

**Research Article**

**Assessment of essential newborn care services for low birth weight babies in rural Lucknow, India**

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**Abstract**

Majority of the death during neonatal period occur due to the low birth weight. So reduction of the neonatal mortality, availability of neonatal care service especially for low birth weight babies were required at the primary and secondary health care level. For this first assessment of actual condition of health services of essential newborn care for low birth weight were required. So the objective of the study was to assess the essential newborn care services for low birth weight babies in rural Lucknow. The facility based survey was conducted from Oct 2011 to May 2012 in rural area of Lucknow district, Uttar Pradesh in 9 community health centres (CHCs) and 9 primary health centres (PHCs). Multistage random sampling was used for the reaching up to the PHCs. For facility assessment regarding neonatal care services for low birth weight infrastructure, manpower, equipments related to newborn care were assessed. Only four (44.4%) primary health centres had separate labour room. About 11.1 percent PHCs had newborn care corner and adequate light in labour room. Only one PHC had regular electricity supply. Most of the primary health centres (77.8%) had one general duty medical officer. availability of essential newborn care equipment was found to be grossly inadequate in almost all the primary health centres. No primary health centre had baby weighing scale and radiant warmer. Majority of PHCs did not have suction pumps, resuscitation bags with masks, oxygen facilities and IV infusion facilities. There were inadequate neonatal care services at the primary health care level. For the improvement of the neonatal health, strengthening of the neonatal care services especially for low birth weight is required at primary health care level.

**Keywords:** essential newborn care services, low birth weight, rural area, India

**1. Introduction**

In particular, it is apparent that a disproportionate burden of infant and under-5 childhood mortality relates to deaths within the neonatal period, which frequently occur within the first few days after birth<sup>1</sup>. Nearly 75 percent neonatal death and 50 percent of infant death occur among the low birth weight neonates. Even after recovering from neonatal complications, some low birth weight babies may remain more prone to malnutrition, recurrent infection and neurodevelopment handicaps. Low birth weight, therefore is a key risk factor of adverse outcome in early life<sup>2</sup>.

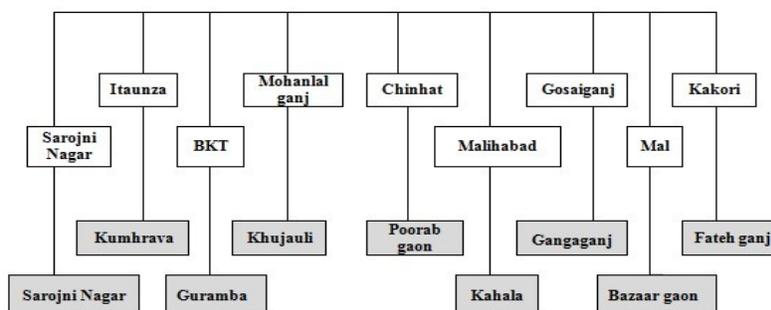
Moreover, achievement of Millennium Development Goal 4 to reduce under-5 mortality by two thirds by the year 2015 is critically dependent on a substantial reduction in neonatal mortality<sup>1</sup>. So reduction of neonatal mortality especially concern of neonatal care facility for low birth weight at primary and secondary health care facilities are required. Need of assessment require for the assessing actual condition of the primary health centres (PHCs) and community health centres (CHCs) for neonatal care for low birth weight? Such information may be used at the national level and community levels. It

may also be utilized by program planners, field managers, researchers, field staff and by organizations outside the country for the planning of development programs. So the objective of the study was to assess the essential newborn care services for low birth weight babies.

## 2. Methodology

The facility based survey was conducted from Oct 2011 to May 2012. For the selection of health facilities multistage random sampling was done. In Lucknow district there are a total of nine community development blocks. For facility assessment regarding neonatal care services nine CHC was selected to assess the infrastructure, manpower, equipments related to newborn care. In addition to this one PHC from each CHC was randomly selected (Fig. 1).

**Fig. 1: Flow diagram for selection of health facilities on each PHC of all CHCs**



For assessment of facilities for neonatal care predesigned schedule (based on Facility based Integrated Management of Neonatal and Childhood Infection training module<sup>2</sup> and Indian Public Health Standard<sup>3</sup>) were developed. Assessment was done on the basis of infrastructure, human resources and supply of equipments. Prior consent was taken from the chief medical officer to perform the study.

**2.1 Data analysis:** Data was tabulated on Microsoft Excel Sheet and analyzed by using the software SPSS, version 17.0. Frequency distributions were calculated for all variables.

