Research article

The usability and effectiveness of a web-based nurse-patient communication training program

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Abstract

Nurses need access to innovative educational delivery methods to continuing education. Web based training (WBT) program is opportunity for many clinical nurses. The aim of this descriptive study is to develop a WBT which offers clinical nurses information on patient-nurse communication and to evaluate its usability and effectiveness. The study was conducted in three phases: (I) Assessment of information regarding the nurses and their educational needs (n=202), (II) Development and usability evaluation of the web-based training (n=10) and (III) Effectiveness evaluation (n=110). The content of the web-based training material was based on the data collected from the nurses during the first phase. Four training modules were developed. The number of nurses registered to the program during this time period was 110. As a result, the usability of the WBT program was determined to be excellent (91±6.9) and the nurses were utilizing the modules. Web-based training programs may be promoted and preferable as a continuous education model in nursing, professions in which time and space limitations are intensely experienced.

Keywords: Nurse, patient, web, training, use-effectiveness

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1. Introduction

Children need guidance and care at every stage Communication skills are necessary in all facets of nursing practice [1,2,3]. The insufficiency of communication of nurses with patients effects both patient safety and the quality of nursing care in a negative way [1]. Nurses, who play a key role in the promotion of health, experience communication problems due to factors such as specific diagnoses and clinical situations (e.g., metastatic cancer onthe oncology unit and long-term patients on the rehabilitation unit), patient and family emotions (patients or family members or both was expressed emotion is anger), nurses' emotions (negative emotions such as helplessness, hopelessness, and sadness), triangle of nurse-physician-patient communication (receiving inconsistent messages from physicians, being drawn into unresolved patient issues that were outside the nurse's role, and feeling conflict between the nurse and physician, all of which affected patient care.), and nurse coping behaviors with difficult communication (nurses deal with their own responses to conversations, they perceived as difficult after the encounter)[4]. At the same time, nurses identify time restrains [2,3,5] and the inadequacy of communication skills as hindrances to the development of effective nurse-patient communication [6]. Evaluations of nurses' communication skills by patients also reveal the shortcomings of nurses in this area [7]. Considering the fact that nurses are unable to promote patient health without effective communication, it is of great importance to rectify their inadequacies in this area [3,5].

In order to maintain a desired level of clinical competence in nurses, it is necessary to continually enhance their knowledge and skills [8]. In light of the intense schedules imposed on them by the health care system, the training options that nurses require must be easily accessible and flexible. In this context, web-based educational programs present us with a training option that significantly contributes to the professional development of nurses [9,10,11].

WBT programs which are increasingly utilized within the health care system [12] present the opportunity for continuous education by removing time and space constraints wherever nurses have access to the internet [13]. In addition, WBT model offers the opportunity for continuous education to individuals of varying geographic locations, ages and learning capacities [14]. Studies on clinical nurses indicate that nurses also exhibit positive attitudes towards this educational alternative and they wish to receive training using this model [15,16,17,18 ,19]

Due to the nature of the health care system in Turkey, nurses are responsible for the care of very large numbers of patients as well as the execution of routine tasks. According to the 2010 report by the Republic of Turkey Ministry for EU Affairs, there are 1.3 nurses for every 1000 people [20]. Therefore, WBT programs present us with a viable solution to constraints of time and place [13,21] In Turkey, distance education started in the 1990's and the opportunity for education through this model is very limited [22]. Besides, the excessive work load of nurses in our country may affect their method and speed of reaching the knowledge and cause some limitations in updating their knowledge. Within the scope of all these information, evaluating in terms of solving the problems of nurses concerning time, space and patient-nurse communication; the support of patient-nurse relations training that would increase the quality of nursing care with a web-based model will become a practical solution as they will use it as a source whenever they need.

In this context, the aim of this study is to develop a WBT which offers clinical nurses information on patient-nurse communication and to evaluate its usability and effectiveness.

