



Technical Report

Operational Status of Special Newborn Care Units (SNCUs) in India

January-March, 2011

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List of Acronyms

CHC	Community Health Center
FBNC	Facility Based New Born Care
HBNC	Home Based New born Care
HR	Human Resources
IMR	Infant Mortality rate
IMNCI	Integrated management of Neonatal and Childhood Illnesses
LBW	Low Birth weight
NCHRC	National Child Health Resource Center
NE	North Eastern
NIHFW	National Institute of Health and Family Welfare
NICU	Neonatal Intensive Care Unit
NNF	National Neonatology Forum
NRHM	National Rural Health Mission
NMR	Neonatal Mortality Rate
MCH	Maternal Child Health
MDG	Millennium Development Goals
MoHFW	Ministry of Health and Family Welfare
PHC	Primary Health Center
SNCUs	Special New born Care Units
SRS	Sample Registration System

INTRODUCTION

India carries the highest single share of neonatal deaths in the world with around 30% of the global neonatal deaths. Of the 26 million babies born every year in India, about 940,000 babies die before the age of one month (1). According to the SRS 2009 report, neonatal mortality contributes to about two-thirds of all infant deaths (NMR 34/1000 live births, IMR 50/1000 live births) and about half of under-5 deaths in the country (U-5MR 69/1000, SRS 2008). Though IMR has shown a steady decline over the last few years (from 58/1000 in 2004 to 50/1000 in 2009), the decline in NMR has been disproportionately slow (from 37/1000 in 2004 to 34/1000 in 2009).

There is a growing recognition that in order to reduce the under-5 and infant mortality rates in the country, a significant decline in neonatal mortality rate is required – especially reduction of deaths within the first one week of life. Under the Janani Suraksha Yojna scheme of the National Rural Health Mission (NRHM), there has been a significant increase in institutional deliveries and influx of mothers and newborns in the facilities (2). In addition the Integrated Management of Neonatal and Childhood Illness (IMNCI) and the Home Based Newborn Care (HBNC) programs have been operationalized. All these programs have resulted in an increasing number of sick newborns presenting to district hospitals and other referral hospitals. However, essential new born care and care of the sick new born have been found to be lacking in the existing health facilities (2).

The Ministry of Health & Family Welfare, Government of India (MoHFW, GoI) is committed to achieve the MDG 4 goal and newborn care has nowadays become central to its Child Health Strategy under NRHM and RCH II. One of the key initiatives to achieve this is the establishment of **Facility Based Newborn Care (FBNC)** services at different levels of health care facilities. The following table describes the required facilities at different levels:

Health Facility	All Newborns at birth	Sick Newborns
Primary Health Centre (PHC)/ Sub-centre (SC) identified as MCH Level I	Newborn Care Corner (NBCC) in labor rooms	Prompt Referral
Community Health Centre (CHC)/ First Referral Unit	Newborn Care Corner (NBCC) in labor rooms and in Operation Theatre (OT)	Newborn Stabilization Unit (NBSU)

(FRU) identified as MCH Level II		
District Hospital identified as MCH Level III	Newborn Care Corner (NBCC) in labor rooms and in Operation Theatre	Special Newborn Care Unit (SNCU)

Source: FBNC Guidelines 2011, MOHFW

Facility-based interventions have the potential of reducing neonatal mortality by 25-30% (3). Under the FBNC program, **Special Newborn Care Units (SNCUs)** are being established at any health facility where the delivery load is more than 3000 per year. This would cover most district hospitals and some of the sub-district hospitals. SNCU is special unit in the vicinity of the labour room which will provide special care for sick newborns, that is, provide all type of neonatal care except for assisted ventilation and major surgeries.

In order to facilitate the states in planning, establishment, operationalisation and monitoring of newborn care facilities at various levels, the MoHFW has recently developed an **Operational Guideline on FBNC**. According to it, the cost of establishing an SNCU would be approx Rs 51, 00,000 (Rupees fifty one lacs only). Moreover under the 12th Five Year Plan, it is now being planned to increase the number of SNCUs across the country to 943 which would include medical colleges also. This requires a huge investment in terms of money and other resources.

Since SNCUs are expected to play a key role in saving newborn lives and the huge investment they require, it becomes essential to monitor their functioning and ensure newborn care services are provided effectively. A formal system of regular monitoring of FBNC in the country was discussed at the recently held National Child Health Review cum Workshop in June 2011. In the meantime, the Child Health division of MoHFW has started collecting relevant information from the states using an in-house reporting format.

This report aims to review the existing status of SNCUs in the country utilizing the data collected from the states for the time period of 3 months (January-March 2011). Its specific objectives include

- to review the operational status of the SNCUs in the country
- to enlist the number of beds, doctors and nurses available in these units
- to assess the availability and adequacy of HR (doctors, nurses) and their training status
- to evaluate utilization of services in these units using standard indicators

METHODOLOGY

The FBNC guideline has recommended a uniform system of record keeping and monitoring. Under the system, a case-recording sheet would be filled for each admitted newborn and each unit will submit monthly report to the district in a standardized reporting format using these case sheets. This report would help in generating a list of standard/dash board indicators for reviewing the performance of each SNCU. However this system will take some time to operationalize.

Since last year, the Child Health division of the MoHFW had started collecting information on the status of SNCUs using an in-house reporting format. The States were asked to collect the data from SNCUs, collate it, and then send it to the MoHFW in the prescribed format. These reports were forwarded to the National Child Health Resource Centre (NCHRC) at the National Institute of Health & Family Welfare (NIHFW) for review and detailed analysis. This report analyzes and presents the result of the data collected for the quarter **January 2011 to March 2011**.

