Original Research Article

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Experience of skill labs to improve quality of newborn care at birth in three district of Uttar Pradesh, India

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ABSTRACT

Background: Retention of neonatal resuscitation skill among birth attendants have been a challenge in developing countries. The objective of the study was to document the performance of skill labs and its impact on the skill and knowledge of the birth attendants in India.

Methods: In three districts of Uttar Pradesh, impact assessment of twelve skill labs was done adopting mixed quantitative and qualitative methodology.

Results: Twelve skill labs supported skill building of 606 birth attendants over one year. Six of the units performed well and four moderately and too units poorly. The health functionaries at all levels were positive about their experience about the skill labs. Majority of them hoped sustenance of these units. There was marked retention of resuscitation skill after one year.

Conclusions: The skill labs appear to be useful modality for promoting retention of the resuscitation skills of birth attendants.

Keywords: Neonatal resuscitation, Skill labs, Skill retention, India

INTRODUCTION

Neonatal deaths contribute to more than half of underfive deaths in India. 1,2 Decline in neonatal mortality rate (NMR) in India is relatively slower. 2 Care around birth and on first day remains the most critical period to prevent neonatal deaths. 1,2 Apart from prematurity birth (28%) and severe infections (26%), asphyxia (20%) is a leading cause of neonatal mortality In India. 3,4 About 10% of newborns require some assistance (stimulation), 3% require positive-pressure ventilation (PPV) and 2% need intubation and advanced cardio-respiratory support to initiate breathing. Effective essential care and

resuscitation around birth could prevent many of these asphyxia episodes and consequences. Neonatal resuscitation program (NRP) training using different methodologies have shown improvement in knowledge and skill and thereby assumed to have impact on the neonatal mortality. Maintaining resuscitation knowledge and skills has been a major challenge, especially where few deliveries occur with infrequent opportunity for resuscitation. Refresher at 3-6 monthly interval has been suggested. To

However, there is limited information on the sustainability and retention in clinical practice in low-

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resource settings. Additionally the repeated training has cost and logistics implications. Self-learning and peerlearning techniques have been used for several clinical areas with good results. An implementation project focused improving skill, knowledge and competency of the birth attendants at the public health facilities on essential newborn care and resuscitation through training and self-and peer-learning opportunity. It was assumed that provision of an enabling environment and facility for skill practice after training would improve retention of skills and build confidence. In three districts of Uttar Pradesh; Gonda, Aligarh and Raebareli with high NMR, twelve skill labs (4 in each district) were established. The skill labs were equipped with necessary kits including radiant warmer, self-inflating resuscitation bags & masks, mannequin, guidelines, charts and job-aids. In each district the skill labs were established at the district hospital and three at first referral units (FRUs). One doctor was in-charge of the skill lab and one nurse was designated as coordinator for the skill lab. The project was implemented through the public health system in the three districts with facilitation and supervision from Save the Children. A total of 779 birth attendants including 69 doctors, 281 nurses and 429 auxiliary nurse midwives (ANMs) from all level of facilities in the districts were trained by the technical experts using three-day neonatal resuscitation and newborn care training module with more emphasis on skill building and hands-on practice. Following the training, the birth attendants leveraged the monthly review meetings for attending the skill lab and practice facilitated by the in-charge. To document the performance of the skill labs and its possible impact on the skill and knowledge of the birth attendants, an impact assessment was done. This article reports on the experience of functioning of the skill labs and their influence on the retention of knowledge and skill among the birth attendants.

METHODS

Study design

A before-after study design was adopted for impact assessment of the program in three districts of Uttar Pradesh: Raebareli, Gonda and Aligarh. Baseline data collection in the three districts (Gonda and Aligarh in August 2014 and Raebareli in May 2015) included health facility assessment, knowledge and skill levels of the birth attendants and perceptions and practices related to perinatal care and capacity building. The end-line data collection was done during May 2016 assessment, after 12-18 months of baseline data collection.

