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STATUS OF AVAILABILITY OF SERVICES OF MATERNAL AND NEWBORN CARE AT HEALTH CARE FACILITIES WHERE DELIVERIES ARE CONDUCTED IN SOLAN AND MANDI DISTRICTS OF HIMACHAL PRADESH

Vikas Thakur[1]*, Rakesh Thakur[2], Sumit Sharma[3], Gurmeet Singh[4] and Jai Gopal Vohra[5]

[1]Junior Resident Department of Community Medicine, Maharishi Markandeshwar Medical College and Hospital Kumarhatti Solan (H.P), India.
[2,3]Junior Resident Department of Community Medicine Indira Gandhi Medical College Shimla (H.P), India.
[4]Prof. & Head Department of Community Medicine, Maharishi Markandeshwar Medical College and Hospital Kumarhatti Solan (H.P), India.
[5]Associate Prof. Department of Community Medicine, Maharishi Markandeshwar Medical College and Hospital Kumarhatti Solan (H.P).

***Corresponding Author: Dr. Vikas Thakur**

Junior Resident Department of Community Medicine, Maharishi Markandeshwar Medical College and Hospital Kumarhatti Solan (H.P), India.

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ABSTRACT

Objectives: To assess the availability of health care services at heath care facilities where deliveries are conducted. **Methods:** Cross-sectional study done at health care facilities where deliveries are conducted in Solan and Mandi disrict of Himachal Pradesh with help of checklist for assessment of FBNBC. **Results:** Assessment of FBNBC was an important part of present study where it was found that Inj oxytocin used for augmentation of labour pains and in management of PPH was available in 100% health care facilities where deliveries are conducted in both Districts. Obstetricians or pediatricians were available only in 28.5% of such health facilities in Solan Disrtict and in District Mandi at 25% of public health institutions. In present study all 100% of these healthcare facilities were having availability of NAS(108) for transportation of delivery cases in both Districts. Amongst these facilities blood bank services were available at 21.4% places in District Solan whereas in District Mandi it was present at 25% of these institutions.Amongst these facilities phototherapy unit was present at 28.5% & 40% places in Solan and Mandi districts respectively. **Conclusions:** In our study of assessment of FBNBC need of Obstetrician and Pediatrician is of an absolute importance. Similarly at healthcare facility providing delivery facilities should be equipped at least with blood storage units where provision of blood bank facility is difficult so as to manage PPH. Furthers strategies are to be made to strengthen Maternal and Child Health (MCH) for better outcomes.

KEYWORDS: FBNBC, NAS, PPH, MCH.

INTRODUCTION

Great efforts have been made to increase institutional deliveries and Facility Based Newborn Care (FBNBC) in Himachal Pradesh. Transportation of delivery cases in 108 ambulances from home to delivery points and skill development staff (Emergency Medical Technician-EMT) in conducting delivery in emergency situations along with neonatal resuscitation skills has also played an important role in improving institutional deliveries after its launch on 2nd October 2010 in Himachal Pradesh.[1] This study also includes impact on Facility Based Newborn Care (FBNBC) operational guidelines 2011for implementations.[2] Government of India has launched Janani Shishu Suraksha Karyakaram (JSSK) on 1st June, 2011.[3] Clear articulation of the reproductive, maternal, newborn, child and adolescent health (RMNCH+A) is an effort in this direction which was started in 2013, this strategic approach will prove useful in strengthening efforts and renewing India's commitment towards a compelling vision of improving maternal health and child survival in India.[4] Rashtriya Bal Swasthya Karyakram (RBSK) was launched in February, 2013 under National Rural Health Mission(NRHM). This initiative aims to screen and manage children from birth to 18 years of age for Defects at Birth, Deficiencies, Diseases and Developmental Delays including disabilities.[5] Janani Express-102 (ambulance) for free transport and drop back facility to expectant mothers, women after delivery and sick child up to 1 year under the Janani Shishu Suraksha Karyakram (JSSK) in the entire state of Himachal Pradesh was flagged of on 5th December 2014.[6]

