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Evaluation of capacity to deliver emergency obstetrics and newborn care updated midwifery and reproductive health training curricula in Kenya: Before and after study

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ABSTRACT

Introduction: Provision of emergency obstetric and newborn care (EmONC) by skilled health personnel reduces maternal and newborn mortality. Pre-service diploma midwifery and clinical medicine (reproductive health) curricula in Kenya were reviewed and updated integrating the competency based EmONC curriculum. A two-part (virtual for theoretical component and face-to-face for the skills-based component) capacity building workshop for national midwifery/clinical medicine trainers of trainers to improve their capacity to implement the updated curricula and cascade it to colleagues nationwide was conducted.

Purpose: This paper measured change in confidence of pre-service midwifery/clinical medicine educators to deliver the updated competency-based curricula in Kenya.

Methods: A before-after study among 51 midwifery/clinical medicine educators from 35 training colleges who participated in upskilling workshops as trainers-of-trainers for the updated curricula between September-November 2020. Assessment included self-reported confidence using a 3-point Likert scale (not confident, somewhat confident or extremely confident) in facilitating online teaching (as COVID-19 pandemic containment measure), EmONC skills teaching/demonstration; scenario/simulation teaching, small group discussions, peer review and giving effective feedback. Analysis involved test of proportions with p-values < 0.05 statistically significant.

Results: Educators' confidence significantly improved in facilitating virtual teaching (46% to 70%, $p = 0.0082$). On the competency-based training, the confidence among educators significantly increased in facilitating EmONC skills teaching/demonstration (44% to 96%), facilitating scenario/simulation teaching (46% to 92%), facilitating small group discussions (46% to 94%), giving effective feedback (46% to 92%), and peer review and feedback (47% to 77%), $p < 0.05$).

Conclusion: The blended training improved the confidence of pre-service educators to deliver the updated midwifery/clinical medicine curricula.

1. Introduction

Quality midwifery education underpins the provision of quality midwifery care and is vital for the health and well-being of women, infants, and families (World Health Organization, United Nations Population Fund, & International Confederation of Midwives, 2021). Improving access to midwifery including skilled attendance at birth, provision of emergency obstetric and newborn care (EmONC) and

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family planning could avert 83% of all maternal deaths, stillbirths and neonatal deaths (ten Hoope-Bender et al., 2014). Despite the known benefits associated with midwifery education and training, it remains grossly under-invested with variation in the quality, content and duration of content between and within countries (World Health Organization, United Nations Population Fund, International Confederation of Midwives. (2021), 2021). Barriers to quality midwifery education and training in low- and middle-income countries include deficient curriculum, inadequate content, insufficient and poorly trained educators, lack of connection with clinical practice and use of didactic teaching methods in traditional classroom settings despite advances in teaching methods (Adegoke, Mani, Abubakar, & van den Broek, 2013; Filby, McConville, & Portela, 2016; Gavine, MacGillivray, McConville, Gandhi, & Renfrew, 2019).

Pre-service diploma midwifery and clinical medicine (reproductive health specialty) curricula in Kenya were reviewed and updated in 2019/2020 integrating the competency-based EmONC. The updating used the Liverpool School of Tropical Medicine's (LSTM) Emergency Obstetrics and Newborn Care Training for Skilled Health Personnel package (Ameh. et al., 2021). This package has been used by LSTM in collaboration with Ministries of Health in over 15 LMICs to strengthen the capacity of maternity care providers for quality EmONC (Ameh & van den Broek, 2015). The updated curricula included principles of adult teaching and learning, respectful maternity care (RMC), shoulder dystocia, newborn resuscitation, breech birth, vacuum assisted birth, manual vacuum aspiration, airway management, cardio-pulmonary resuscitation, placenta abruptio, eclampsia, hypovolemic shock, septic shock, newborn examination and resuscitation; situation background assessment and recommendation (SBAR) communication to facilitate efficient clinical handover and care; WHO surgical safety checklist to promote theatre safety, teamwork and reduce surgical related deaths; physiological labour and birth including active management of the third stage of labour – including the introduction of heat-stable carbetocin in management of postpartum haemorrhage; peer learning and support in teaching. A two-part capacity building workshop for national midwifery/clinical medicine (reproductive health specialty) trainers of trainers to improve their capacity to implement the updated curricula and cascade it to colleagues nationwide was conducted. The workshop also covered setting up virtual classrooms, sharing/presenting teaching material (PowerPoint slides or other media), use of the whiteboard and breakout rooms for small group work features in Zoom to facilitate interactive online teaching. Part 1 was a three-day virtual workshop for the theoretical component (including an additional module on 'facilitating online teaching' as part of the COVID-19 containment measure and modification to pre-service teaching) and part 2 was a two-day face-to-face workshop for the skills-based component. This paper reports on the change in confidence of pre-service midwifery and clinical medicine (reproductive health specialty) educators to deliver EmONC within the updated midwifery and clinical medicine (reproductive health) curricula after training workshops in Kenya.

