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The relationship between in-service training nurses' attitudes toward computer in health care and computer anxiety in Turkey[1]

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Abstract

Nurses' perception relating to using technology and computer can directly affect how they structure in-service and continuous education programmes. This research was planned as a cross-sectional-correlational design to determine the relationship between in-service training nurses' attitudes toward computer in health care and computer anxiety. Research was realized with 116 in-service training nurses who work at Education Department of Istanbul Local Health Authority and primary, secondary and tertiary health institution subordinate Istanbul Local Health Authority. Data were collected after getting permission from Istanbul Local Health Authority considering voluntariness with "Personal Information Form", "Attitudes Toward Computer in Health Care Assessment Scale (P.A.T.C.H. Assesment Scale)" and "Computer Anxiety Scale (CAS)". Research data were analyzed with SPSS package program. Mean of the P.A.T.C.H. Assesment Scale was found as 20.07±11.91, mean of the CAS was found as 39.31±9.52. There is a moderate negatively significant correlation between the attitude of the in-service training nurses toward computer in health care and their computer anxiety (r: -0.502 $p \leq 0.01$). The results of research are limited to in-service training nurses who work in Istanbul and are not generalized to all in-service training nurses. The research findings suggest that in-service training nurses have positive attitude toward computer in health care and low computer anxiety. These findings will enable in-service training nurses to consider the importance of using technology and computer. Understanding these concepts is beneficial in efforts to improve the educational activities offered to nurses, other medical staff and patients.

Keywords: Nurse; In-service training nurse; Health care; Computer anxiety; Turkey

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1. Introduction

Fast and surprising advancements in science and technology have deep impact on professional life, and play a significant role in rendering the service provided more effective and efficient (Kısa&Kaya, 2006; Meral&Çolak, 2002). Information technology applications in health professional education, research and clinical practice are an increasingly important aspect in healthcare organizations (Koivunen et al., 2008; Oroviogoicoechea et al., 2010). As a result of such advancements, more and more computers are being used in the fields of health and education becomes inevitable (Jiang et al., 2004; Erdemir et al., 2005). Besides producing, processing, storing, distributing and using information, the computers increase the level of learning by simultaneously addressing several senses, create permanent learning, save from time, place and learning speed and support life-long learning. With such attributes, the computers support efficient fulfillment of the roles, functions and responsibilities of the nurses/in-service training nurses, increase the quality of health care and enhance quality and efficiency of nursing practice (McNeil et al., 2003; Jiang et al., 2004; Kaya et al., 2008; Lee, 2008; ANCC, 2010; Chow et al., 2011; Kaya, 2011; Lın et al., 2014). Nursing is not only a care giving profession, but has become a technology-proficient profession as well (Lee, 2008). In this context, Staggers et al. (2002) produced a research based master list of informatics competencies for nurses of four levels: beginning nurses, experienced nurses, informatics specialists, and informatics innovators.

However, successful implementation of the computer and computer systems depends mainly on the nurses'/in-service training nurses' attitudes its use and acceptance (Oroviogoicoechea et al., 2010; Chow et al., 2011). So, user attitudes are viewed as the components influencing the user technology adoption level and have been found critical to successful computer and computer system implementation (McLane, 2005).

Today, in-service training nurses' knowledge, skill and attitude about changing/advancing computer and computer systems become too important to realize educational activities in accordance with teaching-learning process (Gül et al., 2003; Kaya&Aştı, 2008). In this respect, nursing organizations emphasize knowledge, skill and attitude regarding the usage of computer and computer systems as effective in nursing as a desirable attribute. United Kingdom Central Council-UKCC, define some technological skills such as using computer as a key skill which nurses should have (Wishart&Ward, 2002). United Kingdom National Health Service Information Authority suggests to be asked for European Computer Usage Licence as a basic competence for nurses (Wishart&Ward, 2002). American Nurses Association-ANA (2001) emphasize the nurses should be computer-literate and have detailed informatics competence (McNeil et al., 2003). Also, the 2010

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Institute of Medicine report titled, "The Future of Nursing: Leading Change, Advancing Health," identified technology as the means toward both increased patient safety and cost-efficient care, citing nurses as having a "fundamental role" in this technology transformation.

