Training of Post-Natal Care Attendants for Post-Natal Care, Nutrition and Breastfeeding: Rapid Evidence Synthesis

This document is a supplement to the rapid policy brief on the issue.

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Contributions of authors
Conceptualisation, methodology, searching, study selection, formal analyses, lead writing, editing – Jyoti Tyagi
Methodology, draft review and editing – Soumyadeep Bhaumik
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Draft review and editing – Sandeep Moola, Devaki Nambiar

Competing interests
The authors do not have any relevant competing interests.

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Suggested citation
List of abbreviations
CBI Community-Based Interventions
DMO District Medical Officer
HSI Health Systems Interventions
PNC Post-Natal Care
PRISMA Preferred Reporting Items for Systematic reviews and Meta-Analyses
RCT Randomized Controlled Trial
RES Rapid Evidence Synthesis
TBA Traditional Birth Attendant
WHO World Health Organization
Executive Summary

The post-natal period is a critical phase in the lives of mothers and new-borns. Most maternal and infant deaths occur during this time. Yet, this is the most neglected period in the provision of quality care and maintenance of health behaviors.

The District Medical Officer (DMO) in Malappuram, Kerala with support from an action group of obstetricians in the district, proposes to train Post-Natal Care (PNC) attendants. They are engaged by the families of pregnant females in the post-delivery phase. The DMO intends to design training modules, particularly in relation to post-natal nutrition and breastfeeding.

The Rapid Evidence Synthesis (RES) team of the George Institute for Global Health (TGI) received a request to identify effective training strategies that can guide the content and design of training modules designed for these attendants from existing research. The request was made by the DMO, Malappuram, Kerala.

The primary objective of this RES was to identify and summarize the evidence on the content and format of training modules or packages for traditional birth attendants in Post-Natal Care (PNC) practices. No evidence was available on use of the PNC attendants for post-natal care and nutrition. Hence, for the purpose of informing decision making, we synthesised evidence on Traditional Birth Attendants (TBAs) as the knowledge intended for them would be of high relevance to PNC attendants.

The RES found that TBA training led to significant reductions in the perinatal death rate, neonatal death rate, stillbirth rate; increased early initiation of breastfeeding, exclusive breastfeeding; as well as avoidance of prelacteal feeding. Trained TBAs were much more likely than untrained TBAs to advise mothers on diet and immediate feeding of colostrum. Trained TBAs who were additionally supervised (by lady health workers or trained nurses or community midwives) reported slightly better outcomes in comparison to unsupervised TBAs. Training across the studies ranged from 2-8 days. Training on basic content accompanied by supportive supervision and follow up trainings was associated with better outcomes.
**Background**

The World Health Organization (WHO) defines the post-natal period as the period beginning one hour after the delivery of the placenta up until six weeks or 42 days after birth (1). Since major changes occur during post-natal period, lack of appropriate care during this period could result in significant ill health and even death. To achieve quality care, appropriate standard of care for mothers and newborns should be provided by trained health care workers (2).

Kerala is a state with high levels of literacy and institutional delivery. There is a trend of engaging Post-Natal Care (PNC) attendants for 40 days post-delivery. These attendants are hired by families of expectant mothers from agencies to provide support for PNC and nutrition. The District Medical Officer (DMO) in Malappuram, with support from an action group of obstetricians in the district, Kerala has identified the need to train these attendants in appropriate practices and avoid harmful behaviours. They intend to design and develop training modules to build capacity of PNC attendants particularly in relation to post-natal nutrition and breastfeeding. To support these efforts, it is necessary to identify effective training strategies that can guide the content and design of training modules designed for these attendants.

The DMO requested the Rapid Evidence Synthesis (RES) team the George Institute for Global Health (TGI) to conduct a rapid review of evidence on the content and format of training modules for post-natal attendants for PNC and nutrition. RES is an emergent research approach undertaken to provide synthesised information in short timeframes for decision making.

There is no direct evidence on the use of PNC attendants on PNC, nutrition and breastfeeding. To inform decision making, the RES team, with concurrence of the DMO synthesised evidence pertaining to Traditional Birth Attendants (TBAs) since evidence related to TBAs may be relevant for their training.

The objective of the RES was thus to i) assess the effects of traditional birth attendant (TBA) training on TBA and maternal behaviours and outcomes; as well as ii) identify and summarize the evidence on the content and format of training modules or packages for TBAs in PNC.
1. Methods

This section describes methods used in the development of the policy brief report.

Inclusion criteria for assessing the effect of TBA training on TBA and maternal behaviour and training content and formats for traditional birth attendants on PNC practices:

PICOS

Types of participants
Our populations of interest trained and untrained TBAs as well as additionally trained TBAs who assisted mothers in the postpartum period as well as mothers and neonates taken cared by trained and untrained TBAs.

