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Association between the safe delivery app and quality of care and perinatal survival in Ethiopia: A randomized clinical trial

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Importance: Health apps in low-income countries are emerging tools with the potential to improve quality of health care services, but few apps undergo rigorous scientific evaluation.

Objective: To determine the effects of the safe delivery app (SDA) on perinatal survival and on health care workers' knowledge and skills in neonatal resuscitation.

Design, Setting, & Participants: In a cluster-randomized clinical trial in five rural districts of Ethiopia, 73 health care facilities were randomized to the mobile phone intervention or to standard care (control). From September 1, 2013 to February 1, 2015, 3601 women in active labor were included at admission and followed up until seven days after delivery to record perinatal mortality. Knowledge and skills in neonatal resuscitation were assessed at baseline and at 6 and 12 months after the intervention among 176 health care workers at the included facilities. Analyses were performed based on the intention-to-treat principle.

Interventions: Health care workers in intervention facilities received a smartphone with the SDA. The SDA is a training tool in emergency obstetric and neonatal care that uses visual guidance in animated videos with clinical instructions for management.

Main Outcomes & Measures: The primary outcome was perinatal death. Secondary outcomes included the knowledge and clinical management of neonatal resuscitation (skills) of health care workers before the intervention and after 6 and 12 months.

Results: The analysis included 3601 women and 176 health care workers. Use of the SDA was associated with a non-significant lower perinatal mortality of 14 per 1000 births in intervention clusters compared with 23 per 1000 births in control clusters (odds ratio, 0.76; 95% CI, 0.32-1.81). The skill scores of intervention health care workers increased significantly compared with those of controls at 6 months (mean difference, 6.04; 95% CI, 4.26-7.82) and 12 months (mean difference, 8.79; 95% CI, 7.14-10.45) from baseline, corresponding to 80% and 107%, respectively, above the control level. Knowledge scores also significantly improved in the intervention compared with the control group at 6 months (mean difference, 1.67; 95% CI, 1.02-2.32) and at 12 months (mean difference, 1.54; 95% CI, 0.98-2.09), corresponding to 39% and 38%, respectively, above the control level.

Conclusions & Relevance: The SDA was an effective method to improve and sustain the health care workers' knowledge and skills in neonatal resuscitation as long as 12 months after introduction. Perinatal mortality was non-significantly reduced after the intervention. The results are highly relevant in low-income countries, where quality of care is challenged by a lack of continuing education.

Biography

Stine Lund is a Pediatrician with extensive experience in global reproductive and child health. Her area of special interest is health systems in Sub-Saharan Africa, where for the last decades has worked for numerous organizations including Danida (Danish International Development Agency) and as an independent Consultant. She has extensive experience with innovative use of mobile phone solutions to improve maternal and child health in Sub-Saharan Africa. She is responsible for the development, research and scale up of two exciting mHealth innovations; the Wired Mothers and the Safe Delivery App. The Wired Mothers is a SMS based system that links women to health systems throughout pregnancy and early childhood while the Safe Delivery App uses animation-videos to improve quality of care with a focus on lifesaving interventions such as management of post-partum hemorrhage and neonatal resuscitation. Academically, she holds a PhD degree and is affiliated with the Department of Public Health, University of Copenhagen, Denmark with a focus on conducting randomized controlled trials in Ghana, Ethiopia and Tanzania.

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