The Effect of E-learning Education on Primipar Women's Knowledge about Neonatal Care

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Abstract

Introduction
E-learning is there to enhance knowledge of patients and can provide an efficient way to enhance personnel-patient interaction and provide patient-specific education. So the aim of this study was to Compare the effect of two educational methods, e-learning (multimedia) and painted booklet on Primipar Women's Knowledge about neonatal care.

Methods
This was a quasi-experimental study based on pre- and post- tests that were carried out on 100 primipar women in Isfahan during the years 2012-2013. Participants were divided into two groups of e-learning or painted booklet learning, randomly. Participants' knowledge scores were collected via a researcher-made questionnaire. SPSS version 11.5 was used to conduct statistical tests such as independent t-test and paired t-test for analyzing the data. The significance level was considered less than 0.05.

Results
Before training, the mean score of knowledge of the e-learning education group was 5.4±1.2 and 5.5±1.2 for the painted booklet group; the difference between mean scores was not significant. At the end of the study, this score was 9.54±1.1 for the e-learning group and 6.5±1.2 for the painted booklet group and the difference was statistically significant (P< 0.01). Also increase in the rate of knowledge in the e-learning group and the painted booklet group was 56% and 30%, respectively.

Conclusion
This study showed that passing the e-learning training course could better improve knowledge of mothers about neonatal care than the painted booklet. So, different aspects of e-learning, including computer literacy, infrastructure of telecommunications should be revisited.

Key words
Electronic education, primipar woman, neonatal care

Introduction

Neonatal period is one of the most sensitive life stages which requires a lot of care and precision (1). The main infant caregivers are mothers, thus newborns and community health is influenced by mothers (2). Mother's knowledge on how to provide necessary care during the neonatal period can raise mother's confidence regarding infant care and reduce false and traditional beliefs about neonatal care and neonatal morbidity and mortality rate (3,4). Therefore, being aware of mother's knowledge about neonatal care is important in the promotion of society health (4).

In fact, the fastest way to improve public health is by promoting awareness   through education (5). According to emphasis by the World Health Organization about maternal and child health,

promotion of parent's knowledge and education especially mothers are essential and important (6). E-Learning is a new training method by which the learner can learn materials without being face to face with the educator (7). This kind of education is available in various forms, such as computer based learning and off line learning(8).

With regards to the promotion of quality of postpartum care for mothers and newborns and since mothers are influential and are the major caregivers, responsible for the neonate, and can benefit from E-learning and computer based training, thus researchers have decided to conduct a study aimed to define the effects of E-learning on primigravida women's knowledge about neonatal care.

Methods

Randomized, quasi-experiment, pretest and post-test, control group, and single blind design was used to investigate the effects of E-learning on primipar women's knowledge about neonatal care at a hospital in Isfahan, Iran . The study was approved by the Isfahan University of Medical Sciences ethics committee. For blinding purposes, the results from the random allocation of subjects into the study groups were not disclosed to the research assistant who was analyzing the data.

 Inclusion criteria were primigravida, women 18-35 years old, singleton pregnancy, Iranian nationality, residing in Isfahan, absence of any obstetrical or medical pregnancy complications, Persian literacy, being able to listen and speak; being a user of the computer.

Exclusion criteria were women that had a high risk pregnancy and their newborn was considered high risk for any reason. Of the 100 mothers called in the preliminary study, 72 participated in the final survey (28% dropout rate).The reasons for the dropouts were no answer to calls and missing booklet or multimedia software.

 Data collection tool included a questionnaire of demographics (including: mother's age, education, occupation, mode of birth and infant birth weight) and mothers knowledge about neonatal care that was developed by the investigators through a review of the literature and Iran's health standard on neonatal care.

 Neonatal care knowledge questionnaire in the Pretest and posttest was based on a 15-item scale. Answers included 'Yes,' 'No' and 'Unknown' and a high score indicated a better degree of neonatal knowledge. The content validity was used to quantify the extent of agreement between five experts.

Pearson's correlation coefficient was used to examine the correlation between neonatal care knowledge questionnaires of the pre and post tests. The Pearson's r correlation coefficient was 0.94. The study was thoroughly explained to the mothers and written informed consent was obtained.

Both groups received the usual postpartum care or standard care given by the midwife and health care providers in the post partum ward. The E-learning group received the multimedia software in addition to the usual post partum care. This software included: text, animation, music, audio and video with MPEG, MP3, WMV, MP4 `and HTML formats. While the other group received the painted booklet, in addition to the usual post partum care. Content of both painted booklet and multimedia software was same.