Types of interventions
The intervention of interest was training with information on training modules or packages including their format and content;

Type of comparator
The comparator of interest was no intervention or training with supervision or additional training;

Type of outcome measure

Primary outcomes: The primary outcomes of interest were
1. TBA or maternal behaviours, or both, thought to mediate positive pregnancy outcomes included:
   • TBA advice regarding or maternal initiation of early and exclusive breastfeeding, or both;
   • TBA advice on diet;
   • TBA advice on complementary feeding; or not giving any prelacteal feed; and
   • referred mother or infant post-partum

Secondary outcomes: The secondary outcomes of interest were
2. Measure of maternal mortality: maternal mortality ratio (number of maternal deaths per 100,000 live births).
3. Measures of peri-neonatal mortality:
   • stillbirth (number per 1000 live births);
   • early neonatal death (number of deaths of babies aged 0 to 7 days per 1000 live births);
   • late neonatal death (number of deaths of babies aged 8 to 28 days per 1000 live births);
   • neonatal death (number of deaths of babies 0 to 28 days per 1000 live births); and
   • perinatal death (number of stillbirths + early neonatal deaths per 1000 live births).

Type of studies
Systematic Reviews supplemented with more recent Randomized Controlled Trials (RCTs). Since, RCTs were considered to provide more reliable evidence on effectiveness of interventions.
Search strategy
A systematic review (3) published in 2012 addressed the review question of interest with all the relevant details provided from included studies on training formats and content. Hence, we updated the Cochrane review (3) by searching for RCTs published after 2011. We searched in four electronic databases (PubMed, Cochrane Library, EMBASE and Health Systems Evidence). The search was restricted to studies published in the English language. The following key search terms and related synonyms were used to identify and retrieve potentially relevant studies.

Box 1: Comprehensive list of search terms utilised in various databases

“Traditional birth attendant*” OR “tba*” OR “traditional midwife” OR “traditional midwives” OR “Lay midwife” OR “lay midwives” OR “Traditional family birth attendant*” OR “Traditional home birth attendant*” OR “Family birth attendant*”

AND

“Teaching” OR “knowledge/attitudes and practice” OR “train*” OR “teach” OR “educat*” OR “instruct*” OR “evaluat*” OR “compa*” OR “effect*” OR “impact*” OR “outcome*” OR “perform*”

AND

“randomised controlled trial”

Data collection and analysis

Selection of studies
The titles and abstracts of studies for inclusion were screened, which then enabled retrieval of full texts of eligible studies for full text examination and selection. The primary reviewer independently applied the inclusion criteria to the retrieved publications.

Data extraction and management
Data from included reviews was extracted using a standardised template. A primary reviewer independently extracted all relevant outcome data, with random verification of the data by a secondary reviewer. The data of interest included:

a. Study type
b. Countries where studies were conducted
c. Participants (number) and details of setting
d. Intervention (Training modality/tools, its content and format)
e. Outcome measures
Data Synthesis
Relevant outcome data were extracted and tabulated from selected reviews. A narrative summary was presented to address the review question and document relevant data and findings.

2. Results

Description of studies

Search Results and Study Selection

Searches of all mentioned electronic databases were conducted in December 2019. The search identified 435 citations of which 81 duplicates were discarded (Figure 1 depicts the study selection in Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram). The RES began with six studies from the Cochrane systematic review by Sibley et al. 2012 (2). Based on pre-set inclusion criteria, additional, potentially relevant study titles and abstracts were screened, and irrelevant studies were discarded. Full text articles were obtained for five studies. The studies were reviewed for relevance for each domain of interest, and the inclusion and exclusion criteria were applied for the full texts as well. Only two of the five studies were further included for extraction.

Characteristics of included studies

Overall eight studies (4-11) were included in the RES. Studies included were mostly cluster RCTs from Bangladesh (5,10); the Democratic Republic of Congo, Guatemala, India, Pakistan, Zambia (6); Zambia (7); and Pakistan (9,11), along with individual RCTs from Malawi (4) and Bangladesh (8). The characteristics of the included studies are summarised in Table 1.

Participants: Participants included TBAs and lactating mothers living in intervention and control areas (8), women in their second and third trimester of pregnancy and mothers of children aged 0–6 months living in intervention and control clusters identified, recruited and followed through the postpartum and/or postnatal periods (5,6,9,10), and women recently delivered by and/or referred to a health facility by TBAs (4,7,11).

Interventions: For three studies training/a package of training was received only by the intervention cluster (9,10,11) while in the rest of the five studies (4,5,6,7,8) both the intervention group and control group received some basic training on safe, clean delivery and immediate newborn care while the intervention group was additionally trained on bag-valve-mask resuscitation, additional instruction on immediate suckling before placental delivery, neonatal resuscitation, and sepsis management. Hence, these were categorised as additionally trained TBAs versus trained TBAs. The duration of the training ranged from two to five days (4,6,8,9,10) to up to a week and eight days respectively (7,11). Details of the training modalities, content and format are summarised in Table 2.
Outcomes: The outcomes of interest reported in eight studies were TBA or maternal behaviours, or both, thought to mediate positive pregnancy outcomes. Outcomes included: TBA advice on early initiation of breast feeding and exclusive breastfeeding, or both, TBA advice on mothers’ diet, complementary feeding, maternal deaths, maternal morbidity, still births, early or late neonatal deaths. Perinatal deaths, stillbirths, early and late neonatal deaths and referral were reported in three study.

