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Situational Analysis of WASH Facilities in Maternity Units of a District of Central India

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ABSTRACT

Introduction: Pregnancy and childbirth remain to be one of the leading factors of mortality worldwide, among women of reproductive age despite the advancement of modern medicine. As per current situation of LMICs it is found only 50% deliveries are safe. The reason is minimal improvement is done for awareness and hence adherence to the given guidelines. Many of these service-providing facilities, do not have enough of trained health workers.

Aims: To investigate the Infection Prevention Control practices & policy in the maternity units in Raipur districts.

Methodology: A cross-sectional study was carried out that utilized quantitative methods to collect data from secondary and tertiary care of Raipur district from June 2019 to November 2019.

Results: Training in Infection prevention control for healthcare providers and non-medical staff was reported by 66.7% & 55.6%. Proper Personal protective equipment are worn by staff in all healthcare facilities. Syringes and gloves used once in all delivery units, Standard color coded waste bins were kept in all delivery units. During discharge women are given advice regarding dangerous sign for which they should seek treatment in all healthcare facilities and in majority oral instruction. Standard IPC was observed in six of nine HCFs. Staff vaccination was reported in eight of nine HCFs.

Conclusions: There is a need to dedicate more resources to the provision of monitoring of IPC in the labor rooms to further reduce the mortality in mother and neonate. Although, training and retraining of staff towards various aspects of WASH is critical; it is of utmost importance that IPC practices & infrastructure facilities be improved upon in all HCFs.

Key Words: Healthcare facilities (HCFs), IPC (Infection Prevention & Control), maternity units, WASH (Water, Sanitation and Hygiene), MMR (Maternal mortality ratio), HCP (Health care providers).

INTRODUCTION

Pregnancy and childbirth remain to be one of the leading factors of mortality worldwide, among women of reproductive age despite the advancement of modern medicine.[1]The question of safe motherhood has been widely recognized as an issue of social inequity and is not merely a public health concern anymore.[2,3]

The target to reduce the maternal mortality ratio (MMR) to less than 70 per 100,000 live births by 2030 and to provide universal access to reproductive healthcare globally has been mentioned under the Sustainable Development Goals (SDGs), however, India remains to be the second-highest contributor worldwide, when it comes to maternal deaths.[4]

There has been a decline of approximately 4.6% in the Maternal Mortality Ratio (MMR).[5] India has improved much and is on the path to achieve its SDG goal no 3 by reducing MMR to 113 Per 100,000 in 2016-2018 from 122 in 2015-17 and 130 in 2014-2016.[6] Genital tract infections and sepsis can be contracted due to poor sanitation of hand, unhygienic and contaminated surfaces, where the deliveries have taken place and it contributes to eight percent of the postpartum deaths. With the help of the Janani Shishu Suraksha Yojana (JSSY) establishment, safe deliveries have popped up by improving the hygiene standards and practices in the healthcare facilities (HCFs). These practices will help in stepping toward the change and in reducing the maternal & neonatal mortality and morbidity statistics.[7] Approximately 10.7% of

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postpartum, neonatal mortality, and morbidity is still related to sepsis.[8]

Up to 70% of deliveries in Chhattisgarh state take place in HCFs and it has increased the pressure on the facilities, which has impacted both the quality of the care provided and the birth environment; in terms of infection, prevention, and control (IPC) and HCAIs.[9] As per the current situation of LMICs it is found only 50% of deliveries are safe if we draw comparison with the WASH and IPC standard guidelines. The reason is minimal improvement is done for awareness and hence adherence to the given guidelines.[10] Many of these service-providing facilities, do not have enough of trained health workers and neither do they have the capacity to cope up with the increased demand of the service. Hence, the health of the mother and her child is ignored, leading to a rise in infection-related deaths of the mothers and their babies.[11]

There are not many studies to prove the relation between safe institutional deliveries in LMICs, IPC, and infections in mothers and babies. But, there are numerous facts suggesting that the lack of sanitation, WASH, and IPC have an adverse effect on the health of the mothers and their babies.[12,13]

The State Government and other key supporting divisions in the state are supportive of a focus on infection control, and the work fits in with a state-level initiative for a hospital accreditation scheme, which requires the guidelines and standards to be met on various aspects of health service provision. As the State does not have a plan and guidelines for controlling the infection and infectious disease of its own, the guidelines used for this study were based on the principles of the World Health Organization's Global Patient Safety Challenge. This effort on the healthcare-associated infections, provides guidelines for clean practices, clean equipment, a clean environment, and the availability of diagnostics and treatment.[14]

We hope that the conclusion of this research will provide an insight into specific areas lacking infection, prevention, control practices, water availability, newborn & postpartum care thereby improving subsequent interventions to reduce the rate of infections and associated Infant & maternal mortality.

