

Comparing the Effectiveness of Webinars and Participatory Learning on Essential Newborn Care (ENBC) in the Class Room in Terms of Acquisition of Knowledge and Skills of Student Nurses: A Randomized Controlled Trial

Poonam Joshi · Anu Thukral · Meena Joshi ·
Ashok K. Deorari · Manju Vatsa

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Abstract A randomized controlled trial was conducted in tertiary level center to compare the effectiveness of Webinars (WL) vs. Participatory learning (PL) on Essential Newborn Care (ENBC) in terms of acquisition of knowledge and skills of pre-service 6th semester student nurses. They were randomized to receive teaching on four topics of ENBC by two facilitators. Gain in knowledge and skill scores in ENBC were measured using validated assessment methods. Baseline characteristics including age, education, marks and hours of internet surfing were comparable between two groups (WL: $n=28$, PL: $n=30$). Pre-training mean knowledge scores in WL and PL group (mean \pm SD) (30.96 ± 5.62 vs. 31.43 ± 4.74 $p=0.42$), and skill scores (19.14 ± 3.37 vs. 19.20 ± 3.71 respectively, $p=0.77$) were comparable. Training methods resulted in equal gain in knowledge in both groups. Satisfaction scores among the participants were also comparable. Thus, using webinars on ENBC as new technology in class room teaching may be an effective, alternative method to using participatory learning.

Keywords Webinars · Essential newborn care · Participatory learning · Satisfaction

Introduction

Nurses play a critical role in perinatal-neonatal care at all levels of the health system. Essential newborn nursing is taught to the nursing students in only few institutions using a high quality essential newborn care (ENBC) training module, prepared by Department of Pediatrics, All India Institute of Medical Sciences (AIIMS) in collaboration with World Health Organization (WHO). Teaching and learning strategies used in this training program are facilitated by self reading, self evaluation, oral drill, demonstration, role plays and feedback [1]. Webinars (lecture transmitted over web) on ENBC is a further step taken in the direction of improving the newborn nursing care, by making the resource material available easily with the help of information technology to all existing educational nursing institutions in India. So far, there has not been any published trial comparing relative effectiveness of webinars and participatory learning for teaching ENBC nursing in the class room. Hence, the authors designed this randomized trial to evaluate the impact of two different methods of teaching *i.e.*, webinars (WL) and participatory learning (PL). The secondary objective of the study was assessment of students' satisfaction with these two different methods.

Material and Methods

This trial was conducted at the college of nursing of a tertiary care hospital. To calculate sample size; a pilot study was conducted. Mean knowledge score of 9 nursing students was 6 ± 1.1 ; it was assumed that raising the mean knowledge score to 7.5 ± 1.1 would be the reflection of

P. Joshi (✉) · M. Vatsa
College of Nursing, All India Institute of Medical Sciences,
New Delhi 110029, India
e-mail: pjoshi69@rediffmail.com

A. Thukral · M. Joshi · A. K. Deorari
Department of Pediatrics, All India Institute of Medical Sciences,
New Delhi, India

improved knowledge. The estimated sample size was 13 in each group.

The authors had 59 sixth semester nursing students, all of whom consented for the study and were enrolled. They were randomly allocated using computer generated random sequence to either WL or PL. One student did not turn up on the second day of training program, therefore excluded.

Training on ENBC was provided covering four modules (care of the baby at birth, care of normal baby after birth, thermal protection and feeding normal and low birth weight babies) by two certified ENBC facilitators in two separate class-rooms in one and half day training program. Each facilitator covered two modules in each group. The training program consisted of projecting webinars in the WL ($n=28$) and participatory learning in PL ($n=30$) group along with demonstrations, return demonstrations, drills and discussions common to both groups. In WL group students attended the audio-visual lectures, while in PL students read the resource material at their own pace.

For measuring the primary outcome *i.e.*, gains in knowledge and skills, assessment was carried out independently by four certified trainers in ENBC. Assessment of knowledge was performed by an objective structured questionnaire consisting of 18 items. Assessment of skills was performed by four objective structured clinical examination (OSCE) stations namely (1) care at birth, (2) providing Kangaroo Mother Care (KMC) to LBW baby, (3) taking temperature in newborn (4) preventing hypothermia in a new born. Satisfaction of students, a secondary outcome variable was measured with a five point likert's scale questionnaire. Demographic data was gathered using another self administered questionnaire. The participants were escorted by separate routes.

The assessment team (blinded to the training methods) assessed both the groups before and after the training program. Data was analyzed using SPSS 15.0. Group characteristics were compared with chi-square test and independent *t* test for discrete and continuous variables, respectively. Between two groups and within

the group independent *t* test and paired *t* test were used respectively ($p<0.05$)

Results

Demographic characteristics of the subjects (age, education, marks, hours of internet surfing) were comparable in both groups. Pre-training mean knowledge and skill scores in both groups (WL and PL) were comparable [(30.96±5.62 vs. 31.43±4.74, $p=0.42$) and (19.14±3.37 vs. 19.20±3.71, $p=0.77$)] respectively. Training resulted in similar gain in knowledge and skill scores in both the groups (WL, 39.50±3.67 vs. PL, 40.07±4.06, $p=0.60$) and (WL, 25.86±2.07 vs. PL, 25.57±2.18, $p=0.63$). The gain in knowledge and skill scores within the group was significant (Table 1). Training satisfaction with content, delivery, personal gain, teacher's ability, active participation, individual attention and delivery of subjects were comparable in two groups (82.04±4.887 vs. 79.20±7.261, $p=0.064$). Minor technical difficulties in terms of pausing and streaming the sessions were encountered in webinars group.

Discussion

The most notable aspect of webinars was that it brought about the comparable gain in knowledge, skills and satisfaction pertaining to ENBC. The present results are consistent with other studies in finding no difference between web based and traditional methods like self reading, lecture or face to face interaction [2–7]. In the present study demonstrations and clarifications by the facilitators may be the reasons for similar learning outcomes.

Conclusions

Teaching essential newborn care using webinars is an acceptable and a feasible method.

Table 1 Gain in mean knowledge and skill scores between and within groups

Variable		WL ($n=28$) (mean ± SD)	PL ($n=30$) (mean ± SD)	<i>p</i> value (between groups)	<i>p</i> value (within group)
Knowledge score	Pre test	30.96±5.62	31.43±4.74	0.42	<0.001
	Post test	39.50±3.67	40.07±4.06	0.60	<0.001
Skill score	Pre test	19.14±3.37	19.20±3.71	0.77	<0.001
	Post test	25.57±2.18	25.86±2.07	0.63	<0.001
Satisfaction score	Post test	82.04±4.89	79.20±7.26	0.06	

Independent *t* test, $p<0.05$, between two groups

Paired *t* test, $p<0.05$, with in group

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Conflict of Interest None.

Role of Funding Source None.

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