

A Blended Learning Approach for Basic Emergency Obstetric and Newborn Care (BEmONC) Training in Ethiopia

Summary:

Many countries are considering alternative approaches to conventional in-service clinical training because of high costs and disruption to service delivery when providers are pulled away from health facilities. Research on alternative and cost effective blended training approaches moves us closer to the objective of building competencies of health providers and minimizing the impact of necessary trainings on health service delivery. This technical brief presents an overview of the study's key findings with respect to blended and conventional BEmONC learning approaches, followed by a recommendation for BEmONC training programming and implementation.

Key Message:

There was no difference in knowledge but a small but statistically significant reduction in the skill retention with the blended approach compared to a traditional training approach. However, the blended approach cost 38% less trainee and required six fewer days away from the job. Further study is needed to see if the blended approach can be improved in the Ethiopian context, since it can be done with lower cost and less work disruption compared to a traditional training approach.

Background

From November 2015 to June 2016 the Maternal and Child Survival Program (MCSP) Strengthening BEmONC Project conducted a study to determine the effectiveness of a blended training approach for BEmONC training in Ethiopia. Objectives of the study were to:

1. Determine whether the knowledge gained through a blended BEmONC learning approach was similar to or better than that gained through the conventional BEmONC learning approach;
2. Determine whether the skills gained through a blended BEmONC learning approach were similar to or better than that gained through the conventional BEmONC learning approach; and
3. Determine whether the cost of the blended learning approach is less than the conventional learning approach.

Methods

Study Design – A quasi experimental study compared blended learning and conventional learning groups on overall BEmONC competency, knowledge and skills.

Sample Size - Out of 80 providers invited to each study arm, 78 and 75 participated in the intervention and control arms, respectively.

Setting - Amhara, Oromia and Southern Nations Nationalities & Peoples (SNNP) regions of Ethiopia

Intervention - The blended learning approach included eight days spent on clinical simulation and practice with theoretical content being delivered in advance for four days, followed by use of short messaging service (SMS) and phone for post-training follow-up. The conventional approach dedicates more time to theory, with the same emphasis on clinical practice, followed by post-training on-site mentoring. The components of the blended and conventional learning approaches are presented in Table 1.

Study Outcomes, Instruments and Procedures – A self-administered questionnaire was used to measure provider knowledge, a structured questionnaire was used to collect socio-demographic data, and an observation checklist was used to document provider skills.

Outcomes

1. Knowledge was measured based on percent correct of 47 items. Health care providers' knowledge was assessed three times: pre-course, soon after completion of off-site training, and three-month post training.
2. Health care provider skills were measured through observation by expert observers using clinical simulation three months after the group training.

Assessors were national master BEmONC trainers with substantial experience in providing clinical maternal and newborn health services. They received three days of training to ensure standardization of data collection procedures.

Analysis methods – Data were entered to Epidata version 3.1 database and analyzed using SPSS version

24. Group comparison between blended and conventional approaches was computed using the independent-samples t-test. Analysis was intention-to-treat, a whole group analysis. We also conducted per-protocol analysis, which is based on fidelity to the full intervention including follow-up.

Table 1: Differences in training packages between the blended and conventional learning approaches in BEmONC training

The conventional package used tools for mentoring as per the national BEmONC training package. The blended approach was a package of SMS messages and guidelines for structured phone call follow up developed for the study.

Elements	Conventional	Blended
Group-based training	<ul style="list-style-type: none"> • 8 days of theoretical training • 10 days of practical sessions 	<ul style="list-style-type: none"> • 4 days of theoretical training • 8 days of practical sessions
Post-training follow up	<ul style="list-style-type: none"> • On-site mentoring (after 45 days) 	<ul style="list-style-type: none"> • SMS follow-up for two months after group-based training (Sending computer generated message was sent every day) • Follow up through phone call

Results

Characteristics of study participants: In the conventional learning group, 42.7%, 42.6% and 14.7% were from the Amhara, Oromia and SNNP regions, respectively, compared to 41%, 19.2% and 39.8% of health care providers in the blended BEmONC learning group. Among health care providers in the conventional learning group, 53.3% were females, 52% were age 20 to 24 years and 96% were midwives by profession (Table 2).

Table 2: Percent distribution of study participants by learning approach, according to selected socio-demographic characteristics

Sociodemographic and facility characteristic	Learning approach		Total
	Conventional BEmONC (N = 75)	Blended BEmONC (N = 78)	
Sex of respondent			
Male	46.7	28.2	37.3
Female	53.3	71.8	62.7
Educational attainment			
Diploma/TVET	79.7	85.9	82.9
Undergraduate degree	20.3	14.1	17.1
Age of study participant			
20-24	52.0	62.7	57.3
25-30	48.0	37.3	42.7
Qualification			
Health Officer	1.3	1.3	1.3
Nurse	2.7	5.1	3.9
Midwife	96.0	93.6	94.8
Region			
Amhara	42.7	41.0	41.8
Oromia	42.6	19.2	30.7
SNNPR	14.7	39.8	27.5

Implementation fidelity with follow-up support: 68% of conventional learning groups received on-site mentoring, of which the majority (60%) received the on-site mentoring within two months post-training. The phones of health professionals were used for the phone call follow-up and SMS in the blended BEmONC arm. 55% of the blended BEmONC learning groups received post training follow-up by phone, while the remaining 45% did not receive the phone follow-up due to challenges related to insufficient network coverage, and a lack of sustained power supply to charge their mobile phones. In this study, about one-third of the health centers where the health professionals worked did not have a 24-hour power supply, and nearly 8% of the study participants did not have network coverage in their workplaces.

