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Assessment and Gap Analysis regarding the work done by Auxiliary Nurse Midwives/Multipurpose Workers in strengthening Antenatal and Postnatal Care at Solan and Mandi District of Himachal Pradesh

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Abstract

Objectives: To assess the effect of skill development of frontline health workers on maternal and newborn care.

Methods*:* Cross-sectional study in selected blocks of two Districts of Himachal Pradesh to assess health care delivery by ANMs/MPWs on ANC & PNC.

Results: All ANMs/MPWs in Solan and Mandi district were equipped with knowledge to detect high risk pregnancy. All were skilled to detect sugar, hemoglobin, urine albumin levels and were trained to do Glucose Challenge Test (GCT). In District Solan Inj Dexamethsone was available as compared to the Health Blocks studied under District Mandi at 92.5% HSC it was available. Similarly in 68.3% of places in District Solan and in Mandi at 72.3% places Inj Gentamycin was available. Corresponding figures regarding availably of Tab Mesoprostol was 0% in District Solan and 21.2% in District Mandi. In District Solan 26.9% were having knowledge about managing PPH and corresponding figures in District Mandi was 74.4%. At the same time 34.9% of these workers in District Solan and 72.3% in District Mandi were confident to resuscitate newborn. Apart from this 100% of these workers in both Districts knew management of AEFI.

Conclusions: To achieve the best outcome all health care providers should aim for 100% achievement in all mentioned parameters. This requires frequent trainings, orientations and skill development of all heath care providers. Maintaining the records and reporting of all events is again one of the essential steps for gap analysis and initiate the interventions. Gap analysis will help to improve the health care delivery.

Keywords: ANM/MPW, ANC, PNC, GCT, AEFI

Introduction

Tremendous efforts have been put by government at community and facility based interventions to upgrade maternal and newborn care after 2010. This study is being designed to look into the various parameters to compare impact of skill development of frontline health workers i.e- Auxiliary Nurse Midwife (ANM), Multi-Purpose Worker (MPW).This study also includes coordination of ANM/MPW with ASHA (Accredited Social Health Activist) and Medical Officers in providing Antenatal Care and Postnatal Care including early registration, detection of high risk pregnancies, will definitely have an optimistic effect on Maternal and Newborn Care. Impact of trainings of ANM/MPW for giving Injection Dexamethasone in case of pre term labor pains (before 32 weeks of gestation) & giving

Injection Gentamycin and Syrup Amoxicillin to sick child before their referral to higher institutions will prove a great step in early interventions.

Poshan Abhiyaan (National Nutrition Mission) is India's flagship programme to improve nutritional outcomes for children, pregnant women and lactating mothers was launched in March 2018 with targeted approach to reduce the level of stunting, under-nutrition, anemia and low birth weight in children, adolescent girls, pregnant women and lactating mothers, thus holistically addressing malnutrition[1]. Himachal Pradesh is a hilly state with wide climatic variations and difficult areas to access. Not many studies have been carried out on this topic in the recent past especially in Himachal Pradesh so this research work will prove fruitful so as to assess the gap analysis and recommendations for betterment of delivery of health care services with respect to maternal and new born care.

Materials And Methods

Himachal Pradesh has 12 districts out of which Solan and Mandi Districts were selected by random technique. These districts are having almost similar population density, topography and climatic conditions. Majority of population in these districts is rural and there are certain areas in these districts which are hard to reach and inaccessible. As per Census-2011 the population of Himachal Pradesh is 6,864,602. Population of District Solan and Mandi is 576670 and 999777 respectively[2]. After obtaining the list of all Healthcare Blocks from office of Chief Medical Officer (CMO), 3 blocks were chosen from each of these Districts using lottery method. Health Blocks chosen from Solan District were Arki, Chandi and Dharmpur and with similar technique blocks chosen from Mandi District were Padhar, Katuala and Ratti Blocks.

Study design: cross-sectional study.

Study Period: 1st January 2019 to 31st December 2020

Inclusion Criteria: All Auxiliary Nurse Midwives (ANMs/MPWs) who gave informed consent during their monthly meetings at Block headquarters were included in study.

Exclusion Criteria: All Health Blocks except chosen blocks were excluded in study.