Training of Medical Officers, Staff Nurses, Axillary Nurse Midwife (ANM) under Navjaat Shishu Suraksha

Karyakram (NSSK) and Integrated Management of Neonatal and Childhood Illnesses (IMNCI) has also played a vital role for newborn care. Intervention in Mother and Child Tracking System (MCTS) with 104 helpline number as Comprehensive Call Centre for Antenatal and Postnatal Care was started in Himachal Pradesh in 2016. Special Newborn Care Unit (SNCU) online software can play vital role for linkages and monitoring of health programs along with providing best possible neonatal care.[7] Himachal saw a 23% decline in the infant and child mortality rate in 2019-20 as compared to 2015-16, the National Family Health Survey-5 (NFHS-5).[8]

Review of litrature

Kumar, et al.: *(2013)* in their study to explore the effectiveness of Navjaat Shishu Surakasha Karyakram (NSSK) training using mannequin for imparting neonatal resuscitation skills to health professionals. Their study was to evaluate two days training to MOs (Medical Officers), SNs (Staff Nurses), and ANMs (Auxiliary Nurse Midwife) was given at district hospital for the districts of Bijnore, Saharanpur, and Muzaffarnagar in Uttar Pradesh (India) by Dept. of Community Medicine, Lala Laj Rai Memorial Medical College Meerut (U.P.). In that training one local trainer from the respective district was invited. It was done from November 2012 to February 2013. In each batch there were 24 participants, 8 each from MOs, SNs, and ANMs group of health professionals. Study was carried out in 13 such batches. Participants (92-95%) expressed their confidence in handling newborns after training on mannequins. They appreciated videos, demonstrations, systematic and individual approach. The best part of the training was resuscitation with bag mask and Kangaroo mother care (KMC). The participants opined that this type of training on mannequins will be really useful in places where only few resources and facilities are available for conducting deliveries and newborn care. Definitive experiments to improve understanding of their effects on training will allow them to be used more intelligently to improve provider performance, reduce errors and ultimately, promote patient safety. Although such experiments will be difficult and costly, they may be justified to determine how this technology can best be applied at different places to improve newborn care.[9]

Kumar, et al.: *(2015)* conducted a descriptive, cross-sectional, community based study regarding utilization and perception regarding Janani Suraksha Yojana (JSY) in a rural area at Agra. JSY is a maternal protection scheme that promotes institutional delivery by providing cash incentive to the mothers who deliver their babies in a health facility. With the purpose of improving maternal and neo-natal mortality and morbidity indicators, the investment and emphasis on JSY was continued. They interpreted that nearly half (53.25%) of the mothers had an institutional delivery and were eligible for the JSY benefits. Postnatal home visits by ASHAs were done in 48% of home and 100% of institutional deliveries. Nearly half 48.09% of the pregnant women were benefited by free transport facility under JSY. Although all of the health care providers perceived JSY as benefit for improving maternal health, 44% of them had the notion that cash incentives under JSY can have a negative effect on family planning practices.[10]

Singh et al.: *(2016)* carried out a cross-sectional analysis of 108 ambulance records from six states for one year. The numbers, proportions, and characteristics of pregnant women and obstetric emergencies transported by the '108' ambulance service are described Pregnant women who called '108' between 1st April 2013 and 31st March 2014 in five states where had been fully functional for more than 3 years were included in this analysis. One state was selected randomly from North, South, Central, West and East of India. These were Himachal Pradesh, (undivided) Andhra Pradesh, Chhattisgarh, Gujarat, and Assam.. The estimated proportion of pregnant women transported by '108' ambulance services ranged from 9.0 % in Chhattisgarh to 20.5 % in Himachal Pradesh. The '108' service transported an estimated 12.7 % of obstetric emergencies in Himachal Pradesh, 7.2 % in Gujarat and less than 3.5 % in other states. Women who used the service were more likely to be from rural backgrounds and from lower socio-economic strata of the population. Across states, the ambulance journeys traversed less than 10–11 km to reach 50 % of obstetric emergencies and less than 10–21 km to reach hospitals from the pick-up site. The overall time from the call to reaching the hospital was less than 2 h for 89 % to 98 % of obstetric emergencies in 5 states, although this percentage was 61 % in Himachal Pradesh. Inter-facility transfers ranged between 2.4 % –11.3 % of all '108' transports.[11]

