

The Effectiveness of Training Through Mobile on the Practice of Midwives in the Management of Pre-Eclampsia

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ABSTRACT

Preeclampsia is associated with Maternal and fetal complications included intrauterine growth restriction, preterm delivery and fetal mortality risk. With provided proper training during pregnancy many of these risks can be prevented. This study aimed to determine the effect of administration of pre-eclampsia training via mobile on the knowledge and practice of midwives. In this quasi-experimental study 90 midwives working in six maternity hospitals were randomly divided into two groups. Both groups before and after intervention completed knowledge and practice questionnaire regarding management of pre-eclampsia. The intervention consisted of training required cases by mobile educational software installed on the test group. The collected data were analyzed using statistical software SPSS (Ver. 22). Results showed that the midwives mean score of knowledge about the management of pre-eclampsia before intervention between Test group (60.8) and control group (61) were not significantly different ($P=0.95$). But after the intervention in the experimental group (74.5) was significantly ($P=0.006$) more than the control group (63.2). The mean of midwives practice scores in the management of pre-eclampsia before the intervention in the control group was 72.3 and in the intervention group was 73.1 which there were no significant difference. But after intervention the mean performance of the experimental group (84.4) significantly ($P=0.004$) more than the control group (73.5). Training via educational software using a mobile phone to midwife can increase their knowledge and practice of preeclampsia in administration.

Keywords: Virtual education, pre-eclampsia, midwife, Knowledge and Practice.

INTRODUCTION

Annually, 190 million women become pregnant in the world¹. One of the most important complications of pregnancy is hypertensive disorders which one of the most important unsolved problems in midwifery medicine. This disorder associated with bleeding and infection constitute deadly triad in pregnancy². Among the variety of hypertension, the most dangerous is preeclampsia syndrome³.

Pre-eclampsia can lead to serious complications for mother including seizures, HELLP syndrome, subcapsular hematoma of the liver, acute renal failure, ICH and death. It also can cause baby complications including non-reassuring fetal heart rate, placental abruption, preterm labor, oligohydramnios, intrauterine growth retardation and death⁴. In order to describe the etiology and pathophysiology of preeclampsia many theories have been proposed. However, no single

cause for this disease has been found so far⁵. One of the strategies for reducing the risks of pregnancy and prenatal care is training midwives. The training is a process during which a person acquires some professional skill to do special act or job duty or lead to increasing his/her ability. During the training some condition provided to use the experiences and lessons learned practical⁶. On the other hand today's complex situation has the potential for efficient use of technology and modern means of presenting information and knowledge⁷.

Due to the rapidly increasing production of new knowledge and the development of communication technologies such as smart phone which provide the data associated with a variety of different subject without restriction of time and place for learners⁸, In this study, the training practices by smart phone and install the application on it, was used.

In previous studies around the world lack of professional health support, known as an important variable in achieving the goals of prenatal care especially breastfeeding^{9,10}. For example, in a study online software was used for clinical staff CME within a year. More than 90% of nurses and 68% of doctors stated that this tutorial achieved to its goals to change the health care team performance about breastfeeding¹¹.

According to what was explained, this study aimed to determine the effect of training via smart phones on the knowledge and practice of a midwife for administration of preeclampsia. It is obvious that use of correct and effective methods to training, promote the awareness and attitude and cause to change in behavior patterns.

MATERIALS AND METHODS

Current study was a quasi-experimental with pretest-posttest and the control group that was done in the first half of 2016. The study population consisted of a maternity hospital in Isfahan (Iran). For this purpose, six hospitals were divided randomly into two groups. Then 96 midwives working in hospitals, using by random sampling divided into two groups: intervention (n = 48) and control (n = 48). Inclusion

criteria included consent to participate in the study, having a bachelor's degree in midwifery and above, employment in labor wards of the Hospitals and having the Android smart phone.

A researcher made questionnaire was used to assess the performance of midwives. The first part consists of 6 demographic questions such as age, qualification, and work experience in maternity ward, away from graduation and type of employment, time since graduation and type of employment and the second part included questions on knowledge and practice of the administration of preeclampsia that designed similar to a scenario with multiple choices for self express. In order to check the validity of the questionnaire content validity and formal validity methods were used. Cronbach's alpha coefficient was used to confirm the reliability of the questionnaire that was equal to 86/0 which indicating reliability of the tool was used.

Pre-exam and post-test before and one week after the test in both control and intervention was done respectively. Educational software installed on the participant's phone, in the intervention group.

How to use the software were trained by researcher for intervention group. In cases where the intervention group had a question or problems in implementation of the software was created, questions just answered by phone or in person. To provide educational software the content of last country guide booklet of obstetric services was used. The software was about 20 megabytes, including the definition of pre-eclampsia, eclampsia, evaluation of emergency signals, facilities and equipment, drug treatment, necessary examinations, action at the time of seizure, description of the measures at the time of pre-eclampsia and postpartum practices through engaging and fun environment designed in the form of multiple-choice questions. Also part of the educational materials and software designed to help users on how to use the software. Its contents were confirmed by a group of experts and specialists in order to educational materials based on the objectives. After collecting data, the chi-square test, MANCOVA, Independent T and Paired T in SPSS22 software was used for data analysis.

