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.

Jyoti Tyagi, Sandeep Moola, Priyanka Shah, Devaki Nambiar, Soumyadeep Bhaumik

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

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

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

Acknowledgements

Email for correspondence
res@georgeinstitute.org.in

Suggested citation
Tyagi J,Moola S Shah P, Nambiar D, Bhaumik S. Training of Post-Natal Care Attendants for Post-Natal Care, Nutrition and Breastfeeding: Rapid Evidence Synthesis. Vishakhapatnam: The George Institute for Global Health, India. August 2020.

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 the 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.

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

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 "compar*" 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

---

[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
World Health Organization source - defines
[1]*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".*

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

0.79) and late neonatal death[6] 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**.

---

[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

Identification	Citations identified through database (n= 435)
	Citations after duplicates removed (n= 81)
Screening	Citations screened (n= 354) → Citations excluded after screening titles and abstracts (n= 349)
Eligibility	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)
Included	Studies Included (n= 2) in addition to that n=6 studies from Sibely et al, 2012.

The George Institute for Global Health India

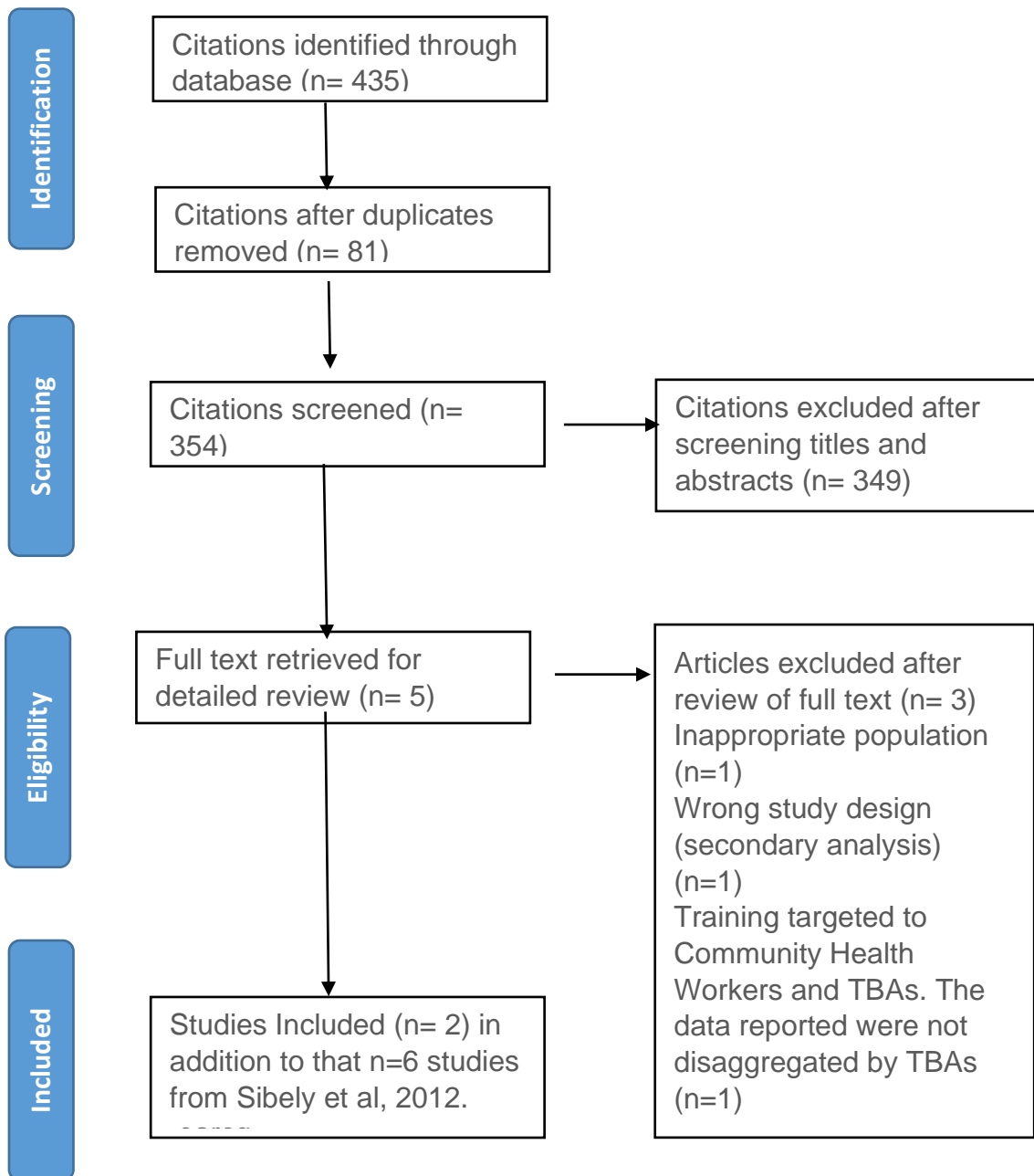Better treatments. Better care. Healthier societies.

