International Nurses Association (ICN) and ANCC all state that the nursing informatics and computer use during nursing education improves the quality of patient care, reduces the time for nursing applications and increases the patient time given to the patient, and also decreases the number of mistreatment cases for the patients.

When grade levels and the views of the students on the adequacy of the use of computers in the health care system were compared; the percentage of the fourth grade students finding the use of computers in the health care system as adequate was found to be higher compared to the students in other grades in a statistically significant way. In the study made by Turhan and Kose (2010) which aimed to evaluate the views of the nurses regarding nursing informatics, it was seen that the nurses supported the idea that the use of technology is adequate in nursing practice. Our study findings are in line with the field study findings [15]. It is thought that the fourth grade students thought computer use was adequate in the health care system, because they were making nursing applications for 24 hours for 3 days per week, they were working in the bedside nursing program and also they were making nursing applications in places like Family Health Care Centres in the scope of the "Public Health Nursing" program and these places could require more computer use.

When the grade levels and the views of the students regarding the use of informatics technology in nursing practice were compared; the percentage of the first grade students finding the use of informatics technology unnecessary in nursing practice was found to be higher compared to the students in other grades in a statistically significant way. In the study made by Turhan and Kose (2010) which aimed to evaluate the views of the nurses regarding nursing informatics, it was seen that the nurses supported the idea that the use of technology is necessary in nursing practice [15]. Our findings of this study are similar to the findings of other studies. The reason for this is thought to have been due to the fact that first grade students were thought the basic nursing skills in the first year clinical training and they did

not understand the concept of nursing informatics in nursing.

When the grade levels and the views of the students about the average daily time they spent using the internet days, and their views on the computers making it easier for the creation of nursing standards were compared; the percentage of students thinking one hour of daily computer usage makes it easier for the creation of nursing standards is higher compared to the students thinking more than one hour of daily computer usage makes it easier for the creation of nursing standards. In the study made by Erdemir et al. (2005) regarding the computer and internet use and the value of computer use in nursing, they reported that 97.6% of the nurses in their study thought computer use made the creation of the nursing practice standards (protocols) easier [9]. In the study made by Zayim et al. (2006) which aimed to examine the attitudes and competencies of the students regarding nursing informatics, 81.3% of the students supported the idea that the computer use makes the creation of the nursing practice standards/protocols easier [17]. In the study made by Turhan and Kose (2010) which aimed to evaluate the views of the nurses regarding nursing informatics, it was seen that the nurses supported the idea that computer use makes the creation of the nursing practice standards/protocols easier. In our study, we had similar findings to the field findings for the participants who had less than one hour of computer use [15]. This might be due to more active use of student time spent on the computer for these students.

Conclusion

Medical informatics is a field which is progressing every day. Using up-to-date informatics to conduct medical services in a professional manner is required. Health workers in this field should work in cooperation with the team as this is the case for all fields; they should monitor the development of informatics closely because it provides the information of the data, regular data management, and it also increases the quality of care for the patient and decreases the unnecessary material consumption and this monitoring of informatics is important for the health care for the patient and the society. Also information security and the formation of the legal framework for the mission, authority and responsibilities for the circulation of the data

among team members is a requirement. It is important to establish the legal and educational framework for our students to keep up with the developments in this informatics field as it is a field where regular nursing congresses are held, magazines are published and there are areas of expertise in this field. In conclusion, it is recommended that students should be trained in terms of IT nursing with the current international standards of science, they should be trained in the medical informatics and about the importance of multidisciplinary work, and their educational programs should be established accordingly, and their data entries should be made in accordance with the special nature of their professional field. In order to train nurses to meet the needs of the information age, the creation of shared policies and strategies by the higher education institutions and non-governmental organizations which are giving training in this area, and the establishment of a support for the integration of nursing informatics to the nursing educational programs are required.