When early works were examined, it was seen that emphasized nurses need appropriate knowledge and skills to use computers. Bryson (1991) emphasizes that in order for the nurses to be computer-literate; they should have basic computer knowledge, and know how they can develop their professional skills through computer and how to benefit from computer as a tool in nursing practices. Carter and Axford (1993) identified computer learning needs of practicing nurses at the bedside. In the literature, it is emphasized that nurses' attitudes toward computer and anxiety is effective to use computer in professional practice (Wishart&Ward, 2002; McNeil et al., 2003; Jiang et al., 2004; NHS, 2010). When the definitions of anxiety are examined; it is expressed as "sadness, thoughts creating uneasiness, worry" (Turkish Linguistic Society, 2006); and defined as "an emotion distinguished from other emotions with anxiety, depression, and unpleasant characteristics" (Arkonaç, 1999). Computer anxiety is disscussed as one of the factors that comprise attitudes regarding computer and defined to be indisposition to inreact with computer or use computer and widely experienced by many adults (Ceyhan&Namlu, 2000; Namlu&Ceyhan, 2003; Özbıçakçı et al., 2011).

In 16. item's a,b,c paragraph of In-Service Training Regulation numbered 15296 of The Ministry of Health of Turkey it is intended to develop and increase health care employees' knowledge and qualifications (The Ministry of Health of Turkey, 2010). In this context, it can be said that in-service training nurses have a key role to raise the qualification of health care, and it is a necessity to have positive attitude, knowledge and skill directed computer to actualize these roles as effective and productive. It shouldn't be forgotten that computer anxiety becomes effective to gain this qualification. In the light of this explanations in this research it is aimed to identify in-service training nurses' attitudes toward computer in health care and computer anxiety. It is thought the results will be beneficial to restructure the continuous education programmes accordingly intended nurses.

2. Purpose

This research was conducted to determine the relationship between in-service training nurses' attitudes toward computer in health care and computer anxiety. In accordance with this aim following questions guided this study:

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- How is in-service training nurses' attitudes toward computer in health care?
- Do in-service training nurses have computer anxiety?
- Is there any relationship between in-service training nurses' attitudes toward computer in health care and computer anxiety?
- Do in-service training nurses' attitudes toward computer and computer anxiety differ from in terms of in-service training nurses' some identifications?

3. Method and material

3.1.Population and sample selection

The universe of research was included 137 in-service training nurses who work at Education Department of Istanbul Local Health Authority and primary, secondary and tertiary health institution subordinate Istanbul Local Health Authority. All of universe participated research and it was realized with 116 in-service training nurses. One survey form didn't be evaluated because of filling out a survey incorrect, and didn't be reached twenty in-service training nurses who are on leave/on sick leave. Participation rate of study was 85%.

3.2.Type of study

This study was conducted as a cross-sectional-correlational design.

3.3. Data collection

In research, "Personal Information Form", "Attitudes Toward Computer in Health Care Assessment Scale (P.A.T.C.H. Assesment Scale)" and "Computer Anxiety Scale (CAS)" was used as data collection tool.

Personal Information Form is included in-service training nurses' age, sex, marital status, graduate of educational programme, work year as an in-service training nurse, have own computer, computer usage, self-assessment at using computer, computer usage in educational activities and, whether the participate computer education.

Attitudes Toward Computer in Health Care Assessment Scale (P.A.T.C.H. Assesment Scale) was used to determine in-service training nurses' attitudes toward computer in health care. The scale was developed by Kaminski in 1996 and produced 2nd version in 2007, and was made validity and realibility by Kaya and Aştı in 2008 and found cronbach alpha value as .90. Also, in our study cronbach alpha value was found as .94. The scale is five point likert scale with answer options from

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"strongly agree", to "strongly disagree" and constituted 40 questions. Scale score interval changes between -40 and 40. Score is getting closer to 40, attitude increase positively (Kaya&Aştı, 2008).

Computer Anxiety Scale (CAS) was used to determine in-service training nurses' computer anxiety. The scale was developed by Ceyhan and Namlu in 2000 and was made validity and realibility and found cronbach alpha value as .94 also, in our study cronbach alpha value was found as .92. The scale is four point likert scale with answer options as "never" (1), " sometimes" (2), "often" (3), "always" (4) and constituted 28 items. Scale score interval is between 28-112. Four items in scale were marked reverse. It is showed that when scale point increases, computer anxiety increases, too (Ceyhan&Namlu, 2000).