Chauhan, et al.:, *(2016)* did an assessment of status of availability of NBCCs and service provision in selected public health facilities of Bihar across 25 high-priority districts in Bihar, were selected purposively in consultation with the State Health Society, Bihar, for the assessment. These facilities were assessed for the availability and/or functioning of infrastructure, equipment maintenance, human resource, supply of drugs and consumables, adherence to protocols, and record keeping. Only 22.8% of the NBCCs were found to be fully functional, majority (68.4%) were partially functional, and 9% were nonfunctional. Thirty-seven (64.9%) NBCCs were located inside the labor room premises. Approximately, one-third of the neonates delivered were kept in NBCCs. Equipment though available lacked the provision of annual maintenance contract. Essential drugs such as adrenaline (24.6%) and Vitamin K injection (42.1%) were not available in many facilities. Only 6.2% of the newborns had low birth weight, indicating underreporting. Majority of the health-care staff available were trained but possessed poor skills. Data recording and reporting was also suboptimal. They concluded that the network of NBCCs needs to be strengthened across the state and linked with higher

facilities to achieve the desired reduction in neonatal morbidity and mortality.[12]

Salve HR et al.: *(2017)* did a study to assess the impact of JSSK on institutional delivery. A record review was done at the primary health care facility in Faridabad district of Haryana from August 2010 to March 2013. Institutional delivery increased by almost 2.7 times after launch of JSSK . For institutional deliveries, the most important facilitator as well as barrier was identified as ambulance service under JSSK and pressure by elders in the family respectively. Conclusions: JSSK scheme had a positive impact on institutional deliveries. It should be supported with targeted intervention designed to facilitate appropriate decision-making at family level in order to address barriers to institutional delivery. [13]

Shah, et al.: *(2017)* an assessment of admission pattern and treatment outcomes of neonates admitted in SNCUs was done in 2015–2016 .Gujarat had operationalized forty SNCUs, each district has at least one SNCU. Reasons for admission were respiratory distress syndrome (RDS) and infection. Similar pattern in mortality found as final diagnosis of deaths was RDS and infection. The proportion of neonatal deaths was high in those sick neonates who were referred to SNCUs from other health care facilities as compared to who were born in institution SNCUs were located. Strengthening of FBNC is essential to address neonatal mortality. NMR is of prime focus because the health interventions needed to tackle NMR differ from those needed for IMR and under‐5 mortality rate. This accentuates the need for focused attention on facility‐ and community‐based child health interventions along with quality maternal health services and robust referral mechanisms to all delivery points.[7]

Madhusudhan H.N, et al.: *(2017*) in order to assess the magnitude & distribution of the health conditions identified under RBSK in urban field practice area of Bangalore medical college and research institute. Where 1232 children were screened out of which 5 children were found to have birth defects, 16 children were found to have some kind of deficiency, 100 children were found to have diseases and 31 children were found with developmental delay including disabilities. Here in our study 12.3% children deprived of good health due to 4Ds. Among 152 children referred only 78 children utilized the referral services. The**y** observed that still there are many children are undiagnosed and deprived of treatment for curable diseases. Child Health Screening and promotion of early intervention services is most beneficial for improvement in health status of children and RBSK should be extended to private schools also in order to reach more children.[14]

