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Original Research Article

Study to assess the labour room standards of 24×7 PHCs in Kurnool district

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ABSTRACT

Background: Most of the causes of maternal and neonatal mortality were preventable through effective primary health care. Primary health care is essential to provide maternal and child health care especially in rural areas. The objective of this study is to assess the labour room standards of 24×7 PHCs in the Kurnool district.
Methods: This study is a facility based cross sectional study carried out from November 2014-May 2015 in administrative limits of Kurnool district. Questionnaire is attempted to assess the standards of labour room of that PHC by obtaining information about following standards - Infrastructure in labour room, Infection Prevention, Drugs and supplies etc.
Results: Majority (66.67%) of 24×7 PHCs had availability of <6 beds and 33.33% of 24×7 PHCs had availability of ≥6 beds. All PHCs had availability of stepping stool, ensured privacy during delivery and new born care corner. All PHCs had availability of running water facility, majority of PHCs (90.47%) had availability of antiseptics, 14/21 (66.67%) of PHCs had provision of HLD and 12/21 (57.14%) of PHCs had provision of sterilization facilities. no PHC had availability of functional ambulance and all PHCs were utilizing 108 facility for referral transport.
Conclusions: Availability of infrastructure facilities, infection prevention facilities, equipment and laboratory services were adequate in most of the PHCs. No PHCs were practicing segregation of bio medical wastes and there was deficiency in availability of antiseptics. No PHCs were provided with ambulance facility which was major concern in addressing the second delay.

Keywords: 24×7 PHC, Labour room, IPHS, Infrastructure

INTRODUCTION

Major causes of maternal mortality globally are due to direct causes i.e. obstetric complications of pregnancy, labour and puerperium to interventions or incorrect treatment.[1] The major cause of maternal mortality in India according to the SRS survey are hemorrhage- 38%, sepsis-11%, hypertension- 5%, obstructed labour-5%, abortion- 8% and other conditions-34%.[2] The major causes of neonatal mortality in India are 35% Preterm birth complications, 20% due to Birth asphyxia, 16% due to pneumonia, 15% due to sepsis, 9% due to congenital malformations, 2% due to diarrhea and 3% due to other causes.[3]

Most of the causes of maternal and neonatal mortality were preventable through effective primary health care. Primary health care is essential to provide maternal and child health care especially in rural areas. Staff of Primary health Centre should be trained to conduct

normal deliveries and identify and referral of high risk cases.

Delay model

The underlying factors or indirect causes or 'delays' in accessing healthcare during pregnancy, childbirth or thereafter are well recognized as contributing factors to many of the maternal and neonatal deaths, which may be in: 1) Recognizing danger signs and deciding to seek appropriate medical help for an obstetric emergency, 2) Reaching an appropriate obstetric facility, 3) Receiving adequate quality of care once a woman reaches the facility.[5]

Maternal mortality ratio of world was 210, in SEAR was 450, in India was 167, in Andhra Pradesh was 110 and Kurnool district was 135.[5-8]

In GGH, Kurnool mothers were coming in the late stages of labour increasing the chances of maternal and neonatal mortality. Causes of the both maternal and neonatal deaths were preventable if they were detected at early stages and referred at appropriate time and to appropriate facility. For early detection of the complications and providing appropriate treatment/ pre referral treatment in case of referral health personnel at the periphery should have adequate knowledge and skills to provide quality of care.

Though MMR and IMR of the Andhra Pradesh were less than the national average, but Kurnool district averages were more than state averages. The early neonatal mortality in Andhra Pradesh in rural area (28) was more than the national average (25) and there is non-achievement of goals of MDGs, National Health Policy and twelfth five year plan related to maternal and neonatal health. So there is need to address the difference of early neonatal mortality in rural areas of Andhra Pradesh and Maternal Mortality Ratio in Kurnool district. There were few studies available regarding labour room standards. The objective of this study is to assess the labour room standards of 24×7 PHCs in the Kurnool district.