RESULTS

Chi-square test showed there was no significant difference between demographic groups participating in the study included age of midwives(42% under 30 years), Education (91% BA),Experience in hospital (46% 1 to 5 years), The time of graduation (66% 1 to 10 years), type of employment (42% permanent) and demographic characteristics control group Including age of midwives participating in the study (44% under 30 years)Education (93% BA),1 to 5 years experience in hospital (66%), the time of graduation (68% 1 to 10 years), type of employment (37% permanent).The results of correlation scores of research variables with demographic characteristics such as age, Education, work experience in hospital, days from graduation showed that none of the variables had a significant relationship with research variables.

Results showed significant difference between the mean score of knowledge about management of preeclampsia in post-test in experimental group and control group (P=0.001). Also the relationship between pre-test and post-test was significant (P=0.001).In other words, training by mobile raise awareness about the

management of pre-eclampsia (effect size= 661/0) in the experimental group (Table 1).There was no significant difference in mean midwives scores of knowledge about the management of pre-eclampsia before intervention in the experimental group equal60.8 (SD=19.01) and the control group equal 61 (SD=15.4).But after intervention

In the experimental group, with an average of 74.5 (SD=22.7) significantly (P=0.006) more than the control group with an average of 63.2 (SD= 14.4). This average only in the experimental group after the intervention was significantly higher than before the intervention (P<0.001).

Independent t-test showed that the mean performance of midwives in the management of pre-eclampsia before intervention between the experimental group (73.1) and control group (72.03) was not statistically different (P=0. 7)But after the intervention in the experimental group (84.4), significantly(P=0.004) more than the control group (73.5).

Paired t-test showed that the score averages in the experimental group after the intervention, was significantly higher than before

Table 1: A comparison of the two groups in post-test score of knowledge on the management of pre-eclampsia

Variable	LAMBDA	F	Suppose degrees of freedom	error Degrees of freedom	Significance	Effect size	Statistical power
pre-exam of knowledge group	0.339	22.419	2	43	0.001	0.661	1.000
group	0.397	17.502	2	43	0.001	0.603	0.999

Table 2: A comparison of the two groups in post-test scores

Variable	LAMBDA	F	Suppose degrees of freedom	error Degrees of freedom	Significance	Effect size	Statistical power
pre-exam of knowledge group	0.115	88.784	2	23	0.001	0.885	1.000
group	0.484	12.267	2	23	0.001	0.516	0.995

the intervention ($P < 0.001$), but in the control group showed no significant difference between the two time ($P = 0.61$).

DISCUSSION

According to the results of this study training by smartphone was significantly effective to raise awareness and improve the performance of midwives in maternity hospitals in Isfahan.

In a quasi-experimental study by Mahdiyoon *et al.* which aims to compare the effects of interactive and non-interactive e-learning in the intensive care unit nurses' knowledge about the process of brain death and organ donation was done results showed that the level of awareness in both groups after the intervention significantly increased than before the intervention ($P < 0.001$). This finding confirms the findings of this study on the impact of education on raising awareness of the health staff¹². The quasi-experimental study by Nassiri *et al.* to compare the effect of lecture and e-learning on knowledge and attitudes of nursing students about ECT, the results showed that after intervention, knowledge and attitudes of both groups increased significantly compared to pre-intervention ($P < 0.05$). The average of increase in awareness of lecture group was 7.55 ± 4.40 and in e-learning was 10.57 ± 3.95 . The difference is statistically significant ($P = 0.03$). But increase levels of attitude in the lectures group was 2.05 ± 4.96 and in e-learning was 1.95 ± 5.82 , which the difference was not significant¹³. In a study by To W (2011) course participants who attended obstetric emergencies were examined through a survey. He said that midwives in 15 types of emergency obstetric management after various training courses, were more comfortable and relaxed. In addition their skills in various fields, had been raised, including management of preeclampsia¹⁴. Thus, the findings of this study were consistent with the findings of current study.

In explaining the findings it can be concluded that awareness is a very deep concept, which is not directly related with science, knowledge and a variety of mental reserves¹⁵. An activity is practical when done consciously. Being conscious means that the ability to detect, classify and respond appropriately to environmental stimuli, mental states are reportable,

person is able to access their inner states, just be attention and focused, conscious behavior can be controlled and the difference between sleeping and waking created^{16, 17}. In the present study, the test group by learning conducted, active knowledge acquired and what they had learned, well-wielded. If there is proper training, better performance will expect. As well as people with proper training, and implement changes in their work practices can have stronger skills and performance. In education by mobile phone, according to in learning spare time, and far from coercion for presence in a classroom setting, so can acquire more knowledge and repeat it several times if necessary. It is important to note that with repetition and practice the skills and performance improved. Craft and colleagues in a study in which the midwifery training was conducted showed that training in the management of obstetric emergencies can reduce maternal and perinatal mortality. However, some training programs had no clinical effects or even caused to spread of disease. Some reports have shown that after training, although the knowledge and skills of participants increases, but there have been no effective clinical results¹⁸. So results of this study are not the same with the results of the present study. Of the reasons for the lack of effect of training in the craft study it can be concluded that many factors are effective in the use of self-awareness and in crisis situations. Including family business, critical condition of the patient, shift work fatigue, lack of alternative work force, burnout, and lack of justice in the workplace and so on, which all contributed to the disuse of personnel's learned. Also Learning by mobile phone, based on the centrality of Person learner, and available to all age groups, everywhere and at all times. This type of learning fast and dynamic, yet low-cost so training opportunities are available to everyone.

