



A study on quality assurance in labor rooms at different levels of public health facilities in Darjeeling District, West Bengal

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ABSTRACT

Background: Quality of care at the health facilities during childbirth remains a key concern. Enhanced quality could have the utmost dividend in saving maternal and newborn lives. India continues to intensify its efforts to reduce maternal and neonatal mortality, through the initiatives launched under the umbrella of the National Rural Health Mission. **Objective:** The objective of this study was to assess the quality in labor rooms against recommended model labor room quality standards in different levels of health facilities in Darjeeling district, West Bengal, India. **Methods:** This study was a Descriptive epidemiological study with one baseline and a follow up visit conducted in labor rooms in different levels of health facilities in Darjeeling district, West Bengal. Study was conducted from May 2016 to October 2018. Pre-designed and pre-tested semi-structured schedule based on Government of India recommendations for standardization of labor rooms was used. Template was generated in MS excel sheet and analysis was done on SPSS software. **Results:** Out of the 38 public health facilities there were one medical college, 2 district

hospital, two sub-division hospital and 12 Block Primary Health Centre and 2 PHC were included as study unit. among L1 facilities maximum improvements occurred in Bagdogra PHC during follow up visit. Among the L2 facilities maximum improvements occurred in Mirik BPHC, Naxalbari Rural Hospital & Bidhan Nagar PHC during follow up visit. Among L3 facilities Siliguri District Hospital & Kalimpong District Hospital scored higher. **Conclusions:** Most of the key practices were followed but there were lots of structural issues in labor rooms of each facilities.

Keywords: Health facility, labour room, public health facility, quality assurance

INTRODUCTION

Maternal and neonatal mortality and morbidity are the key indicators of progressive society. The crucial aspect of maternal and newborn health was prioritized by the United Nations Millennium Development Goals (MDGs). India has made significant progress in its efforts to achieve Millennium Development goals (MDG) 4 and 5.¹ A further reduction of maternal mortality is now part of the Agenda 2030 for sustainable development. The target of the third Sustainable Development Goal (SDG) is to reduce the global maternal mortality ratio (MMR) to less than 70 per 100,000 live births by 2030.² Across the world, nations are striving to achieve health goals and remove social inequalities in health care system. The gap in risk of maternal death between the industrialized world and many developing countries, particularly the least developed, is often termed the 'greatest health divide' in the world.³

Maternal mortality Ratio (MMR) is a health indicator that shows very wide gap between urban and rural area and between developed and developing country. MMR in India is about 33 times higher compared to a developed country.⁴ In the World Summit for Children Declaration and Plan of Action, one of these seven major goals is the reduction of maternal mortality by half between 1990 and the year 2000. This goal was reemphasized at the 1994 International Conference on Population and Development (ICPD) held in Cairo, and the 1995 Fourth World Conference on Women, in Beijing.⁵

The Universal Immunization Programme (UIP) was strengthened and expanded into the Child Survival and Safe Motherhood (CSSM) Project in August 1992.⁶ The CSSM program gave due importance on pregnant woman and the child immunization and childhood diseases. The RCH phase-

was launched by the Govt. of India in 1997 with a paradigm shift from Target Oriented to Target Free Approach (TFA).⁷

Reproductive and Child Health, Phase II (RCH II), launched in April 2005 in partnership with the state governments under the bigger umbrella of the Government of India's (GoI) National Rural Health Mission (NRHM).⁸ The major strategies of the programme are Essential obstetric care, Emergency obstetric care and strengthening referral system. To fulfill the commitment to achieve the Millennium Development Goals 4 and 5, the country had launched the National Rural Health Mission in 2005 with the aims to improve the availability and access to quality health care by people.⁹

About 830 women die from pregnancy- or childbirth-related complications around the world every day.¹⁰ India contributes 25% of global maternal deaths [387,200] and over 30% of neonatal mortality [3.4 million]. Around 56,000 women die every year and 120 women die in a day in this country due to pregnancy or pregnancy-related causes.¹¹ India is the second highest contributor to maternal deaths globally (45,000 deaths in 2015).¹² In India over 50 per cent of the children born are reported to have low birth weight with a low probability of survival in the first year.¹³

Keeping with the above mentioned view the study was conducted in labor rooms at different levels of public health facilities in Darjeeling district where no published study related to quality assurance in labor rooms conducted before. This study would make an attempt to measure quality score for different areas of concern and overall facility score. This study would also help to develop action plans with a timeline which had been verified during follow-up assessment.

Method and Materials:

Type of study: Descriptive epidemiological study with one baseline and a follow up visit

Study setting: Different levels of health facilities in Darjeeling district, West Bengal, India

Period of study: May 2016 to October 2018,

Study population : Study units- selected functional labor rooms in the study area.