2. Methodology

Cross-sectional online survey assessment before and after both workshops among 51 diploma midwifery and clinical medicine (reproductive health specialty) educators from 35 Kenya Medical Training Colleges (KMTCs) between September and November 2020. This was a two-part survey on the educators' capacity to deliver EmONC within the updated midwifery and clinical medicine (reproductive health specialty) curricula and their perception on the early impact of COVID-19 on midwifery training in Kenya. The educators were purposively selected by each KMTC, with at least one educator nominated from midwifery or clinical medicine (reproductive health specialty) department per institution. The study population included educators within the KMTC with a specific eligibility criterion for participation that included an educator who had attended a previous basic EmONC training and actively facilitates teaching, students' clinical supervision and assessments in midwifery or clinical medicine (reproductive health) in the training institution. Before the start of the training, participants were informed about the anonymous online survey and the benefits of participating in the survey by LSTM's senior technical officer and training coordinator. It was emphasized that participation in the survey was voluntary, and data collected was strictly confidential. Importantly, data collected was not shared with the institutions' managers/supervisors neither did it form part of their (educators) performance appraisals. Ethical clearance was not obtained for the study. The study was approved by the Ministry of Health as part of the project monitoring and evaluation plan. Participants were informed of this, and all participants consented. Findings on the early impact of COVID-19 pandemic on midwifery education were published in a separate paper (Shikuku et al., 2021). Self-reported confidence covering facilitating online teaching, EmONC skills teaching and demonstration, scenario/simulation teaching, small group discussions, peer review and principles of effective feedback including giving effective feedback was assessed. An anonymous online assessment checklist designed in Google Forms software was used. To ensure participant anonymity, no identifying information – name, email address, IP address, and gender were collected on the online forms. Additionally, no signing in was required to access the form. This assessment was conducted before the start and end of the training, with participants completing the anonymous online self-confidence assessment checklist. Self-reported confidence was rated using a 3-point Likert scale (not confident, somewhat confident or extremely confident) covering facilitating online teaching, EmONC skills teaching and demonstration, scenario/simulation teaching, small group discussions, peer review and principles of effective feedback including giving effective feedback. All questions in the survey tool were valid with their obtained Pearson correlation values greater than the critical value of 0.2907 ($p < 0.0001$) at 95% confidence interval. The internal consistency of the survey questions, a measure of reliability of the survey tool, was good and acceptable with a Cronbach's alpha of 0.889 for the surveyed items. Analysis involved proportions and differences in the proportions before and after the training were tested using two-sample test of proportions in STATA version 12. P-values < 0.05 were considered statistically significant.

3. Results and discussion

3.1. Demographic characteristics of participants

A total of 51 educators (19 males and 32 females), consisting of 32 (63%) midwives, 16 (31%) clinical officers (reproductive health specialty) and 3 (6%) doctors participated in the training. About half ($n = 25$, 49%) of the educators also had a management role in their institutions as a college administrator, principal or head of department.

3.2. Educators' confidence before and after in facilitating teaching

On facilitating online teaching, the response rate was 80% (41 of 51 educators) before and 96% (48 of 51) after the training. For skills training, the response rate was 100% (48 of 48) after the training. 31 of 41 (76%) educators had used either Zoom or Google Meet online/virtual teaching platforms to deliver online content to pre-service students. The confidence of educators on facilitating virtual teaching increased significantly from 46% to 70% ($p = 0.0082$).

On competency-based training, the confidence among educators significantly increased in facilitating EmONC skills teaching (44% to 96%), facilitating scenario/simulation teaching (46% to 92%), facilitating small group discussions (46% to 94%) and giving feedback to students (46% to 92%), $p < 0.0001$. Similarly, the confidence to provide peer review and feedback using the 'sandwich technique' significantly increased from 47% to 77%, $p = 0.0016$ (Fig. 1).