METHODS

This study is a facility based cross sectional study carried out from November 2014-May 2015 in administrative limits of Kurnool district. Kurnool district is divided into Kurnool, Adoni and Nandyal revenue divisions. Study was conducted in 21, 24×7 PHCs 7 PHCs from each revenue division. There are total 83 PHCs in the Kurnool district, among them 40 are 24×7 PHCs distributed among 3 revenue divisions (In Kurnool division 11 PHCs, in Adoni division 14 PHCs, in Nandyal division 15 PHCs. Among forty, 24×7 PHCs 21 PHCs were selected by stratified random sampling and 7 PHCs from each division (strata) were selected by simple random sampling.

Inclusion criteria

Inclusion criteria were 24×7 PHCs where deliveries were being conducted.

Exclusion criteria

Exclusion criteria were 24×7 PHCs where deliveries were not being conducted.

A pilot study was conducted in Kallur PHC with the objective of standardizing the questionnaire and to know the feasibility of study. The study was taken up after the approval of the Ethical committee of the Kurnool medical college, Kurnool. Before the study permission was obtained from DM&HO, Kurnool. During the study, purpose of the study was explained to all medical officers and informed verbal consent was taken. Before the visit to PHC, medical officer of respective PHC was contacted and informed about the visit and medical officer was requested to gather staff nurses of that PHC. Each PHC was visited in person by investigator and standards were observed and medical officers and staff nurses were interviewed using a pretested, semi structured questionnaire.

Questionnaire is attempted to assess the standards of labour room of that PHC by obtaining information about following standards - Infrastructure in labour room, Infection Prevention, Drugs and supplies, Equipment at labour room and NBCC, Human resources availability, Training of health providers regarding MCH, HMIS (Health Management Information system), Services-Laboratory services, and referral services, Registers maintained.

Statistical analysis

Collected data was entered in Microsoft excel numbers and Percentages were calculated for qualitative data.

RESULTS

Table 1: Distribution of PHCs according to availability of bed strength and infrastructure facilities.

Infrastructure		No. of PHCs	%
Total no. of beds	<6 beds	14	66.67
	≥6 beds	7	33.33
Infrastructure facilities	Stepping stool	21	
	Privacy ensured	21	100
	Provision of light	20	95.23
	Electricity backup	20	95.23
	Toilet facility	20	95.23
	New born care corner	21	100

It was observed from the Table 1 that, majority (66.67%) of 24×7 PHCs had availability of <6 beds and 33.33% of 24×7 PHCs had availability of ≥6 beds. All PHCs had availability of stepping stool, ensured privacy during delivery and new born care corner. Majority of the PHCs (95.23%) had availability of provision of light, electricity backup and toilet facility in the labour room.

Table 2: Distribution of PHCs according to availability of infection prevention facilities in PHCs.

S. No	Infection prevention facilities	No. of PHCs with availability of facility	%
1	Availability of running water for hand washing	21	100
2	Availability of antiseptics*	19	90.47
3	Availability of HLD†	14	66.67
4	Availability of sterilization‡	12	57.14

*Antiseptics- savlon & Betadine; †HLD- Boiling, steaming, soaking in Chemical solution; ‡Sterilization – Autoclave.

It was observed from the Table 2 that, all PHCs had availability of running water facility, majority of PHCs (90.47%) had availability of antiseptics, 14/21(66.67%) of PHCs had provision of HLD and 12/21(57.14%) of PHCs had provision of sterilization facilities.

Table 3: Distribution of PHCs according to measures being done for infection prevention.

S. No	Measures	No. of PHC practicing	%
1	0.5% chlorine preparation	19	90.47
2	Hand washing	21	100
3	Wearing gloves	21	100
4	Gloves decontaminated after procedure	19	90.47
5	Antiseptics used for cleaning body	19	90.47
6	Antiseptics used for forceps dipped in solution	13	61.90
7	Instruments being sterilized	12	57.14
8	Wastes segregated	0	0

It was observed from the Table 3 that, in all PHCs, health personnel were wearing gloves and practicing hand washing before and after delivery and other procedures, in most of PHCs 19/21(90.47%) health personnel were practicing preparation of 0.5% chlorine solution, decontaminating gloves after procedures and were using antiseptics for cleaning body, in 13/21 (61.9%) health personnel were using antiseptics for dipping of forceps, in 12/21 (57.14%) health personnel were sterilizing instruments and no PHC was segregating wastes.