Study respondents : Health care providers related to labor rooms of hospitals under study e.g. facility in charge, medical officers, nursing staff and other supportive staffs.

Study tools : Pre-designed and pre-tested semi-structured schedule based on Government of India recommendations¹⁴ for standardization of labor rooms. Five areas of concern was taken into account like Space and layout, Equipment and accessories, Consumables, Human resources, Practices and protocols. Checklists was prepared based on above parameters according to level of facility in the scenario when new construction was not possible and no additional space was available for labor rooms. Responses/observations will be scored based on National Quality Assurance Standards Checklist for labor room.¹⁵

Plan for data analysis: Collected data was checked for consistency and completeness. Data was entered in Microsoft Excel data sheet for analysis using SPSS 26 (SPSS Inc Chicago IL USA). Data were organized and presented in tables and diagrams. Diagrams were done by Microsoft Excel software.

Ethical clearance: The study will be conducted only after obtaining written approval from the Institutional Ethics Committee (Vide Memo No. NBMC/IEC/2016-17/08, dated 12.11.2016)

Results

The study aimed at assessing the labor rooms in terms of recommended model labor room quality standards in five areas of concern, namely, space & layout, equipments, consumables, human resources and practices including infection control; in different level of health facilities in Darjeeling district, West Bengal. During the reference period of one and half year total of sixteen public health facilities were assessed with one baseline visit & a follow up visit.

Table 1: Public health facilities in Darjeeling District

	Total	StudyUnit
MedicalCollege	1	1
DistrictHospital	2	2
SubDivision Hospital	2	2
BPHC/RH	12	9
PHC	21	2(includingSiliguriMatrisadan MunicipalityHospital)

Table 1 shows out of the 38 public health facilities there were one medical college, 2 district hospital, two sub-division hospital and 12 Block Primary Health Centre and 2 PHC were included as study unit.

Table 2 : Facility wise study units as per delivery load

	TotalNo	Nameof HealthFacility
L1Facility	2	BagdograPHC, SiliguriMatrisadan,Municipality Hospital
L2Facility	9	Matigara BPHC, Phansidewa BPHC, Khoribari RH,NaxalbariRH,SuknaBPHC,SukhiaPokhri BPHC, MirikBPHC,Bijanbari RH
L3Facility	5	NorthBengalMedicalCollege andHospital,SiliguriDH, DarjeelingDH , KurseongSDH, KalimpongSDH

Table 2 shows different levels of public health facilities as per delivery load, criteria laid down by MNH tool kit.

Table 3 : Area wise score in LI Health facilities; baseline & follow up visit

Areaofconcern	Maximum possiblescore	BagdograPHC		SiliguriMatrisadanM unicipalityHospital	
		1stVisit	2nd Visit	1stVisit	2nd Visit
Spaceand layout	76	41	45	39	41
Equipment&access ories	82	56	65	46	48
Humanresources	2	1	1	1	1
Practice&protocols	34	28	29	24	24
Infectioncontrol	42	32	33	23	24
Totalscore	236	158	173	133	138

Table 3 shows that among L1 facilities, Bagdogra PHC scored higher than Matrisadan Municipality Hospital. Major deficits were found in the area of space & layout and equipment & accessories in both the facilities. Maximum improvements occurred in Bagdogra PHC during follow up visit.

Table 4 : Area wise score in L2 Health Facilities ;baseline &follow up visit

Area of concern	Maximum possible score	Matigara BPHC		Phasidewa BPHC		Khoribari Rural Hospital		Naxalbari Rural Hospital		Sukna BPHC		Mirik BPHC		Sukiapakhri BPHC		Bijanbari Rural Hospital		Bidhan Nagar PHC			
		Visit																			
		1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd
Space and layout	96	42	47	43	43	57	61	48	50	41	41	53	54	48	48	56	57	43	48		
Equipment & accessories	82	56	58	58	61	66	68	59	64	54	56	54	67	59	62	62	67	50	58		
Human resources	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Practice & protocols	34	26	27	27	28	31	32	28	31	26	27	29	31	24	25	30	30	25	28		
Infection control	42	34	35	31	32	34	34	29	31	30	31	30	34	30	31	36	36	32	35		
Total score	256	159	164	160	165	189	196	165	177	152	156	156	187	162	167	185	191	151	170		

Table 4 depicts among the L2 facilities, Kharibari and Bijanbari Rural Hospital were in higher side. Major deficits were found in Matigara, Sukna BPHC & Bidhan Nagar PHC regarding space & layout. Maximum improvements occurred in Mirik BPHC, Naxalbari Rural Hospital & Bidhan Nagar PHC during follow up visit