Sampling Technique: All ANM/MPWs who were present during monthly meetings at Block headquarters of their concerned blocks were given Questionnaire. Data was collected after explaining them purpose of study and obtaining informed consent. Regarding ASHA workers questions will be explained local language.

Study Tools: Data was collected after pre tested and pre designed Questionnaires for ANM/MPW.

Statistical Analysis: Data collected was 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: Assessment of ANM/MPW regarding knowledge about Antenatal Care

Total No. of ANM/MPW Participated		Solan (N=63)		Mandi (N=94)	
S. No.	Parameter	N	%	N	%
1.	Knowledge about benefits of early registration of Antenatal Case	63	100	94	100
2.	Knowledge about detection of high risk pregnancy	63	100	94	100
3.	Skilled to perform routine tests –i)Hemoglobin	63	100	94	100
	ii) RBS	63	100	94	100
	iii)Urine Albumin	63	100	94	100

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	& Sugar				
	iv)Glucose Challenge Test	**63**	**100**	**94**	**100**

Table 1/Fig. 1 reflects an excellence in delivering antenatal care by Axillary Nurse cum Midwife (ANM)/Multi-Purpose Workers (MPW). With their subsequent trainings and skill developments in detection of high risk pregnancy and performing various tests concerned with antenatal care bester results are being received. All workers in both study Districts were aware about benefits of early registration of Antenatal cases and 100% of them were equipped with knowledge to detect high risk pregnancy. Availability Glucometers at every Health Sub Centers (HSCs) which has made it compatible to do Random Blood Sugar test at grass root level. Henceforth 100 % of the workers in Solan and Mandi districts were skilled to RBS tests. Sahli's hemoglobin meter is also available at every HSC and 100% of ANMs/MPWs were skilled to perform tests to detect level of hemoglobin in both Districts under study. Similarly every ANM/MPW was taught to detect urine albumin and sugar by the detection kits provided to them, henceforth 100% of the ANMs/MPWs were detecting urine albumin in Solan and Mandi Districts of (H.P). In similar fashion they were trained to do Glucose Challenge Test (GCT) and 100% of them were skilled to do GCT in both the Districts