MATERIALS & METHODS

Study settings & design: A cross-sectional study was carried out that utilized quantitative methods to collect data from secondary and tertiary care of Raipur district from June 2019 to November 2019. Raipur district is divided into four blocks. The study was restricted to the all Maternity units of all the 8 Community Health Centres (CHC) and 1 District hospital (DH) of Raipur district.

The permission from Chief Medical & health officer (CMHO) of Raipur district was taken for data collection and the list of Block Medical Officers (BMOs) along with their phone numbers was obtained from the CMHO office. A suitable day & time along with their consent was agreed upon for the data collection.

The data collection was done, using a Semi-structured questionnaire to assess the Infection Prevention Control Practices & policy in these maternity units. In charge of the maternity unit (i.e., Staff nurse) and cleaners were also interviewed. Specific objectives of the data collection tool are shown in Figure no 1:

It can be observed from table no 1 that the Orientation program had information on IPC for new Healthcare providers and was conducted in four of the nine HCFs. Training in IPC for all the HCP were given in six of the nine HCFs. There is also a training program in IPC for non-medical staff (maintenance, cleaning, and kitchen staff), which were given in five out of nine HCFs.

From Table no 2 shown that practice of disinfecting the premises is performed routinely, walls and ceilings are cleaned and sanitized regularly in 8/9 (88.9%) of the healthcare facilities. Regular OT fumigation practices are performed in 3/9 (33.3%) of healthcare facilities, segregation of soiled linen contaminated with blood practices are routinely performed in 5/9 (55.6%) of the healthcare facilities. Personal protective equipment such as caps and masks are worn by staff in all the healthcare facilities studied. The practice of changing dress and footwear is routinely performed in all of these healthcare facilities. Dusting and sanitizing doors, door handles of delivery unit & OT, is also practiced by all these healthcare facilities. Disinfection using UV lamps was not performed in any of the healthcare facilities.

4/9(44.4%) Healthcare facilities were using a cloth mop, 3/9(33.3%) were using Jute mop and 2/9(22.2%) are using ready-to-use the mop for the cleaning of Delivery unit premises. Separate Mop for different departments is available in 7/9(77.8%) healthcare facilities and Mops were changed as per the requirement in 5/9(55.6%) of healthcare facilities. As shown in Figure no 2.

It was observed that needles, syringes & gloves used in the delivery unit were used only once in all of the healthcare facilities. Contracted disposal of contaminated waste is a practice in 7/9 (77.8%) healthcare facilities, 2/9(22.2%) healthcare facilities practice disposal in the hospital campus in a specific waste disposal area. Sharp disposal boxes & Standard color-coded waste bins are kept in the delivery unit of all the healthcare facilities. Contaminated waste is stored separately from routine waste in the delivery unit of all these healthcare facilities (100%) shown in Figure no 3.

Patient practices in the delivery units were not good. No routine cleansing of perineum is done in 8/9(88.9%) facilities. Betadine 8/9(88.9%) prior to clamping and cutting of the umbilical cord, is routinely used in all of these healthcare facilities.

Prophylactic antibiotics are used in delivery units (Table no 3), irrespective of indication was observed in 4/9(44.4%) healthcare facilities. Another indication used of prophylactic antibiotics in labor with spontaneous rupture of membranes four hours or more, no fever or other signs of infection in labor with rupture of membrane was observed in 3/9(33.3%) healthcare facilities. In addition, prophylactic antibiotics was also used in the Elective and emergency C section in 1/9(11.1%) healthcare facilities

Gloves are always worn for the vaginal exams & deliveries in all these healthcare facilities and gloves were changed after examining the patient. Overall, the average length of stay for a normal delivery is more than 24 hours and the average length of stay for an emergency C section is more than 4 days in 3/9(33.3%) healthcare facilities.

In all the healthcare facilities, patients are advised regarding the alarming signs for which they should seek treatment during their discharge. The verbal instruction is given in 8/9 (88.9%) along with the written instruction from 1/9 (11.1%) healthcare facilities.(Figure 4)

Usage of Sterile clamps is routinely practiced and disposable cord clamps are used in all the healthcare facilities. In 3/9(33.3%) of the healthcare facilities, a blade is used only once to cut the cord and the newborn is cleaned after the delivery in all of these healthcare facilities. The type of cleaning material used for cleaning the newborn baby was sterile and the towel is reusable in 4/9 (44.4%). The cloth brought by the patient is used in 5/9(55.6%) healthcare facilities.