Table 5 : Area wise score in L3 Health Facilities; baseline & follow up visit

Area of concern	Maximum possible score	Siliguri District Hospital		Darjeeling District Hospital		Kalimpong subdivision Hospital		Kurseong subdivision Hospital		North Bengal Medical college	
		1 st Visit	2 nd Visit	1 st Visit	2 nd Visit	1 st Visit	2 nd Visit	1 st Visit	2 nd Visit	1 st Visit	2 nd Visit
		Space and layout	96	65	66	59	61	61	67	46	46
Equipment & accessories	82	64	65	65	68	61	70	58	60	51	67
Human resources	2	2	2	1	1	1	1	1	1	1	1
Practice &	34	31	31	32	34	28	30	25	26	22	31

protocols											
Infection control	42	37	37	34	35	35	37	34	34	25	30
Total score	256	199	201	191	199	196	205	164	167	150	197

Table 5 shows among L3 facilities Siliguri District Hospital & Kalimpong District Hospital scored higher. Major deficits were found in Kurseong District Hospital regarding space & layout, equipment & accessories. Maximum improvements occurred in North Bengal Medical college during follow up visit

Table 6: Summary score in L1 facilities (Maximum possible score =236)

L1 facilities	Score obtained			
	1st visit	percentage	2nd visit	percentage
BagdograPHC	158	67.0%	173	73.3%
Siliguri MatrisadanMunicipal ityHospital	133	52.0%	138	54.0%

Table 6 shows Bagdogra PHC scored higher than Siliguri Matrisadan Municipality. Maximum improvement was observed in Bagdogra PHC during follow up visit

Table 7: Summary score in L2 facilities (Maximum possible score =256)

L2 facilities	Total Score			
	1st visit	percentage	2nd visit	percentage
BidhannagarPHC	151	59.0%	170	66.4%
MatigaraBPHC	159	62.1%	164	64.1 %
KharibariBPHC	189	74.0%	196	76.6%
PhasidewaBPHC	160	62.5%	165	64.5%
NaxalbariRH	165	64.5%	177	69.1%
SuknaBPHC	152	59.4%	156	61.0%
MirikBPHC	156	61.9%	187	73.1%
SukiapakhriBPHC	162	63.3%	167	65.2%
BijanbariRH	185	72.3%	191	75.0%

Table 7 shows Kharibari Rural Hospital & Bijanbari Rural Hospital scored higher. Maximum improvements occurred in Bidhan Nagar PHC & Mirik BPHC. No significant change occurred in other institutions.

Table 8: Summary score in L3 facilities (Maximum possible score =256)

L3facilities	TotalScore			
	1st visit	percentage	2nd visit	percentage
NorthBengalMedical CollegeandHospital	150	59.0%	197	76.9%
SilguriDistrictHospital	201	78.5%	203	79.3%
DarjeelingDistrictHospital	191	74.6%	199	77.7%
KurseongSubDivision Hospital	164	64.1%	167	65.2%
Kalimpong Sub DivisionHospita 1	196	76.6%	205	80.1%

Table 8 shows Kalimpong Sub -Division Hospital & Silguri District Hospital scored higher. North Bengal Medical College and Hospital scored lowest in 1st visit, but follow up visit maximum improvements were observed.No significant change occurred in other institutions.

DISCUSSION

The present study was conducted aiming at identification of strengths and gaps against recommended model labor room quality as per Government of India stipulated norms and to suggest opportunities for improvement which may bring about the upliftment of quality of services. This study would also make an attempt to measure quality score for different areas of concern and overall facility score.Labor table with adjustable side rails, Trendelenburg position, Facilities for Heightadjustment, swiveling castor wheels & brakes, calf support, hand grip, leg support wasnotavailableinanyofthesixteenpublichealthfacilities.Duringthe2ndvisit,newlabortable as per specification was placed but not functional in 2 out of 16 public healthfacilities.Labor room floors, doors, windows were not as per specification of Govt of Indiastipulated norms in anyofthe16publichealth facilities.

All the 16 facilities had appropriate handwashing areas with one elbow-operated tap butdidn't have functional and clean toilets attached to the labor room except two publichealthfacilities.Geyserswith10litrecapacityinhandwashingstationwasnotfoundanyfacilities except one. Hand washing protocol was mounted on the wall above the handwashingareainallthefacilitiesexceptfiveOn2ndvisitonwardsprotocolwasdisplayedinall 16 public health facilities.

Power back up to continuously run the radiant warmer the lights, fans was not adequatein5 public health facilities out of 16.

Regardingventilationonly6laborroomswereair-conditioned,hadadequateventilationas per guideline out of 16 public health facilities. Broken windows panes or doors werealsofound in

four public health facilities. Nursing station was satisfactory in all the 16 public health facilities where white board was available only in 3 facilities.