The information received from the states was checked for completeness and accuracy. In case of missing data or discrepancy, individual SNCUs and/or States were either visited or contacted through emails and telephone calls for further clarification. The corrected information was then entered into Excel sheets and double checked for accuracy of data entry. Data was analyzed using simple statistical tools and pre-defined indicators were calculated. Results of these indicators are usually presented as proportions. As the data was collected for a 3 month period, the results are presented taking the average of these three months.

Information collected in the prescribed format was not sufficient to calculate all the standard indicators as given in the FBNC guideline. This report describes the following indicators:

- a) Operational status of SNCUs
- b) Bed Position and Human Resources
 - Number of beds, doctors and nurses
 - Adequacy of HR and Training status
- c) Service Utilization Indicators
 - Inborn Admission Rate
 - Proportion of admissions which are inborn
 - Proportion of LBW admissions

- Referral rate
- Mortality rate
- Admission load per bed

It was not possible to calculate all the indicators for each state and each SNCU since the required data was either missing or inadequate despite contacting the States. Wherever this problem arose, it has been highlighted under the relevant section.

While presenting the results/key findings below, effort has been made to highlight the differences between the High Focus States and the Non-High Focus States, and between the different states wherever it was possible. In order to review the functioning of SNCUs and learn from States which have taken the lead in establishing SNCUs, indicators have also been compared between those states which have operationalized more than 50% of the proposed SNCUs provided the number of such operational units is more than 10.

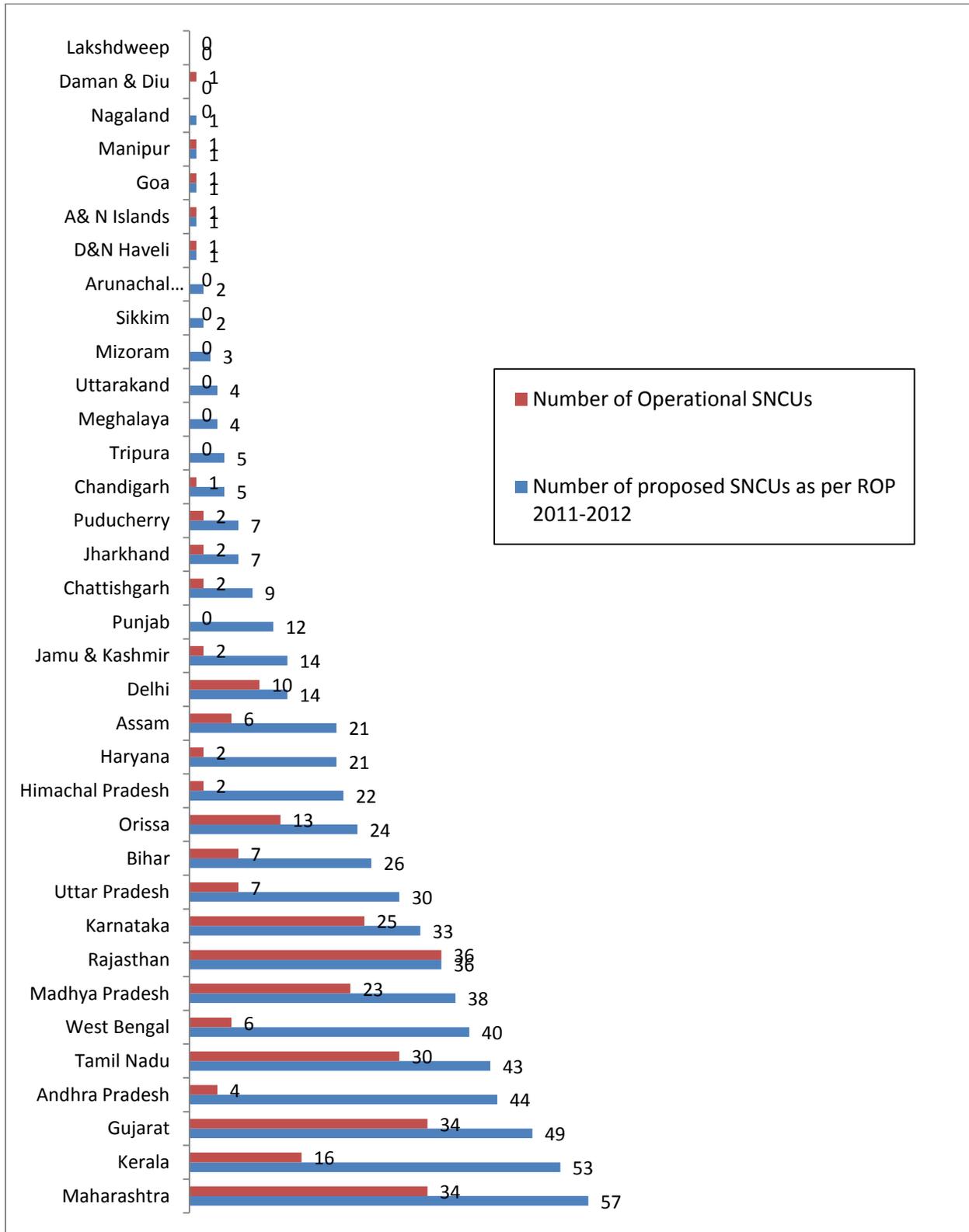
KEY FINDINGS

Data regarding the operational status of SNCUs was obtained from all the States and Union Territories, and it also included information collected earlier by the MoHFW during the quarter October-December 2010. However detailed information for the quarter January-March 2011 in the prescribed format sent by the MoHFW was received from 164 SNCUs across 16 states, which included the 10 High Focus States (5 from NE & 5 Non NE states) and 6 Non-High Focus States. Since the required data was either missing or inadequate, it was not possible to calculate all the indicators for each state and each SNCU and this has been highlighted under the relevant sections. Another observation was the confusion regarding designation of a unit as an SNCU or a NBSU depending upon bed strength and services provided. Few states already had functional units with bed strength less than the proposed number of 12. In order to be consistent, any unit with bed strength less than 4 was not considered an SNCU for this report and its data was not utilized for analysis.

