

Assessment of Essential Newborn Care Service in
Secondary and Primary Level Health Facilities in
Mandla District (M.P.)

By

Meenakshi Agrawal

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2014-2016



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer Airport
Jaipur-302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

TO WHOMSOEVER MAY CONCERN

This is to certify that Dr. Meenakshi Agrawal, student of MBA Hospital and Health Management from IIHMR University, Jaipur has undergone internship training at National Health Mission, Mandla (M.P.) from 8 February, 2016 to 8 May, 2016.

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfilment of the course requirements.

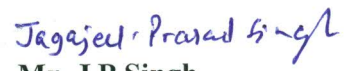
I wish her all success in all her future endeavours.



Col. (Dr.) Ashok Kaushik

Dean, Academics and Student Affairs

IIHMR, Jaipur


Mr. J.P. Singh

Associate Professor

IIHMR, Jaipur



कार्यालय मुख्य चिकित्सा एवं स्वास्थ्य अधिकारी,
जिला – मण्डला (म०प्र०)



फोन न- 07642-251501

E-mail - cmhomal@mp.nic.in

The certificate is awarded to

Dr. Meenakshi Agrawal

In recognition of having successfully completed her
Internship in the department of

NATIONAL HEALTH MISSION, (M.P.)

And has successfully completed her Project on

**Assessment of Essential Newborn Care (ENBC) in Secondary and Primary level
health facilities in Mandla district (MP)**

(8th February 2016-8th May 2016)

She comes across as a committed, sincere & diligent person who has a
Strong drive & zeal for learning

We wish her all the best for future endeavors

Dr. K.C. Meshram

Chief Medical and Health Officer
Mandla (M.P.)



INSTITUTE OF HEALTH MANAGEMENT RESEARCH, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **Assessment of Essential Newborn Care (ENBC)** in primary and secondary level health facilities in Mandla district, Madhya Pradesh, and submitted by **Dr. Meenakshi Agrawal**, Enrollment No.19-1570, under the supervision of Professor **J.P. Singh** for award of MBA Hospital and Health Management of the university carried out during the period from **February 8, 2016** to **May 8, 2016** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.


Signature

Dr. Meenakshi Agrawal

Acknowledgement

The success of any task would be incomplete without the expression of gratitude to the people who made it possible. I hereby take an opportunity to express my sincere gratitude towards everyone who helped directly or indirectly in completion of my Internship at NHM-MP.

At the onset of my report, I would like to acknowledge my sincere thanks to our institute, Institute of Health Management and Research, Jaipur for providing us platform to gain enough knowledge and skills in different aspects of health management, and NHM-MP for believing in my abilities.

I express my gratitude and regards to my Guide, Professor J.P. Singh for his able guidance and useful suggestions which helped me in completing the project work successfully. His guidance was tremendous right from the onset and at each step of the project.

I would like to express my gratitude to Dr.Archana Mishra (DD Maternal Health, NHM MP), K.C.Meshram (CMHO,Mandla) and Dr.L.S. Kori (District Health Officer) who have shown faith upon me, and helping me at various stages of my project.

I would like to thank Dr.Ankita Tiwari (District health co-ordinator UNICEF) for her extreme support throughout my tenure.

I would also like to thank my faculty members without whom this project would have been a distant reality. My seniors and colleagues also hold a special mention here for believing in me and supporting me throughout internship.

I would like to thank staff of all the facilities for their co-operation during my data collection.

Finally, and most importantly, I would like to thank God for allowing me to complete my project, my beloved parents and brother for their blessings and my friends for their help and wishes for the successful completion of this Internship.

Dr. Meenakshi Agrawal

IIHMR University Jaipur

Table of Contents

	Contents	Page No.
	Acknowledgement	2
	List of Tables	4
	List of Abbreviations	5
Dissertation		
1.1	Introduction	9
1.2	Review of Literature	11
1.3	Rationale of the Study	13
1.4	Research Questions	13
1.5	Objectives	14
1.6	Methodology	14
	Study Design	14
	Study Area	14
	Study Participants	14
	Sampling	14
	Methods and Instruments of Data Gathering	15
	Statistical Treatment	16
1.7	Ethical Consideration	16
1.8	Results	16
1.9	Discussion	26
1.10	Limitations	29
1.11	Conclusion	29
1.12	References	31
2	Annexure	33
2.1	Questionnaire for ANM/SN	37
2.2	Checklist for facility Assessment	42

List of Tables

Table No.	Title of the Table	Page No.
1.	Training Status of SN/ANM	17
2	Knowledge grade of healthcare provider in warmth/hypothermia prevention domains	18
3.	Knowledge grade of healthcare providers in breastfeeding domain	18
4.	Knowledge grade of healthcare provider in Infection prevention domain	19
5.	Knowledge grade of healthcare providers in Vitamin K	20
6.	Availability of Infrastructure in various types of facilities assessed in the stud	22
7.	Availability of equipments and drugs in various types of facilities assessed in the study	23
8.	Availability of Human Resource and training status(SN/ANM)	25
9.	Availability of Human Resource and training status(MO's)	25