## 3. Result

Only four (44.4%) primary health centres had separate labour room. About 11.1 percent PHCs had newborn care corner and adequate light in labour room. Only one PHC had regular electricity supply. Safe water source with sufficient amount for hand washing was available in 4 (44.4%) PHCs. None of the PHC had ambulance services. All of the community health centres had separate labour room and new-born care corner in labour room. About 22.2 percent CHCs had inadequate light in labour room. About two third CHCs (66.7%) had safe water source with sufficient amount for hand washing. Availability of functional ambulance was in 66.7 percent CHCs (Table-1).

**Table-1: Distribution of health facilities on the basis of physical facilities and infrastructure**

Physical facilities	Health facilities			
	PHCs (n=9)		CHCs (n=9)	
	N	%	N	%
Separate labour room	4	44.4	9	100.0
Newborn care corner in the labour room	1	11.1	9	100.0
Lighting adequate in labour room and newborn care corner	1	11.1	7	77.8
<b>Generator</b>				
Functioning with fuel	1	11.1	7	77.8
Not functional or no fuel	0	0.0	2	22.2
<b>Running Water supply in the labour room</b>				
Safe water source with sufficient amount for hand washing	4	44.4	6	66.7
<b>Ambulance</b>				
Functional with fuel	0	0.0	6	66.7

Most of the primary health centres (77.8%) had one general duty medical officer. Primary health centres did not have sanctioned post of paediatricians and gynaecologist. Almost all the primary (88.9%) health centres had one to two Auxiliary Nurse Midwives (ANMs) in place. In present study majority (77.8%) of community health centres had a paediatrician and all the health facilities had gynaecologists. All the CHCs had General duty Medical Officers (GDMOs), staff nurses and ANMs. Only 3 CHCs (33.3%) had medical officers (MO's) who were trained in integrated management of neonatal and childhood infection (IMNCI) and 2 CHCs had MO's trained in emergency obstetric care (EmOC). Seven CHCs (77.8%) had facilities for providing 24 hours newborn care (Table-2).

**Table-2: Distribution of health facilities on the basis of availability of health personnel involved in neonatal care**

Staff	Health facilities			
	PHCs (n= 9)		CHCs (n=9)	
	N	%	N	%
Paediatricians	*	*	7	77.8
Gynaecologists	*	*	9	100.0
General duty Medical Officers	7	77.7	9	100.0
Staff nurses	0	0.0	9	100.0
ANMs	8	88.9	9	100.0
MO's trained in IMNCI	0	0.0	3	33.3
MO's trained in Em OC	0	0.0	2	22.2
24 hours newborn care	0	0.0	7	77.8

\*no sanction post

Availability of essential newborn care equipment was found to be grossly inadequate in almost all the primary health centres. No primary health centre had baby weighing scale and radiant warmer. Majority of PHCs did not have suction pumps, resuscitation bags with masks, oxygen facilities and IV infusion facilities. All the community health centres had mechanical baby weighing scales. Radiant warmers were found in all the CHCs, but functional in only six (66.7%) health facilities. All the health facilities had suction pumps, resuscitation bags with masks, oxygen and IV infusion facilities. Majority of CHCs (88.9%) had feeding tubes (Table-3).

**Table-3: Distribution of health facilities on the basis of availability of essential newborn care equipments**

Equipments	Health facilities			
	PHCs (n=9)		CHCs (n=9)	
	No.	%	No.	%
Mechanical baby weigh scale				
Present and functional	0	0.0	9	100.0
Radiant warmer				
Present and functional	0	0.0	6	66.6
Suction pump / mucus trap				
Present and functional	3	33.3	9	100.0
Self inflating resuscitation bag with mask				
Present and functional	2	22.2	9	100.0
Oxygen facility	2	22.2	9	100.0
Feeding tube	0	0.0	8	88.9
IV infusion facility for newborn	2	22.2	9	100.0

Availability of ampicillin/amoxicillin was in majority of PHCs (77.8%). Gentamicin was found in 44.4 percent PHCs. Emergency drugs such as adrenaline, aminophylline and calcium gluconate were available in less than half of PHCs. Injection of vitamin K was not available in any of the PHCs. Antibiotics were available in all the CHCs, whereas vitamin K was not available in any of the CHC. But 4 CHCs (44.4%) used vitamin K from outside when required. Emergency drugs like adrenaline and aminophylline were available in all the CHCs but calcium gluconate was found only in half (44.4%) of the CHCs. Fluid such as normal saline and ringer's lactate were present in all the facilities (Table-4).