Excluded studies
Three studies were excluded following full text examination because they were not RCTs, referred to ineligible population groups and because the data reported was not for TBAs, respectively.

Summary of the findings:
Eight studies were included in this review that examined the effects of TBA training for trained versus untrained TBAs (three studies), basic training\(^1\) versus basic and additionally trained\(^2\) TBAs (five studies) and trained TBAs versus trained and supervised TBAs (one study). Eight studies involved over 1962 TBAs, more than 33,325 women and approximately 58,182 births. These studies were individual randomised trials (two studies) and cluster-randomised trials (six studies). The primary outcomes across the sample of studies were measure of maternal mortality, perinatal, stillbirth and neonatal death rates (early, late and overall), TBA or maternal behaviours, or both, thought to mediate positive pregnancy outcomes.

In the category of trained versus untrained TBAs Jokhio et al. (9) reported a significant reported reduction in perinatal death rate\(^3\) by 30% (Adjusted odds ratio (OR) 0.70), stillbirth rate\(^4\) by 31% (Adjusted odds ratio (OR) 0.69) and neonatal death rate\(^5\) by 29% (Adjusted odds ratio (OR) 0.71).

Two studies (10,11) reported that trained TBAs were more likely to advise on immediate colostrum feeding and diet to mothers (92.6% and 82.1% respectively) as compared to untrained TBAs. Training TBAs significantly improved early initiation of breastfeeding, exclusive breast-feeding, and increased avoidance of prelacteal feeding by 60%, 76% and 88% respectively.

Three large cluster-randomised trials (4,5,6) compared basic training (safe, clean delivery and immediate newborn care) to basic and additional training (bag-valve-mask resuscitation, immediate suckling before placental delivery) of TBAs. There was no significant difference in the perinatal death rate (adjusted OR

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1 Basic training comprised safe, clean delivery and immediate newborn care
2 Additional training comprised bag-valve-mask resuscitation, additional instruction on immediate suckling before placental delivery, neonatal resuscitation, sepsis management
3 World Health Organization source - defines perinatal death as "number of stillbirths and deaths in the first week of life per 1,000 total births, the perinatal period commences at 28 completed weeks (196 days) of gestation, and ends seven completed days after birth per 1000 total births"
4 Still birth rate as a baby born with no signs of life at or after 28 weeks' gestation per 1000 live births.
5 Neonatal death as “death of a live-born baby within the first 28 days of life per 1000 live births"
0.79) and late neonatal death⁶ rate (adjusted risk ratio (RR) 0.47) between the basic and additionally trained TBAs. However, the neonatal death rate was 45% lower in additionally trained TBAs in comparison to basic trained TBAs (one study (9), 22.8% versus 40.2%).

Talukdar et al. (10) compared trained TBAs with additional supervision to unsupervised TBAs and found that those with supervision had slightly better outcomes in relation to breastfeeding: 68% vs 60% for early initiation of breastfeeding and 83% vs 76% for exclusive breastfeeding (P ≤0.05).

Overall, evidence suggests that TBA training on basic domains by trained trainers along with supportive supervision lead to improvement of rates of exclusive breastfeeding, initiation of breastfeeding, avoidance of prelacteal feeding and higher rates of advice on immediate colostrum feeding and diet to mothers. Further, training modalities were similar across the studies (2-8 days) and there is not enough evidence available to suggest which approach is better.

Further, most studies placed emphasis on the delivery and immediate postnatal period and focused on mortality outcomes in the same period. This is not directly relevant to the period of concern for the DMO, although the breastfeeding findings suggest value of training.

The details of the findings are summarised in Table 3.

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⁶ Late neonatal death rate is defined as “occurring after the seventh day but before the 28th day of life (7-27 days) per 1000 live births”
Figure 1: PRISMA flow chart

Citations identified through database (n= 435)

Citations after duplicates removed (n= 81)

Citations screened (n= 354)

Citations excluded after screening titles and abstracts (n= 349)

Full text retrieved for detailed review (n= 5)

Articles excluded after review of full text (n= 3)
  Inappropriate population (n=1)
  Wrong study design (secondary analysis) (n=1)
  Training targeted to Community Health Workers and TBAs. The data reported were not disaggregated by TBAs (n=1)

Studies Included (n= 2) in addition to that n=6 studies from Sibely et al, 2012.
Table 1: Characteristics of included studies