Operational Status of SNCUs

The total number of SNCUs proposed to be established in the country by the end of 2011-2012 is **632** (Source: ROP 2011-2012 of State PIPs, NRHM). Compared to the number of proposed SNCUs, **269 SNCUs (42.6%)** were found to be operational as on March 2011. **Figure 1** shows the number of operational SNCUs in each state/UT against the proposed SNCUs.

Figure 1: Operational SNCUs in each State/UT



The distribution of operational SNCUs in the country is given in **Table 1**. The percentages of operational SNCUs in the High Focus Non-NE States and the Non High Focus States/UTs were **similar** (44.8% and 43.9% respectively), and **much higher compared to that in the High Focus NE States** (18%). Out of 18 states (8 High Focus & 10 Non High Focus) which had proposed more than 10 SNCUs to be established by 2011-2012, **Rajasthan** (with 36 SNCUs) is the only state with all the units operational.

Table 1: Distribution of Operational SNCUs in the country

States	No. of SNCUs reported Operational	No. of SNCUs proposed to be Operational by 2011-12	% of SNCUs Operational (as on March 2011)
High Focus Non-NE States (10)			
Bihar	7	26	26.9
Rajasthan	36	36	100
Himachal Pradesh	2	22	9.1
Jammu & Kashmir	2	14	14.3
Uttar Pradesh	7	30	23.4
Madhya Pradesh	23	38	60.5
Orissa	13	24	54.2
Chhattisgarh	2	9	11.1
Jharkhand	2	7	28.6
Uttarakhand	0	4	0
TOTAL	94	210	44.8
High Focus NE States (8)			
Assam	6	21	28.6
Arunachal Pradesh	0	2	0
Sikkim	0	2	0
Meghalaya	0	4	0
Nagaland	0	1	0
Mizoram	0	3	0
Tripura	0	5	0
Manipur	1	1	100
TOTAL	7	39	23.1
Non High Focus Large States (10)			
Maharashtra	34	57	59.6
Andhra Pradesh	4	44	9.1
Gujarat	34	49	69.4
Punjab	0	12	0
Goa	1	1	100
Kerala	16	53	30.2
Karnataka	25	33	75.6
Haryana	2	21	9.5
Tamil Nadu	30	43	58.1
West Bengal	6	40	15
TOTAL	152	353	43.1

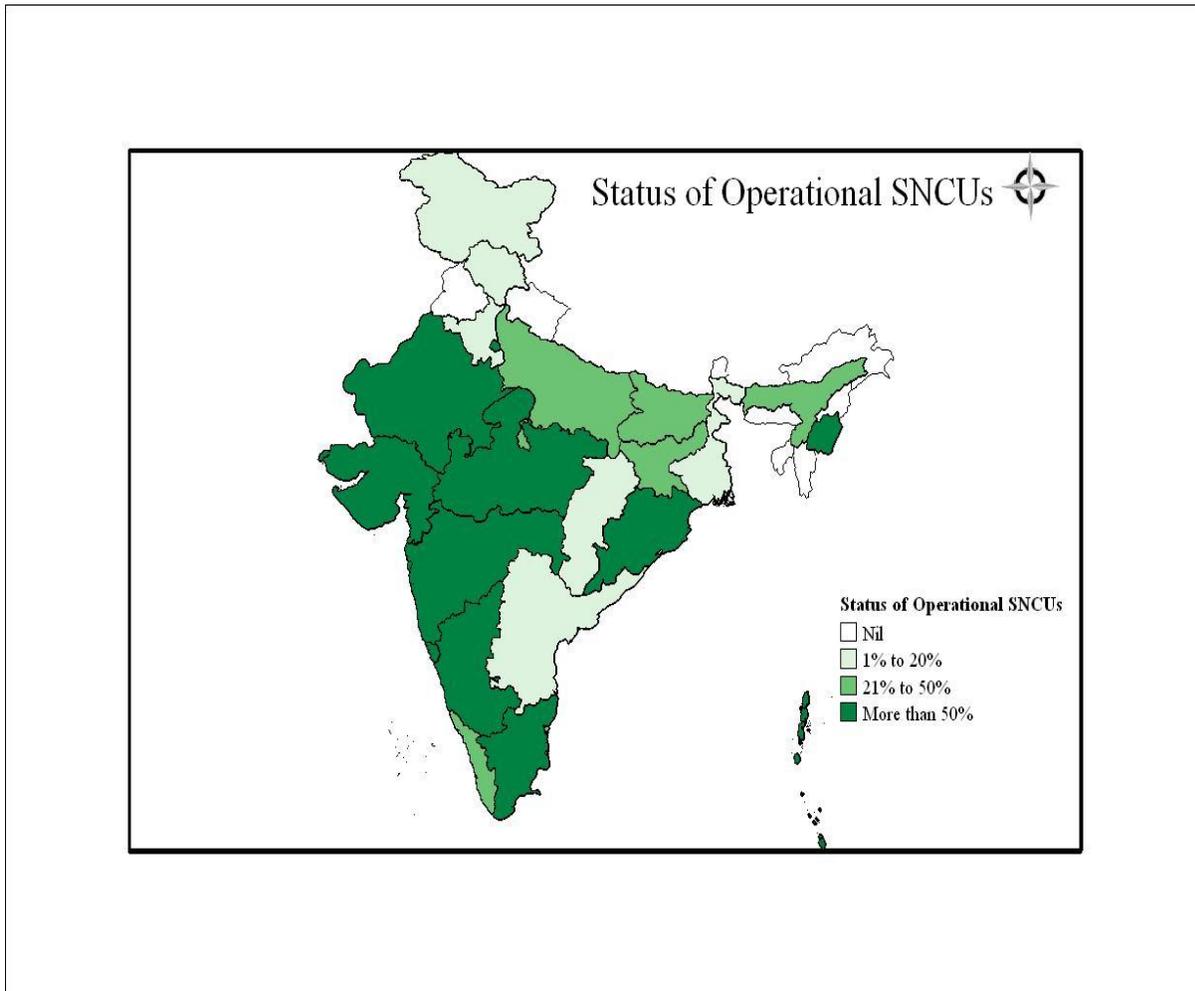
Non High Focus UT & Small States (7)			
A & N Islands	1	1	100
Chandigarh	1	5	20
D & N Haveli	1	1	100
Delhi	10	14	71.4
Lakshadweep	0	0	--
Puducherry	2	7	28.6
Daman & Diu	1	0	--
TOTAL	16	30	53.3
TOTAL (All India)	269	632	42.9