The review and updating of the curricula to integrate the

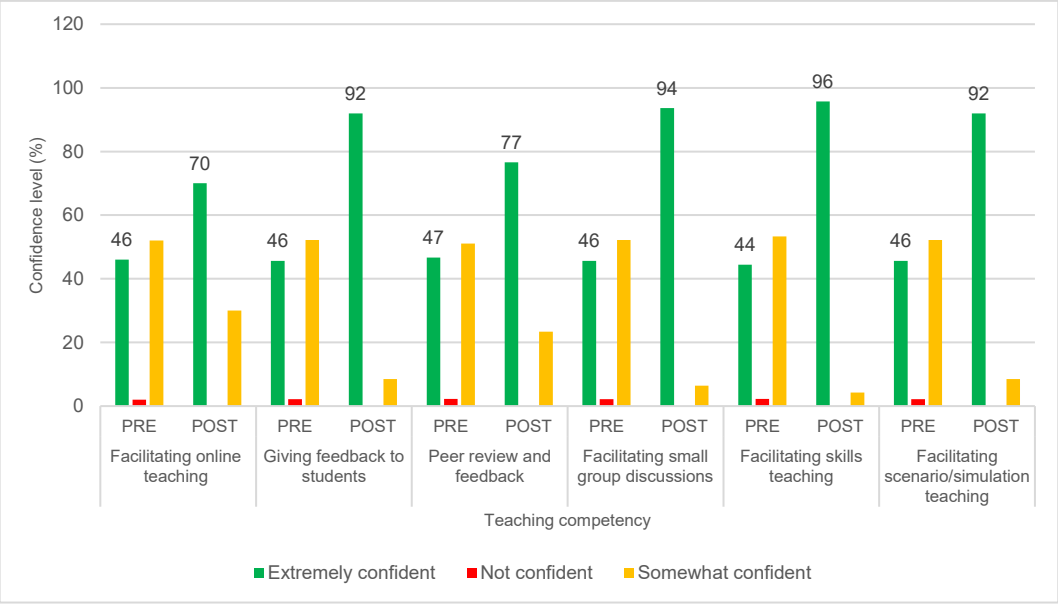

Fig. 1. Confidence levels of educators in delivering teaching competencies before and after the training.

competency-based skills and training of educators on various delivery methods of the updated curricula is an effective strategy to improve pre-service training that has been largely didactic (WHO, 2016). Building the capacity of these educators to support learning virtually is a critical strategy to ensure resilience of skilled health worker education programmes during severe public health emergencies like COVID-19 associated with restrictive containment measures.

The improved confidence in teaching competencies among pre-service educators using the stimulating participatory teaching approaches in this study is a great step towards building midwifery educators' capacity in teaching and achieving the competency-based pre-service training expected for skilled health personnel. Educators being able to apply the stimulating participatory teaching approaches in a supportive clinical environment is associated with improved students' outcomes and lead to sustainable improvements in midwifery education (West, Homer, & Dawson, 2016). This will facilitate teaching of clinical skills and promote competency among both pre-service educators and trainees to ensure quality healthcare workforce, availability and utilisation of EmONC services as skilled health personnel and reduce preventable maternal and newborn deaths (Ameh & van den Broek, 2015; WHO, 2018). This is an essential sustainable strategy that will ensure that pre-service midwifery and reproductive health graduates will be competent after graduation to provide life-saving EmONC with less frequent additional in-service refresher training in EmONC. Further technical skills support through regular structured mentorship on implementation of the updated competency-based curricula among the educators will be provided and monitored through a randomized controlled trial that has been registered at https://www.isrctn.com/ISRCTN14203188. We acknowledge that self-reporting technique for data collection has the potential for bias as participants are likely to overate themselves. However, the provision of multiple options in the responses mitigated against this potential bias.

4. Conclusion

The blended training improved the confidence of pre-service educators to deliver the updated midwifery and clinical medicine curricula. Additional support and upskilling through regular mentorship and continuous professional development on lifesaving EmONC skills will be required to ensure that the essential acquired skills and attitudes among pre-service skilled health personnel are retained.

Ethical approval

The participants in this anonymised survey were pre-service midwifery educators selected by the Kenya Medical Training College as trainers of trainers and registered by LSTM in the two-part workshop (Part 1 was a three-day virtual workshop for the theoretical component and part 2 was a two-day face-to-face workshop for the skills-based component) on delivery of the updated midwifery/clinical medicine curricula integrated with emergency obstetrics and newborn care. Ethical clearance was not obtained for the study. The study was approved by the Ministry of Health as part of the project monitoring and evaluation plan. Participants were informed of this, and all participants consented. Participation in the survey was voluntary and denying participating in the survey did not interfere with participation in the training. Part of the study findings have been published in a separate study available at https://academic.oup.com/inthealth/article/14/3/336/6384818?login=true.

CRediT authorship contribution statement

Duncan N. Shikuku: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – original draft, Writing – review & editing. **Edna Tallam:** Methodology, Investigation, Project administration, Writing – review & editing. **Ibrahim Wako:** Methodology, Investigation, Project administration, Writing – review & editing. **Agnes Mualuko:** Methodology, Investigation, Project administration, Writing – review & editing. **Lucy Waweru:** Methodology, Investigation, Project administration, Supervision, Writing – review & editing. **Lucy Nyaga:** Methodology, Investigation, Project administration, Supervision, Writing – review & editing. **Issak Bashir:** Project administration, Supervision, Writing – review & editing. **Charles Ameh:** Conceptualization, Methodology, Investigation, Resources, Project administration, Supervision, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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