Each in-service training nurses were given data collection forms. The data were collected by means of a personal interview after getting written and oral permission. Data collection took 15 minutes.

3.4. Limitations of the study

The results of research are limited to in-service training nurses who work in Istanbul and are not generalized to all in-service training nurses.

3.5. Research ethics

Data were collected after getting permission from Istanbul Local Health Authority considering voluntariness. Participants were informed of the purpose and procedure of the study. Oral and written consents were obtained from the informants.

3.6. Evaluation of data

Research data were analyzed with SPSS (Version:17.0) package program by descriptive statistics as frequency-percentage, mean, standard deviation, t-test for identifying differences between groups, One-Way ANOVA, Tukey HSD to determine the source of the difference and correlation analysis to determine the relationship between variables and significance level was set as .05 (Özdamar, 2001; Bahar, 2004; Akgül, 2005).

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4. Results

Identifications of In-Service Training Nurses

Table 1: In-service training nurses' identifications (N: 116)

Identifications	n	%
Age		
20-29	29	25.0
30-39	64	55.2
≥40	23	19.8
Sex		
Female	112	96.6
Male	4	3.4
Marital Status		
Married	89	76.7
Single	27	23.3
Graduate of Educational Program		
Health vocational high schools	7	6.0
Associate degree	45	38.8
Undergraduate degree	37	31.9
Graduate degree	27	23.3
Work Month		
0-23 month	50	43.1
24-59 month	29	25.0
60-119 month	20	17.2
≥120 month	17	14.7
Have Own Computer		
Yes	112	96.6
No	4	3.4
Computer Usage		
Yes	116	100.0
No	0	0
Self-Assessment at Using Computer		
Perfect	12	10.3
Good	99	85.3
Bad	5	4.4
Computer Usage in Educational Activities		
Yes	116	100.0
No	0	0
Participate Computer Education*		
Yes	88	80.7
No	21	19.3

***7 people didn't answer this question**

As shown in Table 1, out of the in-service training nurses, 55.2% were between the ages of 30-39, 96.6% were female, 76.7% were married, 38.8% had associate degree, 31.9% had undergraduate degree, 43.1% had been working for 0-23 month, 96.6% had their own computers, 100% used computer, and 85.3% assessed themselves as good at using computers.

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It was determined that 100% of the in-service training nurses used computers in educational activities, 80.7% had participated computer education, and 52.3% of the participants found the duration and quality of the education program insufficient, and 71.4% out of those who had not participated in a computer education were eager to receive education about computer use.

Table 2: In-service training nurses' computer usage in educational process stages (N: 116)

Stages**	**Yes**	**No**
	n (%)	**n (%)**
Collecting Data for Educational Requirements*****	94 (86.2)	15 (13.8)
Planning Education Programme*****	106 (97.2)	3 (2.8)
Implementing Education Programme*****	101 (92.6)	8 (7.4)
Assessing Education Programme*****	94 (86.2)	15 (13.8)
Recording/Reporting Education Programme*****	102 (93.6)	7 (6.4)
Other	19 (16.4)	97 (83.6)

*** 7 people didn't answer this question.**
**** Marked more than one option.**

As shown in Table 2, at the educational process stages, out of the in-service training nurses, 86.2% used the computer for collecting data for educational requirements, 97.2% for planning the education programme, 92.6% for implementing the education programme, 86.2% for assessing the education programme, 93.6% for recording/reporting the education programme, 16.4% for research, execution of the quality studies and communicating with other professionals.

In-Service Training Nurses' Attitudes Towards Computer in Health Care and Computer Anxiety

Table 3: In-service training nurses' attitudes toward computer in health care and computer anxiety means and standard deviations (N: 116)

	$\overline{X}$	**SD**
Attitudes Toward Computer in Health Care	20.07	11.91
Computer Anxiety	39.31	9.52

As shown in Table 3, mean of the P.A.T.C.H. Assesment Scale of the in-service training nurses was 20.07±11.91. The mean of CAS of the in-service training nurses was found to be 39.31±9.52.