Table 4: Distribution of PHCs according to availability of different trays in PHCs.

S. No	Trays	Not available (%)	Partially available (%)	Completely available (%)
1	Delivery tray	0 (0)	21 (100)	0 (0)
2	Episiotomy tray	0 (0)	21 (100)	0 (0)
3	Baby tray	0 (0)	21 (100)	0 (0)
4	Medicine tray	0 (0)	21 (100)	0 (0)
5	Emergency drug tray	0 (0)	21 (100)	0 (0)
6	MVA tray	19 (90.47)	2 (9.53)	0 (0)

It was observed from the Table 4 that, no PHCs had availability of all trays completely. All PHCs had partial availability of delivery tray, episiotomy tray, baby tray, medicine tray and emergency drug trays, 9.53% PHCs had partial availability of MVA tray. 90.47% PHCs had non availability of MVA tray.

Table 5: Distribution of PHCs according to availability of labour room equipment.

S. No	Equipment	Available (%)	Working (%)
1	Stethoscope	21 (100)	21 (100)
2	Sphygmomanometer	21 (100)	21 (100)
3	Mckintosh	14 (66.66)	14 (66.66)
4	Mucus suction machine	15 (71.42)	15 (71.42)
5	Facility for oxygen administration	21 (100)	19 (90.47)
6	Adult thermometer	20 (95.23)	20 (95.23)

It was observed from the Table 5 that, all PHCs had availability of stethoscope, sphygmomanometer, and they were in working condition, 21/21 (100%) PHCs had facility for oxygen administration but only 19/21 (90.47%) were in working condition, 20/21 (95.23%) PHCs had mucous suction machine and in working condition.

From the Table 6 it was observed that, all PHCs had availability of open care systems, resuscitator, weighing scale, baby thermometer, light for examination and they were in working condition. 15/21 (71.42%) PHCs had availability of mucous suction equipment and in working condition. 19/21 (90.47%) PHCs had availability of hub cutter among them only 14/19 PHCs they were in working condition and only in 3 PHCs health personnel were using hub cutter.

Table 6: Distribution of PHCs according availability of NBCC equipment.

S. No	Equipment	Available (%)	Working (%)
1	Open care systems*	21 (100)	21 (100)
2	Resuscitator†	21 (100)	21 (100)
3	Weighing scale	21 (100)	21 (100)
4	Mucus Suction Equipment	15 (71.42)	15 (71.42)
5	Baby Thermometer	0 (0)	0 (0)
6	Light for examination	21 (100)	21 (100)
7	Hub cutter	19 (90.47)	14 (66.66)

*Radiant warmer, fixed height, with trolley, drawers, O_2-supply
†Silicone resuscitation bag and mask with reservoir hand-operated, neonate, 500 ml.

Table 7: Distribution of PHCs according to availability of NBCC consumables.

S. No	Consumables	Available (%)	Working (%)
1	I/V Cannulas	21 (100)	21 (100)
2	Dee Lee mucus extractor	21 (100)	21 (100)
3	Feeding tube	21 (100)	21 (100)
4	Oxygen catheter, Oxygen cylinder	21 (100)	19 (90.47)
5	Sterile gloves	21 (100)	21 (100)

It was observed from the Table 7 that, all PHCs had availability of IV cannula, Dee lee mucous extractor, feeding tube, sterile gloves and oxygen cylinder. But oxygen cylinder was in working condition in only 19/21 (90.47%). Main reason for not working was due to non filling of empty cylinder.