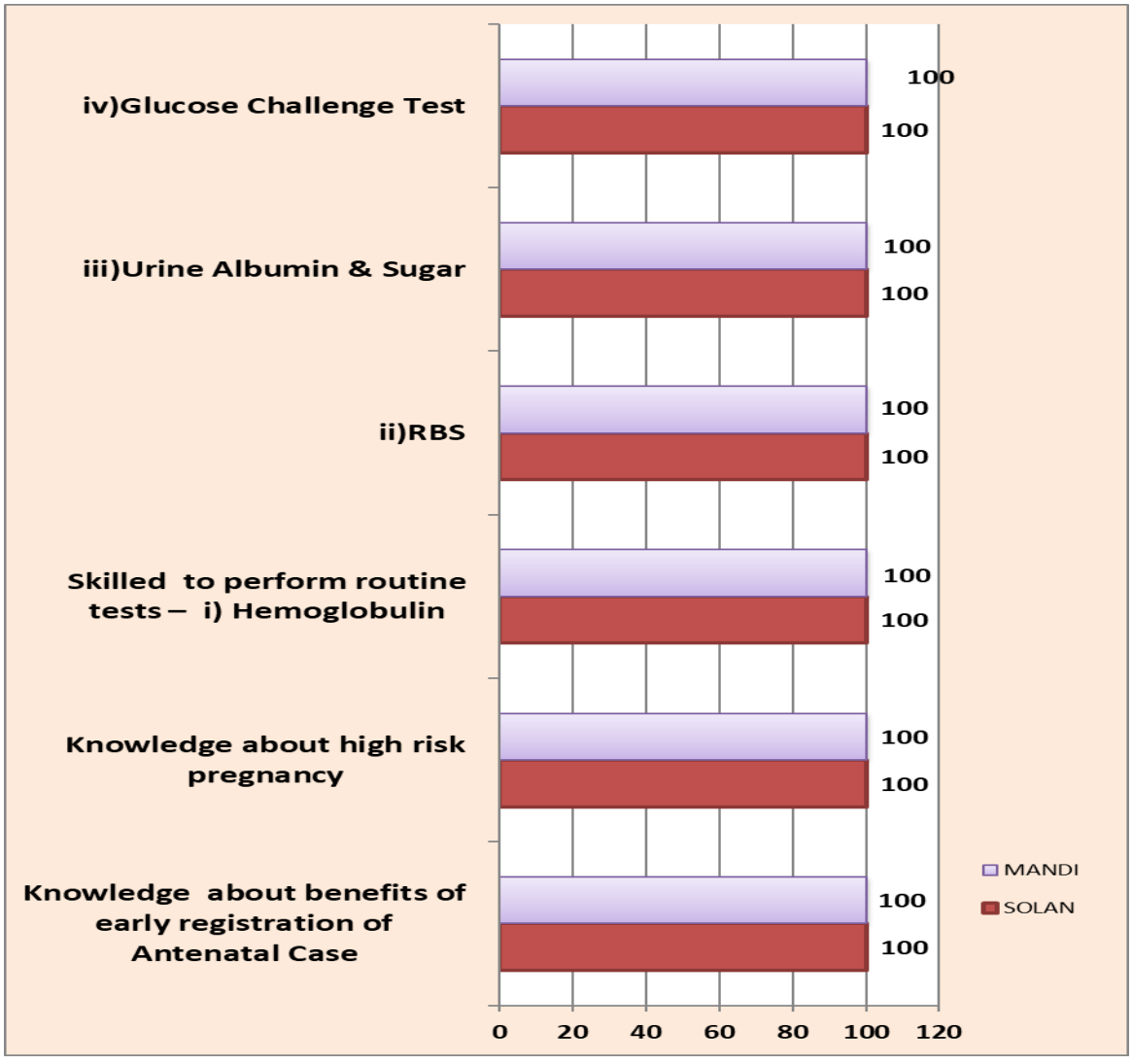

Fig. 1: Depicting assessment of ANM/MPW regarding knowledge about Antenatal Care

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Table 2: Assessment of ANM/MPW regarding knowledge about Post Natal Care

Total No. of ANM/MPW Participated		Solan (N=63)		Mandi(N=94)	
S. No.	Parameter	N	%	N	%
1.	Knowledge about how to detect Sick Newborn	63	100	93	98.9
2.	Knowledge about benefits of early and Exclusive Breast Feeding to neonate	63	100	94	100
3.	Knowledge to advocate pregnant mothers to dial 104 helpline number to seek ANC and PNC advise	63	100	81	86.2
4.	Knowledge about benefits of coordination of ASHA workers as a team member	60	95.2	90	95.7

Table 2/Fig. 2 emphasizes upon knowledge about detection of sick newborn so as to start early interventions to prevent morbidity and mortality at its earliest. In District Solan 100 of ANMs/MPWs were possessing knowledge to detect sick newborn where as in District Mandi 98.9% was able to detect sick newborn. Similarly early breast feeding helps to prevent Post-Partum Hemorrhage (PPH) in mother and helps baby to sustain suckling and rooting reflex in baby. Knowledge of early and exclusive breast feeding was possessed by 100% ANMs/MPWs in District Solan and this finger in District Mandi was 98.9%. After the start of Mother and Child tracking System (MCTS) and dialing its helpline number 104 has facilitated Antenatal and Postnatal care services. MCTS call services also provide guidelines in case of certain complications and also remind pregnant women and post-natal mothers when to get antenatal and post-natal checkups done. All 100% ANMs/MPWs were aware about this helpline facility in District Solan but 86.2 % were aware about this facility in District Mandi. After introduction of ASHA workers in 2014-15 in state it was found that 95.2 % of ANMs /MPWS were satisfied by their services in District Solan and 95.7% of these workers were getting coordination of ASHA workers in District Mandi.