Singh S et al.: *(2018)* conducted a study on the pregnant women, who requested a '108' ambulance in two Indian states Andhra Pradesh (AP) and Himachal Pradesh (HP) in 2013-14. A higher proportion of women who used a '108' ambulance in AP were from poor socioeconomic circumstances while in HP, the users were mostly from the general class. In HP, tribal women were less likely to receive an ambulance. Women transported using a '108' ambulance were more likely to have high-risk conditions and early complications, use government facilities, While women transported using other means were more likely to have an obstetric emergency and they use private facilities. There were no large differences in adverse pregnancy outcomes among those transported using '108' ambulance than those not transported. However, larger studies are required to make valid conclusions. Their findings suggest that the '108' service should adopt strategies to reach the poor and unreachable in HP. Strategies are required to improve the use of '108' services for women who report obstetric emergencies.[15]

Das, et al.: *(2018)* impact on newborn care services by capacity building study was done in 2014-2015 three districts Gonda, Aligarh and Raebareli of Uttar Pradesh with high NMR (45–53/1000live births), higher than the state average. After capacity building marked improvement in newborn service availability, skilled birth attendants, resuscitation and kangaroo mother care was noticed. A multifold rise in newborn resuscitation efforts and documentation with high success rate was observed. There was also improvement in obstetric care services including partograph use and active management of third stage of labor. However, several infrastructural indicators (electricity, water supply, toilets, and sanitation) remained unchanged. Overall improvements were observed in the majority of the signal functions for perinatal care and newborn resuscitation efforts. There was a limited impact on the infrastructural and supervision components [16]

Singh, et al.: *(2019)* in their study surveyed 147 health care providers in primary level public health care from poor and better performing districts from two states The primary care facilities include Sub-health centres, Primary health centres, and Community health centres, in ascending order of level of obstetric care provided. They assessed rural providers' perspectives on management and referrals of antenatal women with high obstetric risk, or with complications. They found that staff had sub-optimal knowledge of, and practices for, screening common high-risk conditions and assessing complications in pregnancy. Only 31% (47/147) mentioned screening for at least 10 of the 16 common high-risk conditions and early complications of pregnancy. Only 35% (17/49) of the staff at Primary health centres, and 51% (18/35) at Community health centres, mentioned that they managed these conditions and, the remaining staff referred most of such cases early in pregnancy. The staff mentioned inability to manage childbirth of women with high-risk conditions and complications. Thus in absence of efficient referral systems and communication, it was better for these women to receive antenatal care at the advanced centres (often far) where they should deliver. There were large

gaps in knowledge of emergency treatment for obstetric complications in pregnancy and pre-referral first-aid. Staff generally was low on confidence and did not have adequate resources. Nurses had limited roles in decision making. Staff desired skill building, mentoring, moral support, and motivation from senior officers. They concluded Indian health system should improve the provision of obstetric care by standardizing services at each level of health care.[17]

Majella, et al.: *(2019)* a record‐based longitudinal study was done during March 2018 JIPMER. Rural Health Centre (JIRHC) and high‐risk pregnancy was classified based on the guidelines from Pradhan Mantri Surakshit Matritva Abhiyan and outcome assessment based on the obstetric and neonatal outcomes. In their study they found that almost one-fifth of the pregnant women in rural area has high‐risk pregnancy with majority of them contributed by maternal age and Pregnancy induced hypertension. Hence, early detection of high‐risk pregnancy needs to be done at primary health‐care level to improve the maternal, obstetric, and neonatal outcome through quality and accessible antenatal care and appropriate referral services.[18]

AIMS AND OBJECTIVE

To assess the availability of health care services at heath care facilities where deliveries are conducted.

MATERIALS AND METHODS

Study area: Health care facilities in Solan and Mandi District where deliveries are conducted**.**

Study design: cross-sectional study.

Study period: 1st January 2019 to 31st December 2020.

Inclusion criteria: All the public health care facilities where institutional deliveries are conducted in Solan and Mandi District of Himachal Pradesh were included in the study.

Exclusion criteria: Health care institutions where deliveries are not conducted were excluded in study

Sampling technique: Checklist for assessment of facility based newborn care were filled after assessment from all public health institutions where deliveries are conducted in Solan and Mandi District of Himachal Pradesh (H.P).