This study sought answers to the following key questions:

1. What are the opinions of nurses with regards to updating knowledge and a WBT about 'patient-nurse communication'?
2. Which type of information do nurses require within the scope of a WBT and 'patient-nurse communication'?
3. What is the usability of the WBT program designed for nurses?
4. What are the opinions of nurses about the WBT program on 'patient-nurse communication'?

2. Material and Methods

Research Design
This study was planned as a descriptive study.

Participants
The study population consisted of all nurses (N=250) working at university hospital. There were no sampling methods used since all nurses who gave consent to participate in the study were included in the sample. In the first phase of the study was completed with 202 nurses (16 nurses were off duty due to birth, disease, etc. and 32 of them rejected to participate in the study). The design and usability evaluation phase was fairly the pre-application of the web page and was completed with the voluntary participation of 10 nurses. We aimed to reach the whole study population in the effectiveness evaluation phase but this phase was completed with 110 subjects that volunteered to participate in the study.

Data collection

The study was completed in three phases (Table 1)
Phase I: *Needs assessment and assessment of current status (n=202);* Data were collected via survey questions related to demographics, computer use, opinions about continuing education and communication training, views and expectations on the use of the WBT offering information on patient-nurse communication.

Table No: 01 The research process

PHASE 1: Needs assessment and assessment of current status
1. a Compilation of the data collection instrument related to current status and needs
1. b Collection of data for determining current status and needs
Participants: All who consented to participate (n=202)
1. c Evaluation of data with SPSS-11, descriptive analysis.
PHASE 2: Design and usability of the web-site
2. a Identification of the information to be posted on the web-site and preperation of presentation plan
Contents: Four training modules
2. b Programming of the web-site
2. c Scanning of usability scales and identification of the appropriate scale
Method: Protocol Analysis **Scala:** System usability scale
2. d Evaluation of usability **Participants:** n=10
2. e Online publishing of the web-site
PHASE 3: Evaluating effectiveness
3. a Compilation of the evaluation survey questionnaire
3. b Collection of data from web based survey to evaluate usability and effectiveness **Subscribers:** n=110
3. c Evaluation of data with web-site program

Table 2: Information requested to be placed on the WBT program (n=202)

Information Requested	n	%
Conceptual dimensions of communication	107	53
Therapeutic communication	164	81.2
Nontherapeutic communication	110	54.5
Special Circumstance Patients	145	71.8
Angry patients	111	55
Patients with constant demands	105	52
Patients with sexually driven behaviour	75	37.1
Patienst who want to establish social contact	57	28.2
Unconscious patients	53	26.2
Terminal patients	47	23.1
Intraverted patients	44	21.8
Patient in pains	44	21.8
Crying patients	25	12.4

Phase II: *Design and usability evaluation of the WBT program (n=10);* The content of the WBT program was identified based on the outcome of the survey during the first phase of the study. Four training modules entitled 'conceptual dimensions of communication', 'therapeutic communication techniques' 'nontherapeutic communication techniques' and 'patients with specific circumstance problems' respectively were developed. The content of the last module was established through a selection of the first four out of nine special-needs patient cases presented to the nurses where the nurses experienced most problems in communication (Table 2).

Usability refers to how well and how easily any user, without formal training, is able to interact with a web-site. It is measured as five product attributes. These are learnability, efficiency, memorability, errors and satisfaction [23]. In this context, this study also assessed usability of the WBT program to ensure that useful. Usability of

the WBT program was evaluated through the 'protocol analysis method'. In this context, users were asked to complete the tasks designated to the WBT environment that was developed, and to think aloud while performing these tasks. After completing the tasks, users were asked to complete the System Usability Scale (SUS) following protocol analysis. The reliability and validity is made of SUS is 10-item likert scale, providing a global view of usability. The result of the SUS questionnaire is a single score, ranging from 0 to 100, with SUS scores above 80 being described as 'excellent' [24]. The necessary changes on the WBT program were made in accordance with the findings of the usability evaluation and the program took on its final shape. After the last edition, the WBT program was published.

