



Essential Care for Small Babies (ECSB) Improves Knowledge, Performance and Confidence in Caring for Small Babies

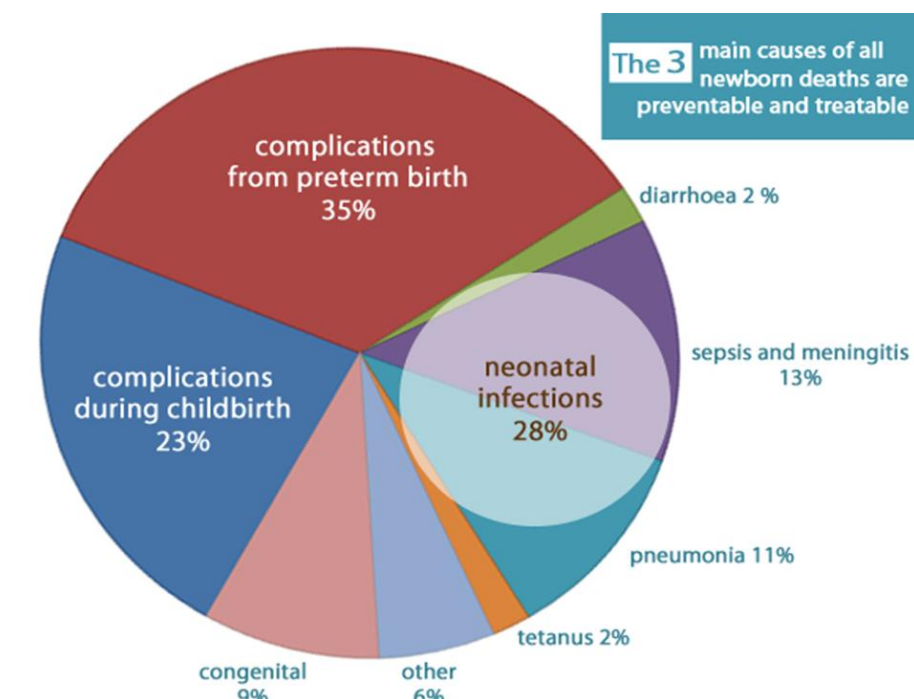
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BACKGROUND

- An estimated 35% of neonatal deaths globally can be attributed to low birthweight or complications from preterm birth.¹
- Most deaths of small infants occur in low-resource settings where educational programs addressing needs of small babies may be limited.
- The low cost, skills-based resuscitation program, *Helping Babies Breathe* (HBB), decreases rates of stillbirth and early neonatal mortality.^{2,3}
- A complementary program, *Essential Care for Every Baby* (ECEB) improves confidence and skills in providing newborn care.⁴
- A program using the same educational methodology, including small group learning and simulation based teaching, was developed to improve care of the small baby.



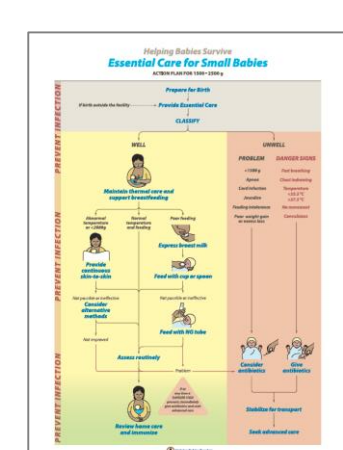
OBJECTIVE

To evaluate the acceptability and educational quality of the *Essential Care for Small Babies* program (ECSB)