Figure 2 shows the distribution of States according to the proportion of operational SNCUs. Apart from Rajasthan, there are **seven (7) other states** with **more than 50% SNCUs operational** and where the **number of operational units is more than 10**. These include Madhya Pradesh and Orissa from the High Focus States, and Maharashtra, Gujarat, Karnataka, Tamil Nadu & Delhi from the Non High Focus States.

Among the **High Focus States from the non-NE region**, Uttarakhand did not have a single operational SNCU while Himachal Pradesh (9.1%), Chhattisgarh (11.1%) and Jammu & Kashmir (14.3%) were the other three states with less than 20% operational SNCUs. In the **High Focus NE region**, Assam has less than one-third SNCUs operational while there is not a single operational SNCU in the 6 states of Arunachal Pradesh, Sikkim, Meghalaya, Nagaland, Mizoram and Tripura. Manipur has proposed a single SNCU and it is operational.

Among the **Non High Focus States/UTs**, Punjab has not reported a single operational SNCU while Haryana (9.5%), Andhra Pradesh (9.1%) and West Bengal (15%) have less than 20% operational units.

Figure 2: Distribution of Operational SNCUs in the country



Bed position and Human Resources (doctors, nurses)

Number of Beds, Doctors and Nurses

The FBNC guideline recommends that the minimum number of beds for an SNCU at the district hospital should be 12. To provide round-the-clock services, this 12-bedded SNCU (plus 4 beds for step-down area) should be staffed by a dedicated and trained team consisting of 3-4 doctors (1 doctor providing back-up of 8 hours, plus provision for leave), 10-12 staff nurses/auxiliary nurses (3 nurses in each shift of 8 hours each, plus provision for leave and contingency), and other support staff.

Table 2: Number of Beds, Doctors and Nurses in SNCUs

State (no. of operational SNCUs)	Avg. number of beds per SNCU (Total beds/ SNCU)	Avg. number of Drs per SNCU (Total Drs/ SNCU)	Avg. number of Nurses per SNCU (Total Nurses/ SNCU)
High Focus Non NE States			
Jharkhand (2)	14 (28/2)	3 (6/2)	11.5 (23/2)
Madhya Pradesh (23)	20 (460/23)	3.5 (80/23)	10.1 (232/23)
Chhattisgarh (2)	22.5 (45/2)	3.0 (3/1)*	6.0 (6/1)*
Rajasthan (36)	12.8 (459/36)	2.2 (57/26)*	7.0 (175/25)*
Bihar (7)	9.3 (65/7)	3.2 (19/6)*	8.2 (49/6)*
Total (70)	15.1 (1057/70)	2.8 (165/58)*	8.5 (485/57)*
High Focus NE States			
Assam (6)	15.9 (105/6)	3.3 (20/6)	10.8 (65/6)
Arunachal Pradesh (0)	NA	NA	NA
Tripura (0)	NA	NA	NA
Manipur (1)	6.0 (6/1)	*	*
Mizoram (0)	NA	NA	NA
Total (7)	15.9 (111/7)	3.3 (20/6)*	10.8 (65/6)*
Non High Focus States			
Gujarat (23)	12.4 (235/19)*	5.1 (96/19)*	10.6 (201/19)*
Goa (1)	3 (3/1)	6 (6/1)	4 (4/1)
Karnataka (25)	16.1 (339/21)*	3.4 (78/23)*	10.7 (256/24)*
Haryana (2)	10.5 (21/2)	2.5 (5/2)	7 (14/2)
Tamil Nadu (30)	16.5 (495/30)	6.5 (197/30)	6 (180/30)
West Bengal (6)	11.3 (68/6)	4.2 (25/6)	12.7 (76/6)
Total (87)	14.7 (161/79)*	5.0 (407/81)*	8.9 (731/82)*
ALL INDIA TOTAL (164)	14.9 (329/156)	4.1 (592/145)	8.8 (1281/145)

**Incomplete Data*

Data on the number of beds was available for **95%** of SNCUs (156/164) across the 16 states (Table 2), while data on the number of doctors and staff nurses working in the SNCUs was available for 88.4% of these units (145/164). Out of the eight (8) states with more than 50% operational units and the number of such units more than 10, three (3) states (Orissa, Maharashtra and Delhi) did not provide detailed information as per the prescribed MoHFW format, and hence their status could not be assessed.