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Table 4: Comparison of in-service training nurses' attitudes toward computer in health care and computer anxiety according to identifications (N: 116)

Identifications		n	Computer Anxiety $\bar{X}\pm SD$	Attitudes Toward Computer in Health Care $\bar{X}\pm SD$
Age	20-29	29	38.72±7.30	23.68±9.90
	30-39	64	39.45±10.49	20.69±11.47
	³40	23	39.65±9.48	11.73±15.15
			F: 0.076 p: 0.927	F: 9.960 p: **0.001****
Graduate of Educational Programme	Health vocational high schools	7	39.71±8.59	13.85±18.36
	Associate degree	45	40.95±11.47	19.10±11.70
	Undergraduate degree	37	38.64±8.41	18.74±13.60
	Graduate degree	27	37.37±7.31	23.38±10.20
			F: 0.883 p: 0.453	F: 1.407 p: 0.245
Work Month	0-23 month	50	39.60±8.31	19.96±11.48
	24-59 month	29	41.89± 11.31	19.82±11.73
	60-119 month	20	36.45±8.00	19.95±15.29
	≥120 month	17	37.41±10.63	18.20±14.28
			F: 1.579 p: 0.198	F: 0.089 p: 0.966
Self-Assessment at Using Computer	Perfect	12	30.33±2.10	29.70±7.88
	Good	99	39.63±8.90	18.97±12.56
	Bad	5	54.40±11.14	9.30±5.79
			F: 14.389 p**: 0.000****	F: 6.228 p: **0.003*****
Participate Computer Education*	Yes	88	38.96±9.05	20.62±11.61
	No	21	40.23±11.84	16.71±16.97
			t: 0.544 p: 0.588	t: 1.001 p: 0.326
Whether The Participants of The Computer Education Found The Duration And Quality of The Education Sufficient	Yes	42	35.92±6.24	23.54±10.15
	No	46	41.73±10.31	17.95±12.30
			t: 3.228 p: **0.002 *****	t: 2.312 p: **0.023******

*** 7 people didn't answer this question.**

**** p≤0.001 *** p< 0.01 ****p< 0.05**

As shown in Table 4, the highest average of CAS points was among the age group of 40 and over (39.65±9.48). There was no statistically significant difference between the average of CAS points of the in-service training nurses according to their ages (p>0.05). The highest average of

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P.A.T.C.H. Assesment Scale points was among the age group of 20-29 (23.68±9.90). There was a high statistically significant difference between the average P.A.T.C.H. Assesment Scale points of the in-service training nurses according to their ages ($p \leq 0.001$). It was determined that such difference resulted from the age groups of 20-29 and 30-39.

When the average CAS points of the in-service training nurses were examined according to the educational programme they had graduated from, the highest average was among the associate degree holders (40.95±11.47). There was no statistically significant difference between the average CAS points of the in-service training nurses according to the educational programmes they had graduated from ($p > 0.05$). When the average P.A.T.C.H. Assesment Scale points of the in-service training nurses were examined according to the educational programme they had graduated from, the highest average was among the graduate degree holders (23.38±10.20). There was no statistically significant difference between the average P.A.T.C.H. Assesment Scale points of the in-service training nurses according to the educational programmes they graduated from ($p > 0.05$).

When the average CAS points of the in-service training nurses were examined according to the working month, the highest average was among 24-59 working month (41.89±11.31). There was no statistically significant difference between the average CAS points of the in-service training nurses according to their working month ($p > 0.05$). When the average P.A.T.C.H. Assesment Scale points of the in-service training nurses were examined according to the working month, the highest average was among 0-23 working month (19.96±11.48). There was no statistically significant difference between the average P.A.T.C.H. Assesment Scale points of the in-service training nurses according to their working month ($p > 0.05$).

When the average CAS points of the in-service training nurses were examined according to their self-assessment at using computer, the highest average was among those who regard themselves as bad (54.40±11.14). There was a high statistically significant difference between the average CAS points of the in-service training nurses according to their self-assessment regarding computer use ($p \leq 0.001$). This difference was found to be resulted from those who regarded themselves as perfect and good. When the average P.A.T.C.H. Assesment Scale points of the in-service training nurses were examined according to their self-assessment at using computer, the highest average was among those who regard themselves as perfect (29.70±7.88). There was a high statistically significant difference between the average P.A.T.C.H. Assesment Scale points of the in-service training nurses according to their self-assessment regarding computer use ($p < 0.01$). This difference was found to be resulted from those who regarded themselves as perfect.