Phase III: *Effectiveness evaluation (n=110);* During this phase, the WBT program was announced to all nurses via e-mail and the program was in active use for two months. Data related to the study were collected via survey questionnaires posted on the 'Evaluation Surveys' section of the web-based environment. The evaluation surveys section consisted of four. During the two-month period, 110 nurses were sent a total of 10 e-mail reminders, five from the nursing management and five from the site administrator.

Table 3: Effectiveness evaluation of the WBT program

Effectiveness evaluation	n	(%)
Visiting time per a day (n=44)		
Less than 1 hour	35	79
Between 1-2 hours	7	6.5
More than 2 hours	2	4.5
Utilization level (n=30)		
Very useful	10	33.3
Useful	19	63.3
Not useful	1	3
Views (n=25)		
Clarity of information	20	80
Ease of use	16	64
Plain but eye-catching design	15	60
Contains scientific knowledge	13	52
Lacks forum pages where nurses can share their experiences and communicate with experts and other subscribers	12	48
Weak in the audio-visual aspects	8	32

Ethical considerations

Ethical approval was obtained from University Faculty of Medicine Ethics Committee. Institutional permission was granted by the University Hospital for implementing the study. Research context and aims were explained to all nurses invited to participate in the study in order to obtain their informed consent.

Statistics

Data analysis relevant to the evaluation of current status and needs assessment was completed using Statistical Package for the Social Sciences 11 (SPSS 11). Descriptive analyses were used.

3. Results

Nurses demographic Survey

The average age of the nurses who participated in the first phase of the study is 28.83±5.1. Ninety-five percent of the nurses were female, 55% were unmarried and a large number (76.2%) had graduate degrees.

Phase I: *Needs assessment and assessment of current status*

It was determined that the nurses want to update their professional knowledge (90.1%) and that almost all of them (94.6%) use the internet towards this end. The nurses also indicated that

they experience difficulty in accessing information due to time restraints (81.1%). While more than half of the nurses (54%) described their communication skills as being very good, they wish to utilize a WBT program designed on the subject of 'patient-nurse communication' (70.3%). As shown in Table 2, they conveyed that they would like the content of this web-based training to include modules on 'patients with specific circumstance problems' (71.8%), 'communication techniques' (67.7%) and 'conceptual dimensions of communication' (53%).

Phase II: *Design and usability evaluation of the WBT program*

Following the protocol analyses which were done with the nurses who participated in the second phase of the study (n=10), the nurses reported which features of the web-site they liked and disliked. While the nurses indicated that they saw a need for photographs to be placed on the homepage (50%), for more detailed information to be provided in relation to the evaluation section (40%) and for the font sizes to be enlarged (30%), they expressed satisfaction with the vibrant use of color (80%) and the fact that relevant illustrations were eye-catching. Based on the SUS data, it was found that the usability of a web-based training program is 'excellent' (90±11.6).

Phase III: *Effectiveness evaluation*

In the third phase of the study, the WBT program remained online for duration of two months. The nurses who subscribed to the web-site (n=110) were asked to fill out web-site evaluation survey questionnaires comprising of four sections, but not all of the nurses completed the four sections. Seventy-nine percent nurses reported having visited the site for less than an hour per day. Nurses who provided their opinions on the web-based training program indicated that they liked the 'patient-nurse communication' site due to reasons such as the information provided being clear and comprehensible (80%), easy to use (64%), and that the site design was plain and eye-catching (60%). Nurses indicated that WBT program was "useful" (66%) (Table 3). Based on the SUS data collected in this phase, the usability score of WBT environment was 'excellent' (91±6.9).

5. **Discussion**

This is the first study in Turkey aiming to evaluate a web-based training program developed on 'patient-nurse communication'. While the findings of the current study show that the participating nurses are extremely keen on receiving training via a web-based educational model; only 25% of the subjects subscribed to the training program, and only 40% of these participants reached the evaluation phase. In addition to this, findings based on data collected from participants in the WBT evaluation phase do support the continuation and necessity of such training.