List of Abbreviations

AAA : ANM, ASHA, ANGANWADI

ANC : ANE NATAL CARE

ANM : AUXILLARY NURSING MIDWIFE

APHC : ADDITIONAL PRIMERY HEALTH CENTRE

ARO : ASSISTANT RESEARCH OFFICER

ASHA : ACCREDITED SOCIAL HEALTH ACTIVIST

AWC : ANGANWADI CENTRE

AWW : ANGANWADI WORKER

BCG : BACILLUS CALMETTE GUERIN

BCS : BLOCK COMMUNITY SUPERVISOR

BPHC : BLOCK PRIMERY HEALTH CENTRE

CHC : COMMUNITY HEALTH CENTRE

CMO : CHIEF MEDICAL OFFICER

CMS : CHIEF MEDICAL SUPERINTENDENT

CRP : COMMUNITY RESOURCE PERSON

DH : DISTRICT HOSPITAL

DCS : DISTRICT COMMUNITY SPECIALIST

DM&ES : DISTRICT MONITORING & EVALUATION SPECIALIST

DPT: DIPHTHERIA PERTUSIS TETANUS

GOI : GOVERNMENT OF INDIA

HEO : HEALTH & EDUCATION OFFICER

LMO : LADY MEDICAL OFFICER

MCP : MOTHER & CHILD PROTECTION CARD

MO : MEDICAL OFFICER

MOIC : MEDICAL OFFICER IN CHARGE

NBCC : NEW BORN CARE CORNER

NM : NURSE MENTOR

OPV: ORAL POLIO VACCINE

OT : OPERATION THEATRE

PHC : PRIMARY HEALTH CENTRE

RI : ROUTINE IMMUNIZATION

RMNCH+A : REPRODUCTIVE MATERNAL NEW BORN CHILD HEALTH + ADOLESCENTS

SC : SUB CENTRE

SDH : SUB DIVISIONAL HOSPITAL

SN : STAFF NURSE

SNCU : SPECIAL NEWBORN CARE UNIT

MP-NHM: MADHYA PRADESH NATIONAL HEALTH MISSION

TT : TETANUS TOXOID

SPSS : STATISICAL PACKAGE FOR SOCIAL SCIENCES

VHND : VILLAGE HEALTH AND NUTRITION DAY

ENBC: ESSENTIAL NEWBORNCARE SERVICES

DISSERTATION

**Assessment of Essential Newborn Care (ENBC) in Secondary and Primary level
health facilities in Mandla district (MP)**

1.1 Introduction:

Worldwide, out of the total 133 million live births, 3.7 million die in neonatal period. Another 3 million are stillborn. Ninety-eight percent of deaths take place in the developing world, where 90% of babies are born. Of these deaths, 76% or 3 million occur in early neonatal period. The risk of deaths in the neonatal period in developing countries is over 7 times greater than in developed countries(1).Also, most of the neonatal deaths occur in Asian countries, more notably in India, which accounts for more than a quarter of the global neonatal mortality(2). The current neonatal mortality rate (NMR) in India is 31 per 1,000 live births (3). Infections, birth asphyxia, and prematurity/low birth weight (LBW) are major causes of deaths within this period (4).Interventions combining resuscitation of newborn baby, breastfeeding, prevention and management of hypothermia and kangaroo mother care (KMC) can reduce NMR by more than half (5).It is vital that health systems are equipped with necessary supplies, at least heating source, resuscitation bags and mask, and mucus devices. Equally important is that the staff members are competent enough to provide essential newborn care to maximize gains from proven evidence-based and cost-effective interventions to combat the burden of neonatal morbidity and mortality in India.

An unacceptable number of babies around the world die in the first week of life with the highest number dying within the first 24 hours of birth. Many of these deaths occur to babies born too early and too small, or with infections, or to babies asphyxiated around the time of delivery. Many newborn lives can be saved by the use of simple low technological interventions. Interventions such as:

- supporting breastfeeding,
- Providing adequate warmth,

- Ensuring good hygiene and cord care,
- Recognizing early signs of danger and providing prompt treatment and referral,
- Giving extra care to small babies, and
- Having skilled health workers attend mothers and babies at delivery and in the immediate postpartum period can all increase a newborn baby's chances of survival.

Prevention of infant mortality is one of the prime responsibilities of every nation. Give the Current Indian scenario and target of IMR and MMR (National, State and District). The MDG 4 aims to reduce child mortality. NMR contributes to nearly 66% of IMR and 50% of U5MR in India.

A lot of thrust has been imparted in recent years by the Government of India to improve facility-based newborn care interventions for reducing NMR in the country. In this assessment of newborn care services, the focus is on essential newborn care (ENBC) in Mandla district of Madhya Pradesh, which is a high priority district with high neonatal disease burden. The overall purpose of the assessment is to analyze the "Current situation of ENBC services" in Mandla district so that we can ascertain the strengths and weaknesses in the quality of newborn care service provision, and could strengthen the newborn care delivery in their service area. The ENBC components included in the assessment are resuscitation, warmth/Hypothermia prevention, breastfeeding, prevention of infections and Vitamin K administration. (6)

1.2 Review of literature:

Sixty percent of infant deaths in occur during the first 28 days after birth. About 40% of these neonatal deaths occur on the first day of life, almost half within three days and nearly three-fourth in the first week of life. Nearly 50% of the neonatal deaths occur among the LBW newborn.

The purpose of Govt. to come up with newborn care facility is to reduce the neonatal mortality from preventable factors. The first SNCU was established in Purulia (West Bengal) in 2003.

There was a study done on “Assessment of essential newborn care services for low birth weight babies in rural Lucknow, India by Krishna Kumar Sahu, M. Z. Idris, Monika Agarwal, S. K Singh, Pratap Shankar, R. K. Dixit” 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 CHC’s and 9 PHC’s. Multistage random sampling was used for the reaching up to the PHCs. For facility assessments regarding neonatal care services for low birth weight infrastructure, manpower, equipment related to newborn care were assessed. Only four PHC’s 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 PHC’s (77.8%) had one general duty medical officer. availability of essential newborn care equipment was found to be grossly inadequate in almost all the PHC’s. No PHC 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.

Another study was done on “Assessment of Essential Newborn Care services in Secondary Level Facilities from two districts of India by Sumit Malhotra, Sanjay P. Zodpey, Aishwarya L. Vidyasagar, Kavya Sharma, Sunil S. Raj, Sutapa B. Neogi, Garima Pathak, and Abhay Saraf” which examined newborn care services, with a focus on essential newborn care (ENC) in two districts, one each from two states in India. Nagaur district in Rajasthan and Chhatarpur district in Madhya Pradesh were included. Six secondary-level facilities from the districts- two district hospitals (DHs) and four community health centres (CHCs) were evaluated, where maximum institutional births within districts were taking place. The assessment included record review, facility observation, and competency assessment of service providers, using structured checklists and sets of questionnaire. The domains assessed for competency were: resuscitation, provision of warmth, breastfeeding, kangaroo mother care, and infection prevention.