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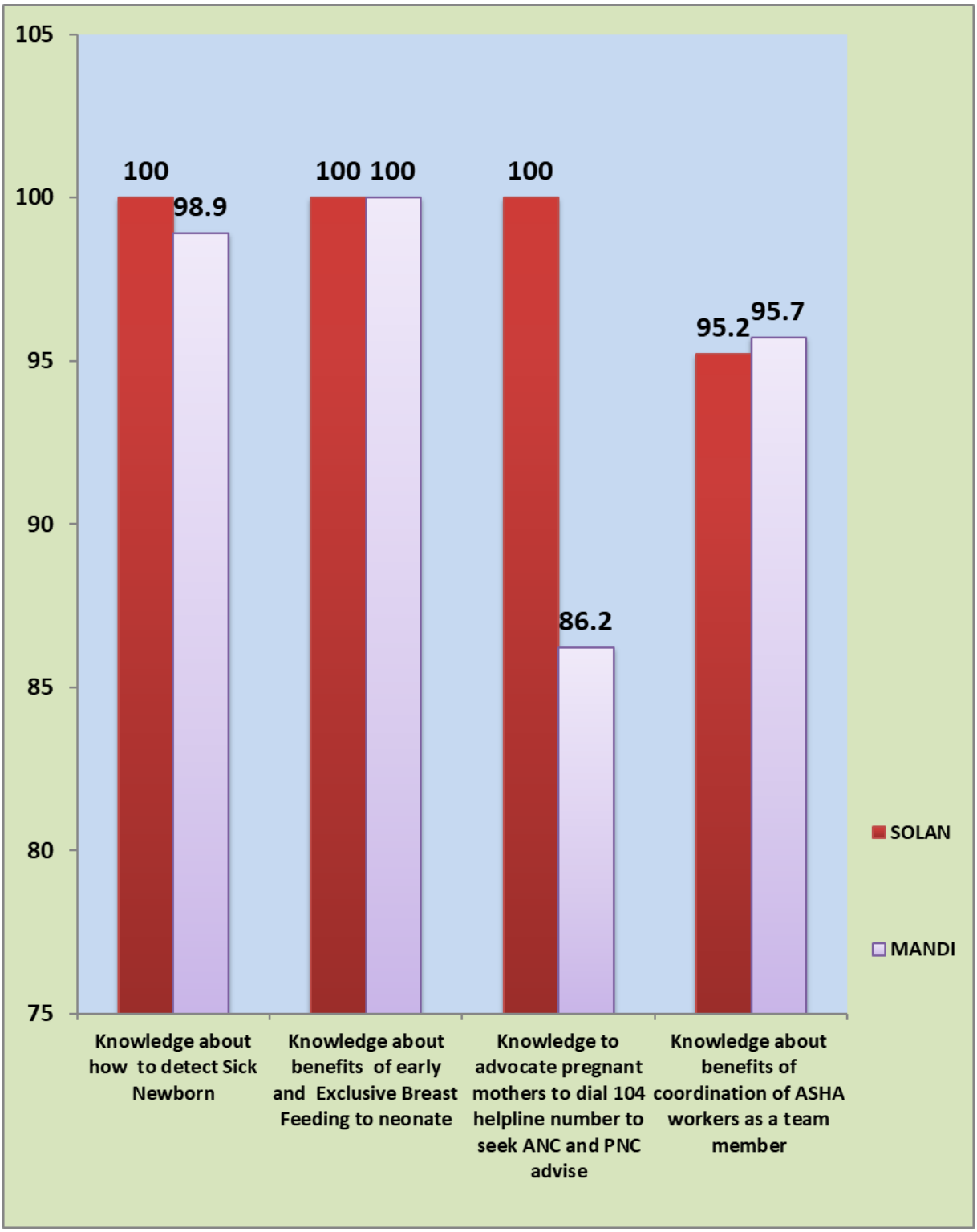

Fig. 2: Depicting assessment of ANM/MPW regarding knowledge about Post Natal Care in Solan and Mandi Districts of Himachal Pradesh (H.P).

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Table 3: Assessment of ANM/MPW regarding training about newer approaches of Antenatal and Post Natal Care

Total No. of ANMs/MPWs Participated		Solan (N=63)		Mandi (N=94)	
S. No.	Type of Training	N	%	N	%
1.	About use of Inj Dexamethsone in case of pre term labor pains	37	58.7	73	77.7
2.	About use of Inj Gentamycine for treatment of Sick Child	41	65.1	82	87.2
3.	Training about Navjat Shishu Suraksha Karykaram (NSSK)	17	27	73	77.7
4.	Training about Mother and Child Tracking System (MCTS)	94	100	63	100
5.	Training about Maternal Death Review (MDR) and Child Death Review(CDR)	88	93.6	63	100