<table>
<thead>
<tr>
<th>Citation details</th>
<th>Study design</th>
<th>Country, Setting</th>
<th>Participants</th>
<th>Intervention</th>
<th>Control/Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Azad 2010</strong></td>
<td>Cluster-randomised controlled trial, factorial design (2 interventions: women's groups and TBA training)</td>
<td>Bangladesh, 3 rural districts, 6 unions per districts, 18 clusters total; Population: 15,441 to 35,110 each</td>
<td>Women’s groups: 18 groups (1 per cluster) comprised of women of reproductive age, mothers-in-law, adolescents, others; TBAs: 482 TBAs in the combined intervention and control clusters</td>
<td>All TBAs received basic training. Intervention cluster TBAs additionally received training in bag-valve-mask resuscitation; TBAs in intervention clusters attended 12,519 home births (8618 attended by any TBA and 2792 attended by TBA trained in bag-valve-mask resuscitation)</td>
<td>Control cluster TBAs didn’t received any additional training in bag-valve-mask resuscitation; TBAs in control clusters attended 13,195 home births (9171 attended by any TBA and 2536 attended by TBA trained in bag-valve-mask resuscitation)</td>
</tr>
<tr>
<td><strong>Bullough 1989</strong></td>
<td>Randomised controlled trial</td>
<td>Malawi, 3 rural regions</td>
<td>TBAs and women living in study areas who were attended by TBAs 2184 and 2201 women were attended by intervention and control group TBAs, respectively</td>
<td>TBAs in both intervention and control groups attended a 2-day refresher course Intervention group TBAs (n=2104) subsequently received additional instruction</td>
<td>Control group TBAs (n=2123) did not receive additional instruction but they were trained to measure all blood loss after delivery using the plastic jug</td>
</tr>
<tr>
<td><strong>Carlo 2010</strong></td>
<td>Two-part study design: (1) Essential Newborn Care Study (before-and-after) and</td>
<td>Five countries (Democratic Republic of Congo, Guatemala, India,</td>
<td>Women attended by community birth attendants in the study area (TBAs attended 10,770 and 13,327</td>
<td>All community birth attendants received a 3-day WHO 2004 Essential Newborn Care course.</td>
<td>Control birth attendants did not receive the additional Neonatal Resuscitation Program.</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Country</td>
<td>Description</td>
<td>Intervention</td>
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<tr>
<td>(2) Neonatal Resuscitation Program (cluster RCT)</td>
<td>This review reports results from the cluster-RCT</td>
<td>Pakistan, Zambia; 88 rural communities (n = 43 and 45 intervention and control communities, respectively)</td>
<td>births in the intervention and control areas, respectively. Community birth attendants, including TBAs, nurses, midwives and physicians. TBAs attended 39.2% of all births in the study area after an Essential Newborn Care program and before implementation of the Neonatal Resuscitation Program study.</td>
<td>Intervention birth attendants received an additional 3-day Neonatal Resuscitation Program and 6-month refresher</td>
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<td>Gill 2011</td>
<td>Cluster-randomised controlled trial</td>
<td>Zambia, one rural district</td>
<td>TBAs (total = 127), women and their newborns, regardless of vital status at birth TBAs attended 1961 and 1536 births in the intervention and control groups, respectively</td>
<td>All TBAs were trained. Intervention TBAs (n=60) were additionally trained in a modified American Paediatric Association and American Heart Association neonatal resuscitation protocol, as well as in sepsis management</td>
<td>Control TBAs (n=67) did not receive additional training and continued to provide their existing standard of care</td>
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<td>Hossain 2000</td>
<td>Randomised controlled trial</td>
<td>Bangladesh, 12 rural thanas (6 intervention and 6 control)</td>
<td>Postpartum lactating women: There were 1065 and 1067 women in the intervention and control groups, respectively.</td>
<td>Intervention group TBAs (n=85) and village doctors received a 2-day training</td>
<td>Control group TBAs (n=86) and village doctors received no training</td>
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<tr>
<td>Study</td>
<td>Design and Location</td>
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<td><strong>Jokhio 2005</strong></td>
<td>Cluster-randomised controlled trial, Pakistan, 7 rural sub-districts (talukas), 3 intervention and 4 control talukas</td>
<td>TBAs (565 TBAs and an unknown number of TBAs in the intervention and control clusters, respectively); Lady Health Workers (LHWs) (811 and 819 LHWs in the intervention and control clusters, respectively); Women living in the study clusters served by the TBAs and LHWs (10,114 women with 9710 singleton births, and 9443 women with 8989 singleton births in the intervention and control clusters, respectively)</td>
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<td>Intervention cluster TBAs (n=565) received a 3-day training and delivery kits; Obstetric teams provided consultation and outreach in the intervention clusters only</td>
<td>Control cluster TBAs did not receive any training and did not receive delivery kits</td>
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</table>