The results of assessments showed that no inpatient care was being rendered at the CHCs while, at DHs, neonates with sepsis, asphyxia, and prematurity/low birth weight were managed. Newborn care corners existed within or adjacent to the labour room in all the facilities and were largely unutilized spaces in most of the facilities. Resuscitation bags and masks were available in four out of six facilities, with a predominant lack of masks of both sizes. Two CHCs in Chhatarpur did not have suction device. The average knowledge score amongst service providers in resuscitation was (76%) and, in the remaining ENC domains, was 78%. The corresponding average skill scores were 24% and 34%, highlighting a huge contrast in knowledge and skill scores. This disparity was observed for all levels of providers assessed. While knowledge

domain scores were largely satisfactory (>75%) for the majority of providers in domains of kangaroo mother care and breastfeeding, the scores were only moderately satisfactory (50-75%) for all other knowledge domains. The skill scores for all domains were predominantly non-satisfactory (<50%). The findings underpin the need for improving the existing ENC services by making newborn care corners functional and enhancing skills of service providers to reduce neonatal mortality rate in India.

1.3 Rationale of the Study:

The country observed a paradigm shift in its approach towards health care by adopting the Reproductive, Maternal, Newborn, Child Health and Adolescent Health Strategy (RMNCH+A) in 2013. Newborn health occupies Centre-stage in the overall strategy as all the inter linkages between various components have the greatest impact on the mortality and morbidity rates of a newborn. Four out of five newborn deaths result from three treatable conditions: Complications during childbirth (including birth asphyxia), newborn infections, and complications from prematurity.

Hence this study was conducted to assess the quality of care at Newborn Care Corners. The quality was assessed on the basis of Infrastructure, Equipment, Training status & Knowledge of service providers at NBCC.

Mandla district is among the High Priority Districts of the country. IMR of Mandla is 70 (IMR of MP is 51), and NMR of Mandla is 48 (NMR of MP is 49).

1.4 Research Question:

What is the current situation of ENBC services and knowledge of healthcare providers regarding ENBC services in Mandla district, Madhya Pradesh?

1.5 Objective:

- To assess the current situation of ENBC services in Mandla district, (MP).
- To observe the facilities for necessary infrastructure, human resources, and equipments for rendering ENBC services.
- To assess the knowledge of service providers (Doctors, ANM & SN) regarding essential newborn care at the identified facilities in Mandla district.

1.6 Methodology:

- **Study design**-Observational and Descriptive study design (The labour rooms was examined for the presence of necessary infrastructure, equipments and Human resource). A MoHFW checklist was used for assessing the facility situation for the provision of ENBC and a semi structured questionnaire was used for the knowledge assessment of the staff.)
- **Study Location** – Mandla District (all nine blocks)
- **Study sample**- All selected facilities were assessed based on checklist and all available Staff nurse and ANMs were randomly selected for knowledge assessment.
- **Sampling Method**-Simple random sampling (DH, One CHC from each block, One PHC from each block, One SHC from each block)
- **Sample Size**-Total no. of delivery points in Mandla district is 48. Out of 48, only 33 are functional. One DH, One functional CHC from each block, One functional PHC from each block and One functional SHC from each block was randomly selected. Total 28 checklists for facility assessment, But two blocks (Block Bamhni has no functional SHC or PHC and Block Bichhiya had no functional SHC).So, overall 25 checklists for facility assessment and 56

available healthcare providers (SN/ANM) of identified selected DPs, who are rendering essential newborn care was interviewed.

- **Method and Instruments-**

Checklist for facility assessment.

Semi structured questionnaire through face to face interview.

- **Analysis and Representation-**

Quality had been assessed on the basis of Infrastructure, Equipments, training status and knowledge of service providers. Knowledge assessment had been done using knowledge grading score into three categories for different domains (Breastfeeding, warmth/hypothermia prevention, Vitamin K, Infection prevention) based on the percentage of correct answers in each domain as -

SATISFACTORY- >75%

MODERATELY SATISFACTORY- 50%-75%

NON-SATISFACTORY - <50%

The reference for scoring criteria, for this study has been adapted from a study Assessment of Essential Newborn Care Services in Secondary-level Facilities from two Districts of India. Representation has been done through graphs and tabulation.

- **Methods and Instruments of Data Gathering**

Checklist was used for the assessment of delivery points.

A semi-structured questionnaire was used as a data collection tool through face to face interviews. This study was a questionnaire-based survey. The study

population comprised of ANM/SN of the delivery points. A briefing was given about the nature of study, and the procedure of completing the questionnaire was explained. Sample of ANM/SN was taken.

- **Statistical Treatment**

Data (for Knowledge of ANM/SN & Facility assessment) collected was cross checked for any incomplete or partial filling. Using SPSS Version 19 collected data was then be edited, coded, tabulated and organized into various frequency distributions.

1.7 Ethical Considerations:

Informed consent was taken before starting the interview. If anyone disagreed to become part of the data collection process they were not forced by any means. Prior information was given before visiting any health facility. Confidentiality was ensured to all participants.

1.8 Results:

Results for Knowledge of ANM/SN

1.8.1 Basic Information about SN/ANM

A total of 56 healthcare providers, who were responsible for rendering immediate essential newborn care services assessed. 56 providers belong to nursing staff categories (43 staff nurses, 17 ANMs) 11staff nurses had education till senior secondary, and 28 SN were graduate. All ANM's were educated till high school, and then undergone 18 months ANM training. About 71 percent of identified providers were in age group up to

35 years, 23percent were in age group 36 to 50 years and 6 percent were above 50 years of age.

1.8.2 Training Status of Doctors/SN/ANM:

The two lady medical officers interviewed trained in CEMoC services .Seventy nine percent of the nursing staff (SN/ANM)were trained in NSSK/FBNC/SBA or All, and 21 percent of the providers have not received any training in Newborn Care. None of the provider was trained in IMNCI. Doctors working as paediatricians were assumed to receive newborn care training as part of their professional basic education.

Table 1: Training Status of SN/ANM (n=56)

S. No.	Characteristic	Percentage of Respondents (n=56)
1	Training in Newborn Care (NSSK)/(FBNC)/(SBA) or ALL	79%
2	Not trained in Newborn Care	21%

1.8.3 Knowledge for Warmth/Hypothermia prevention:

Forty six percent of health providers know the normal temperature of Newborn. Ninety percent of them correctly stated the significance of keeping newborn warm. Around 40 percent know all four steps of hypothermia prevention correctly. Almost all health providers had knowledge about radiant warmer use but only sixty percent of them correctly demonstrated the operation of radiant warmer.