According to IPHS standards there should be at least 2 medical officers, 4 Staff Nurses, 1 Lab technician, 1 Pharmacist in each PHC. Accordingly there should be 42 medical officers (2×21), 84 staff nurses (4×21), 21 Lab technicians (1×21), 21 Pharmacists (1×21) in all 21 PHCs.

Table 8: Distribution of PHCs according to availability of human resources at PHCs.

S. No	Human resource	IPHS standards	Total number (%)	Available (%)
1	Medical Officers	2	42 (100)	33 (78.57)
2	Staff Nurses	4	84 (100)	58 (69.04)
3	Lab technicians	1	21 (100)	20 (95.23)
4	Pharmacists	1	21 (100)	21 (100)

Table 8 shows that there were only 78.57% of availability of medical officers, 69.04% availability of staff nurses, 95.23% availability of lab technicians, 100% availability of pharmacists.

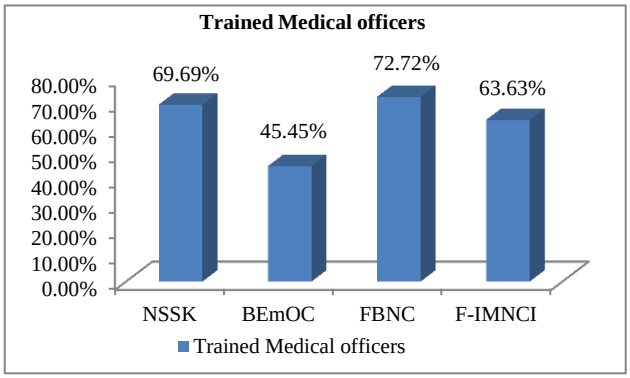

Figure 1: Training status of medical officers at PHCs regarding MCH programmes.
*N=33 total number of medical officers available at all PHCs

From the Figure 1 it was observed that, 24/33 (72.72%) medical officers were trained in FBNC, 23/33 (69.69%) medical officers were trained in NSSK and 21/33 (63.63%) medical officers were trained in IMNCI and 15/33 (45.45%) medical officers were trained in BEmONC. According to IPHS medical officers of PHCs should be trained in NSSK, BEmONC, FBNC and F-IMNCI regarding MCH care.

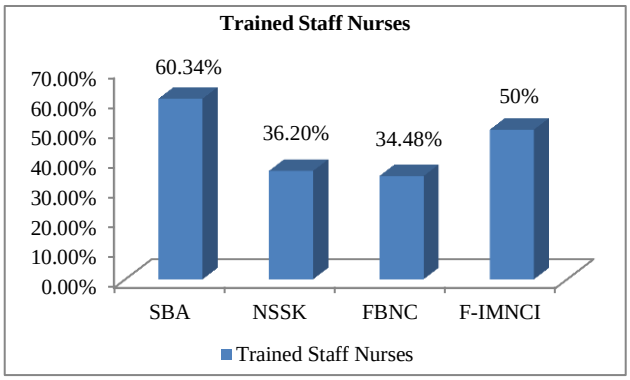

Figure 2: Training status of staff nurses at PHCs regarding MCH programmes.
*N=58, total number of staff nurses available at all PHCs.

It was observed from the Figure 2 that, 35/58(60.34%) staff nurses were trained in SBA, 29/58(50%) staff nurses were trained in F-IMNCI, 21/33 (36.20%) staff nurses were trained in NSSK and 20/58(34.48%) staff nurses were trained in FBNC. According to IPHS staff nurses of PHCs should be trained in SBA, NSSK, FBNC and F-IMNCI regarding MCH care.

It was observed from the Table 9 that, no PHC had availability of functional ambulance and all PHCs were utilizing 108 facilities for referral transport.

It was observed from the Table 10 that, 15/21(71.42%) PHCs had availability of functional computer,

13/21(61.9%) PHCs had availability of internet facility, 9/21(42.58%) PHCs were using internet services and no PHC had availability of data entry operator.

Table 9: Distribution of PHCs according to availability of referral transport services.