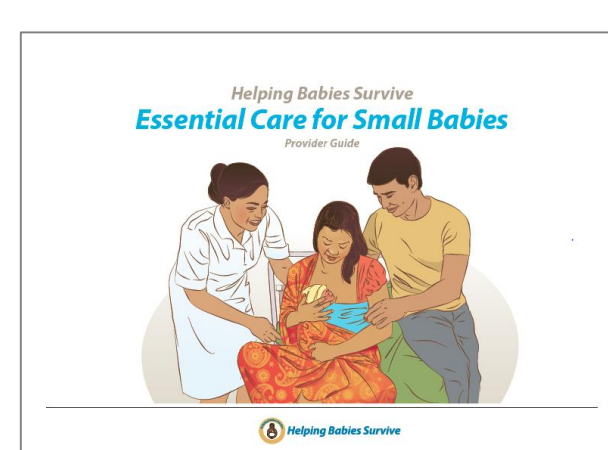
METHODOLOGY

TEACHING MATERIALS

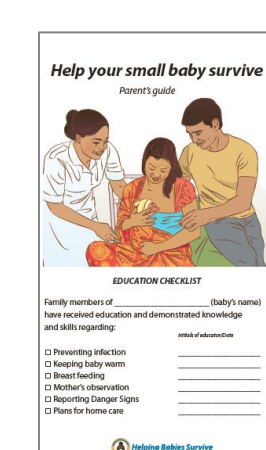
- Materials were developed by a group of neonatal care specialists, including educators and nurses from North America in collaboration with international experts.
- Content reflected WHO guidelines including *Pregnancy, Childbirth, Postpartum and Newborn Care (PCPNC)*, *WHO KMC Guide* and *Optimal Feeding of Low Birthweight Infants in Low- and Middle-Income Countries* among others.
- Educational principles and graphical design replicated those used in the HBB and ECEB programs. Intended dissemination was with a train-the-trainer model.
- Content included topics fundamental to care of small babies:
 - Thermal support (including skin-to-skin care, use of incubator and radiant warmer)
 - Nutrition (breastfeeding, breast milk expression, cup and nasogastric feeding)
 - Daily assessment and discharge planning
 - Infection prevention
 - Transport for advanced care
- Printed materials included an action plan, flip chart, provider and parent guides.



Action Plan



Flip chart



Parent Guide

METHODOLOGY

- Simulation utilized a purpose-designed small baby model for practice of skin-to-skin care and placement of nasogastric (NG) tube as well as a breast model for simulation of breastmilk expression.

SIMULATION MODELS



EVALUATION

- Field testing was performed in Nepal and Uganda.
- Experienced providers (MDs and RNs) were trained as facilitators who then trained providers (MDs, RNs and midwives).
 - Nepal:* Facilitators (from Nepal, India, Bangladesh): 12 Providers: 24.
 - Uganda:* Facilitators (from Uganda, Ethiopia, Kenya): 11 Providers: 18.
- Evaluation tools included:
 - Confidence Survey:* Confidence among facilitators and providers was measured using a 15 item questionnaire completed prior to and immediately after the course.
 - Multiple Choice Questions Examination (MCQ):* Cognitive knowledge was assessed by administering a 30 item examination pre and post training.
 - Objective Structured Clinical Exams (OSCEs):* Skills and performance were evaluated post course using two OSCEs. OSCE A evaluated the skills of positioning, counseling and assessment with skin-to-skin care. OSCE B evaluated the skills of family counseling, NG placement and NG feed administration.
 - Focus groups:* All participants were provided an opportunity to give feedback regarding course acceptability and content during post course focus group discussions.
- Average scores and standard deviations were determined and compared by t-test with significance defined as $p < 0.05$.