Table 2 presents the results in hypothermia prevention domain based on grading of knowledge into three categories. Majority of the providers scored moderately satisfactory scores for the knowledge domain.

Table.2 Knowledge grade of healthcare providers (n=56) in warmth/hypothermia prevention domain

Knowledge Grade	Warmth/Hypothermia prevention (%)
Satisfactory (>75%)	(36%)
Moderate (75-50%)	(41%)
Non-Satisfactory (<50%)	(23%)

1.8.4 Knowledge for Breastfeeding:

Around 85% service providers answered breastfeeding should be initiated within one hour of the delivery and 80% of them had correctly explained exclusive breastfeeding.

Sixty four percent (n=36) of the care providers demonstrated all four steps correctly in positioning the baby for breastfeeding.

Table.3 presents the results in breastfeeding domain based on knowledge into three categories. Three fourth of the providers scored satisfactory for the breastfeeding knowledge domain.

Table.3 Knowledge grade of healthcare providers (n=56) in breastfeeding domain

Knowledge Grade	Breastfeeding (%)
Satisfactory (>75%)	(77%)
Moderate (75-50%)	(3.6%)
Non-Satisfactory (<50%)	(20%)

1.8.5 Knowledge for Infection prevention:

Forty percent of the health care providers correctly enumerated all three steps for cord care and infection prevention at birth. Only 9% (n=5) of the providers knew correctly the six steps of hand washing and its duration.

Table.4 presents the results in infection prevention based on knowledge into three categories and most of the health provider's fall into moderately satisfactory knowledge domain.

Table.4 Knowledge grade of healthcare providers (n=56) in Infection prevention domain:

Knowledge Grade	Infection prevention (%)
Satisfactory (>75%)	(39%)
Moderate (75-50%)	(43%)
Non-Satisfactory (<50%)	(18%)

1.8.6 Knowledge for Vitamin K:

Almost 90% of the health providers were known that vit K is for newborn but only half of them had knowledge about correct doses and benefits.

Table 5 depicts the results based on Vit K knowledge into three categories and almost half of the health provider's scored into satisfactory knowledge domain.

Table.5 Knowledge grade of healthcare providers (n=56) in Vitamin K:

Knowledge Grade	VitK administration (%)
Satisfactory (>75%)	(45%)
Moderate (75-50%)	(29%)
Non-Satisfactory (<50%)	(27%)

1.8.7 Knowledge for resuscitation:

About 90 percent of health provider said they have knowledge about Management of Asphyxiated Newborn. Only 16% (n=15) were correctly able to demonstrate on dummy.

1.8.8 Knowledge for KMC:

All health providers knew about KMC but only half of them (52%) correctly able to demonstrate the right technique.

Results of Facility Assessment

1.8.9 Types of Facility visited:

Forty delivery points were visited in nine blocks. One was DH, nine were CHC, eight were PHC and seven were SHC.

1.8.10 Infrastructural facilities and support services:

DH at Mandla has separate functional units for newborns with radiant warmers and used for providing newborn care. Sick neonates were admitted and cared for within the

SNCU. DH labour room is has assigned NBCC and having two radiant warmer. They are utilized but maintenance is not good.

Except in two SHCs, newborn care corners were present in the all CHC, PHCs and SHCs facilities. These were situated in spaces adjacent to the labour room. Apart from one CHC and one PHC, NBCCs were not utilized and maintained poorly and was not kept draught-free. Protocol for NBCC displayed in all facilities.

1.8.11 Electricity Supply:

All (100%) delivery points have Electricity Supply, only fourteen (56%) have power backup or generator and none of them have fuel in their generator.

1.8.12 Running water in Facility:

Eighteen Delivery points have running water supply, none of them have elbow operated hand washing station.

1.8.13 Availability of Equipment:

Facilities were assessed for availability and functioning of equipment needed to provide essential newborn care as well as equipment to treat sick infants. DH was equipped with phototherapy unit. Equipment for newborn resuscitation was available in most of the study facilities. Resuscitation bags with masks and mucous extractor were available in nineteen out of twenty five facilities. However, masks of different sizes were not available and in most of the facility resuscitation bags and mask are completely unutilized and not even brought out of there packing.

Table:6 Availability of Infrastructure in various types of facilities(n=25) assessed in the study

S.N o.	INFRA-STRUCTURE	DH (n=1)	CHC (n=9)	PHC (n=8)	SHC (n=7)	Total (n=25)	(%)of facility with available Infrastructure
1	DESIGNATED NEWBORN CARE CORNER IN LABOUR ROOM	1	9	8	5	23	92
2	RADIANT WARMER	1	9	8	5	23	92
3	ELECTRICITY SUPPLY	1	9	8	7	25	100
4	ELECTRICITY BACKUP	1	8	3	2	14	56
5	RUNNING WATER SUPPLY	1	7	6	4	18	72
6	ELBOW TAP	0	0	0	0	0	0
7	PROTOCOL DISPLAYFOR NBCC	1	9	8	7	25	100

Oxygen supply was present in DH, all CHCs, six PHCs and SHC five facilities, either unutilized or non-functional in most of the facilities. Suction devices were present and functional in all facilities, except one PHCs and two SHC. Wall clocks were fitted to record the time of birth in all facilities, except one PHC. Medical thermometers were

available in sixteen facilities but none of the facilities was equipped with room thermometers.

Other basic physical facilities relating newborn care, such as infant-weighing scale were available in all facilities. Supply of clean towels was good; the practice of wrapping the neonates in clothes brought by mother or other attendants was common. Other items, such as Hand wash/soap, disposable syringes and needles, gloves, were available and being used in most facilities.

1.8.14 Availability of Essential drug:

The facilities were assessed for the availability of basic antibiotics, like ampicillin and gentamicin; emergency drugs, like adrenaline and aminophylline , IV fluids; and other essential drugs, like vitamin K. Basic antibiotics and IV fluids was available in all facilities. However, emergency drugs were not available in two PHCs and two SHCs. Essential drug like Vit-K supply is majorly compromised. It was available only in four facilities. None of the PHCs and SHCs has availability of Vit-K.