Table 1: Characteristics of included studies

Citation details	Study design	Country, Setting	Participants	Intervention	Control/Comparison
Azad 2010	Cluster-randomised controlled trial, factorial design (2 interventions: women's groups and TBA training)	Bangladesh, 3 rural districts, 6 unions per districts, 18 clusters total; Population: 15,441 to 35,110 each	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	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)	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)
Bullough 1989	Randomised controlled trial	Malawi, 3 rural regions	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	TBAs in both intervention and control groups attended a 2-day refresher course Intervention group TBAs (n=2104) subsequently received additional instruction	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
Carlo 2010	Two-part study design: (1) Essential Newborn Care Study (before-and-after) and	Five countries (Democratic Republic of Congo, Guatemala, India,	Women attended by community birth attendants in the study area (TBAs attended 10,770 and 13,327	All community birth attendants received a 3-day WHO 2004 Essential Newborn Care course.	Control birth attendants did not receive the additional Neonatal Resuscitation Program.

	(2) Neonatal Resuscitation Program (cluster RCT) This review reports results from the cluster-RCT	Pakistan, Zambia); 88 rural communities (n = 43 and 45 intervention and control communities, respectively)	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.	Intervention birth attendants received an additional 3-day Neonatal Resuscitation Program and 6month refresher	
Gill 2011	Cluster-randomised controlled trial	Zambia, one rural district	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	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	Control TBAs (n=67) did not receive additional training and continued to provide their existing standard of care
Hossain 2000	Randomised controlled trial	Bangladesh, 12 rural thanas (6 intervention and 6 control)	Postpartum lactating women: There were 1065 and 1067 women in the intervention and control groups, respectively.	Intervention group TBAs (n=85) and village doctors received a 2-day training	Control group TBAs (n=86) and village doctors received no training

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

			TBAs and village doctors. Only TBAs (n=171) included in this review		
Jokhio 2005	Cluster-randomised controlled trial	Pakistan, 7 rural sub-districts (talukas), 3 intervention and 4 control talukas	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 singletons births, and 9443 women with 8989 singleton births in the intervention and control clusters, respectively)	Intervention cluster TBAs (n=565) received a 3-day training and delivery kits; Obstetric teams provided consultation and outreach in the intervention clusters only	Control cluster TBAs did not receive any training and did not receive delivery kits
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

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

		approximately 5000	criteria for activity level and agreed to participate	In other only the HSI component was implemented.	
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 11 111 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

Citation details	Trainer information	Trainee information	Module/content of training	Duration of the training/ Duration of intervention	Training resource/material	Training modality	Post training	Source of funding
Azad 2010	Trainer profile: Not clear Trainers training: Nor clear Trainer qualification: not clear	Trainees per cohort: Not clear Total trained in programme year :482 TBAs, number in intervention and control clusters not clear	All TBAs, clean safe delivery, danger signs emergency preparedness, mouth-to-mouth ventilation; intervention TBAs, bag-valve-mask resuscitation	Duration of the training: Not clear Total contact hours: Not clear	Not clear	Theoretical: done Practical: done Format: interpersonal, simulation	Follow up: Not clear Supervision: Not clear	Women and Children First, UK Big Lottery Fund, Bill & Melinda Gates Foundation, UK Department for International Development
Bullough 1989	Trainer profile: Not clear Trainers training: Not clear Trainer qualification: not clear	Trainees per cohort: 6 to 7 TBAs. Total trained in programme year: 69 TBAs.	Patient education; Advice around breastfeeding; Record keeping, physiology of 3rd stage	Duration of the training: 2-days refresher course Total contact	Developed by/for project, local expert body	Theoretical: not clear Practical (clinical): not clear Format: interpersonal, audio/ visual	Follow up: 3 to 4 weeks after training, then every 5 weeks over 6 to 9 months. Supervision: Community midwives	Bert Trust, Wellcome Trust)

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

			labour, management of 3rd stage labour, causes of haemorrhage, measurement of blood loss, reason for referral of 3rd stage labour complication plus early sucking for the intervention group	hours: Not clear				
Carlo 2010	Trainer profile: Local expert Trainers training: cascade- trainers trained master trainers, who trained community co-ordinators	Trainees per cohort: Not clear Total trained in programme year: Not clear	All birth attendants- routine neonatal care, initiation of breathing and resuscitation (bag valve- mask ventilation), thermo regulation, early	3 days Essential Newborn Care Program, 3 days Newborn Resuscitat ion Program Total contact hours: not clear	WHO 2004 Essential Newborn Care Program, Modified; American Academy of Paediatrics Neonatal Resuscitation Program	Theoretical: done Practical (clinical): done Format: interpersonal, clinical practice, demonstration, materials adapted for low/ non-literate participants	Follow up: Not clear Supervision: Not clear 6-month refresher for intervention birth attendants	Eunice Kennedy Shriver National Institute of Child Health and Human Development Global Network for Women's and Children's Health Research, and the