Details about the number of beds, doctors and nurses available in the SNCUs are given in **Table 2**. There were on an average **15 beds per SNCU** in the 16 states from where data was received. The average number of beds per SNCU was **similar** across the High Focus States (both Non-NE & NE) and Non High Focus States (15.1, 15.9 & 14.7 respectively). Of the five (5) states with more than 50% operational SNCUs and number of such units more than 10, Madhya Pradesh has an average of 20 beds/SNCU, Tamil Nadu and Karnataka 16 beds/SNCU, while Rajasthan and Gujarat have 13 and 12 beds per SNCU respectively.

The average number of **doctors per SNCU was 4.1** while the average number of **nurses per SNCU was 8.8**. The results showed that the **average number of doctors per SNCU was lower in the High Focus States** (2.8 in Non NE States, 3.3 in NE States) compared to the Non High Focus States (5.0 per SNCU). However, the average number of nurses per SNCU was similar in the High Focus States and the Non High Focus States (8.5 vs. 8.9).

Adequacy of Human Resources and Training Status

The number of doctors and nurses considered adequate for running an SNCU depends upon the number of available beds. In view of the existing HR situation and norms in the country, three (3) doctors and eight (8) nurses were regarded as the minimum HR requirement for operating a 12 bedded SNCU. The adequacy of HR in each SNCU was calculated using the ratio **0.25 doctors per bed** and **0.66 nurses per bed**. In order to evaluate the training status of the health personnel, data was utilized for those who had undergone special FBNC training conducted by NNF (or any equivalent training like the Emergency Newborn Care training in Gujarat).

Data for HR adequacy and training status was received from 143 of the 164 SNCUs (87.2%). Results showed that **46.5%** of the SNCUs had **adequate number of doctors** while almost **41% had adequate number of nurses (Table 3)**. The proportion of units with adequate number of doctors and nurses was **lower in the High Focus States** compared to the Non High Focus States. While the proportion of SNCUs with adequate number of doctors was almost **4 times lower** in the High Focus States compared to the Non High Focus States (17% vs. 70%), it was nearly **1.5 times lower** for adequate number of nurses (33% vs. 47%).

Table 3: Adequacy of HR and Training Status

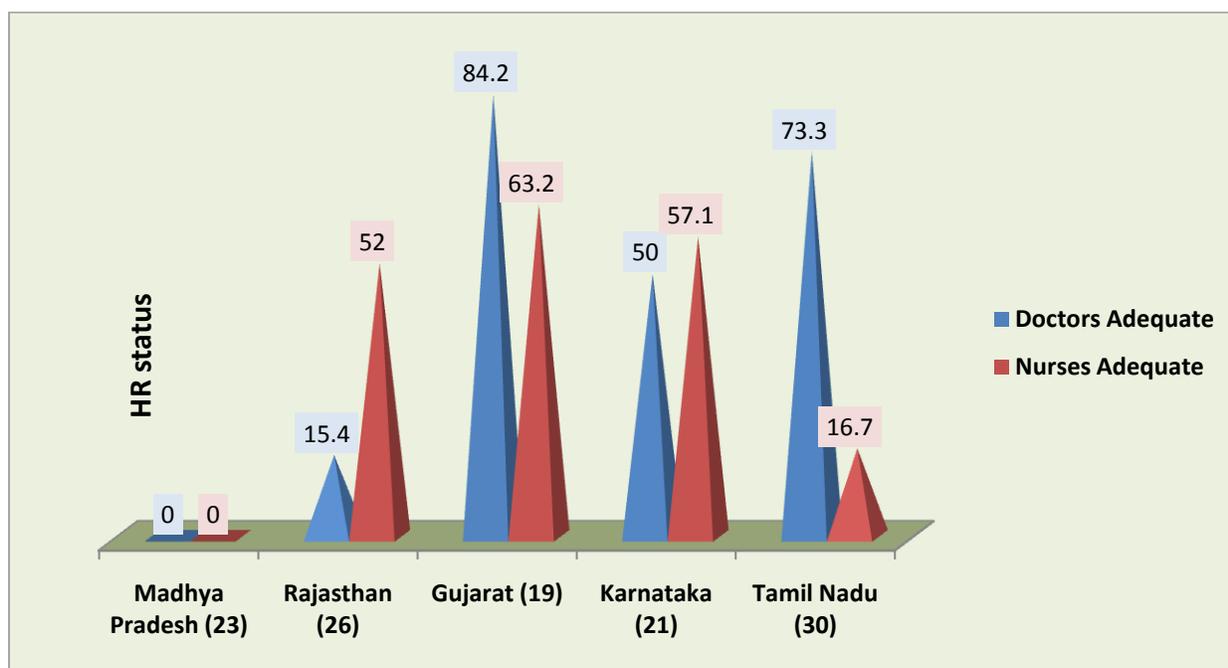
State (no. of SNCUs with relevant data)	Percentage (n/N) of SNCUs where Doctors are adequate	Percentage (n/N) of SNCUs where Nurses are adequate	Percentage (n/N) of Drs in SNCUs who are FBNC trained	Percentage (n/N) of Nurses in SNCUs who are FBNC trained
High Focus Non NE States				
Jharkhand (2)	50.0 (1/2)	50.0 (1/2)	66.7 (4/6)	69.6 (16/23)
Madhya Pradesh (23)	0 (0/23)	0 (0/23)	93.8 (75/80)	91.4 (212/232)
Chhattisgarh (1)	0 (0/1)	0 (0/1)	0 (0/3)	0 (0/6)
Rajasthan (26)	15.4 (4/26)	52 (13/25)*	100 (57/57)	97.7 (168/172)
Bihar (6)	66.7 (4/6)	66.7 (4/6)	47.4 (9/19)	20.4 (10/49)
Total (58)	15.5 (9/58)	31.6 (18/57)*	87.9 (145/165)	84.2 (406/482)
High Focus NE States				
Assam (6)	33.3 (2/6)	50.0 (3/6)	100 (20/20)	98.5 (64/65)
Arunachal Pradesh (0)	NA	NA	NA	NA
Tripura (0)	NA	NA	NA	NA
Manipur (0)	NA	NA	0 (0/4)	0 (0/13)
Mizoram (0)	NA	NA	NA	NA
Total (6)	33.3 (2/6)	50.0 (3/6)	83.3 (20/24)	82.1 (64/78)
Non High Focus States				
Gujarat (19)	84.2 (16/19)	63.2 (12/19)	28.1 (27/96)	23.9 (50/209)
Goa (1)	100 (1/1)	100 (1/1)	0 (0/6)	0 (0/4)
Karnataka (21)	50.0 (10/20)*	57.1 (12/21)	38.5 (30/78)	65.6 (168/256)
Haryana (2)	50.0 (1/2)	50.0 (1/2)	20.0 (1/5)	0 (0/14)
Tamil Nadu (30)	73.3 (22/30)	16.7 (5/30)	100 (197/197)	100 (180/180)
West Bengal (6)	83.3 (5/6)	100 (6/6)	100 (25/25)	100 (76/76)
Total (79)	70.5 (55/78)*	46.8 (37/79)	68.8 (280/407)	64.1 (474/739)
ALL INDIA TOTAL (143)	46.5 (66/142)	40.8 (58/142)	74.7 (445/596)	72.7 (944/1299)