RESULTS

ECSB Training Improved Confidence in Care of Small Babies

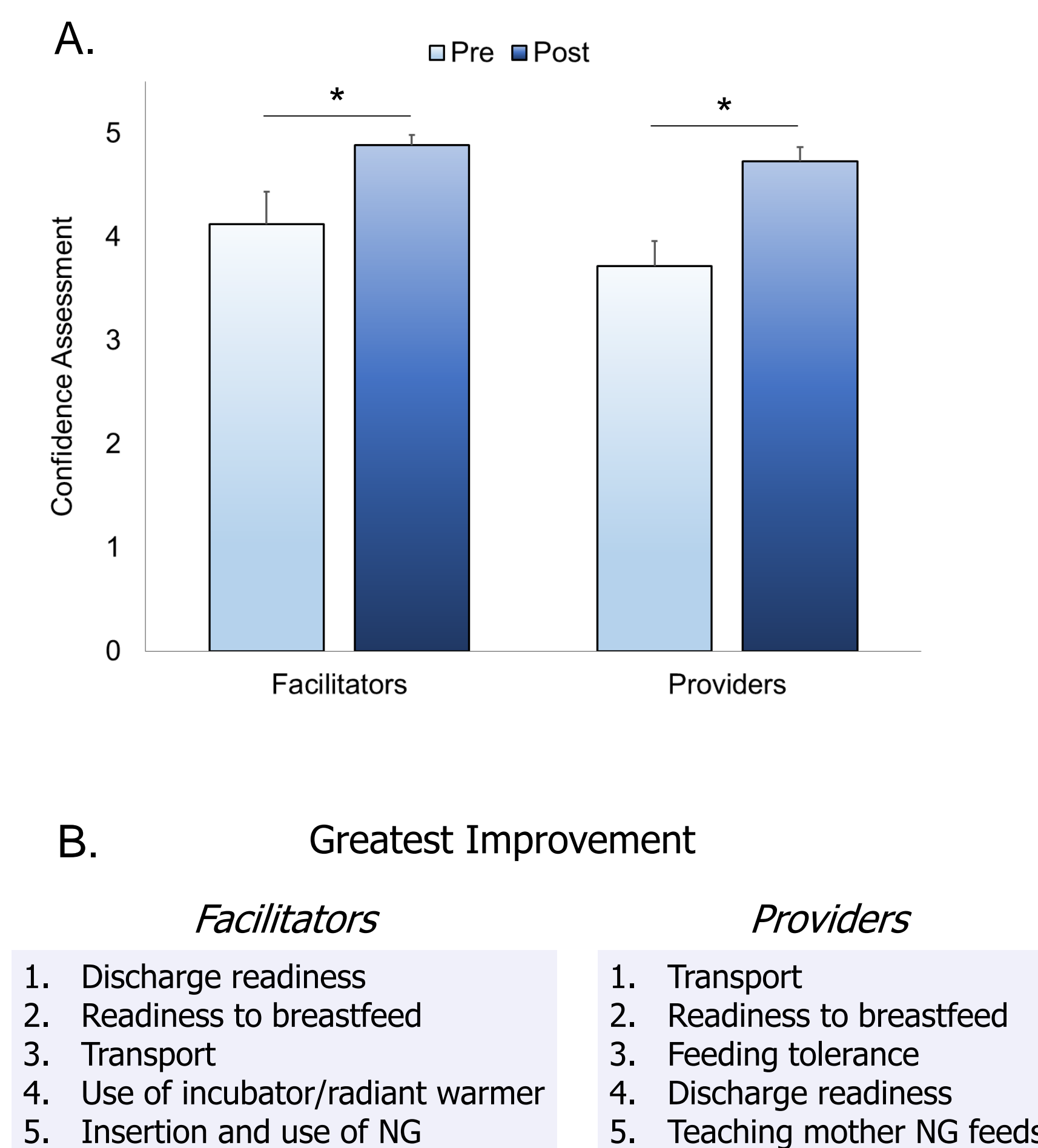


FIGURE 1: A. Surveys assessed reported confidence in 15 areas of small baby care on a 5 point scale. Average scores prior to and after training demonstrated increased confidence in both facilitators and providers. Data are presented as mean \pm SD. * $p < 0.05$. B. Top 5 areas of improvement for facilitators and providers.