Health care providers' knowledge retention:

Intention-to-treat analysis: The overall knowledge retention rate between the two training approaches was statistically equivalent three months post-training (conventional=75.5% vs. blended=74.7%; $p = 0.720$).

Per-protocol analysis: Among only study participants who received the full training package (subset of participants), the mean percentage knowledge score was 77.1% for the conventional learning group and 76.6% for the blended learning group ($p = 0.867$).

Health care providers' skill retention:

Intention-to-treat analysis: Three months post-training, the mean percentage skill score was higher among the conventional learning groups compared to the blended learning group: specifically 85.8% for the conventional learning group and 75.3% for the blended learning group ($p < 0.001$).

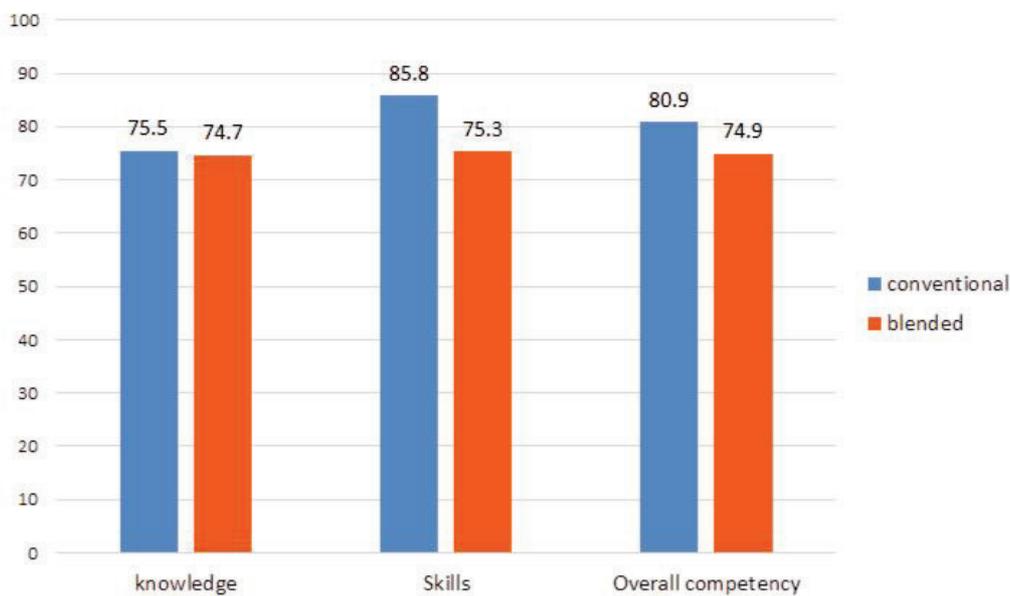
Per-protocol analysis: Among only study participants who received the full training package (subset of participants), the mean percentage skill score was 88.0% for the conventional learning group and 79.3% for the blended learning group ($p < 0.001$).

Health care providers' overall competency score (knowledge plus skills):

Intention-to-treat analysis: Three-months post-training, the overall mean percentage competency scores (knowledge and skills combined) were higher among the conventional learning group compared to the blended learning group (80.9% vs 74.9%, $p = 0.001$).

Per protocol analysis: The overall mean percentage competency scores (knowledge and skills combined) were also higher among the conventional learning group than compared to the blended learning group (83.2% vs 78.0%, $p = 0.015$), a small but significant difference.

Figure 1: Knowledge, skills and overall mean percentage competency scores three months post-training, by learning approach



Note: The 'overall competency score' is not a simple arithmetic average of the two. Knowledge and skill scores have no similar weights to drive the overall percentage score.

Cost of Training

Direct costs: For blended learning, the mean cost per trainee was 1,023 USD compared to 1,648 USD for that of the conventional learning approach.

Cost of service interruption: On average, six days can be saved per trainee (i.e. the additional days required in the conventional learning approach), an amount of time during which an average of 10,000 adults and children, and over 1,000 deliveries would normally have been attended by 75 health care providers that were at the off-site conventional training. The blended approach minimized the amount of time health care providers must spend away from their facilities.

Conclusion

There was no difference in knowledge but a small yet statistically significant difference in the skill retention between the conventional and blended learning group in both the intention to treat and per protocol analyses. However, there was a 38% reduction in per trainee costs with the Blended approach.

Recommendation

We feel that implementing the blended approach could be considered as an alternative BEmONC training approach in Ethiopia. Further study might help to improve the approach in the Ethiopian context so that it would yield equivalent trainee results.

The Maternal and Child Survival Program (MCSP) is a five year global, United States Agency for International Development (USAID) cooperative agreement to support the introduction of high-impact health interventions in 25 priority countries, with the ultimate goal of ending preventable child and maternal deaths within a generation. MCSP built upon established relationships and approaches from the preceding USAID global Maternal and Child Health Integrated Program (MCHIP) award (2008 - 2014). In Ethiopia, MCSP is implemented by Jhpiego and Save the Children in Amhara, Oromia, Tigray and SNNP regions. From 2014 – 2016, Jhpiego implemented the Strengthening Basic Emergency Obstetric and Newborn Care (Strengthening-BEmONC) component of MCSP and contributed to increased availability and utilization of quality maternal and newborn health (MNH) services. The Strengthening BEmONC Project worked at national, regional and facility levels, advocating for respectful maternity care, improving referral and linkages and overall quality of MNH services, scaling up quality BEmONC and postpartum family planning services, and conducting research for MNH.

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