	Trainer qualification: not clear		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					Bill and Melinda Gates Foundation
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

The George Institute for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

			TBAs trained in bag-valve-mask ventilation, sepsis management, facilitated referral					
Hossain 2000	Trainer profile: Local expert Trainers training: Not clear Trainer qualification: not clear	Trainees per cohort: 15 Total trained in program year: 85	Breastfeeding advice including benefits, early, exclusive feeding, introduction/ types of complementary weaning foods, disadvantages of bottle feeding	2 days training Total contact hours: not clear	Developed by/ for project, national expert body (Bangladesh Breast Feeding Program)	Theoretical: Not clear Practical (clinical): not clear Format: not clear	Follow up: Not clear Supervision: Not clear	Voluntary body
Jokhio 2005	Trainer profile: Local expert Trainers training: Not clear Trainer qualification:	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,

The George Institute for Global Health India
Better treatments. Better care. Healthier societies.

	paramedics (LHW) And obstetricians		disposable delivery kit, referral for obstetric emergencies, newborn care					UK for data entry
Miller 2012	Trainer profile: Not clear Trainers training: Nor clear Trainer qualification: 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

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

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

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

Table 3: Summary of the findings

Outcomes	Citation detail	Statistical method	No. of participants	Findings
Trained Traditional birth attendants (TBAs) vs untrained TBA				
Maternal mortality (number per 100,000 pregnancies)	Jokhio 2005	Adjusted odds ratio (AOR) (95% CI) 0.74 (0.45 to 1.22)	N= 19,525	27 deaths in the intervention and 34 deaths in the control clusters, corresponding to a 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%)
Stillbirths (number per 1000 births and stillbirths)	Jokhio 2005	AOR (95%CI) 0.69 (0.57 to 0.83)	N= 18,699	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%)
Neonatal death	Jokhio 2005	AOR (95%CI) 0.71 (0.61 to 0.82)	N= 18,699	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)
Perinatal death (number per 1000 live births and stillbirths)	Jokhio 2005	AOR (95%CI) 0.70 (0.59 to 0.83)	N= 18,699	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

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

				clusters (8.5% versus 12%)
Advice on diet	Miller 2012	P<0.01	N=504	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.
Referred mother or infant post-partum	Miller 2012	0.01<P<0.05	N=534	13.7% trained TBAs referred mother or infant post-partum as compare to 7.8% untrained TBAs.
Advice about immediate feeding colostrum	Miller 2012	P<0.01	N=805	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.
Early initiation of breastfeeding	Talukdar 2017	P ≤ 0.05	N=2330	At endline early initiation of breast feeding (<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.
No prelacteal feeding	Talukdar 2017	P ≤ 0.05	N=2330	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.
Exclusively breastfeeding	Talukdar 2017	P ≤ 0.05	N=2322	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

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

				sex and infant age
Additionally, trained TBAs versus trained TBAs				
Maternal deaths	Gill 2012	Unadjusted Risk Ratio (RR) (95% CI) 0.79 (0.05 to12.62)	N= 3437	Two maternal deaths, one in both the intervention and control groups were reported
Early neonatal death (0-6 days)	Azad 2010	Adjusted RR, 95% CI 0.95 (0.75 to 1.21)	N=13,946	Azad 2010 found 25.4 versus 26.5 deaths per 1000 live births in the intervention and control clusters. Carlo 2010 identified 15.0 versus 21.9 deaths per 1000 live births in the intervention and control clusters respectively.

Gill 2011 identified 18.2 versus 30.5 deaths per 1000 births in the intervention and control clusters, respectively.

The overall weighted mean effect estimate for the three studies approached but was not statistically significant. |
	Carlo 2010	Adjusted RR, 95% CI 0.68 (0.45 to 1.03)	N=20,117	
	Gill 2011	Adjusted RR, 95% CI 0.56 (0.31 to 1.01)	N= 3431	
		Adjusted RR, 95%CI 0.83 (0.68 to 1.01)	N = 37,494	
Neonatal death (0-28 days, excluding stillbirths)	Gill 2011	Adjusted RR (95% CI) 0.54 (0.32 to 0.92)	N=3355	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.