* Incomplete Data

On comparing five (5) states with more than 50% operational SNCUs and the number of such units more than 10, it was found that **none of the SNCU in Madhya Pradesh had adequate number of doctors or adequate number of nurses (Figure 3)**. Gujarat had the highest proportions with 84% SNCUs having

adequate number of doctors and 63% with adequate number of nurses. Karnataka had almost similar proportion of units with adequate doctors and nurses (50% and 57%). Rajasthan and Tamil Nadu showed opposite results for doctors and nurses adequacy. In Rajasthan, SNCUs with adequate nurses were 52% and only 15% had adequate doctors, while in Tamil Nadu adequate nurses were available in only 17% units and doctors in 73% units.

Figure 3: HR Adequacy (%) in States with Operational SNCUs more than 50% & Number of such units more than 10



Results for the training status showed a **high proportion of doctors and nurses working in the SNCUs having undergone FBNC trainings** with nearly three-fourths of the **doctors (74.7%) and nurses (72.7%)** been trained (**Table 3**). These proportions were **higher for the High Focus States** compared to the Non High Focus States – 88% vs. 69% for the doctors training, and 84% vs. 64% for the nurses trainings. Among the High Focus States, Rajasthan and Madhya Pradesh had trained more than 90% of their SNCU staff (both doctors & nurses), while all the staff in the Non High Focus States of Tamil Nadu and West Bengal had been trained.

Service Utilization Indicators

The FBNC guideline has recommended a uniform system of record keeping and monitoring of SNCUs. Under the system, a case-recording sheet would be filled for each admitted newborn and each unit will submit monthly report to the district in a standardized reporting format using these case sheets. This report would help in generating a list of standard/dash board indicators for reviewing the performance of each SNCU. However for this report information was available for selected indicators only.

Service Utilization data was unavailable from Chattisgarh while there were no functional SNCUs in the three NE States of Arunachal Pradesh, Tripura and Mizoram. The remaining 12 States provided information for 155 SNCUs (94%) but the information was inadequate and incomplete to calculate all the indicators for all the units. Incomplete information on Live births was received from Rajasthan & Assam, on LBW admissions from Gujarat, Karnataka, Tamil Nadu & West Bengal, on Referrals from Assam & Tamil Nadu, and on Mortality from Bihar.

Inborn Admission rate: It is the proportion of inborn babies (babies born in the same health facility) admitted in the SNCU out of the total live births in the health facility.

The average inborn admission rate was generally **lower in the High Focus States** compared to the Non High focus States (Table 4). Out of the 4 High Focus States with relevant information available, only Bihar had Inborn admission rate of more than 20% while it was between 8% and 12% for the other 2 states. On the other hand, 4 out of the 5 Non High Focus States with relevant information available had Inborn admission rate of more than 20%. **Within each state, great variation was observed** for the results of individual SNCUs. The average inborn admission rate ranged from 6.7 to 100% in Gujarat, from 1 to 100% in Karnataka, from 10 to 100% in Tamil Nadu, and from 2 to 76% in Bihar.

Table 4: Service utilization Indicators

State (no. of SNCUs with data)	Inborn Admission Rate in % (Range)	% of admissions which are Inborn (Range)	% of LBW Admissions # (Range)	% of Referrals	Mortality Rate (%)
High Focus Non NE States					
Jharkhand (2)	8.6 (2.2-15.1)	84.8 (69.6-100)	28.9 (14.3-43.5)	2.2	19.8
MP (23)	11.5 (2.5-21.0)	66.9 (44.4-86.6)	52.4 (22.3-87.5)	5.3	12.1
Chhattisgarh (0)	NA	NA	NA	NA	NA
Rajasthan (34)	NA	70.5 (44.2-96.9)	21.7 (3.2-61.7)	6.8	8.7
Bihar (7)	22.1 (1.6-76.2)	72.7 (22.6-98.4)	25.9 (2.2-92.2)	3.4	5.6
High Focus NE States					
Assam (6)	12.4 (10.6-27.0)	56.6 (75.2-93.3)	60.8 (33.3-82.2)*	3.7	12.5
Arunachal Pradesh (0)	0	0	0	0	0
Tripura (0)	NA	NA	NA	NA	NA
Manipur (1)	5.8	75.9	60.5	NA	5.6
Mizoram (0)	NA	NA	NA	NA	NA
Non High Focus States					
Gujarat (20)*	28.0 (6.7- 100)	71.8 (24.4-100)	53.7 (8.2-100.0)	4.9	12.0
Goa (1)	9.2	80.9	NA	31.9	4.3
Karnataka (23)*	22.1 (0.3-100)	63.3 (12.4-100)	35.3 (3.0-79.0)*	7.1	7.3
Haryana (2)	31.7 (7.9-55.5)	39.3 (32.1-55.5)	29.5 (19.2-39.8)	14.9	10.6
Tamil Nadu (30)*	38.6 (10.6 - 133)	68.3 (41.2-91.6)	26.8 (0.7-63.0)*	NA	8.9
West Bengal (6)	3.7 (2.1-6.1)	58 (36.8-92.3)	57.2 (41.5-75.7)*	2.2	16.5