Table:7 Availability of Equipments & drugs (n=25)in various types of facilities assessed in the study

S.N o.	INFRA- STRUCTURE	DH (n=1)	CHC (n=9)	PHC (n=8)	SHC (n=7)	Total (n=25)	(%)of facility with available Infrastructure	Total with
1	RADIANT WARMER	1	9	7	5	22	88	
2	BAG & MASK	1	8	6	4	19	76	
3	BOTH MASK(SIZE AND ZERO)	1	0	0	0	1	4	

4	BABY WEIGHING MACHINE	1	9	8	7	25	100
5	CLINICAL THERMOMETER	1	7	3	5	16	64
6	ROOM THERMOMETER	1(NF)	0	0	0	0	0
7	IV INFUSION SET	1	9	8	6	24	96
8	O2 CYLINDER/O2 CONCENTRATOR	1	9	6	5	21	84
9	SUCTION DEVICE	1	9	7	5	22	88
10	MUCOUS EXTRACTOR	1	9	5	4	19	76
11	DISPOSABLE SYRINGES	1	9	8	7	25	100
12	CORD CLAMP	1	9	6	3	19	76
13	TOWEL FOR DRYING	1	9	8	7	25	100
14	STERILE GLOVES	1	9	8	7	25	100
15	HAND WASH/SOAP	1	9	8	7	25	100
16	WALL CLOCK	1	9	7	7	24	96
17	VIT K	1	3	0	0	4	16
18	ANTIBIOTICS	1	9	8	7	25	100
19	EMERGENCY DRUG(ADRENALIN AND AMINOPHYLLIN)	1	9	6	5	21	84
20	IV FLUID	1	9	8	7	25	100

1.8.15 Availability of Human Resource:

All facilities were assessed for the availability of trained personnel in the labour room or operation theatre. It was noted that DH, all CHC and six out of eight PHC had medical officers; all facilities had staff nurses, and ANMs to provide newborn care services. However, most deliveries were handled by staff nurses/ANMs, and they were largely responsible for rendering immediate essential newborn care services, except from DH, no other delivery point had trained medical officer/gynaecologist/paediatrician.

Table 8: Availability of Human Resource and training status(SN/ANM)

	SN	SBA	NSSK/FBNC/I MNCI trained	ANM	SBA	NSSK/FBN C/IMNCI trained
DH	25	15	9(FBNC) 5(NSSK)	1	1	1(NSSK)
CHC	51	26	13(NSSK)	8	3	1(NSSK)
PHC	7	3	1(NSSK)	17	10	6(NSSK)
SHC	NA			14	10	5(NSSK)

Table 9: Availability of Human Resource and training status (Specialist and MO's)

	Gynaecologist	Paediatrician	Anaesthesias	MO	CEMoC/BE MoC Trained
DH	1	2	1	4	2
CHC	NA	NA	NA	22	NONE
PHC	NA	NA	NA	6	NONE

1.9 Discussion:

This study is a cross-sectional assessment that examined the essential newborn care services in Mandla district with high neonatal and infant mortality rate and compares some parameters with FBNC Operational guidelines by Ministry of Health & Family Welfare, and to assess the knowledge of service provider (ANM & SN) regarding Newborn Health at the identified facilities. The quality was assessed on the basis of Infrastructure, Equipment, Training status & Knowledge of service providers.

India tops among the high-burden countries contributing to maximum stillbirths globally. It was estimated that, every year, 613,500 stillbirths at the third trimester occurred with a rate of 22 per 1,000 births (range 17-36). Also, interstate variation prevails within the country with high rates from central India, reaching up to 66 per 1,000 births (6). Amongst the health facilities studied, inpatient neonatal care was rendered by DHs only. At CHCs, PHCs or SHCs no admissions were done, except from DH none of the facilities had gynaecologist, paediatrician or MOs trained in BEMoC; and this is an area requiring concerted efforts to manage common neonatal morbidities at this level.

The study facilities had newborn care corners either within the labour room or adjoining room, although this was not utilized in all. All facilities had electricity supply but only half of them had electricity backup or generator. None of the facilities had elbow operated tap. Most of the essential equipments were found at the district and CHCs level but, at the PHCs, and SHCs there were deficiencies noted in regard to availability. One PHC and two of the SHCs did not have bag and mask for resuscitation. Masks of both the sizes were absent in all facilities, except DH. Suction device was also not present in one PHCs and two SHCs. Radiant warmer was there in the facilities, except two SHCs

but either not used or was not in functioning state and maintained in poor conditions not even draught free.

Rapid assessment of essential newborn care services in 11 districts from 10 states conducted in 2009 reported low availability of resuscitation area in sampled facilities (64% in DHs and 46% in CHCs). This also reported that most of the ENC equipment was available in all DHs but only in two-thirds of CHCs (7). A programme evaluation of Janani Suraksha Yojana, a conditional cash transfer scheme to promote institutional deliveries in India that included both the study states reported suboptimal neonatal care in terms of availability, functionality, and usage of newborn care equipment(8). A recent study reported infrastructure in relation to essential newborn care services in 13 CHCs from Bharatpur district of Rajasthan and found deficiencies in the presence of equipment. Only 3 out of 13 (23.1%) had radiant warmers, 4/13 (30.8%) had resuscitators, and 9/13 (69.2%) had suction pumps available in the facilities. None of the included CHCs in this assessment had fully-equipped newborn care corner (9). Reports of supervisory visits to certain districts of Rajasthan by central government personnel also highlighted lapses in essential newborn care provision in Dholpur and Bharatpur districts(10,11).The recent reviews of the National Rural Health Mission in India in 2010 and 2011, a major primary-care reform initiative launched to bring about architectural correction in infrastructure and human resources in all public health facilities also pointed out lacunae that exist in the availability of functioning equipment and also in the use of newborn care corners (12,13). This assessment included Barmer and Chittaurgarh districts of Rajasthan state. In Barmer, most labour rooms did not have newborn care corner. In Chittaurgarh, the equipment for newborns were recently supplied to the facilities. Absence of simple lifesaving equipment for rendering ENC points out to serious gap in the provision of quality care. PHCs and SHCs require

special attention in this, and lacunae in the availability of equipment require serious rectification. It was also observed that, despite presence of newborn care corners, these were not optimally utilized. This calls for a change of mindset and provision of adequate sensitization of care providers using the newborn care corners.