**Table-4: Distribution of health facilities on the basis of availability of essential drugs in Newborn care corner**

Essential drugs	Health facilities			
	PHCs (n=9)		CHCs (n=9)	
	No.	Percentage	No.	Percentage
Ampicillin / amoxicillin	7	77.8	9	100.0
Gentamicin	4	44.4	9	100.0
Adrenaline	3	33.3	9	100.0
Aminophylline	2	22.2	9	100.0
Normal saline/Ringer's lactate	9	100.0	9	100.0
Calcium gluconate	2	22.2	4	44.4
Vit K	0	0.0	0	0.0
Vit K use from outside	0	0.0	4	44.4

#### 4. Discussion

Present study showed that, condition of the PHCs was worse for new born care and delivery services. Some PHCs had regular electricity supply and Safe water source with sufficient amount for hand washing. There were no ambulance in any PHCs. Similar findings were reported by USAID showed, that the majority of the PHCs did not have a newborn care corner in their premises. Only one primary health centre in Utter Pradesh, Madhya Pradesh, Orissa, and Uttarakhand had newborn corner, usually in labour room. Nearly half of the primary health centres lacked electricity.

This study found that in community health centres, condition was different. All of the community health centres had separate labour room and newborn care corner in labour room, only few had inadequate light in labour room. Majority of CHCs had safe water source with sufficient amount for hand washing and functional ambulance services. Report by USAID showed that, most of the community health centres did not have newborn corner. Three fourth of the CHCs had regular electricity and water supply<sup>4</sup>. In a study in Ghana the majority of health centres and clinics did not have reliable electricity. Additionally, health centres and clinics did not all have clean water supply<sup>5</sup>.

Health staffs were adequate in most of the primary health centres. Report by USAID showed that, availability of staff most (85.7%) of the PHCs had one GDMO, except for one facility in Utter Pradesh. All of the PHCs except one had had GDMOs posted at the facility, although less than half of these facilities had GDMOs trained in essential newborn care. The staff nurses were available in half (45.5%) of the facilities and only one facility had staff nurses trained in essential newborn care. ANMs were also available at 90.9 percent facilities but only one third facilities had trained in essential newborn care<sup>4</sup>.

Majority of community health centres had a paediatrician and all the health facilities had gynaecologists. All the CHCs had GDMOs, staff nurses and ANMs. In this some staffs were trained in IMNCI and EmOC. Similar findings were presented by report of USAID<sup>4-9</sup>. Availability of essential newborn care equipments was found to be grossly inadequate in almost all the primary health centres. No primary health centre had baby weighing scale and radiant warmer. Majority of PHCs did not have suction pumps, resuscitation bags with masks, oxygen facilities and IV infusion facilities. Report of USAID showed that, the most available equipment in primary health centres were a weighing scale and a clinical thermometer. Very few PHCs had newborn care equipment available. Radiant warmers were functional in two third health facilities. All Similar finding was presented by report of USAID<sup>4,10,11</sup>.

Availability of ampicillin/amoxicillin was in two third of PHCs. Gentamicin was found in near half of PHCs.

Emergency drugs such as adrenaline, aminophylline and calcium gluconate were available in less than half of PHCs. Injection of vitamin K was not available in any of the PHCs. Report by USAID showed that, availability of essential drug gentamicin and amoxicillin/ampicillin was in two-third of PHCs whereas phenobarb and inj. vitamin K were available in less than one-fifth of the PHCs. Emergency drug such as adrenaline, aminophylline, and calcium gluconate were available in less than half of the PHCs. Fluid such as glucose and normal saline or Ringer's lactate were available in most of the PHCs<sup>4,11</sup>.

Antibiotics were available in all the CHCs, whereas vitamin K was not available in any of the CHC. Emergency drugs like adrenaline and aminophylline were available in all the CHCs but calcium gluconate was found deficient in some CHCs. Fluid such as normal saline and ringer's lactate were present in all the facilities. Report by USAID showed that, antibiotic was available in about two-third of the facilities, whereas injection vitamin K was available only in one community health centre. Emergency drug like adrenaline, aminophylline, and calcium gluconate were available in only about one third of the CHCs. Fluid such as normal saline and ringer's lactate were present in majority of the CHCs<sup>4,6,8</sup>. In a study Diazepam was the only drug that the majority of health centres, clinics and maternity homes stocked while more than 50% of maternity homes and clinics had gentamicin; less than 40% of lower level facilities had ampicillin and none had dexamethasone. This is a major shortcoming in any facility performing deliveries<sup>5,7</sup>.

## 5. Conclusion

Essential newborn care for low birth weight babies was far adequate at primary health care. In PHCs and CHCs there were no vitamin K supplies. In PHCs infrastructure, equipment, trained health staffs were defect. Referral services were inadequate in both PHCs and CHCs.

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