The most important limitation of this study was individual differences that are associated with the impact of education and it was an uncontrollable variable to researcher.

CONCLUSIONS

According to the results this study and considering the importance of the role of midwives in reducing severe complications of preeclampsia,

as well as low cost training activities compared to non-teaching and risks, it seems that the design and implementation of training programs by using new methods such as training with cell phone, simple,

functional and user friendly virtual training In order to increase the level of awareness among health staff is efficient and helpful.

REFERENCES

- Kohan S, Beigi M, Taebi M. Midwives' Experiences of Applying Critical Thinking in High Risk Situations at Labor Unit: A Qualitative Study. *Iranian Journal of Medical Education*. **13**(4):341-52 (2013).
- Magee LA, Pels A, Helewa M, Rey E, von Dadelszen P, Committee SHG. Diagnosis, evaluation, and management of the hypertensive disorders of pregnancy: executive summary. *Journal of Obstetrics and Gynaecology Canada*. **36**(7):575-6 (2014).
- Storgaard M, Malchau S, Forman J, Pinborg A. Risk of preeclampsia and hypertensive disorders of pregnancy (HDP) in singleton and twin oocyte donation (OD) pregnancies. Human Reproduction. (2015).
- Shaheen SO, Macdonald-Wallis C, Lawlor DA, Henderson AJ. Hypertensive disorders of pregnancy, respiratory outcomes and atopy in childhood. *European Respiratory Journal*. **47**(1):156-65 (2016).
- Nelson DB, Ziadie MS, McIntire DD, Rogers BB, Leveno KJ. Placental pathology suggesting that preeclampsia is more than one disease. *American journal of obstetrics and gynecology*. **210**(1):66. e1-. e7 (2014).
- Phillips D, Duke M, Nagle C, Macfarlane S, Karantzas G, Patterson D. The Virtual Maternity Clinic: A teaching and learning innovation for midwifery education. *Nurse education today*; **33**(10):1224-9 (2013).
- Button D, Harrington A, Belan I. E-learning & information communication technology (ICT) in nursing education: A review of the literature. *Nurse Education Today*. **34**(10):1311-23 (2014).
- Raman J. Mobile technology in nursing education: where do we go from here? A review of the literature. *Nurse education today*. **35**(5):663-72 (2015).
- Berg M, Sparud-Lundin C. Experiences of professional support during pregnancy and childbirth—a qualitative study of women with type 1 diabetes. *BMC pregnancy and childbirth*. **9**(1):27 (2009).
- Hannula L, Kaunonen M, Tarkka MT. A systematic review of professional support interventions for breastfeeding. *Journal of clinical nursing*. ; **17**(9):1132-43 (2008).
- Wutoh R, Boren SA, Balas EA. ELearning: a review of Internet based continuing medical education. *Journal of Continuing Education in the Health Professions*; **24**(1):20-30 (2004).
- Mahdiyoun SA, Imanipour M, Mojtahedzadeh R, Hosseini AF. Comparison of Effectiveness of Interactive and Non-interactive Virtual Education about Brain Death and Organ Transplantation on Knowledge and Satisfaction of Critical Care Nurses. *Journal of hayat*. **21**(2):40-53 (2015).
- Nasiri M, Davarpanah M, Adarvihi S. Comparison of two methods of E-learning and lectures on knowledge and attitude toward ECT. *Journal of Medical Education Development Center*. **5**(4):321-40 (2014).
- To W. Training in emergency obstetric skills: is it evidence-based. *Hong Kong Med J*. **17**(2):141-6 (2011).
- Bapat U, Kedlaya PG. Organ donation, awareness, attitudes and beliefs among post graduate medical students. *Saudi Journal of Kidney Diseases and Transplantation*. **21**(1):174 (2010).
- Saunders PA, Tractenberg RE, Chaterji R, Amri H, Harazduk N, Gordon JS, et al. Promoting self-awareness and reflection through an experiential mind-body skills course for first year medical students. *Medical Teacher*. **29**(8):778-84 (2007).
- Vaz K, McGrowder D, Alexander-Lindo R, Gordon L, Brown P, Irving R. Knowledge, awareness and compliance with universal precautions among health care workers at the University Hospital of the West Indies, Jamaica. *The international journal of occupational and environmental medicine*.

- 1(4 October) (2010).
18. Crofts JF, Mukuli T, Murove BT, Ngwenya S, Mhlanga S, Dube M, et al. Onsite training of doctors, midwives and nurses in obstetric emergencies, Zimbabwe. *Bulletin of the World Health Organization*. **93**(5):347-51 (2015).