Staff room for off duty staff to rest & a cabinet to store documents were available in all the public health but it was unsatisfactory in 3 facilities. Attached western style water closet and was unavailable in all the 16 public health facilities. Indian style toilet & one wash basin were found in all facilities. Store room with cabinets & storage racks to store essential items was available only in 6 public health facilities.

In a study by Government of Bihar in 2013 reported that less than half the labor rooms in public sector health facilities in Bihar had adequate infrastructure.¹⁶

Process Evaluation Report Quality Initiatives in CEmONC (L3), BEmONC (L2), and Delivery Points (L1) in Madhya Pradesh by Madhya Pradesh Technical

Assistance and Support Team

also revealed inadequacy of infrastructure like waiting area, water supply (source and safe drinking water), staff quarters and toilets largely at lower level facilities.¹⁷

Study conducted by Odisha technical and management support team on March 2012 also reported that the infrastructure was often very basic within maternity wards: only 30% had adequate lighting, 30% had adequate ventilation, just 10% were in good repair, 13% had a functional toilet and 7% had a functional hand washing facility.¹⁸

Study conducted by Ms. Asha Kumari & Ms. Sanyukta Kashyap in Khowai District Hospital Tripura reported patient amenities such as attached toilet/bathroom, hot water facility etc were not available.¹⁹

Glucometer, Adult digital thermometer were available in labor room. Pediatric resuscitator bag (volume 220 ml) with masks of 0 and 1 size, color coded buckets/bins [yellow, red, and blue, white], baby weighing scale, cheek forceps, were found in labor room. Records/registers were in stock. Consumables like gloves, apron, face masks, head covers, shoe covers, goggles were available, Cotton, sanitary napkins, catgut, IV drip sets, needle, cord clamp, medicines-oral and parenteral were in stock. Leucoplast bleaching powder/ hypochlorite solution, hand-wash and betadine solution were found in all 16 public health facilities except mosquito repellent.

Safe Childbirth Checklist was not found in any facilities. On 2nd visit onwards it was available in most of the facilities. Mother and Baby Kit was available in 8 facilities out of 16 public health facilities. Gown for pregnant women was available in most of the facilities but not functional. Monitoring of labor on routine interval, assessment of relevant medical & obstetric history & measurement of mother's pulse, BP, temperature, were noted at the time of admission.

A study done by Odisha technical and management support team on March 2012 reported the availability of protective gear was inadequate. Partograph was not used in 87% of facilities. Haemoglobin testing was routinely performed in 57% of district hospitals and urine albumin testing in half of the district hospitals (50%).¹⁷ Study conducted by Ms. Asha Kumari & Ms. Sanyukta Kashyap in Khowai District Hospital Tripura also revealed non-adherence to 6 steps of hand washing & personal protective equipment were not used by sweepers or laundry staff.¹⁹

Regarding human resources most of facilities had limited availability of staff nurse, sweepers n guards. Guards were not found in 6 facilities out of 16. OBG & pediatrician were deficit in three L3 facilities. Widespread staff shortages were reported at all the 16 public health facilities.

In a study at nine sub-Saharan African countries reported shortage of man power in maternity care service.²⁰

Decontamination & after decontamination cleaning of all reusable items in chlorine solution was practiced in 16 public health facilities. Training of staff in handling the biomedical waste management as per the protocol were practiced in all the facilities. Proper waste storage room for the dumping of the BMW, before it was transported by the outsourced agency was available in 8 facilities out of 16 public health facilities.

Study conducted by Ms. Asha Kumari & Ms. Sanyukta Kashyap in Khowai District Hospital Tripura revealed the staffs did not strictly adhere to standard practices of disinfection and sterilization of instruments and equipments. Biomedical waste management was also poor.¹⁹

Another study by Government of Bihar in 2013 reported usage of disinfectants and antiseptic solution and biomedical waste management were inadequate.¹⁶

Quality assurance in government hospitals in Haryana also supported the evidence that staffs were not well trained regarding CPR, BMW management, needle stick injuries.²¹

CONCLUSIONS

The quality of intra-partum care in different levels of public health facilities in Darjeeling district, West Bengal appeared to have many structural constraints. There were immense scope of improvement in most of the areas of concern in all the public health facilities. Therefore, it is concluded although most of the key practices were followed but there were lots of structural issues in labor rooms of each facilities were not according to Government of India recommendations for standardization of labor rooms. There were greater potential of improvements. On 2nd visit onwards lots of improvement were observed in most of the areas of concern in each facility. All the areas evaluated in this study had great potential for improvement with the implementation of proper measures. Regulatory actions/decisions need to be taken by district or state to traverse the observed gaps in the different areas of concern particularly in space and layout

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