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When the average CAS points of the in-service training nurses were examined according to their participation in a computer education, the highest average was among the non-participants (40.23±11.84). There was no statistically significant difference between the average CAS points of the in-service training nurses according to their participation in a computer education ($p>0.05$). When the average P.A.T.C.H. Assesment Scale points of the in-service training nurses were examined according to their participation in a computer education, the highest average was among the participants (20.62±11.61). There was no statistically significant difference between the average P.A.T.C.H. Assesment Scale points of the in-service training nurses according to their participation in a computer education ($p>0.05$).

When the average CAS points of the in-service training nurses were examined according to whether the participants of the computer education found the duration and quality of the education sufficient, the highest average was among those who found it insufficient (41.73±10.31). There was a high statistically significant difference between the average CAS points of the in-service training nurses according to whether they found the duration and quality of the education sufficient ($p<0.01$). When the average P.A.T.C.H. Assesment Scale points of the in-service training nurses were examined according to whether the participants of the computer education found the duration and quality of the education sufficient, the highest average was among those who found it insufficient (23.54±10.15). There was a statistically significant difference between the average P.A.T.C.H. Assesment Scale points of the in-service training nurses according to whether they found the duration and quality of the education sufficient ($p\leq0.05$).

Table 5: Correlation between in-service training nurses' attitudes toward computer in health care and computer anxiety

		Computer Anxiety	**Attitudes Toward Computer in Health Care**
Computer Anxiety	r	1.000	-0.502*
	p	-	0.000
Attitudes Toward Computer in Health Care	r	-0.502*	1.000
	p	0.000	-

*** p<0,001**

When Table 5 is examined, there is a moderate negatively significant correlation between the attitude of the in-service training nurses toward computer in health care and their computer anxiety (r: -0.502 $p<0.01$).

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5. Discussion

The results of the study demonstrated that most of the in-service training nurses used computer in educational activities and participated in a computer education. The findings were in parallel with the results of the study conducted by June et al. (2000) in China with 169 nurses which showed that 56.2% of the nurses participated in a computer-related education programme, and the results of the study conducted by Eley et al. (2009) in Australia which demonstrated that 86.3% of the nurses used computer in their activities. The findings were also similar to the results of the studies conducted by Koç (2003), Erdemir et al. (2005), and Cragg et al. (2003). The results demonstrated that in-service training nurses were open to development in this area.

The results showed that the in-service training nurses utilized computers at every stages of educational process, and particularly at planning education programme stage. This result was in parallel with the results of the studies conducted by Atay et al. (2009) and Başar et al. (2008) which demonstrated that most of the nurses utilized computers in the educational process, particularly in collecting data for educational requirements and planning education programme.

In this study it is determined that in-service training nurses' attitudes toward computer in health care is high, and computer anxiety is lower. In 16. item's c paragraph of In-Service Training Regulation numbered 15296 of The Ministry of Health of Turkey it is identified that in-service training nurses should use effective, useful and advanced educational techniques/technologies in education. This result in the direction of regulation can be considered as positive in realizing in-service training nurses' duty, power and responsibilities. In literature, it is emphasized that when anxiety decreases, increase learning willingness, get easy learning, effect learning readiness and consequently attitude. In-service training nurses' anxiety is low can be considered as a positive result in terms of having positive attitude, using computer and self-development (Ceyhan&Namlu, 2000; Kurt, 2000; Namlu&Ceyhan, 2003; Taşocak, 2012; Bacanlı, 2009).

The study demonstrated that in-service training nurses under 40 years of age had lower computer anxiety and more positive attitudes toward computers in health care. This was in line with the findings of the study conducted by Moody et al. (2004) in Florida with 100 nurses showing that there was a negative correlation between age and attitude toward computers (r:-0.24) (p=0.01). This result was also similar to the results of the studies conducted by Burkes (1991), Koç (2003), June et al. (2000), Cragg et al. (2003), Eley et al. (2009) and Oroviogoicoechea and Watson (2009). This result was consistent with the literature which suggested that younger groups were more eager to use computers, and therefore had less anxiety (Çevik&Baloğlu, 2007).

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The study results made us think that the educational programme the in-service training nurses had graduated from didn't effect computer anxiety and attitude toward computers in health care.