S. No	Service	Available	Percentage (%)
1	Functional ambulance	0	0
2	108 services	21	100

Table 10: Distribution of PHCs according to availability of HMIS.

S. No	HMIS	No. of PHCs	Percentage (%)
1	Availability of functional Computer	15	71.42
2	Availability of internet facility	13	61.90
3	Usage of internet services	9	42.58
4	Availability of data entry operator	0	0

Table 11: Distribution of PHCs according to availability of data recording systems.

S. No	Records	Maintained (%)	Updated (%)
1	Stock register	17 (80.95)	17 (80.95)
2	Case Sheets	13 (61.90)	11 (52.38)
3	ANC Register	21 (100)	21 (100)
4	JSY register	21 (100)	21 (100)
5	JSSK Register	21 (100)	21 (100)
6	High risk Register	19 (90.47)	19 (90.47)
7	Labour register	21 (100)	21 (100)
8	PNC Register	3 (14.28)	3 (14.28)
9	Referral in register	0 (0)	0 (0)
10	Referral out register	19 (90.47)	19 (90.47)

From the Table 11 it was observed that, all PHCs were maintaining ANC, labour, JSY and JSSK registers and they were updated. 19/21 (90.47%) PHCs were maintaining high risk and referral out registers and they were updated. 17/21 (80.95%) PHCs were maintaining stock register and they were updated. 13/21 (61.9%) PHCs were maintaining case sheets among them only 11/21 (52.38%) PHCs were updating case sheets. 3/21 (14.28%) PHCs were maintaining PNC register and it was updated. No PHC were maintaining referral in register.

Table 12: Distribution of PHCs according to availability of laboratory services regarding MCH care.

S. No	Lab services	No. of PHCs	Percentage (%)
1	Hemoglobin estimation	21	100
2	BT & CT	17	80.95
3	Rapid tests for pregnancy	21	100
4	Screening of HIV, HbsAg	21	100
5	Blood sugar	21	100
6	Blood grouping & typing	21	100
7	Urine albumin & sugar	21	100
8	Malaria tests	21	100
9	Microscopy	18	85.71

From the Table 12 it was observed that, all PHCs had availability of laboratory services regarding MCH care i.e. hemoglobin estimation, rapid test for pregnancy, screening of HIV, Hepatitis B, Blood sugar, blood grouping and typing, urine albumin and sugar, and malaria tests. 18/21 (85.71%) PHCs had microscopy facility, 17/21 (80.95%) PHCs had BT & CT facility.

DISCUSSION

It was observed from this study, 66.67% of 24×7 PHCs had availability of less than 6 beds and 33.33% of 24×7 PHCs had availability of more than or equal to 6 beds. These results were similar to the findings of the study conducted by Srinath et al it was observed that, 76% of PHCs were having beds in range of 4-6.[9] According to DLHS 4 report of Kurnool district, PHCs with at least 4 beds were 58.6%.[10] According to DLHS 4 report of Andhra Pradesh, PHCs with at least 4 beds were 84.0%.[10]

It was observed from the current study that, 20/21 (95.23%) PHCs had availability of electricity backup, out of which only 18/21 PHCs had electricity backup in working condition.

It was observed from the current study that, most of the PHCs (95.23%) had availability NBCC inside the labor room and 1/21(4.77%) had availability NBCC outside the labour room. According to IPHS standards NBCC is a space within the labour room, 20-30 sq ft in size, where a radiant warmer will be kept.[11] In a study conducted by Biswas et al it was observed that, 5/5 PHCs had water supply, 4/5 PHCs had electricity facility, 5/5 PHCs had labour room.[12] In a study conducted by Dhiman et al it was observed that, in Panchkula there was 97% of infrastructure facilities and in Mohali there was 84% of infrastructure facilities in labour room.[13] In a study conducted by Zaman et al it was observed that, in Dhubri

district 80% of PHCs had labour room facility and in Gulbarga district 90% of PHCS had labour room facility.[14]