**Miller 2012** | Cluster-randomized trial, Dera Ghazi Khan District of Punjab, Pakistan 120 rural communities each with a population of 60 clusters each in health systems interventions (HSI) plus community-based interventions (CBI) site; 288 TBAs (all active TBAs in the site who met | In one intervention site, a combination of health systems interventions (HSI) and community-based interventions (CBI) (n=288 TBAs) was implemented and TBAs were trained |
|               | | TBAs (n=257) didn’t receive any training |
| Talukdar 2017 | Pragmatic cluster randomized controlled trial | Bangladesh, Of the 26 unions in the three sub-districts, nine unions were selected; Total study area contained a population of approximately 48,000 from 1111 households located in 124 villages | 1182 children and 1325 pregnant women (in their second and/or third trimester) were identified as eligible for inclusion in the study Total of 72 traditional birth attendant (TBAs)/Community Volunteers (CVs) | A group that received support from TBAs/CVS trained in early infant feeding practices (TG) A group that received support from TBAs/CVS trained in early infant feeding practices who were supervised weekly (SG) Total n=72 TBAs were trained | A control group (CG) with no training |
## Table 2: Format, content and modalities of the intervention

<table>
<thead>
<tr>
<th>Citation details</th>
<th>Trainer information</th>
<th>Trainee information</th>
<th>Module/content of training</th>
<th>Duration of the training/Duration of intervention</th>
<th>Training resource/material</th>
<th>Training modality</th>
<th>Post training</th>
<th>Source of funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azad 2010</td>
<td>Trainer profile: Not clear</td>
<td>Trainers per cohort: Not clear</td>
<td>All TBAs, clean safe delivery, danger signs emergency preparedness, mouth-to-mouth ventilation; intervention TBAs, bag-valve-mask resuscitation</td>
<td>Duration of the training: Not clear</td>
<td>Total contact hours: Not clear</td>
<td>Theoretical: done</td>
<td>Practical: done</td>
<td>Theoretical: done</td>
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<td></td>
<td>Trainers training: Not clear</td>
<td>Total trained in programme year: 482 TBAs, number in intervention and control clusters not clear</td>
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<td></td>
<td>Format: interpersonal, simulation</td>
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<td>Follow up: Not clear</td>
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<td>Trainer qualification: not clear</td>
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<td>Trainees per cohort: Not clear</td>
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<td>Bullough 1989</td>
<td>Trainer profile: Not clear</td>
<td>Trainers per cohort: 6 to 7 TBAs. Total trained in programme year: 69 TBAs.</td>
<td>Patient education; Advice around breastfeeding; Record keeping, physiology of 3rd stage</td>
<td>Duration of the training: 2-days refresher course Total contact</td>
<td>Developed by/for project, local expert body</td>
<td>Theoretical: not clear</td>
<td>Practical (clinical): not clear</td>
<td>Follow up: 3 to 4 weeks after training, then every 5 weeks over 6 to 9 months.</td>
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<td>Trainers training: Not clear</td>
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<td>Carlo 2010</td>
<td>Trainer profile: Local expert Trainers training: cascade-trainers trained master trainers, who trained community co-ordinators</td>
<td>Trainees per cohort: Not clear Total trained in programme year: Not clear</td>
<td>All birth attendants- routine neonatal care, initiation of breathing and resuscitation (bag valve-mask ventilation), thermo regulation, early</td>
<td>3 days Essential Newborn Care Program, 3 days Newborn Resuscitation Program Total contact hours: not clear</td>
<td>WHO 2004 Essential Newborn Care Program, Modified; American Academy of Paediatrics Neonatal Resuscitation Program</td>
<td>Theoretical: done Practical (clinical): done Format: interpersonal, clinical practice, demonstration, materials adapted for low/ non-literate participants</td>
<td>Follow up: Not clear Supervision: Not clear 6-month refresher for intervention birth attendants</td>
<td>Eunice Kennedy Shriver National Institute of Child Health and Human Development Global Network for Women’s and Children’s Health Research, and the</td>
</tr>
</tbody>
</table>
| Gill 2011 | Trainer profile: Not clear  
Trainers training: Not clear  
Trainer qualification: not clear | Trainees per cohort: 60 intervention and 60 control TBAs  
Total trained in program year: 120 TBAs | all TBAs trained in prevention of neonatal hypothermia, mouth-to-mouth ventilation, record keeping, following up mothers-newborns Intervention  
1-week session  
Total contact hours: not clear | American Paediatric Association and American Heart Association  
neonatal resuscitation protocol | Theoretical: done  
Practical (clinical): done  
Format: Lectures, demonstrations, small group sessions and skills practice using infant mannequins | Follow up: Not clear  
Supervision: Not clear | Co-operative agreement between Boston University and USAID, with support from American Academy of Paediatrics and UNICEF | Bill and Melinda Gates Foundation | exclusive breastfeeding, kangaroo care, danger signs.  
Intervention birth attendants - in-depth theoretical and practical training in initial steps in resuscitation and bag valve-mask ventilation |
<table>
<thead>
<tr>
<th>Trainer profile: Local expert</th>
<th>Trainers training: Not clear</th>
<th>Trainer qualification: not clear</th>
<th>Trainees per cohort: 15</th>
<th>Total trained in program year: 85</th>
<th>Breastfeeding advice including benefits, early, exclusive feeding, introduction/types of complementary weaning foods, disadvantages of bottle feeding</th>
<th>2 days training</th>
<th>Total contact hours: not clear</th>
<th>Developed by/ for project, national expert body (Bangladesh Breast Feeding Program)</th>
<th>Theoretical: Not clear</th>
<th>Practical (clinical): not clear</th>
<th>Format: not clear</th>
<th>Follow up: Not clear</th>
<th>Supervision: Not clear</th>
<th>Voluntary body</th>
</tr>
</thead>
</table>
| Jokhio 2005                   | Trainer profile: Local expert | Trainers training: Not clear | Trainees per cohort: Not clear | Total trained in program year: 565 | Advice on antepartum, intrapartum, postpartum care, how to conduct clean delivery, how to use | 3 days training | Total contact hours: not clear | Developed by/for project, local expert body | Theoretical: Not clear | Practical (clinical): not clear | Format: interpersonal, audio/visual | Follow up: Not clear | Supervision: LHW support | Family Health Project of Sindh Government Health Department for capital costs, and University of Birmingham,
| Miller 2012 | Trainer profile: Not clear | Trainees per cohort: Not clear | Total trained in programme year: 288 | Maternal and neonatal care | 8 days training (SMART Dai training) | Total contact hours: not clear | Based on formative research, review of the existing training manual, Council’s “client centered,” approach | Theoretical: done | Practical (clinical): done | Format: Participatory, using models where appropriate, “client centered,” hands on, discussion of dais’ vis-a-vis her clients, brainstorming, role play | Follow up: At 4-6 months post training during field evaluation and at 19 months after training | Supervision: Trained nurses | European Union |