Most of the normal deliveries were handled by nursing staff, even in DH. Doctors only take the caesarean cases neglecting all normal delivery cases, rest at the level of CHCs, PHCs and SHCs none of the MOs either posted or, even if, posted not trained in BEMoC services and not attending any deliveries. Less than half of all DPs staff nurses/ANMs are SBA trained and for NSSK/FBNC/IMNCI training number is too less. It was imperative that all these personnel involved in delivery care should possess adequate competencies to provide essential newborn care. The current study underscored the critical gap that existed in competencies of healthcare providers in neonatal resuscitation and essential newborn care.

Knowledge score for breastfeeding and vit K1 administration is satisfactory and for hypothermia prevention and infection prevention is moderately satisfactory. Knowledge for resuscitation is very poor for the health providers, only 16 respondents were able to demonstrate the correct steps, majority of them were from DH. Same with the KMC, only half of them able to perform correct technique of KMC. It was found that staff posted in district hospitals had better skills in performing resuscitation than rest of the health facilities, which can partially be attributed to higher exposure to load in terms of volume of births and larger opportunities for using skills on regular basis. Another reason for this may be more concentration of specialist doctors at the district hospitals compared to CHCs, PHCs and SHCs.

One of the key strengths of this assessment is the fact that it presents a rapid methodology for monitoring essential newborn care in a comprehensive way and will allow replication in other settings for improvising the newborn services in district health systems. A rapid assessment of ENC conducted in 11 districts across 10 states in the country reported that a sample of 44 doctors in the fields of neonatal resuscitation (41%), hypothermia prevention (61%), and breastfeeding (34%), and infection prevention (23%) had both satisfactory knowledge and skills. The study pointed out limited capacity of staff nurses and ANMs in having sufficient knowledge and skills in neonatal resuscitation (41%) and hypothermia prevention (52%). One of the key strengths of this assessment is the fact that it presents a rapid methodology for monitoring essential newborn care in a comprehensive way and will allow replication in other settings for improvising the newborn services in district health systems.

1.10 Limitations of the Study:

There are some limitations of this assessment. The sample tested is small, and could not generalise to other districts. Interview has been conducted only for the available staff at the time of visit.

1.11 Conclusion

The study was aimed to assess the quality of care at 25 randomly selected delivery points in Mandla district. DP's were assessed for their infrastructure, availability of Equipment and essential medicines, and Human Resource. All the SN and ANM of identified randomly selected delivery points were assessed for their knowledge regarding essential newborn care services.

The study highlighted need for having skill-based capacity-building initiatives targeted to health personnel posted in facilities where childbirth occurs and immediate care are provided to the neonates. Availability of equipment or more importantly keeping them functional in these facilities will also be critical to practise the acquired skills in resuscitation. Two third of neonatal deaths and still births can be prevented by practicing the components of essential newborn care and neonatal resuscitation; it is imperative that providers be equipped and made competent to practise these skills that can accelerate the progress towards child survival. It is recommended that by correcting shortage related to infrastructure, equipments and essential medicines and by providing skill-based training, and by periodic assessments existing situations can be improvise.

1.12 References:

1. Åhman E, Zupan J. Neonatal and perinatal mortality: country, regional and global estimates 2004. Geneva: World Health Organization, 2007. 14 p.
2. World Health Organization. Improving newborn survival in India: status of newborns. New Delhi: World Health Organization. (http://www.unicef.org/india/Newborn_Fact_sheet_Final_21_june_2010.pdf, accessed on 21 January 2016).
3. India. Ministry of Health and Family Welfare. Health and family welfare statistics in India 2013. New Delhi: Ministry of Health and Family Welfare, Government of India, 2013. 325 p.
4. The Million Death Study Collaborators. Causes of neonatal and child mortality in India: nationally representative mortality survey. *Lancet* 2010; 376:1853-60.
5. Darmstadt GL, Bhutta ZA, Cousens S, Adam T, Walker N, de Bernis L; Lancet Neonatal Survival Steering Team. Evidence-based, cost-effective interventions: how many newborn babies can we save? *Lancet* 2005; 365:977-88.
6. Lawn JE, Blencowe H, Pattinson R, Cousens S, Kumar R, Ibiebele I et al.; Lancet's Stillbirths Series steering committee. Stillbirths: Where? When? Why? How to make the data count? *Lancet* 2011; 377:1448-63.
7. USAID/INDIACLEN/PATH. Rapid assessment of essential newborn care services and needs in national rural health mission priority states of India: a report. New Delhi: PATH, 2007. 92 p.
8. India. National Health Systems Resource Centre. Programme evaluation of the Janani Suraksha Yojana. New Delhi: National Health Systems Resource Centre, 2011. 142 p.
9. Sodani PR, Sharma K. Assessing Indian public health standards for community health centers: a case study with special reference to essential newborn care services. *Indian J Public Health* 2011;55:260-6.
10. India. National Rural Health Mission. Supportive supervision report of Dholpur, Rajasthan. New Delhi: Ministry of Health and Family Welfare, Government of India, 2010.
11. India. National Rural Health Mission. Monitoring report of Bharatpur, Rajasthan. New Delhi: Ministry of Health and Family Welfare, Government of India, 2010.
12. India. National Rural Health Mission. Third common review mission report. New Delhi: National Rural Health Mission, Ministry of Health and Family Welfare, Government of India, 2009. 151 p.

13. India. National Rural Health Mission. Fourth common review mission report 2010. New Delhi: National Rural Health Mission, Ministry of Health and Family Welfare, Government of India, 2011. 130 p.
14. Sumit Malhotra¹, Sanjay P. Zodpey, Aishwarya L. Vidyasagaran, Kavya Sharma, Sunil S. Raj, Sutapa B. Neogi, Garima Pathak, Abhay Saraf. Assessment of Essential Newborn Care Services in Secondary-level Facilities from Two Districts of India J HEALTH POPUL NUTR 2014 Mar;32(1):130-141 ISSN 1606-0997

Annexure

Interview Schedule

Informed Consent: I would like to thank you for taking the time to meet me. My name is

Dr. Meenakshi Agrawal (MCH Consultant NHM Mandla).