Study tools: Data was collected from pre-tested and pre-designed Checklist for assessment of facility based newborn care..

Statistical analysis: Data collected will be analyzed with the help of Statistical Methods**.**

Ethical consideration: After getting the approval from Institutional Ethics Committee, the research work was started. Informed consent was taken from the participants in study and there was no financial burden on the participants.

RESULTS

Table 1: Status of availability of essential drugs of Maternal and Newborn care at Health Care facilities where delivery is conducted in Solan and Mandi Districts of H.P.

Total Health Care Facilities where deliveries are conducted		Solan (N=14)		Mandi S(N=20)	
Sr. No.	**Name of Drugs**	**N**	**%**	**N**	**%**
1.	Inj Oxytocin	14	100	20	100
2.	Inj Magnesium Sulphate	12	85.7	18	90
3.	Inj Vitamin K	13	92	20	100
4.	Inj Anti D	9	64	17	85
5.	Inj Dinoprostone	6	42.8	7	35
6.	Tab Misoprostol	12	85.7	18	90

Table 1/Fig. 1 shows status of availability of essential drugs of Maternal and Newborn care at Health Care facilities where delivery is conducted in Solan and Mandi Districts of Himachal Pradesh (H.P), Inj oxytocin used for augmentation of labour pains and in management of PPH was available in 100% health care facilities where deliveries are conducted in both Districts. Inj Magnesium sulphate used for management of eclampsia was available in 85.7% of health care facilities of District Solan and 90% of all institutions where deliveries are conducted in District Mandi. Inj Vitamik K given to newborns was available in 92% Health facilities where deliveries are conducted in District Solan, comparing same figures its availability was 100% in District Mandi. Inj Anti-D given in Rh-incompatibility cases was available in 64% places amongst all public institution where deliveries are conducted, corresponding figures in District Mandi was 85 %. Inj Dinoprostone used for induction of labour pains was present in 42.8% of these health care facilities and it was available in 35.5% of such facilities in District Mandi. Tab Misoprostol used for induction of labor pains and management of PPH was present in 85.7% of these Health care facilities where deliveries are conducted in Solan District and comparing same figures with District Mandi it was available in 90% of health care facilities where deliveries are conducted in District Mandi.

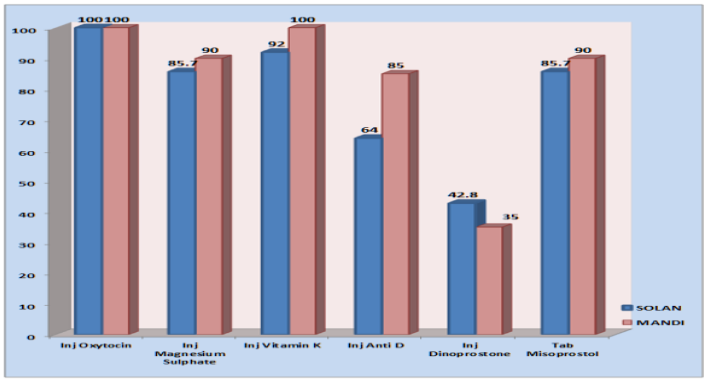

Fig. 1: Depicting status of availability of essential drugs of Maternal and Newborn care at Health Care facilities where delivery is conducted in Solan and Mandi Districts of H.P.

Table 2: Status of availability of services at Maternal and Newborn care at Health Care facilities where deliveries are conducted in Solan and Mandi Districts of H.P.