| **paramedics (LHW)** And obstetricians | disposable delivery kit, referral for obstetric emergencies, newborn care | | | | | | | Theoretical: done | Practical (clinical): done | Format: Participatory, using models where appropriate, “client centered,” hands on, discussion of dais’ vis-a-vis her clients, brainstorming, role play | Follow up: At 4-6 months post training during field evaluation and at 19 months after training | Supervision: Trained nurses | European Union |

**UK for data entry**
| Talukdar 2017 | Trainer profile: Field supervisors and eminence experts  
Trainer training: Training and Assistance for Health and Nutrition and Eminence trained the field supervisors | Trainees per cohort: 36  
Total trained in programme year: 72 | Early infant feeding practices | 5 days training  
Total contact hours: not clear | Modified WHO/United Nations Children’s Fund 5-day breastfeeding counselling training guidelines (Available at: http://www.who.int/nutrition/publications/infantfeeding/9789241594745/en/) to emphasize the targeted behaviour | Theoretical: done  
Practical (clinical): done  
Format: Group facilitation, role plays, case studies, group work, problem-solving discussions, demonstrations of positioning and attachment, and field trips nearby communities to observe implementation of the recommended behaviours during several actual birthing sessions | Follow up: first with weekly and then later fortnightly. Midterm assessment 3 months after the intervention  
Supervision: Field supervisor | The Bill & Melinda Gates Foundation to FHI 360, through the Alive & Thrive Small Grants Program managed by UC Davis |
### Table 3: Summary of the findings

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Citation</th>
<th>Statistical method</th>
<th>No. of participants</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained Traditional birth attendants (TBAs) vs untrained TBA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maternal mortality</strong> (number per 100,000 pregnancies)</td>
<td>Jokhio 2005</td>
<td>Adjusted odds ratio (AOR) (95% CI) 0.74 (0.45 to 1.22)</td>
<td>N= 19,525</td>
<td>27 deaths in the intervention and 34 deaths in the control clusters, corresponding to 268 and 360 deaths per 100,000 pregnancies, respectively. This 26% difference in favour of women living in the intervention clusters was non-significant (0.27% versus 0.36%)</td>
</tr>
<tr>
<td><strong>Stillbirths (number per 1000 births and stillbirths)</strong></td>
<td>Jokhio 2005</td>
<td>AOR (95%CI) 0.69 (0.57 to 0.83)</td>
<td>N= 18,699</td>
<td>483 and 638 stillbirths in intervention and control clusters, respectively. The stillbirth rate difference was significant, 31% lower in intervention compared with control clusters (5.0% versus 7.1%)</td>
</tr>
<tr>
<td><strong>Neonatal death</strong></td>
<td>Jokhio 2005</td>
<td>AOR (95%CI) 0.71 (0.61 to 0.82)</td>
<td>N= 18,699</td>
<td>340 and 349 neonatal deaths in the intervention and control clusters, respectively. The neonatal death rate difference was significant, 29% lower in the intervention compared with the control clusters (3.5% versus 4.88)</td>
</tr>
<tr>
<td><strong>Perinatal death</strong> (number per 1000 live births and stillbirths)</td>
<td>Jokhio 2005</td>
<td>AOR (95%CI) 0.70 (0.59 to 0.83)</td>
<td>N= 18,699</td>
<td>823 and 1077 among singleton deaths in the intervention and control clusters, respectively, corresponding to 85 and 120 deaths per 1000 live births and stillbirths, respectively. The death rate difference was significant, 30% lower in the intervention compared with the control</td>
</tr>
<tr>
<td>Advice on diet</td>
<td>Miller 2012</td>
<td>P&lt;0.01</td>
<td>N=504</td>
<td>82.1% trained TBAs advised on diet to the mother post-delivery as compare to the 47.7% of untrained TBAs with significant p value.</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>Referred mother or infant post-partum</td>
<td>Miller 2012</td>
<td>0.01&lt;P&lt;0.05</td>
<td>N=534</td>
<td>13.7% trained TBAs referred mother or infant post-partum as compare to 7.8% untrained TBAs.</td>
</tr>
<tr>
<td>Advice about immediate feeding colostrum</td>
<td>Miller 2012</td>
<td>P&lt;0.01</td>
<td>N=805</td>
<td>92.6% Trained TBAs more likely to advise mothers on feeding the newborn on breast milk first as compare to the 42.5% untrained TBAs.</td>
</tr>
<tr>
<td>Early initiation of breastfeeding</td>
<td>Talukdar 2017</td>
<td>P ≤ 0.05</td>
<td>N=2330</td>
<td>At endline early initiation of breast feeding (&lt;1 hr after birth) increased significantly from 35% to 60% in intervention groups (Trained TBAs) compared with the control group at endline when adjusted for maternal age, parity and home birth.</td>
</tr>
<tr>
<td>No prelacteal feeding</td>
<td>Talukdar 2017</td>
<td>P ≤ 0.05</td>
<td>N=2330</td>
<td>At endline there was an increased avoidance of prelacteal feeding in intervention groups (Trained TBAs) as compared to control group at from 48% to 80% when adjusted for religion, parity and infant sex.</td>
</tr>
<tr>
<td>Exclusively breastfeeding</td>
<td>Talukdar 2017</td>
<td>P ≤ 0.05</td>
<td>N=2322</td>
<td>At endline the exclusive breast feeding increased from 67% to 76% in intervention group (Trained TBAs) as compared to the control group when adjusted for maternal age, maternal education, religion, parity, infant</td>
</tr>
</tbody>
</table>
Additionally, trained TBAs versus trained TBAs