I would greatly appreciate your participation in this survey.

I would like to ask you some questions about your knowledge on Newborn care. The interview should take about 10 minutes. Information you provide will be kept strictly confidential and used only for research.

Participation in survey is voluntary. If you choose to participate, you may withdraw at any time. However we hope that you will take part in this interview since your participation is important. You don't have to talk about anything that you don't want to and you can end the interview at any time.

Do you have any questions about what I just explained?

Are you willing to participate in the interview?

Start time: _____

End time: _____

Instruction Manual for Questionnaire:

- Ask the questions in their language.
- Instructions for marking responses are mentioned in front of each questions.
- Q.10: Check the baby weighing machine for its functionality.

Wash the hands before touching the baby.

If a sheet is placed below the newborn, first place the sheet & then set the calibration at 0gms.

Place the baby & measure the weight by placing the eye on the same level.

Measure the accurate weight.

- Q.12: Place on dry and warm towel

Immediate drying

Cover baby's head with cap

Skin to skin contact

- Q. 13 Clean cord cut (using sterile scissor or blade)

Cord tie using chord clamp

Dry cord stump

- Q.15: Push the skin sensor plug firmly into the front panel socket or plug the electrical connector of the single patient use temperature sensors into the reusable adaptor.

Push adapter firmly into socket.

When the baby arrives, place on the warmer mattress and correctly attach the skin sensor. Select Baby mode by pressing the Baby button.

Set the desired skin temperature between 34.5°C and 37.5°C by turning the control knob on the front panel.

The set temperature is displayed above the control knob.

With the skin sensor plug correctly inserted into the front panel socket and the skin sensor correctly positioned on the baby, the baby's skin temperature is displayed above the control knob.

The warmer will now automatically adjust the heater power to stabilize the baby's skin temperature at the desired set temperature.

- Q.18: Place baby between the mother's breasts in an upright position.

Head turned to one side and slightly extended.

Hips flexed and abducted in a "frog" position; arms flexed.

Baby's abdomen at mother's epigastrium.

Support baby's bottom.

- Q.23: 0.5mg for a newborn weighing less than 1500gm & 1mg for more than 1500gm.
- Q.31: Initial steps of Resuscitation

Provide Warmth

Position

Clear Airway as needed

Dry

Stimulate

Bag & Mask Ventilation: Squeeze bag with 2 fingers or whole hand, 2-3 times.

Observe for rise of chest.

IF CHEST IS NOT RISING:

Check seal.

Reposition the head.

Clear airway.

Squeeze harder.

Once good seal and chest rising, ventilate at 40 -60 squeezes per minute.

Check heart rate after 30 seconds.

Provide Chest Compressions

Administer medications.

- Q.34: Preterm birth

Severe low birth weight <1800 g

Asphyxia:

Respiration not restored with bag and mask ventilation for more than 30 seconds (OR)

APGAR < 7 at 5 minutes

Unstable newborn (after resuscitation)

Grunting

Respiratory rate > 60/ minute

Chest retraction

Blue or pale baby

Any malformation requiring immediate management-diaphragmatic hernia, esophageal atresia, blue baby (congenital heart disease).

Possible serious bacterial infection (sepsis):

Convulsions / Lethargic / unconscious

Fast breathing (>60 per minute)

Severe chest indrawing, Nasal flaring, Grunting

10 or more skin pustules or a big boil

Axillary temperature ≥ 37.5 C or ≤ 35.5 C

Less than normal movements

Not able to feed

Danger signs:

Persistent vomiting

Jaundice

Abdominal distension

Bleeding from any site

Diarrhea, not passing urine within 48 hours

Stiff or floppy baby

Questions:

Q. No.	Questions	Coding Categories		Instruction	Response
1	What is your name?				
2	What is your Age?			Write in completed years	
3	Since how long are you working as ANM/SN?			Write in completed years	
4	What is your highest Educational level?	No Education	1		
		Primary (Up to grade 5)	2		
		Middle (Up to grade-9)	3		
		Secondary (Up to grade 10-12)	4		
		Graduation and above	5		
5	Have you received any training in Newborn Health?	Yes	1	If “2” skip to Q. 7	
		No	2		

6	Which training you have received?	SBA	1		
		NSSK(2 days)	2		
		Both	3		
7	Which period of life is referred to as Neonatal period?	Before delivery	1	In case of 99 please specify	
		Birth to 28 days	2		
		Birth to one year	3		
		Don't know	98		
		Other	99		
8	Can you tell me what the major causes of Neonatal Mortality are?	Birth Asphyxia	1	Multiple answer possible. In case of 99 please specify	
		Neonatal Sepsis	2		
		Birth Trauma	3		
		Pneumonia	4		
		Diarrhea	5		
		Respiratory Distress Syndrome	6		
		Don't know	98		
		Other	99		
9	What should be the minimum weight of a normal Baby at birth?	3000gms	1	In case of 99 please specify	
		2500gms	2		
		2000gms	3		
		Don't know	98		
		Other	99		
10	Can you demonstrate how to measure weight of a newborn?	Correct	1	Ask SN/ANM to demonstrate weighing of a baby using dummy	
		Incorrect	2		
11	What should be the gestational age of full term baby?	34- 36weeks	1	In case of 99 please specify	
		In between 37 to 42 weeks	2		
		Greater than 42 weeks	3		
		Don't know	98		
		Other	99		
12	Does the ANM/SN know how to keep the Newborn warm?	Correct	1	Ask SN/ANM to tell steps to keep the child warm n dry. If she illustrate all steps correctly than consider answer as 'Correct'	
		Incorrect	2		
13	Does the ANM/SN know how to do umbilical cord care of newborn?	Correct	1	Ask SN/ANM to tell steps to do umbilical cord care. If she illustrate all steps correctly than consider answer as 'Correct'	
		Incorrect	2		
14	Why a newborn need umbilical cord care?	Infection prevention	1	In case of 99 please specify	
		Anemia	2		