Data collection

A mixed research methodology combining quantitative (questionnaire and observations) and qualitative (in-depth interviews) approaches was adopted for data collection. The facility assessment was done for 42 health facilities including the 12 facilities with skill labs in the three

districts. During the observation period status of the parameters assessed were recorded as 1 for available/fully functional, 0.5 for average status/partially functional and 0 for not available. In-depth interviews (IIDs) with 111 respondents including 16 doctors, 66 nurses/ANMs, 12 skill lab in-charges, 9 district health officials, 2 state officers and 6 save the children team members. The functionaries not involved in maternal and newborn health care service delivery were excluded. The qualitative data focused on the skill lab function, attendance and perceived benefit due to the skill lab. The facility assessment and IDIs were done by a team with one doctor and two research assistants. Knowledge assessment tools in bilingual format were selfadministered by the participants. Then skill assessment was done by a pediatrician trained in neonatal resuscitation using case scenario based response and demonstration approach. Knowledge and skill assessment was done for 168 birth attendants including 54 doctors and 114 nurses/ANMs. Percentages of correct responses for knowledge and skill domains were calculated. Multilevel quality assurance measures were put in place including field level monitoring and supervision.

Data management and analysis

Double data entry was done for quantitative data followed by matching to detect the mismatches. Descriptive statistics were used to summarize the proportions and means. Qualitative data analysis was done manually by investigators with experience following the steps: free listing, domain identification, axial coding and cross tabulation. Data was analyzed separately for each category of respondents and then compared between the respondents. This study was reviewed and approved by INCLEN Institute Ethics Committee.

RESULTS

Infrastructure status

A nurse/ANM was the in-charge at eight units and three units had a doctor as in-charge. One facility had the lady health visitor (LHV) as the in-charge. Nine skill labs were located near the labour room, two in the maternity ward and one in separate building. Nine units were established by renovating an existing room, two without any renovation and one was newly constructed facility. Ten units were in good shape. One skill lab was practically non-functional. Five units were clean, four unit were average and three units were dirty during visit. Seven units had adequate space and four had inadequate space. Seven skill labs had running water facility. Although light source in all, seven units functional power supply during visit. At most of the facilities, both the doctor, nurses/ANM facilitated the sessions as resource persons. Although the guidelines and tools were available at most facilities, availability of all components was observed at three facilities. A combination of job-aids was displayed on the walls at most facilities, but all posters were available at six facilities. The detailed status of the skill labs in the three districts are given in Table 1.

The skill labs in Raebareli district had better overall status scores followed by Gonda and Aligarh.

Table 1: Status scores for the skill labs in the three districts.

	Districts			Dealed (v. 12)
Parameters	Gonda (n=4) n (%)	Aligarh (n=4) n (%)	Raebareli (n=4) n (%)	Pooled (n=12) n (%)
Location near labour room	3 (75)	3 (75)	3 (75)	9 (75)
Cleanliness and maintenance	3 (75)	1.5 (37.5)	3.75 (93.8)	8.3 (68.8)
Adequate space	2.5 (62.5)	1.5 (37.5)	3.5 (87.5)	7.5 (62.5)
Furniture availability	2.6 (65)	1.2 (30)	2 (50)	5.8 (48.3)
Functional hand washing facility	1.5 (37.5)	1.5 (37.5)	3 (75)	6 (50)
Functional electricity and light	3 (75)	1.5 (37.5)	4 (100)	8.5 (70.8)
Training tools availability	3.3 (83.3)	2 (50)	4 (100)	9.3 (77.8)
Guidelines availability	3.1 (78.6)	0 (0)	3.4 (85.7)	6.6 (54.8)
Job-aids display	3.4 (84.4)	2.3 (56.3)	3.9 (96.9)	9.5 (79.2)
Record availability	3 (75)	2 (50)	3 (75)	8 (66.7)
Summary status	2.8 (71.1)	1.6 (41.1)	3.4 (83.9)	8 (66.7)

Note: Scores given; 1- available/fully functional, 0.5- average status/partially functional and 0- not available.

Training sessions

At seven units refresher session was held monthly, while at two units quarterly sessions were reported. At one unit session was held as per need. At ten facilities at least one training session was held within 2 months prior to assessment. Record and registers on training were accessible at eight units. On an average these facilities conducted about 19 (7-60) training sessions. At these units, 157 doctors and 449 nurses/ANMs attended the training since establishment. The batch sizes ranged from 4-12 and usually the sessions lasted for 2-4 hours. One unit at district hospital conducted 60 sessions in one year for 120 doctors and 300 nurses/ANMs. Other five more active units provided refresher training for 50-60 participants in last one year.