Data available from 137 SNCUs only

* Incomplete Data

Proportion of admissions which are inborn: It is the proportion of inborn admissions out of the total admissions in the unit.

Less variation was observed for this indicator between the High Focus and the Non High Focus States, and between the individual states within the High Focus and Non High Focus States category. Nine (9) out of the twelve (12) states with relevant data available had proportion of Inborn Admissions between

50 to 75% (Table 4). The highest value for this indicator was 85% in Jharkhand and the lowest was 39% in Haryana. Comparing the proportion of Inborn admissions in the five (5) states with more than 50% operational SNCUs and the number of such units more than 10, it was observed that their **results were very similar** and **around two-thirds** of all admissions in SNCUs in these states were inborn babies.

Proportion of LBW admissions: It is the proportion of newborn babies admitted to the unit with birth weight less than 2500 gms out of the total admissions.

This information was available from 137 SNCUs across 11 states (**Table 4**). **Rajasthan had the lowest proportion of LBW admissions** with 22% while results for the other states were clustered in two ranges – **from 25% to 35% in 5 states** and **from 50% to 60% in the remaining 5 states**. The distribution of results and clustering was similar between the High Focus and the Non High Focus states. Among the six (6) High Focus States, 3 states showed LBW admissions ranging from 25 to 35% while the other 3 had results between 50% and 60%. In the five (5) Non High Focus states, 3 states had LBW admissions between 25% and 35% and the other 2 had 50% to 60% LBW admissions.

Referral rate: The proportion of babies referred out from the SNCU to a tertiary care facility (NICU) or medical college out of the total admissions.

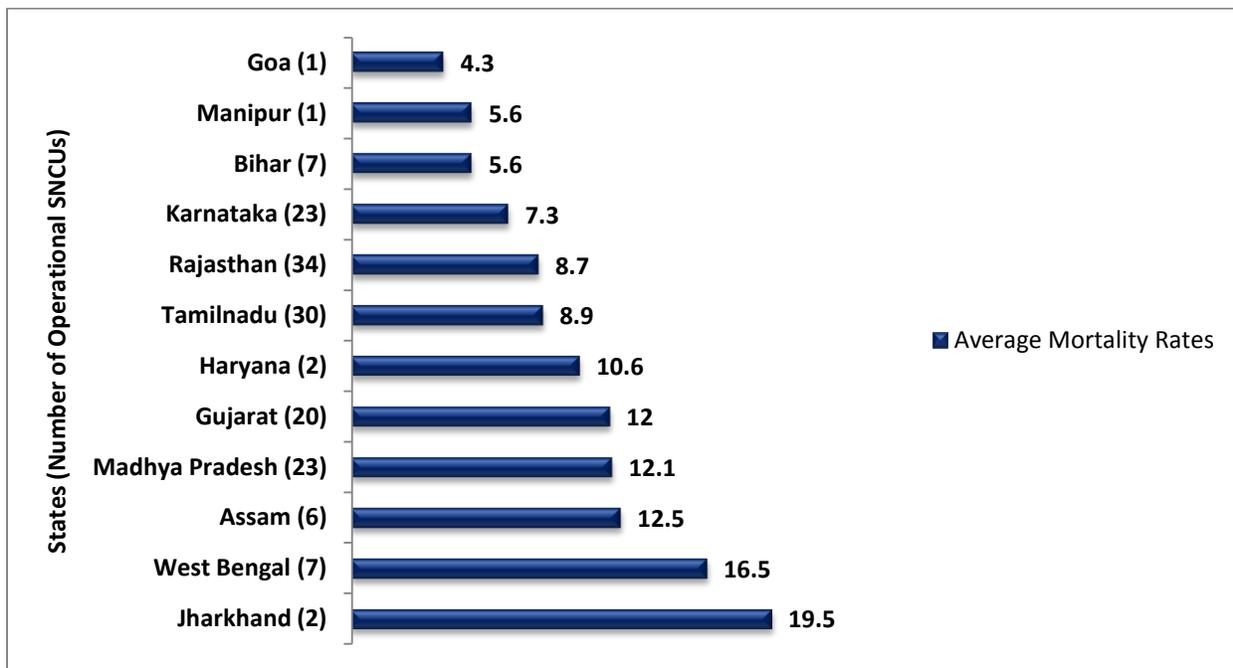
Information for this indicator was received from 10 states and the referral rates **ranged between 2% to 7%** in 8 of the 10 states (Table 4). These included 5 High Focus States and 3 Non High Focus States. Higher referral rates were observed for Haryana (15%) and Goa (32%) but these results were based on limited number of SNCUs operational in these states – 2 in Haryana and only 1 in Goa. Among the 5 states which had more than 50% operational SNCUs and where the number of such units was more than 10, it was seen that their referral rates were **very similar** and between the narrow range of **5% to 7%**.

Mortality rate: It is the proportion of newborn babies who died in the SNCU out of the total number of admissions in the unit.