Table 3/Fig. 3 reflects knowledge of ANMs/MPWs about their training how to use Inj Dexamethasone in case of pre term labour pains. As use of corticosteroids in preterm labor pains has proved a great blessing in foetal lung maturity, 58.7% of these workers in District Solan were trained for that and corresponding figures in District Mandi was 77.7%. In a similar training about use of Inj Gentamycin for treatment of sick child 65.1% workers in Solan were trained whereas 87.2% of these workers were trained in District Mandi. With respect to Navjat Shishu Suraksha Karyakaram (NSSK) 27% of ANMs/MPWs were trained in District Solan and 77.7% of them received training in Mandi District. For MCTS 100% workers of both Districts were trained. Maternal Death Review (MDR) and Child Death Review (CDR) have proven a great assist in evaluating the cause of death and subsequently take measures. 93.6% of ANMs/MPWs were trained about MDR and CDR in District Solan while in District Mandi 100% of these workers were trained.

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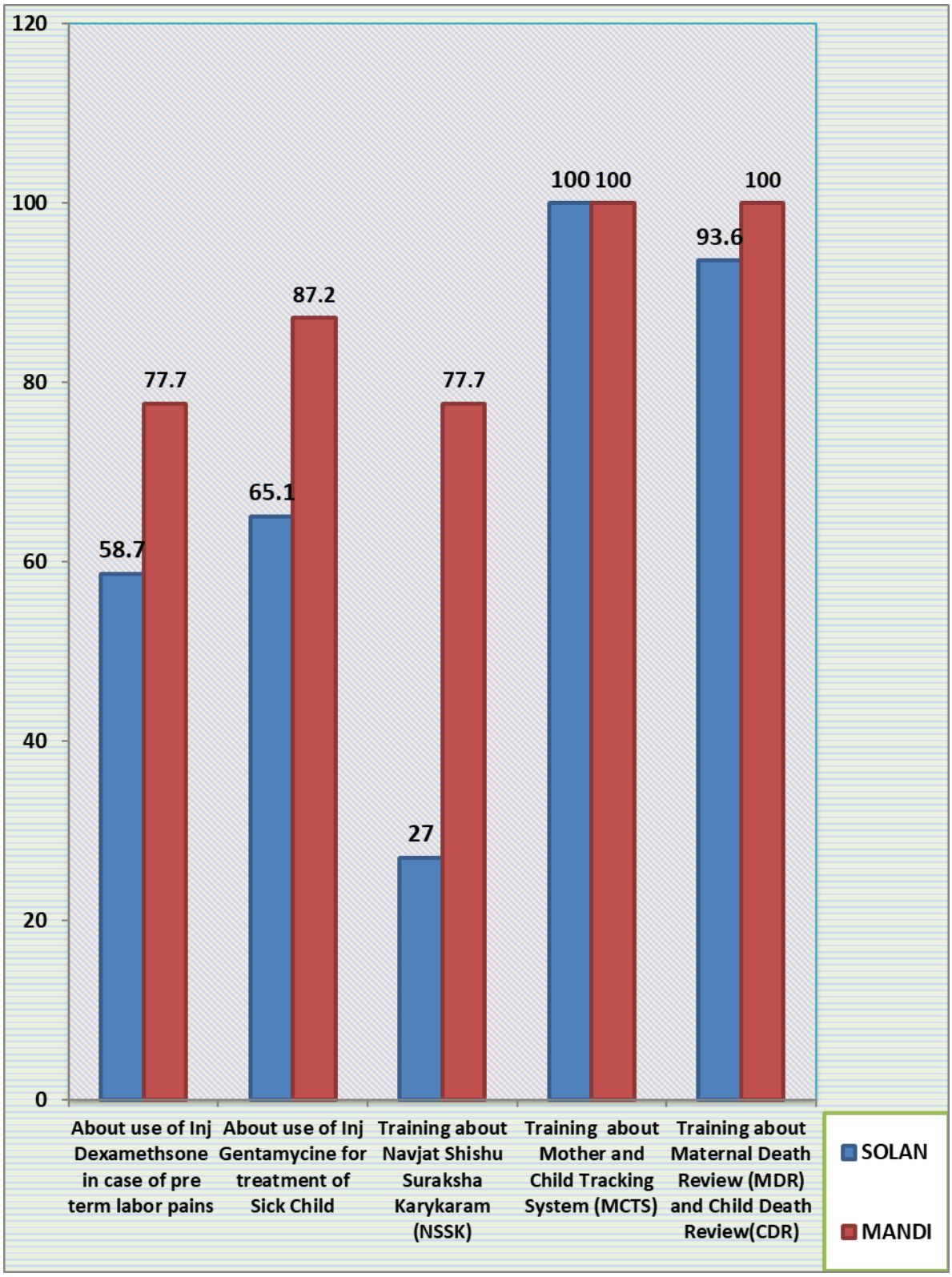