The study results made us think that working month of the in-service training nurses didn't effect computer anxiety and attitude toward computer in health care. This result was similar to the results of the studies conducted by Marasovic et al. (1997) and Moody et al. (2004) which showed that there was no significant correlation between the working month of the nurses and their attitude toward computer.

Another result of the study was that self-assessment of the in-service training nurses effected the attitude toward computer in health care and computer anxiety. This result was in parallel with the results of the studies conducted by Namlu and Ceyhan (2003), Moody et al. (2004) and Oroviogoicoechea and Watson (2009). This made us think that anxiety and attitudes of the nurses with more experience in computers and who found themselves competent regarding the computers were positively effected.

The study revealed that participation in a computer education by the in-service training nurses didn't effect computer anxiety and attitude toward computer in health care, and this made us think that the content of such programmes should be questioned.

The study also showed that whether the in-service training nurses participating in a computer education found the duration and quality of the program sufficient didn't effect their computer anxiety and attitudes toward computer in health care. When the general averages are examined, it can be said that quality educational programmes addressing the computer-related requirements decrease the computer anxiety and positively effect the attitudes toward computer in health care.

In this study, there is moderate negative significant relationship between in-service training nurses' attitudes toward computer in health care and computer anxiety. This finding was in parallel with the study carried out by Koç (2003). This result show that in-service training nurses' computer anxiety decreases, positive attitudes toward computer in health care increases. In literature, it is emphasized when anxiety decreases, attitudes increase as positive. This result is parallel with literature (Ceyhan&Namlu, 2000; Kurt, 2000; Namlu&Ceyhan, 2003; Taşocak, 2012; Bacanlı, 2009).

This study was carried out to identify in-service training nurses attitudes toward computer in health care and computer anxiety. The results of the research showed that in-service training nurses have a positive attitude toward computer in health care and lower computer anxiety. So, it was determined that the in-service training nurses were confident about their ability to use various

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computer programmes, believed in the benefit of the computers in social development, had eager perspective for computer-use in health care. In-service training nurses' attitudes toward computer in health care were positively increasing while in-service training nurses' computer anxiety was decreasing. In-service training nurses' attitudes toward computer in health care were effected from age, self-assessment at using computer, whether the participants of the relevant education programme found the duration and quality of the education sufficient. Also, in-service training nurses' computer anxiety was effected from self-assessment at using computer, whether the participants of the relevant education programme found the duration and quality of the education sufficient.

6. Conclusions and recommendations

Our findings are able to provide guidance for in-service training nurses to understand the complex factors of computer technologies implementation, to address the in-service training nurses' needs. Successful implementation of the technology depends mainly on the in-service training nurses' attitudes and satisfaction with the use of the computer. In-service training nurses acceptance, feelings and satisfaction with the computer technologies would give a positive impact on in-service training nurses attitudes. This may directly improve educational activities realizing by in-service training nurse, and enhancing communication among departments. By understanding the issues that may be of concern to computer technology users, implementation strategies and policy requirements can be designed to support the in-service training nurses' needs in this technology adoption process.

According to research results will recommended;

- In-service training nurses' needs, ages, self-assessment, computer anxiety were regarded for configuration training programmes toward computer,
- More innovative workshops and courses should also be organised as an on-the-job training to help nurses/in-service training nurses maintain their motivation and professional competence.
- Making similar researches with nurse groups which works different areas (Intensive care, operating room etc.).

6.1. Usability of study results

The study findings provide preliminary insights on in-service training nurses' perception of computer and computer technologies in Turkey. Although this study examined the issues in a local context, it has provided valuable information for international and cross-cultural comparisons and

for especially nurses who directly related with in-service education. These findings will enable in-service training nurses to consider the importance of using technology and computer. Understanding these concepts is beneficial in efforts to improve the educational activities offered to nurses, other medical staff and patients. The indicative content of educational programmes should incorporate and adequately address the technological dimension of nursing services. Nurses should take the initiative in increasing their skills and knowledge of using computer technologies and give priority to reflection in and on their educational activities. Knowledge of the training and education needs of in-service training nurses with respect to information and computer knowledge will provide a platform for the development of appropriate policies in the institution. However, understanding the barriers and difficulties they encountered could maximize their technology use and improve both the nursing efficiency and the services quality.

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