Opinion of skill lab in-charges

When asked, all the respondents were positive about their experience with the skill lab. According them, many positive changes were observed in clinical/service delivery practices due to the skill labs. They perceived that the still-birth and asphyxia number had declined, care for preterm babies improved and lesser cases referred recently. Many reported improvement in confidence level and performance of resuscitation by the nurses.

"We use three to four rounds in a month, during meeting of ANM or during extra time." (Skill lab in-charge)

"Good learning opportunity & Good to practice skill. Became more confident to perform neonatal resuscitation procedures" (Staff Nurse) The key challenges expressed included inadequate space, additional burden of skill lab coordination and record keeping and regular replacement of the supplies.

"There is inadequate space." (ANM)

"It is difficult to maintain the record due to absence of sufficient manpower." (Doctor)

More than half of them were hopeful about sustenance of skill labs after withdrawal of supervision and support from Save the Children. But, some were apprehensive about potential decline in the function and sustainability after withdrawal of external supervision.

"After withdrawal of support, there will be no proper functioning of skill-lab as no separate staff is assigned for skill lab." (Skill Lab In-charge)

"Continue the usage with whatever existing infrastructure/training, but will decline over a period of time" (Staff nurse)

"Continue working the same way to achieve the aim of reducing mortality rate of newborn and mother." (Skill Lab In-charge)

The hospital authority and district administration were appreciative of skill labs, which provided an opportunity for skill building at these facilities in the district. They appear to be committed to ensure functionality and sustainability of these units. Some hoped to have such more units in the district.

"Skill lab has increased the confidence level of health workers and helped in overcoming their fears." (District Chief Medical Officer)

"Such skill labs should be established at PHCs and subcentres also." (District RCH Officer)

"The skill labs at district and CHCs and refresher training for staffs at delivery point are very useful." (State Child Health Officer)

Knowledge and skill status of the birth attendant

The cumulative knowledge score of the birth attendants improved from 42% (at baseline) to 85% (post-training) and dropped to 59% after one year. The cumulative skill score for them improved from 15% (at baseline) to 89% (post-training) and stayed at 82% after one year. There was sizable gap in the knowledge-skill scores for both doctors and nurses after one year.

DISCUSSION

This study documented the unique experience of skill lab in the public health system and influence on the knowledge and skill status of the birth attendants in high neonatal mortality context. Ten of the twelve skill labs were functional after one year. Majority of these units provided skill refresher opportunity and assisted in building confidence of the birth attendants. The retention in skill after one year was very encouraging and skill labs may be the critical factor. The willingness and commitment of the skill lab in-charges and support from the administration was noticeable. This was probably the first experience of performance of skill labs in public health sector in India.

There have been limited reports regarding skill lab performance and impact. Preliminary findings from USAID Assist program (Uganda) with helping babies breath skill labs at the health facilities helped reducing NMR by more than 50% and improving successful neonatal resuscitation from 0% to 80% over three months. We could not find any other similar report. Retention of skill and knowledge among birth attendants have been identified as a challenge related to neonatal resuscitation, especially at the facilities with low delivery load and scarce opportunity for using resuscitation. Some of the studies using simulation based training demonstrated retention of skill after 4-8 months, but among paediatric residents.

In developing countries with high burden of neonatal mortality, timely neonatal resuscitation by the birth attendants is a challenge. The poor skill and confidence of the birth attendants are key factor for this. The impact of capacity building efforts of neonatal resuscitation have been sub-optimal due to poor retention of skill and knowledge. Opportunity for refresher skill practice to improve chance of retention appears to be a good

proposition for birth attendants, especially at peripheral health facilities with limited practical opportunity. The current study documented the performance of the skill labs at the facilities in a weak public health system and impact on the skill and knowledge retention. The long-term impact following withdrawal of the external supervision is yet to be documented. The study could not document and track the performance of the individual participants over the time.

CONCLUSION

To our knowledge this was the first experience of skill lab in India. The experience of skill lab performance and its influence on the skill level of the birth attendants was encouraging. The approach is simpler and doable in the public health system with incorporation of the structured opportunity for refresher practice contact and monitoring. Sustainability and maintenance of these skill labs and long term impact on neonatal mortality and skill level of the birth attendants needs to documented.

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