Fig. 3: Depicting assessment of ANM/MPW regarding training about newer approaches of Antenatal and Post Natal Care

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Table 4: Assessment about availability of essential drugs at Sub-centres concerned with Antenatal and Post Natal Care

Parameter		Solan		Mandi	
Total No. of ANM/MPW Participated		N=63		N=94	
S. No.	Name of Drug	N	%	N	%
1.	Inj Dexamethasone	52	82.5	87	92.5
2.	Inj Gentamycin	43	68.3	68	72.3
3.	Tab Misoprostol	0	0	20	021.2

Table 4/Fig. 4 reflects that in 82.5% of HSCs of Health blocks under study in District Solan Inj Dexamethasone was available as compared to the Health Blocks studied under District Mandi where at 92.5% in HSCs of study area it was available. Similarly in 68.3% of places in District Solan and in Mandi at 72.3% places Inj Gentamycin was available. Corresponding figures regarding availably of Tab Misoprostol was 0% in District Solan and 21.2% in District Mandi.

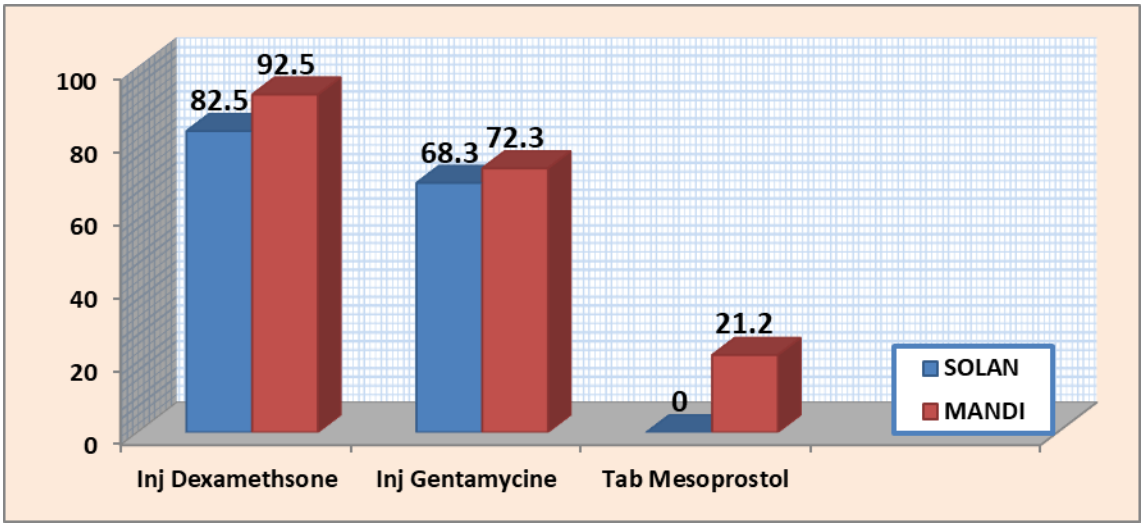

Fig. 4: Depicting assessment about availability of essential drugs at Sub-centres concerned with Antenatal and Post Natal Care

Table 5: Assessment of ANM/MPW regarding skills about Antenatal and Post Natal Care.

Total No. of ANM/MPW Participated		Solan (N=63)		Mandi (N=94)	
S. No.	Parameter	N	%	N	%
1.	Skilled to conduct normal delivery	30	47.6	58	61.7
2.	Skilled to manage Post-Partum Hemorrhage (PPH)	17	26.9	70	74.4

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3.	**Skilled to resuscitate newborn**	**22**	**34.9**	**68**	**72.3**
4.	**Skilled to manage adverse event following immunization**	**63**	**100**	**94**	**100**

Table 5/Fig. 5 describes skill development of ANMs/MPWs of District Solan with respect to conducting normal delivery was 47.6% at the same time 61.7% of the workers in District Mandi were confident to conduct deliveries from the blocks under study. It was further noticed that among these workers of District Solan 26.9% were having knowledge about managing PPH and corresponding figures in District Mandi was 74.4%. At the same time 34.9% of these workers in District Solan and 72.3% in District Mandi were confident to resuscitate newborn. Apart from this 100% of these workers in both Districts knew management of AEFI.