4/9(44.4%) Hospitals provide sanitary pads free of cost after the delivery and the Disposable sanitary pads used by the women after the delivery is 4/9(44.4%), sterile cloth pads is 1/9 (11.1%) and the Cloth pads brought by the patients is 4/9(44.4%). One of the healthcare facilities provides JSSK (Janani Shishu Suraksha Karyakram) kits which include sanitary pads, towels, Protein powder, Multi-vitamin drops, iron, and calcium tablets.

Separate wards for the mother or the newborn with infections, are available in 2/9(22.2%) healthcare facilities and designated staff for these wards in 1/9(11.1%).

Table no 4. Summary of Quantitative findings related to key IPC policies and procedures, training to the Healthcare providers.

Availability of policies and procedures in the delivery unit shows that the Standard IPC, Decontamination of body fluids, Microbiological surveillance for LR policies and procedures is at 6/9 HCFs, Hand-washing protocols are in place for 8/9 HCFs, and a protocol for Sterilization, sharps disposal, waste disposal is in place at 7/9 HCFs. Microbiological surveillance for OT policies is available at 4/9 HCFs and changing of the mops and buckets policies is not available in any of the HCFs.

Specific personnel responsible for looking after infection controls is present in 6/9 HCFs, personnel responsible for IPC such as Staff Nurse, Labor room in-charge, Block Program Manager (BPM), Lab assistant is present in six HCFs. It was reported that five HCFs had a Formal/Informal Infection control committee and a monthly meeting of infection control committee was reported in only one HCFs. There is also a provision for staff vaccination as a preventive measure in 8/9 HCFs and the vaccination for Hepatitis B, TT, Flu is provided to the staff.

DISCUSSION

Patient safety and infection control is a very challenging issue and it's very complex when it comes to the Labor room, given the critical nature of the healthcare services being delivered. The Janani Suraksha Yojana Program implementation in Chhattisgarh had a huge spike in Institutional deliveries. The high case load of maternal care services in Chhattisgarh, highlights the importance of improving the quality of care in health facilities. One of the markers of quality care is the prevention and treatment of infections, so the focus on infection control during the provision of maternity services is of utmost priority to achieve India's SDG goal of number 3. Common issues of IPC include Microbiological Surveillance of OT, policies were absent in the majority of the healthcare facilities,

A study done in Gujarat state on Infection Control in labor and delivery units in Gujarat state, India reported significant shortcomings in the current practices and procedures. For example, a standard IC procedure was only available in 5% of facilities. Another study from LMIC countries shows that 74% lack guidelines for standard precautions.[15] Reuse of surgical gloves for vaginal examinations in the labor room was commonly practiced in over 70% of facilities and in only 15% of facilities cleaning of surfaces was done immediately after each delivery.[16]Changing of Mops and Buckets policies is absent in all the healthcare facilities. Other gaps are identified, formal/informal infection control committees are present in half of the healthcare facilities & Mops are changed in the labor room as per the requirements observed in the majority. Antibiotics are widely and irrationally used and the assessment presented here offers evidence about the actual conditions and need for improvement in the IPC.

CONCLUSION

There is a need to dedicate more resources to the provision of monitoring of IPC in the labor rooms to further reduce the mortality in mother and neonate. Although, Training and re-training of staff towards various aspects of WASH is critical. It is of utmost importance that IPC practices & infrastructure facilities be improved upon in all HCFs.

Limitation: The selection of sites is limited to the Raipur district only and does not generalized to entire HCFs in Chhattisgarh. Additional studies are needed.

Due to logistics and financial constraint, it was not feasible to cover all the healthcare facilities and that's the reason for its restriction to the Maternity units of all CHC & DH.

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Dr Arvind Shukla (Data analysis, Design, Manuscript Preparation)

Dr Abhiruchi Galhotra (Conceptualization, Design, Manuscript review)

Dr Ujjwala Gaikwad (Manuscript review and preparation)

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Availability of Policies & Procedures for Infection prevention
Training provided to facility staff in relation to IPC
IPC procedures on the delivery unit
Hazardous & Non hazardous waste management
Patient practices on the delivery unit
New-born care & Postpartum care
Care provided to Mother or New-born with infections

Figure 1: Specific aims of data collection tools.