Total Public Health Facilities where deliveries are conducted		Solan (N=14)		Mandi (N=20)	
S. No.	**Services Provided/Available**	**N**	**%**	**N**	**%**
1.	Breast feeding support services	13	92.8	12	60
2	Availability of Obstetrician/Pediatrician	4	28.5	5	25
.3.	Transport Facility	14	100	20	100
4.	Electricity Backup	12	85.7	16	80
5.	Blood Bank services	3	21.4	5	25
6.	Cardiac Monitor	12	85.7	15	75
7.	Clinical and Room thermometer	13	92.8	19	95
8.	Weighing Machine	14	100	20	100
9.	Phototherapy Unit	4	28.5	8	40
10.	Suction Pump	14	100	20	100
11.	Oxygen Cylinder/Concentrator	14	100	20	100
12.	Ambubag	14	100	20	100
13.	Eclempcia Room	3	21.4	3	15

Table 2/Fig. 2 depicts availability of different health care services for maternal and newborn care at facilities where deliveries are conducted in both districts. Amongst these facilities breast feeding support services were present in 92.8% places in District Solan comparing same it was available in 60% places in district Mandi. Obstetrician or pediatrician was available only in 28.5% of such health facilities and in District Mandi 25% of such public health institutions were having such services. 100% of these healthcares were having availability of transport facilities in both Districts. In these facilities electricity backup was present 85.7% places in District Solan and at 80% places in District Mandi. Amongst these facilities blood bank services were available at 21.4% places in District Solan whereas in District Mandi it was present at 25% of these institutions. Cardiac monitors were available at 85.7% places in District Solan and at 80% places in District Mandi. Clinical and room thermometers were present in 92.8% of these facilities in Distict Solan and at 95% places in District Mandi.

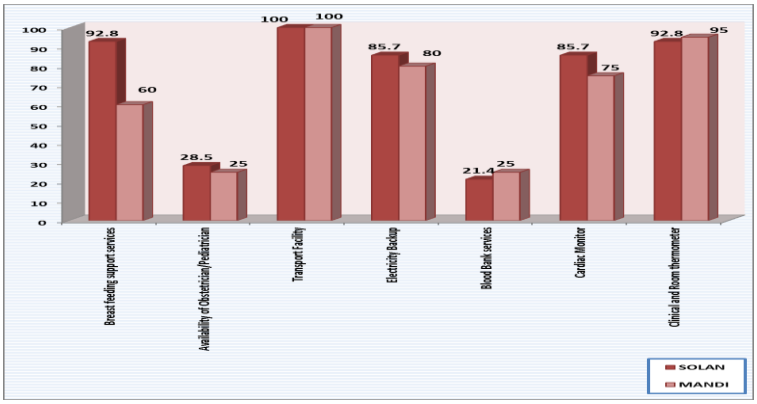

Fig. 2: Depicting status of availability of services at Maternal and Newborn care at Health Care facilities where deliveries are conducted in Solan and Mandi Districts of H.P.

As evident from **Table 2/Fig. 3** 100% of these health care facilities where deliveries are conducted in both districts weighing machine was available to weigh newborn. Amongst these facilities phototherapy unit was present at 28.5% & 40% places in Solan and Mandi districts respectively. Suction pumps, oxygen cylinders/concentrators and ambubags were present at 100% of these facilities in both districts. Eclempsia room was present in 21.4% of these facilities in District Solan with corresponding figures of 15% in district Mandi.

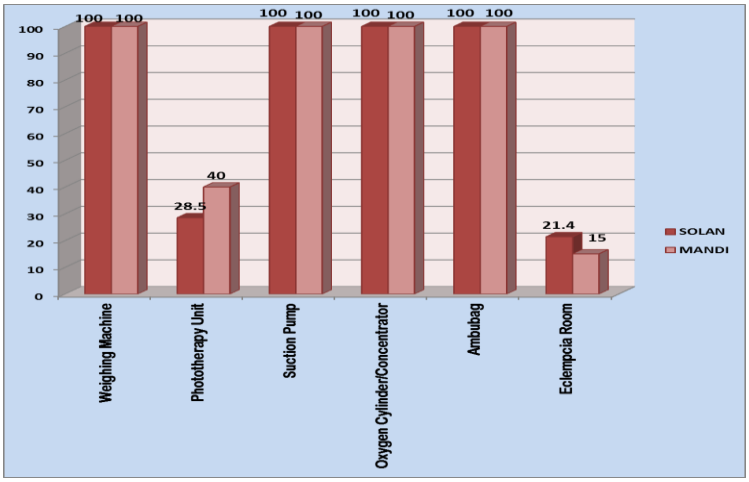

Fig. 3: Depicting status of availability of services at Maternal and Newborn care at Health Care facilities where deliveries are conducted in Solan and Mandi Districts of H.P.