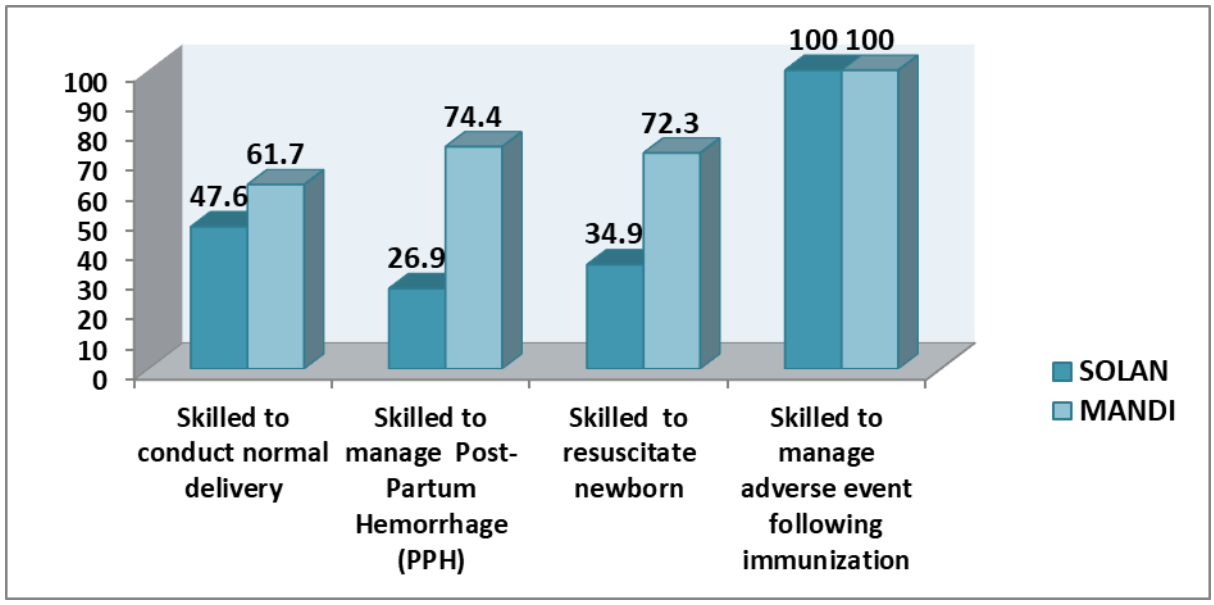

Fig. 5: Depicting assessment of ANM/MPW regarding skills about Antenatal and Post Natal Care

Discussion

In present study it was found that 100% of ANMs/MPWs knew benefits of early registration and were able to perform routine test like detection of hemoglobin, urine albumin and sugar, random blood Glucose in both the districts under study. M.M. Fernandez, *et al* conducted a study to assess the worldwide availability of misoprostol. Documenting the extent of misoprostol use in obstetrics-gynecology was difficult because the drug typically was unregistered for such indications. Data form 2002–2007 on annual sales (measured in weight) to hospitals and retail pharmacies, plus manufacturer prices were analyzed for medications containing misoprostol. Asia sold the most misoprostol-only drugs. Sales increased dramatically in Bangladesh (by 128%) and India (646%), where various low-price brands were sold. They further concluded that availability was improving in some low-income regions where misoprostol could significantly reduce maternal deaths due to postpartum hemorrhage and unsafe abortion.[3] Parashar A, *et al* carried out across-sectional study using the WHO cluster sampling method during the period October 2015 to January 2016 in Himachal Pradesh. Card availability was 81.1% and 95.9% recalled receiving the antenatal card and tetanus immunization during their respective pregnancies. 1,241 (98.5%) of the mothers had undergone full Antenatal check-ups (ANC) during their pregnancy. 210 (100%) had at least one ANC. All had undergone the ANC at the nearest government health facility. 1055 (83.7%) deliveries were institutional deliveries and 201 (16%) were home deliveries. Overall, deliveries conducted by skilled personnel stood at 91.3%.. The coverage targets for key RMNCH&A, interventions have been well achieved in the state.[4] Majella, *et al* a record-based longitudinal study was done during