		prevention			
		Don't know	98		
		Other	99		
15	Do you know what Radiant Warmer is?	Yes	1	In case of 2 skip to Q no.17	
		No	2		
16	Can you tell me the usage of Radiant Warmer?	To Maintain the temperature of the new born	1	In case of 99 please specify	
		Use in treatment of jaundice	2		
		Don't Know	98		
		Other	99		
17	Can you demonstrate me how to use Radiant Warmer?	Correct	1	Ask SN/ANM to use Dummy if newborn is not available at Radiant warmer	
		Incorrect	2		
18	Do you know what Kangaroo Mother Care is?	Yes	1	In case of 2 skip to Q no. 20	
		No	2		
19	Can you demonstrate how to perform Kangaroo Mother Care?	Correct	1	Ask SN/ANM to use Dummy to demonstrate Kangaroo Mother Care	
		Incorrect	2		
20	Can you tell me about the essential vaccines we should give to the newborn at birth?	BCG	1	In case of 99 please specify	
		Hepatitis -B	2		
		OPV	3		
		All of the above	4		
		Don't Know	98		
		Other	99		
21	Do you know to whom we should give Vitamin-K injection?	Newborn	1	In case of 99 please specify	
		Mother	2		
		Don't Know	98		
		Other	99		
22	Can you tell me the route of administration of Vitamin-K injection?	Intra Muscular	1	In case of 99 please specify	
		Intra Venous	2		
		Sub-Cutaneous	3		
		Don't Know	98		
		Other	99		
23	Can you tell me the benefits of vitamin-K to the newborn?	To Prevent Hemorrhagic disease	1	In case of 99 please specify	
		For lung maturity	2		
		Don't Know	98		
		Other	99		
24	Can you tell me the dosage of vitamin-K should be given to a	0.25 mg	1	In case of 99 please specify	
		0.5 mg & 1mg	2		
		Don't Know	98		

	newborn?	Other	99		
25	Do you know what NBCC is?	Yes	1	If answer is 2 than skip to 26	
		No	2		
26	Can you tell me what are the equipment and accessories required at NBCC?	Radiant Warmer	1	Multiple answer possible. In case of 99 please specify	
		Resuscitation pump	2		
		Phototherapy Unit	3		
		Stethoscope	4		
		Baby Tray	5		
		Towel	6		
		Don't Know	98		
		Other	99		
27	According to you when we should initiate breastfeeding to a newborn child?	1 hr after delivery	1	In case of 99 please specify	
		2 hr after delivery	2		
		24 hrs after delivery	3		
		As soon as possible after delivery	4		
		Don't know	98		
		Other	99		
28	Do you know what exclusive breastfeeding is?	Yes	1	In case of response-2 skip to Q no.- 29	
		No	2		
29	Please tell me what is Exclusive breastfeeding?	Only breast milk till 6 months	1	In case of 99 please specify	
		Water & breast milk till 6 months	2		
		Prelacteals can be given along with breast milk till 6 months	3		
		Don't know	98		
		Other	99		
30	What is the danger Signs in Newborns?	Grunt	1	Multiple answer possible. In case of 99 please specify	
		Fast Breathing	2		
		Chest Indrawing	3		
		Nasal flaring	4		
		Cyanosis (blue or Pale baby)	5		
		Hypothermia	6		
		Skin Pustules	7		
		Jaundice	8		
		Lethargic	9		
		Don't know	98		
		Other	99		
31	Do you what is Asphyxiated Newborn?	Yes	1	If "2" skip to Q.32	
		No	2		
32	Can you demonstrate in	Correct	1		

	to the dummy how to manage Asphyxiated Newborn?	Incorrect	2		
33	Can you tell me the steps you are following during child birth?	Place baby on mother's abdomen	1	Multiple answer possible In case of 99 please specify	
		Dry & cover mother & baby	2		
		Clamp & cut the cord	3		
		Provide Warmth	4		
		Early Initiation of Breastfeeding	5		
		Skin to skin contact to mother	6		
		Don't know	98		
		Other	99		
34	Do you Know when there is need to refer a newborn?	Yes	1	In case of -2 leave the question 34 and greet the respondent to participate in the study	
		No	2		
35	Can you tell me when you should refer a newborn or what are the signs or symptoms to refer a newborn?	Newborn weight less than 1800 gm	1	In case of 99 please specify	
		Newborn with Asphyxia	2		
		Possible serious bacterial infections	3		
		Newborn with danger signs	4		
		Unstable Newborn after Resuscitation	5		
		Any of the above	6		
		Don't know	98		
		Other	99		

Thank you for your time and valuable contribution. Do you have any question for me?

Sign of Interviewer

2.2 Annexure

Checklist for assessment of Delivery Point:

Name of the facility: _____

Type of facility (DH/SDH/FRU CHC/CHC/24*7PHC/APHC/SC): _____

Mark Tick “√” for availability and mark cross “×” for unavailability.

Infrastructure:

S. No.		Response	Remarks
1	Is there designated newborn care corner in delivery room?		
2	20-30 ft in size (where Radiant warmer can be kept)?		
3	Appropriate power connection for plugging in the radiant warmer?		
4	Is there regular electricity supply?		
5	Does this facility have a backup or standby generator for electricity?		
6	Is generator having fuel?		
7	Is there availability of running water in the facility?		
8	Is there availability of Elbow operated Hand washing station?		
9	Protocols are displayed in Newborn Care Corner?		

Equipment:

S. No.	Name of item	Unavailable	Available	Functional
1	Radiant Warmer			
2	Bag and Mask, Neonate, 250-500 ml			
3	Baby Weighing Machine			
4	Clinical thermometer			
5	I/V Cannula			
6	Mucous Extractor, 20ml, sterile, disposable			
7	Cord Clamp			

8	Towels for drying and wrapping the baby			
9	Sterile gloves			

Human Resource:

S. No.	Designation	Number	Remark
1	MO		
2	SN		
3	ANM		

Training Status of Staff:

S. No.	Designation	NSSK (2days)	Remark
1	MO		
2	SN		
3	ANM		