Table 1: Infection prevention and control training

Health care facilities	Orientation programme with information on IPC for new HCPs	Training programme in IPC for all HCPs?	Training programme in IPC for non-clinical staff (maintenance, cleaning, kitchen staff)?
Facility 1	No	Yes	Yes
Facility 2	Yes	Yes	Yes
Facility 3	Yes	No	No
Facility 4	Yes	Yes	No
Facility 5	No	Yes	Yes
Facility 6	No	No	No
Facility 7	No	Yes	Yes
Facility 8	Yes	Yes	Yes
Facility 9	No	No	No

Table 2: Infection control practices performed in the Labor room

Practices routinely performed	% (n=9)
a. Disinfection of premises is performed, delivery unit closed regularly for disinfection	88.9
b. Ultraviolet lamp used for disinfection	0
c. Regular operating theatre (OT) fumigation	33.3
d. Segregation of soiled linen contaminated with blood or body fluids in red bags or containers	55.6
e. Walls and ceilings cleaned and sanitized as and when required	88.9
f. Caps are worn by staff (nurse, cleaner, doctor)	100
g. Masks are worn by staff (nurse, cleaner, doctor)	100
h. Practice of changing dress and footwear followed	100
i. Dusting and sanitizing of doors, door handles etc. of delivery unit and OT	100

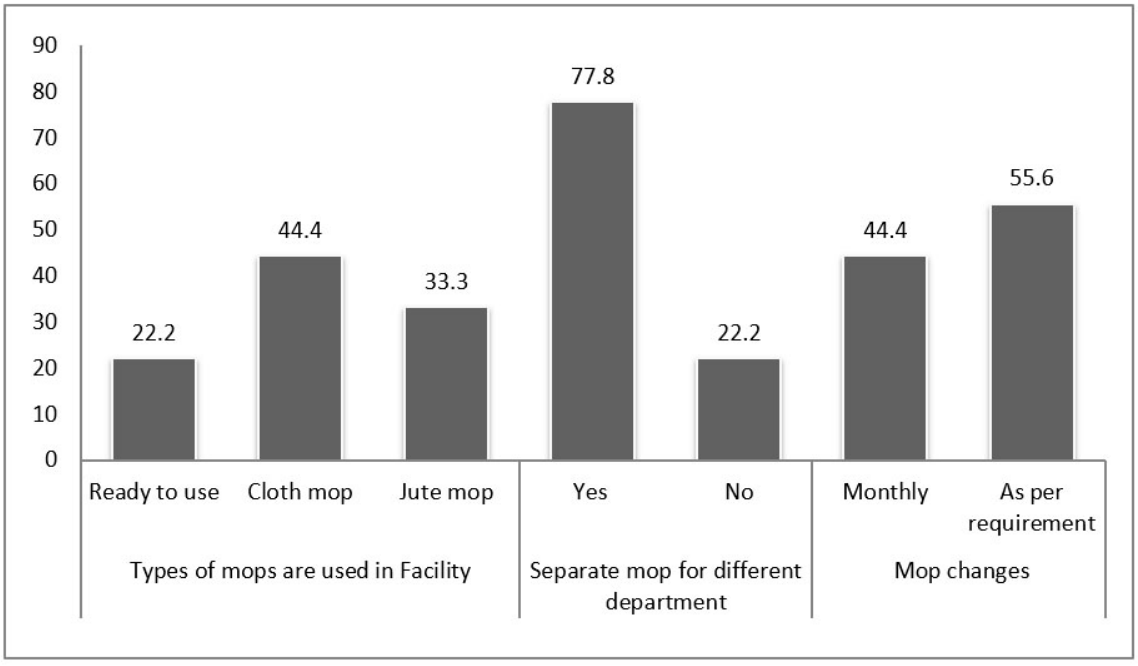

Figure 2: Mops used in Health care facilities.