References:

- [1] Akın Ö., Khorshid L. Hemşirelik öğrencilerinin bilgisayar kullanmaya yönelik tutumlarının incelenmesi. Ege Üniversitesi Hemşirelik Yüksekokulu Dergisi 2006; 22(1): 55-67.
- [2] Ay F. Uluslararası elektronik hasta kayıt sistemleri, hemşirelik uygulamaları ve bilgisayar ilişkisi. Gülhane Tıp Dergisi 2009; (51): 131-36.
- [3] American Nurses Credentialing Center (ANCC), [cited 17 December 2015] available at <http://www.nursecredentialing.org/Certification.aspx>.
- [4] American Nurses Association, <http://www.nursingworld.org/International> Council of Nurses ICN [cited 17 December 2015] available at <http://www.icn.ch/>.
- [5] Basar A., Delice S. T., İlhan M. N., Ergun M. A., Soncul H. Hemşirelik hizmetlerinde bilgisayar kullanımı-Gazi Üniversitesi Tıp Fakültesi Örneği. Bilişim Teknolojileri Dergisi 2008; 1(1): 43-60.
- [6] Bilgiç Ş., Şendir M. Hemşirelik bilişimi. Cumhuriyet Hemşirelik Dergisi 2014; 3(1): 24-28.
- [7] Çalık E., Yeter K., Değirmen N. Cerrahi kliniklerindeki hasta datalarının oluşturulmasında ekip üyelerinin bilgisayar kullanımına ilişkin multidisipliner tutumlarının incelenmesi. Akademik Bilişim'07-IX. Akademik Bilişim Konferansı Bildiriler Dumlupınar Üniversitesi, Kütahya, 31 Ocak - 2 Şubat, 2007.
- [8] Erdemir F. Hemşirelik bilişimi eğitimi. [cited 17 January 2016] available at <http://www.turkmia.org/dokumanlar.php>.
- [9] Erdemir F., Hanoğlu Z., Akman A. Hemşirelerin bilgisayar ve internet kullanma durumu ve hemşirelikte bilgisayar kullanımının değerine ilişkin görüşleri. [cited 17 January 2016] available at <http://www.turkmia.org/kongre/cd/pdf/16.pdf>.
- [10] Fidancıoğlu H., Beydağ K. D., Özer F.G., Kızılkaya M. Sağlık yüksekokulu öğrencilerinin internet kullanımına yönelik görüşleri. Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi 2009; 2(1): 3-9.
- [11] Graves J. R., Corcoran S. The study of nursing informatics" Journal of Nursing Scholarship, 1989; 21(4): 227-231.
- [12] Koç Z. Hemşirelik öğrencilerinin hemşirelik eğitimi ve uygulamalarında bilgisayar kullanımı konusundaki görüşlerinin belirlenmesi. Cumhuriyet Üniversitesi Hemşirelik Yüksekokulu Dergisi 2006; 10(2): 29-40.
- [13] Ömürbek N., Altın F. Sağlık bilişim sistemlerinin uygulanmasına ilişkin bir araştırma: İzmir örneği. SDÜ Fen Edebiyat Fakültesi Sosyal Bilimler Dergisi 2009;19: 211-32.
- [14] Özel H. Ö., Ürkmez D. Ö., Demiray S., Cebe Z. Hemşirelik bilişimi ve hastane bilgi yönetimi sistemi. Okmeydanı Tıp Dergisi 30(3), 158-160. doi:10.5222/otd.2014.158, 2014.
- [15] Turhan K., Köse A. Hemşirelerin hemşirelik bilişimi hakkındaki düşüncelerinin değerlendirilmesi: Trabzon iline ait bir çalışma. [cited 17 December 2015] available at www.turkmia.org/kongre2010/cd/bildiriler.html
- [16] Yeter K., Çalık E., Değirmen N. Cerrahide sağlık profesyonellerinin hastaya bütüncül yaklaşımında bilgisayar kullanımı ile ilgili tutumları. Akademik Bilişim'07 - IX. Akademik Bilişim Konferansı Bildiriler Dumlupınar Üniversitesi, Kütahya, 31 Ocak - 2 Şubat, 2007.
- [17] Zayim N., Akcan A., Metreş Ö. Öğrenci ve eğitimcilerin hemşirelik bilişimine ilişkin tutum ve yeterlikleri. [cited 17 January 2016] available at <http://www.academia.edu>.