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

Perinatal death (0-7 days plus stillbirths)	Carlo 2010	Adjusted RR (95% CI) 0.79 (0.61 to 1.02)	N=24,097	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).
Stillbirth	Carlo 2010 Gill 2011	Adjusted RR (95% CI) 0.96 (0.71 to 1.3) Adjusted RR (95% CI) 1.07 (0.64 to 1.78) Adjusted RR (95% CI) 0.99 (0.76 to 1.28)	N=24,097 N=3497 N=27,594	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.
Late neonatal death (7-28 days)	Gill 2011	RR (95% CI) 0.47 (0.2 to 1.11)	N=3274	Eight and 13 deaths were identified in the intervention and control clusters, respectively. The late neonatal death rate difference was not significant.
Neonatal death within 24 hours of life	Carlo 2010	RR (95% CI) 0.75 (0.44 to 1.27)	N=24,097	5.5 versus 7.3 deaths per 1000 live births were identified in the intervention and control clusters respectively.
Advice about immediate feeding colostrum	Hossain 2000	Odds ratio (95% CI) 1.21 (0.39 to 3.79)	N=162	The difference in additionally trained versus trained TBAs at post test for three months was not significant.
Advice about introduction of complementary foods (3 months post-test)	Hossain 2000	Odds ratio (95% CI) 3.11 (1.63 to 5.92)	N=162	The effect size estimates of the post-test difference for additionally

				trained TBAs versus trained TBAs three-month follow-up, favour the intervention group.
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				
Early initiation of breastfeeding	Talukdar 2017	P ≤ 0.05	N=2330	At endline the early initiation of breastfeeding in trained plus supervised TBAs increased from 60% to 68% as compared to trained TBAs group.
No prelacteal feeding	Talukdar 2017	P ≤ 0.05	N=2330	At endline the avoidance of pre lacteal feeding in trained plus supervised TBAs increased from 80% to 88% as compared to trained TBAs group
Exclusively breastfeeding	Talukdar 2017	P ≤ 0.05	N=2322	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.

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

NHSRC

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 asses risk of bias and relevance across context (external generalisability).

The George Institute
for Global Health   India
Better treatments. Better care. Healthier societies.

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

1. World Health Organisation. Pregnancy, childbirth, postpartum and newborn care: A guide for essential practice. 2015.
2. WHO recommendations on postnatal care of the mother and newborn. 2013
3. Sibley_LM, Sipe_TA, Barry_D. Traditional birth attendant training for improving health behaviours and pregnancy outcomes. *Cochrane Database of Systematic Reviews* 2012, Issue 8. Art. No.: CD005460.
   DOI: 10.1002/14651858.CD005460.pub3.
4. Bullough CHW, Msuku RS, Karonde L. Early suckling and postpartum haemorrhage: controlled trial in deliveries by traditional birth attendants. *Lancet* 1989;2:522-5. [0089]
5. Azad K, Barnett S, Banerjee B, Shaha S, Khan K, Rego AR, et al. Effect of scaling up women's groups on birth outcomes in three rural districts in Bangladesh: a cluster-randomised controlled trial. *Lancet* 2010;375(9721):1193-202.
6. Carlo WA, Goudar SS, Jehan I, Chomba E, Tshefu A, Garces A, et al. First Breath Study Group. Newborn-care training and perinatal mortality in developing countries. *New England Journal of Medicine* 2010;362:614-23.
7. Gill C, Mazala G, Guerina N, Kasimba J, Knapp A, Mulenga C, et al. Reducing neonatal mortality in rural Zambia with traditional birth attendants, a cluster randomized trial: the Lufwanyama neonatal survival project (LUNESP). Pediatric Academic Societies' 2010 Annual Meeting; 2010 May 1-4; Vancouver, Canada. 2010.
8. Hossain Z, Ripon FH, Chowdury JH. Promotion of breastfeeding: an operations research on traditional birth attendants (TBAs) and village doctors. Unpublished report, Adabor, Shamoly, Phaka, Bangladesh: Development Support Services May 2000:1-47. [200]
9. Jokhio AH, Winter HR, Cheng KK. An intervention involving traditional birth attendants and perinatal and maternal mortality in Pakistan. *New England Journal of Medicine* 2005;352(20):2091-8. [0103]
10. Talukdar S, Farhana D, Vitta B, Greiner T. In a rural area of Bangladesh, traditional birth attendant training improved early infant feeding practices: a pragmatic cluster randomized trial. Maternal & child nutrition, 2017, 13(1)
11. Miller P.C, Rashida G. Tasneem Z, Haque M . The effect of traditional birth attendant training on maternal and neonatal care. International Journal of Gynecology and Obstetrics 117 (2012) 148–15

The George Institute for Global Health   India
Better treatments. Better care. Healthier societies.