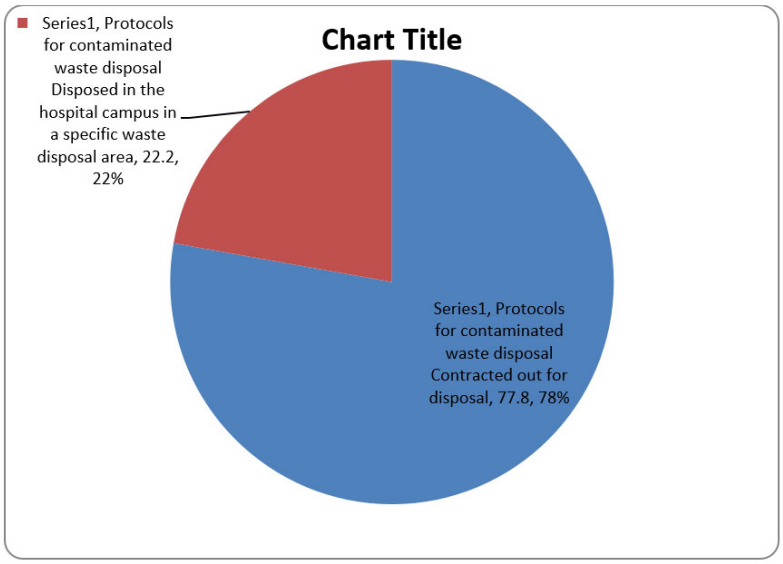

Figure 3: Hazardous and Non-Hazardous Waste Management.

Table 3: Use of Prophylactic antibiotics in Labor and delivery

Prophylactic antibiotics used for which procedures?*	% (n=9)
None at all	0
All patients-irrespective of indication	44.4
In labor with spontaneous rupture of membranes four hours or more, no fever or other signs of infection	33.3
In labor with rupture of membranes four hours or more, fever or other signs of infection	33.3
Elective C-section	11.1
Emergency C-section	11.1

*Multiple responses

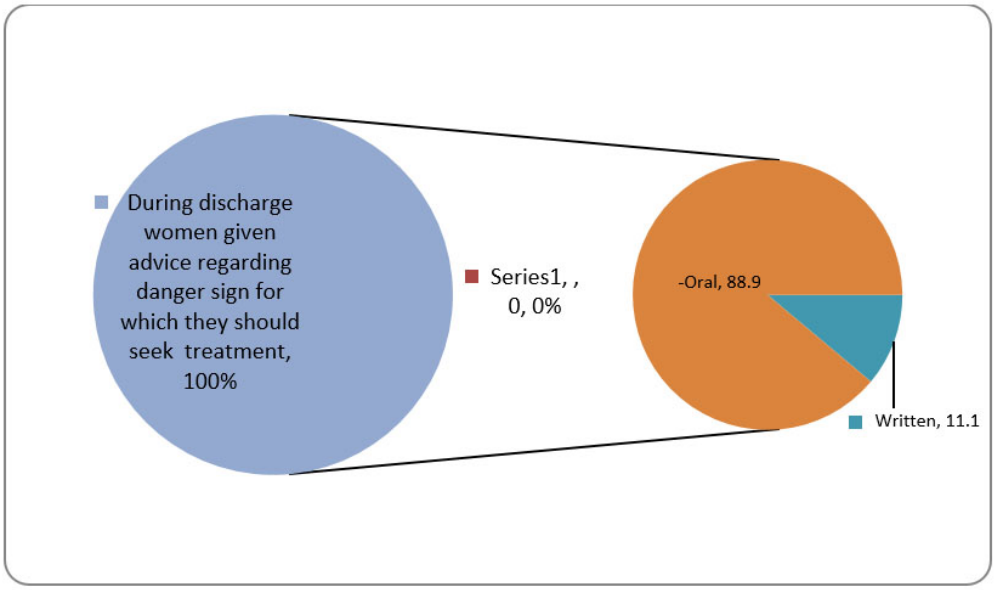

Figure 4: Advice regarding danger sign for delivered women when discharged.

Table 4: Availability of Policies for Infection prevention control in Healthcare facilities

IPC Domain	Indicator	Facility 1	Facility 2	Facility 3	Facility 4	Facility 5	Facility 6	Facility 7	Facility 8	Facility 9 (DH)	Total
Availability of Policies / procedure for Infection Prevention	Standard IPC	■		■	■	■	■	■			6/9
	Hand washing	■	■		■	■	■	■	■	■	8/9
	Decontamination of body fluids or blood spillage	■				■	■	■	■	■	6/9
	Sterilization	■		■	■	■	■	■		■	7/9
	Waste disposal	■		■	■	■	■	■			7 9
	Micro plan of personnel posted in Maternity ward	■		■	■	■	■		■	■	7/9
	Microbiological surveillance for OT				■	■	■	■			4/9
	Microbiological surveillance for LR			■	■	■	■	■	■		6/9
	Changing of mops & buckets										0/9
Specific Personnel for IPC			■		■	■	■	■	■		6/9
Formal/informal infection control committee					■	■	■		■	■	5/9
Staff vaccination for preventive measure		■		■	■	■	■	■	■	■	8/9