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March 2018 in JIPMER Puducherry. Rural Health Centre and high-risk pregnancy was classified based on the guidelines from PMSMA 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.[5] Taqi, *et al* did a study to assess improvements in overall coverage of maternal and child health (MCH) services. These services are essentially required if India in general and Jammu and Kashmir state in particular have to attain the Sustainable Development Goals by the year 2030. Thus, the disparities in coverage of MCH services need to be assessed and addressed. The overall coverage gap in the state was 28.17%, and the size of coverage gap was largest for family planning interventions (55.8%), followed by treatment of sick children (26.95%) and maternal and newborn care (18.75%), and was smallest for immunization (10.5%). Their study demonstrates the district-level disparities in MCH service indicators which urgently need to be minimized in order to achieve the objective 3.1, 3.2, and 3.7 of the SDGs. Thery concluded that targeted intervention for further reducing the disparities is extremely important for the betterment of overall situation in the state.[6] Singh, *et al* did a survey in UP and found that majority of the pregnancies were registered (89%) and about 83% of women had reported utilization of any ANC services. Among women who reported utilization of any ANC services, 61% had availed at least three ANCs and only 6% had full Antenatal Care (which includes at least three ANC plus two TT injections plus 100+ IFA tablets). Coverage of TT immunization was reported by 96% of the women who had taken two TT injections during pregnancy and 66% had their PNC within a week after delivery, only 12% reported having three PNCs within a week. Home visit by any of the health worker within 42 days of delivery was reported by 59% of the women.[7]

Present study describes skill development of ANMs/MPWs of districts Solan and Mandi with respect to conducting normal delivery. Whereas 47.6 % of them were confident in this aspect in district Solan against a corresponding figure of 61.7% in district Mandi. It was further noticed that among these workers of District Solan 26.9 % were having knowledge about managing PPH and corresponding figures in District Mandi was 74.4 %. At the same time 34.9 % of these workers in District Solan and 72.3 % in District Mandi were confident to resuscitate newborn. Apart from this 100 % of these workers in both Districts knew management of AEFI. In a similar study a study. Pankaj Prasad, *et al* found ANMs (100%) in Damoh district enumerated PROM (Pre-Mature Rupture of Membrane) as complication during Pregnancy as against 76.67% in Sagar district. 60% of ANMs in Damoh district appreciated Fetal Heart Sound (FHS) correctly as compared to merely 16.67% in Sagar district.[8]

Conclusion

Maternal and newborn care begins prior to conception and to impart this more efforts are required to implement guidelines of National Health Mission regarding pre conventional supplementation of folic acid to prevent the neural tube defects of foetus. This will also aid in early registration of ANC cases. Scale up new operational guidelines allowing ANMs to treat neonates with suspected sepsis, where referral is not possible or refused, using injectable gentamicin and oral amoxicillin. As it was found in our study that 35 % ANMs/MPWs in Solan while 15 % in Mandi District were not trained for use of Inj Gentamycin. At certain places availability was also an issue. All ANMs/MPWs must be trained regarding use of Inj Dexamethasone and at certain places it was unavailable, the use of corticosteroids helps in the feotal lung maturity and prevents asphyxia.

Early antenatal registrations have one of the greatest advantages in order to detect high risk cases and plan early preventive measures. In this direction pre conceptional counselling will prove a blessing not only to prevent neural tube defect but also aid in early registrations. In present study it was found that 100% of ANMs/MPWs knew benefits of early registration and were able to perform routine tests like detection of hemoglobin, urine albumin and sugar, random blood sugar in both the districts under study.

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To achieve the best outcome all health care providers should aim for 100% achievement in all mentioned parameters. This requires frequent trainings, orientations and skill development of all heath care providers. Maintaining the records and reporting of all events is again one of the essential steps for gap analysis and initiate the interventions. Maintaining Eligible Couple Register will be of great significance in tracing women and providing spacing along with pre conceptional counselling.. In this study it was found that ASHAs, ANM/MPWs were having basic knowledge about ANC and PNC still there skill development to combat emergency obstetric complications is an utmost priority.

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