<table>
<thead>
<tr>
<th>Maternal deaths</th>
<th>Gill 2012</th>
<th>Unadjusted Risk Ratio (RR) (95% CI) 0.79 (0.05 to 12.62)</th>
<th>N= 3437</th>
<th>Two maternal deaths, one in both the intervention and control groups were reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early neonatal death (0-6 days)</td>
<td>Azad 2010</td>
<td>Adjusted RR, 95% CI 0.95 (0.75 to 1.21)</td>
<td>N=13,946</td>
<td>Azad 2010 found 25.4 versus 26.5 deaths per 1000 live births in the intervention and control clusters.</td>
</tr>
<tr>
<td>Carlo 2010</td>
<td>Adjusted RR, 95% CI 0.68 (0.45 to 1.03)</td>
<td>N=20,117</td>
<td>Carlo 2010 identified 15.0 versus 21.9 deaths per 1000 live births in the intervention and control clusters respectively.</td>
<td></td>
</tr>
<tr>
<td>Gill 2011</td>
<td>Adjusted RR, 95% CI 0.56 (0.31 to 1.01)</td>
<td>N= 3431</td>
<td>Gill 2011 identified 18.2 versus 30.5 deaths per 1000 births in the intervention and control clusters respectively.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted RR, 95% CI 0.83 (0.68 to 1.01)</td>
<td>N = 37,494</td>
<td>The overall weighted mean effect estimate for the three studies approached but was not statistically significant.</td>
<td></td>
</tr>
<tr>
<td>Neonatal death (0-28 days, excluding stillbirths)</td>
<td>Gill 2011</td>
<td>Adjusted RR (95% CI) 0.54 (0.32 to 0.92)</td>
<td>N=3355</td>
<td>43 and 59 deaths reported in the intervention and control clusters, respectively. A significant neonatal death rate difference of 45% lower in the intervention compared to the control clusters.</td>
</tr>
<tr>
<td>Event</td>
<td>Study</td>
<td>Adjusted RR (95% CI)</td>
<td>N</td>
<td>Additional Information</td>
</tr>
<tr>
<td>--------------------------------------</td>
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<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Perinatal death (0-7 days plus stillbirths)</strong></td>
<td>Carlo 2010</td>
<td>0.79 (0.61 to 1.02)</td>
<td>N=24,097</td>
<td>306 and 476 perinatal deaths were identified (defined as stillbirths plus neonatal deaths in first seven days) in the intervention and control clusters, respectively. The perinatal death rate difference was not significant as reported by the author (28.5 versus 35.8 deaths per 1000 births).</td>
</tr>
<tr>
<td><strong>Stillbirth</strong></td>
<td>Carlo 2010</td>
<td>0.96 (0.71 to 1.3)</td>
<td>N=24,097</td>
<td>147 and 189 stillbirths in the intervention and control clusters, respectively (13.6 versus 14.2 per 1000 births) 38 and 28 stillbirths in the intervention and control clusters, respectively (19.4 versus 18.9 deaths per 1000 births). The overall weighted mean effect estimate was close to 1.0 and not statistically significant.</td>
</tr>
<tr>
<td></td>
<td>Gill 2011</td>
<td>1.07 (0.64 to 1.78)</td>
<td>N=3497</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gill 2011</td>
<td>0.99 (0.76 to 1.28)</td>
<td>N=27,594</td>
<td></td>
</tr>
<tr>
<td><strong>Late neonatal death (7-28 days)</strong></td>
<td>Gill 2011</td>
<td>0.47 (0.2 to 1.11)</td>
<td>N=3274</td>
<td>Eight and 13 deaths were identified in the intervention and control clusters, respectively. The late neonatal death rate difference was not significant.</td>
</tr>
<tr>
<td><strong>Neonatal death within 24 hours of life</strong></td>
<td>Carlo 2010</td>
<td>0.75 (0.44 to 1.27)</td>
<td>N=24,097</td>
<td>5.5 versus 7.3 deaths per 1000 live births were identified in the intervention and control clusters respectively.</td>
</tr>
<tr>
<td><strong>Advice about immediate feeding colostrum</strong></td>
<td>Hossain 2000</td>
<td>1.21 (0.39 to 3.79)</td>
<td>N=162</td>
<td>The difference in additionally trained versus trained TBAs at post test for three months was not significant.</td>
</tr>
<tr>
<td><strong>Advice about introduction of complementary foods (3 months post-test)</strong></td>
<td>Hossain 2000</td>
<td>3.11 (1.63 to 5.92)</td>
<td>N=162</td>
<td>The effect size estimates of the post-test difference for additionally</td>
</tr>
</tbody>
</table>
### Exclusively breastfeeding post delivery