DISCUSSION

Assessment of Facility Based Maternal and Newborn Care was an important part of present study where it was found that Inj Oxytocin used for augmentation of labour pains and in management of PPH was available in 100% health care facilities where deliveries are conducted in both Districts. Inj Magnesium sulphate used for management of eclampsia was available in 85.7% of health care facilities of District Solan and 90% of all institutions where deliveries are conducted in District Mandi. In a similar study *Katageri, et al.: (2018)*[19] their assessment of public facilities in districts of North Karnataka magnesium sulphate was available in 6 out of 10 Primary Health Centres (60%), in all eight taluka (sub-district) hospitals (100%), five of eight Community Health Centres (63%) and both district hospitals (100%). In another similar study done by *Chaturvedi S, et al.: (2013)*[20] found that 61% of facilities had no stock of magnesium sulphate and in another 20% which was less than the expected minimum quantity. In our study the situation is better because of good material management of health managers.

In present study all 100% of these healthcare facilities were having availability of National Ambulance Services (108). Study was done by *Dr Hitesh Bhabhor, et al.: (2015)*[21] in which they found that out of total 97.40 % deliveries conducted in the Health Facility and 108 services to reach out the facility used by 39.02% of mothers. In a similar study *Kanabar, et al.: (2019)*[22] found 39.1% mothers used 108 for transport from their place to a health facility.

Amongst these facilities blood bank services were available at 21.4% places in District Solan whereas in District Mandi it was present at 25% of these institutions. A similar kind of study was done by *Pratap Kumar Sahoo, et al.: (2014)*[23] in which, access to blood which can prove fruitful to save mothers was present in 1 out of 15 facilities assessed. Only district hospital (6.7%) had a blood bank and transfusion facility and the rest 14 (93.3%) of the facilities had no provision for blood transfusion, blood storage unit (BSU).

In present study Cardiac monitors were available at 85.7% places in District Solan and at 80% places in District Mandi. Clinical and room thermometers were present in 92.8% of these facilities in Distinct Solan and at 95% places in District Mandi. Amongst these facilities' phototherapy unit was present at 28.5% & 40% places in Solan and Mandi districts respectively. Suction pumps, oxygen cylinders/concentrators and ambubags were present at 100% of these facilities in both districts. A facility based study was also done by *Singh T, et al.: (2019)*[24] in Punjab, where it was observed health services are concentrated at the DH and SDH. Functional equipment like ECG, oxygen, mask, ambubag etc. are deficient at all levels of health facilities. Nearly 50% of expected medicines were in stock at the District Hospitals and Sub District Hospitals and 66% at CHC level. Our districts are well equipped with these lifesaving facilities due to better material management.

SUMMARY AND CONCLUSIONS

Assessment of FBNBC is an important aspect so as to bridge the gap where possibility of improvements exists. Amongst these facilities blood bank services were available at 21.4% places in District Solan whereas in District Mandi it was present at 25% of these institutions. In present study Cardiac monitors were available at 85.7% places in District Solan and at 80% places in District Mandi. Amongst these facilities phototherapy

unit was present at 28.5% & 40% places in Solan and Mandi districts respectively. Obstetricians or pediatricians were available only in 28.5% of such health facilities in Solan Disrtict and in District Mandi at 25% of public health institutions. In FBNBC need of Obstetrician and Pediatrician is of an absolute importance. Similarly at healthcare facility providing delivery facilities should be equipped at least with blood storage units where provision of blood bank facility is difficult so as to manage PPH. Furthers strategies are to be made to strengthen Maternal and Child Health (MCH) for better outcomes.

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