It was observed from the present study that, all PHCs had availability of running water facility, majority of PHCs (90.47%) had availability of antiseptics, 14/21(66.67%) PHCs had provision of HLD and 12/21(57.14%) PHCs had provision of sterilization facilities. Similar findings were observed in a study conducted by Biswas et al it was observed that, 5/5 PHCs had water supply.[12]

It was observed from this study that, all of the PHCs had availability of stethoscope, sphygmomanometer, and in working condition, 100% PHCs had facility for oxygen administration but only 90.47% were in working condition, 95.23% PHCs had suction machine and in working condition. These findings were higher compared to other studies. In a study conducted by Srinath et al it was observed that, 71% of PHCs had availability of equipment.[9] In a study conducted by Dhiman et al it is observed that, in Panchkula there was 83% had availability of Equipment and in Mohali there was 83% had availability of equipment in labour room.[13]

From the current study it was observed that, 100% PHCs had availability of open care systems, resuscitator, weighing scale, baby thermometer, light for examination and they were in working condition. 71.42% PHCs had availability of mucous suction equipment and in working condition. 90.47% PHCs had availability of hub cutter among them only 14/19 PHCs they were in working condition and only in 3 PHCs health personnel were using hub cutter. It was observed from this study that, all PHCs had availability of IV cannula, Dee lee mucous extractor, feeding tube, sterile gloves and oxygen cylinder. But oxygen cylinder was in working condition in only 19/21 (90.47%). Main reason for not working was due to non-filling of empty oxygen cylinder. In a study conducted by Sodani et al it was observed that, 15.8% PHCs had open care system, 26.3% PHCs had availability of resuscitator, 57.9% PHCs had availability of weighing scale, 52.6% PHCs had availability of thermometer, 84.2% PHCs had availability of hub cutter.[15]

From the present study it was observed that there were only 78.57% of availability of medical officers, 69.04% availability of staff nurses, 95.23% availability of lab technicians, 100% availability of pharmacists. In a study conducted by Sodani et al it was observed that, there was 60.5% medical officers were available in 19 PHCs, 83.2% staff nurse were available, 47.4% lab technicians were available and 10.2% pharmacists were available which was contradicting to present study.[15] Similar findings were observed in a study conducted by Ninama et al, which shows 92.8% medical officers were available, 100% lab technicians were available and 100% pharmacists were available.[16] Similar findings were observed in a study conducted by Zaman et al which shows, there was 80% availability of medical officers in Dhubri district and 90% availability of medical officers in Gulburga district, 80% availability of staff nurses in Dhubri district and 50% availability of staff nurses in Gulburga district, 100% availability of Pharmacists in Dhubri district and 60% availability of Pharmacists in Gulburga district, 100% availability of lab technicians in Dhubri district and 80% availability of lab technicians in Gulburga district.[14] In a study conducted by Biswas et al it was observed that there was 5/5 PHCs with availability of medical officers according to IPHS norms, 3/5 PHCs with availability of staff nurses according to IPHS norms, 3/5 PHCs with availability of pharmacist according to IPHS norms, 4/5 PHCs with availability of lab technicians according to IPHS norms.[12] In a study conducted by Dhiman et al it was observed that there was 81% availability of human resources in Pachkula and 59% availability of human resources in Mohali.[13] In a study conducted by Srinath et al it was observed that there was 45% availability of man power.[9]

From the current study it was observed that, 24/33 (72.72%) medical officers were trained in FBNC, 23/33 (69.69%) medical officers were trained in NSSK and 21/33 (63.63%) medical officers were trained in IMNCI and 15/33 (45.45%) medical officers were trained in BEmONC. According to IPHS medical officers of PHCs should be trained in NSSK, BEmONC, FBNC and F-IMNCI regarding MCH care. In a study conducted by Ninama it was observed that 85.7%, 57.1%, 85.7% and 57.1% medical officers were trained in antenatal care, SBA, IMNCI and Newborn Care respectively.[16]