**Gill 2011**  
Unadjusted RR (95% CI)  
1.01 (1 to 1.01)  
N=3437  
Similar rates of breastfeeding were reported between women delivered by additionally trained TBAs (96.8%) versus trained TBAs (97.1%).

### Trained TBAs versus trained and additionally supervised TBAs

<table>
<thead>
<tr>
<th><strong>Early initiation of breastfeeding</strong></th>
<th><strong>Talukdar 2017</strong></th>
<th><strong>P ≤ 0.05</strong></th>
<th><strong>N=2330</strong></th>
<th>At endline the early initiation of breastfeeding in trained plus supervised TBAs increased from 60% to 68% as compared to trained TBAs group.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No prelacteal feeding</strong></td>
<td><strong>Talukdar 2017</strong></td>
<td><strong>P ≤ 0.05</strong></td>
<td><strong>N=2330</strong></td>
<td>At endline the avoidance of pre lacteal feeding in trained plus supervised TBAs increased from 80% to 88% as compared to trained TBAs group</td>
</tr>
<tr>
<td><strong>Exclusively breastfeeding</strong></td>
<td><strong>Talukdar 2017</strong></td>
<td><strong>P ≤ 0.05</strong></td>
<td><strong>N=2322</strong></td>
<td>Within the intervention groups (Trained TBAs and Trained TBAs plus supervision of TBAs) increased exclusive breastfeeding is reported to increase from baseline to endline by 63% to 76% and 62% to 83% respectively.</td>
</tr>
</tbody>
</table>
3. Policy options

Policy makers might consider engaging PNC attendants to improve post-natal care, nutrition, and breastfeeding even as direct evidence is lacking on their impact or training needs. Based on evidence from trained TBAs, training of 2-8 days in duration may be suitable (although this was not assessed), and will depend on domains being covered (no direct evidence was found related to maternal nutrition). Evidence suggests that training programs which focus on limited basic content accompanied by supportive supervision (by lady health workers or trained nurses or community midwives) and follow-up training may lead to better outcomes. An overall training plan should be developed which would include components related to training the trainers and evaluation.

4. Recommendations for future research

There is no direct evidence for use of post-natal attendants who are relevant in the Indian context, particularly in relation to maternal nutrition outcomes. There is a need for embedded research within the context of programs training post-natal attendants to understand its utility.

5. Strengths and limitations of the review

The strength of this rapid evidence synthesis is that it is first of its kind to examine the evidence on the effect of the TBA training for improved maternal behaviours and outcomes. The review is an update of the existing Cochrane systematic review conducted by Sibley et al.2012 (3). The review was comprehensive in terms of the robust methods utilised, and the search strategies employed. Further, the reviewers engaged with stakeholders, including content experts throughout the RES process. The RES is limited by only considering the randomized controlled trials in the review and grey/unpublished literature was not identified, but may have provided important and relevant insights, somewhat limiting our ability to assess risk of bias and relevance across context (external generalisability).
6. Next steps

In order to apply these study findings in Malappuram, Kerala, further dialogue and engagement with relevant actors, like health care providers, attendants and mothers will be essential. This may be enabled by the dissemination of and discussion around this and related policy brief and creation of a workplan following this.

7. References

2. WHO recommendations on postnatal care of the mother and newborn. 2013