Patient-nurse relations constitute an important part of daily nursing practices and as such, amount to being the cornerstone of nursing skills [4]. The fact that the nurses who participated in our research wanted the WBT to feature patient-nurse communication (Table 2) is quite significant in that it puts forth an essential need.

It has been emphasized that in order to fulfill their responsibilities within their units, nurses have to update their knowledge with clinical guidelines and need to utilize the internet for this purpose [8]. Our study has determined that nurses feel the need to update their knowledge (90.1%) and that they use the internet toward this end (94.6%). This is consistent with the results of similar studies on the subject [25,26]. This is a positive outcome since the use of the net by nurses primarily for gaining professional knowledge indicates the possibility of an increase in the utilization of WBT programs. In our study, nurses expressed having difficulties in accessing information due to time constraints (81%). This difficulty in accessing information is consistent with the literature that report reasons why nurses prefer WBT programs [13, 14, 27, 28]. Accordingly, it is suggested that the use of web-based programs within the scope of continuous education for nursing which is a profession where time limitations are experienced, may be effective in resolving the time constraint problems identified by the nurses.

In a Turkish study on the effects of an internet-based counseling model on nurses working with oncology patients, it was found that nurses' desire for accessing counseling services through the use of information technology was lower than expected [29]. In contradiction with the willingness of the nurses, this level was also lower than expected in our study. This situation may be attributed to the fact that in Turkey, distance education started in the 1990's and the opportunity for education through this model is very limited [22]. It may also be that due to the inadequacies of the system of supervision/control of evaluating how clinically well-equipped they are, nurses may not feel the need to update their knowledge. However, the reality of the impact of Turkish nurses' heavy workloads on their modes of accessing information and the speed thereof, must not be overlooked.

During the 'effectiveness evaluation' phase of the study, four evaluation survey forms assessing the nurses' views on the web-based 'patient-nurse communication' training program were posted on the site to facilitate the collection of nurses' feedback via the internet. The response rate of the nurses was lower than expected in this phase. This may be attributed to their unawareness as to the importance of feedback, the heavy work-loads at the hospital or by inadequate on-line skills.

In this study, the nurses who filled out the evaluation surveys reported that they were pleased with the WBT environment. The nurses' approval of the WBT program and its high usability can be associated with the study being conducted jointly with specialists on the topic and the utilization of the usability assessment conducted during the design phase towards modifications that were made before the WBT program was finalized for general use. The usability score attained during the design phase of the WBT environment was increased after the necessary modifications were made.

In indicating the level of usefulness of the WBT, a majority of the nurses described every single module within the program as 'useful'(Table 3). In a similar study where nurses participated in a WBT program on 'care of the elderly', nurses reported the related site as being very useful for their theoretical and professional development [30]. Another study assessed the effectiveness of WBT

on 'stress management'. The results of this study showed that the nurses had decreased levels of work-related mental stress following the WBT. In yet another study conducted on nurses, the results of web-based education on 'evidence-based acute pain management for adult patients' were explored and the nurses were found to have successfully met the targets of the training [31]. Based on the findings of these studies, it can be suggested that WBT is an appropriate method to be used by clinical nurses within the scope of continuous education.

The results of this study may serve as pilot data for further research. Thus, in order to determine the effect of WBT upon the patient-nurse communication, it is required to conduct longer-term evaluation studies with larger scales.

Conclusion

Despite nurses' favorable opinions related to updating knowledge and WBT, they appear to have some shortcomings with regards to the use and the provision of feedback. However, the continuous change and development of health care technologies, the necessity for health care professionals to adapt to new technologies, a growing tendency towards providing technology-based services renders imperative the use of web-based education and implementation. In nursing as a discipline focused on care-giving, WBT should be promoted as a viable continuous education option in order to overcome limitations imposed by time constraints and heavy workloads. That being said, it is important that further studies exploring how this approach can be part of continuous education and assessing the perceptions, hindrances and motivations of nurses in relation to web-based educational practice are necessary and the results of these studies should be reflected on the practice.

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