It was observed from present study that 35/58 (60.34%) staff nurses were SBA trained, 29/58 (50%) staff nurses were trained in F-IMNCI, 21/33 (36.20%) staff nurses were trained in NSSK and 20/58 (34.48%) staff nurses were trained in FBNC. According to IPHS staff nurses of PHCs should be trained in SBA, NSSK, FBNC and F-IMNCI regarding MCH care. In a study conducted by Ninama it was observed that 100% staff nurses were trained in antenatal care, 71.42% staff nurses were trained in SBA, 100% staff nurses were trained in IMNCI and 50% staff nurses were trained in newborn care.[16]

It was observed from this study that, none of the PHCs had availability of Functional Ambulance and all PHCs were utilizing 108 facility for referral transport. In a study conducted by Misra et al it was observed that, there was 47.2% of mothers reached PHCs by 108 services and 11.1% mothers reached PHCs by private vehicle.[17] In a study conducted by Zaman et al it was observed that, there was 100% availability of vehicle in Dhubri district and 30% availability of vehicle in Gulburga district.[14]

From the current study it was observed that, 21/21(100%) PHCs were maintaining ANC, labour, JSY and JSSK registers and they were updated. 19/21(90.47%) PHCs were maintaining high risk and referral out registers and they were updated. 17/21 (80.95%) PHCs were

maintaining stock register and they were updated. 13/21 (61.9%) PHCs were maintaining case sheets among them only 11/21 (52.38%) PHCs were updating case sheets. 3/21 (14.28%) PHCs were maintaining PNC register and it was updated. No PHC were maintaining Referral In register. None of the PHCs were maintaining separate referral out registers for mother and newborns. In a study conducted by Ray et al it was observed that, none of the PHCs were maintaining PNC register.[18] According to DLHS 4 report of Kurnool district, Percentage of women who received JSY benefits for home delivery were 4.5% and for institutional delivery were 14.5%.[10] According to DLHS 4 report of Andhra Pradesh, Percentage of women who received JSY benefits for home delivery were 5.4% and for institutional delivery were 21.9%.[10]

It was observed from the present study that, 15/21 (71.42%) PHCs had availability of functional computer, out of which 13 (61.9%) PHCs had availability of internet facility, out of which 9 (42.58%) PHCs were using internet services and none of PHC had availability of data entry operator. In a study conducted by Prahlad Rai Sodani et al it was observed that, 5.3% PHCs had availability of E-mail facility.[15] In a study conducted by Zaman et al it was observed that, there was 80% PHCs had availability of computer in Dhubri district and 0% PHCs had availability of computer in Gulburga district.[14]

From the this study it was observed that, all of the PHCs had availability of laboratory services i. e Hemoglobin estimation, rapid test for pregnancy, screening of HIV, Hepatitis B, Blood sugar, blood grouping and typing, urine albumin and sugar, and malaria tests. 18/21 (85.71%) PHCs had microscopy facility, 17/21 (80.95%) PHCs had BT & CT facility. In a study conducted by Ninama et al it was observed that, there was 71.42% PHCs had availability of Blood grouping, 14.28%, 100%, 0% and 42.85% PHCs had availability of gram staining, rapid test for pregnancy, RPR test and rapid HIV tests respectively.[16] According to DLHS 4 report of Kurnool district, pregnant women who had blood tested for hemoglobin were 91.2%.[10] According to DLHS 4 report of Andhra Pradesh, pregnant women who had blood tested for hemoglobin were 85.6%.[10]

CONCLUSION

From the above findings it was concluded that availability of infrastructure facilities, infection prevention facilities, equipment and laboratory services were adequate in most of the PHCs. No PHCs were practicing segregation of bio medical wastes and there was deficiency in availability of antiseptics. There was deficiency of medical officers, staff nurses and pharmacists (human resources) according to IPHS and inadequacy of training of health personnel which was major concern for delivery of available services. No PHCs were provided with ambulance facility which was major concern in addressing the second delay. No trays were available completely and only one PHC was conducting assisted deliveries.

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Ethical approval: The study was approved by the Institutional Ethics Committee from IEC, KMC, Kurnool

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