The levels of mother's knowledge were measured twice by a research assistant for both the E-learning and painted booklet groups. The first measurement was administered in the two hours after delivery was completed. The second measurement was taken after two weeks from admission date.

Student's t-test and paired t-test were used to analyze the collected data. All analyses were performed by SPSS for Windows 11.5 (SPSS Inc., Chicago, IL, USA) and P values less than 0.05 were considered significant.

Results

 The participants of the study were hospitalized mothers in Beheshti hospital aged 21 to 35 years old. Data were collected for a 3 month-period during 2012-2013. A total of 72 eligible participants who met the recruitment criteria were randomly assigned into either the E-learning (n = 36) or painted group (n = 36).

Based on the findings, mean (SD) of mothers age was 27.24 (1.3) years, mean (SD) of BMI was 24.6 (1.5) and mean (SD) neonatal birth weight was 3000.78g (120.23). 80.6% of subjects were at moderate economic status, 66 subjects were without university education and 12% were employment.

No significant difference was between the two groups regarding mother's age, occupation, economic status and gestational age, neonatal birth weight in pre intervention.

The two-tailed dependent t-test (paired-t test) was used to examine the difference in means of the mother's knowledge between pre-and post-intervention in the E-learning group. The results indicated that there were significant differences between the pre-and post-intervention regarding the mother's knowledge questionnaire [M = 5.4, SD = 2.1 (pre-test), M = 9.5,

SD = 1.1 (post-test), t = -2.21, df = 35, P= 0.004] in this group (see Table 1).

Table 1: Paired Samples Test between the Pre-and Post-Intervention for the E-learning group

Knowledge score about neonatal care	Pre test	Post test	paired-t test
	N(%)	N(%)	
Low	5(13.8)	25 (69.4)	
Moderate	9 (25)	10 (27.8)	
Well	22 (61.1)	1(2.8)	P = 0.004
total	36 (100)	36 (100)	

Also, the two-tailed dependent t test (paired-t test) was used to examine the difference in means of the mother's knowledge between pre- and post-intervention in the painted booklet group. The results indicated that there were significant differences between pre-and post-intervention of the mother's knowledge questionnaire [M = 5.5, SD = 1.2 (pre-test),M = 6.5, SD = 1.2 (post-test), t = -1.01, df = 35, P= 0.012] in this group (see Table 2).

Table 2: Paired Samples Test between the Pre-and Post-Intervention for the Painted Booklet Group

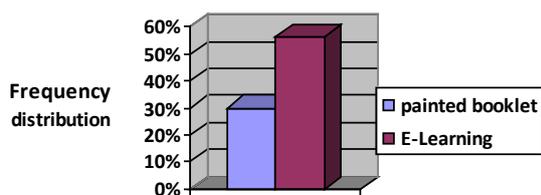| Knowledge score about neonatal care	Pre test	Post test	paired-t test
	N(%)	N(%)	
Low	23(63.8)	7 (19.4)	
Moderate	11 (30.5)	24 (66.6)	
Well	2 (5.5)	5 (13.8)	P = 0.012
total	36 (100)	36 (100)	

rate of rasing

Figure 1: Frequency distribution of subjects based on rate of score knowledge rasing in 2 groups in 2 weeks after intervention

Discussion

This study verified that a multimedia source using a computer is an effective midwifery intervention that can be used during postpartum period to raise knowledge. Results showed that the mean knowledge score after intervention in both groups had a significant increase and this increase indicates the effectiveness of both methods on the level of knowledge change. The Kou study (2009) in Taiwan showed that multimedia education leads to an increase of knowledge score (9). The Huang study (2007) also with the use of multimedia learning including picture, animation, slide show, demonstrated that the knowledge score about breastfeeding had increased two weeks after education compared to the control group (7.14 compared to 19.2)(10). Based on figure 1, rate of score increase of mother's knowledge was higher in the E-learning group than the painted booklet group. Thus, the impact of e-learning education is greater on knowledge and awareness promotion. In addition different studies have showen that educational pamphlets and packets are more efficient than conventional methods (11,12,13). Based on the Langkamp study, verbal instruction along with writing instruction is more useful than verbal instruction alone (14). In fact, e-learning (multimedia) information is accompanied by written words and animations and can be used at home, while traveling, and any during any other available time. In addition, working mothers are able to adjust their schedules based on e-learning. While limitations include, the inability to use the computer and internet as well as the download speed of a training programs that are web-based. It seems that e-learning method can be the leading learning method for volunteers; as the learner, alone is responsible for learning. The implications for future practice are that the delivery of health information to parents especially mothers by computers has the potential to revolutionize public health education by community midwives and nurses. Finally, computer-based strategies must be developed which can reach mothers more effectively.

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