ECSB Training Improved Knowledge

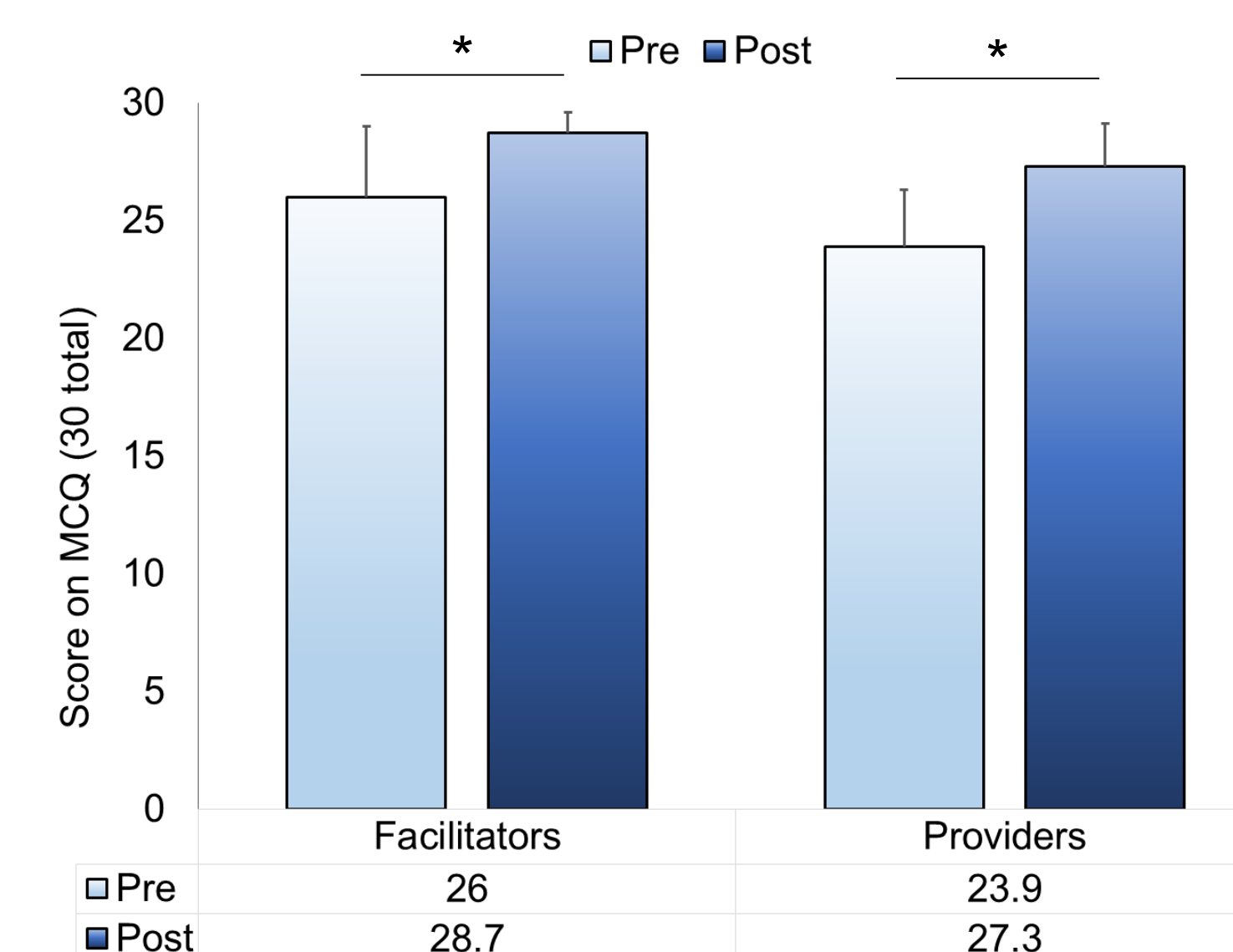


FIGURE 2: Scores of 30 point MCQ demonstrate increased knowledge in both facilitators and providers. Data are presented as mean \pm SD. * $p < 0.05$.

RESULTS

Skills Assessment after ECSB Training

OSCE	Points	SD
OSCE A (12 point max) Thermal care: Classification Positioning skin-to-skin Counseling Monitoring	11.0	1.0
OSCE B (22 point max) Nasogastric feeding: Counseling Placement of NG Administering feed Assessment	18.2	2.5

While pretest was not available, scores from objective structured clinical exams (OSCEs) demonstrated high level of skill performance in providers. Scores ranged from 9-12 out of 12 points total and 12-22 out of 22 points for OSCE A and B, respectively.

CONCLUSIONS

ECSB training resulted in improved confidence and knowledge and adequate skills performance.

As part of an overall implementation plan, ECSB may improve care of small babies in low-resource settings.

ACKNOWLEDGEMENTS

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References:

- Liu, L et al. *Lancet* 2012; 379.
- Msemo G, et al. *Pediatrics* 2013; 131.
- Goudar, S, et al. *Pediatrics* 2013; 131.
- Thukral, A. et al. *BMC Pediatrics*, in press.



Helping Babies Survive