Mortality rates were calculated for 12 states and 9 of these reported rates **between 5% and 15%** (Table 4). **Figure 4** depicts the distribution of the average mortality rates in the 12 states with relevant data

available. Jharkhand showed the highest mortality rate of 20% among all the states while West Bengal (16.5%) had the highest mortality rate among the Non High Focus States. Goa with 4.3% had the lowest mortality rate. The mortality rates were very similar in the 5 states having more than 50% operational SNCUs and where number of such units is more than 10. Their mortality rates ranged **between 7% and 12%**.

Figure 4: Mortality Rate in States/UTs



Admission load of SNCUs: In addition to the above four indicators, a new indicator was developed to evaluate the degree of service utilization in the existing SNCUs, and to help in resource planning for the future. Since the number of admissions in an SNCU will depend on the number of beds available, this indicator is based on the Average Monthly Admissions per bed (admissions/bed/month) in the unit. Depending upon the admission load, each SNCU was categorized as:

- *High admission load:* average monthly admissions more than equal to 10 (≥ 10 admissions)
- *Intermediate load:* average monthly admissions from 5 to less than 10 ($5 < 10$ admissions)
- *Low admission load:* average monthly admissions less than 5 (< 5 admissions)

For example, a 12-bedded SNCU was categorized as **High load** if monthly admissions were **equal to or more than 120** or **average duration of bed occupancy was equal to or less than 3 days in a month**.

Relevant data for calculating the Admission load was available for **91.5% (150/164)** of the operational SNCUs. The proportion of High admission load SNCUs in the country were just 12.2% while less than half (45.2%) were Low admission load and one-third (34%) Intermediate load SNCUs. Data was not available for 8.5% of the units (**Table 5**).

Table 5: Distribution of SNCUs in the States according to Admission Load

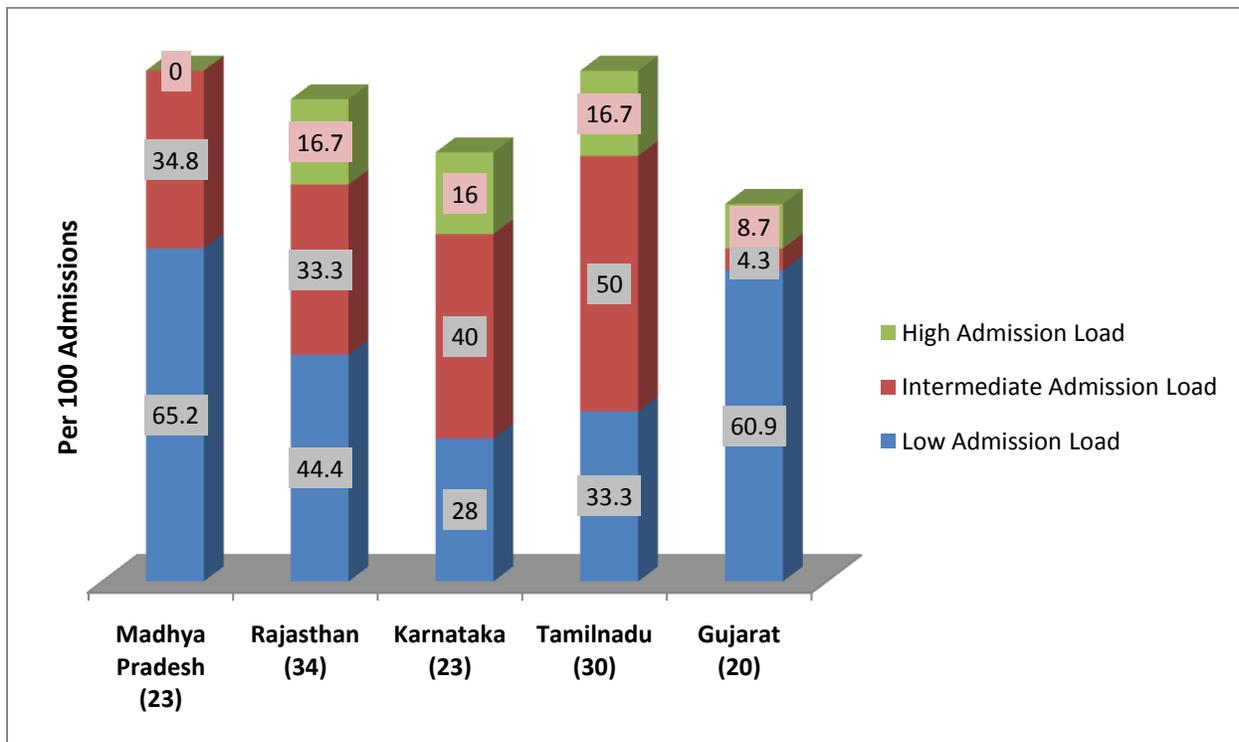
States (No of operational SNCUs)	High Admission Load (%)	Intermediate Admission Load (%)	Low Admission Load (%)	Data Not Available (%)
High Focus Non NE States				
Jharkhand (2)	0	2 (100)	0	0
Madhya Pradesh (23)	0	8 (34.8)	15 (65.2)	0
Chhattisgarh (2)	0	NA	NA	2 (100)
Rajasthan (36)	6 (16.7)	12 (33.3)	16 (44.4)	2 (5.6)
Bihar (7)	3 (42.9)	3 (42.9)	1 (14.3)	0
Total (70)	9 (12.9)	25 (35.7)	32 (45.7)	4 (5.7)
High Focus NE States				
Assam (6)	0	2 (33.3)	4 (66.7)	0
Arunachal Pradesh (0)	NA	NA	NA	NA
Tripura (0)	NA	NA	NA	NA
Manipur (1)	0	0	1 (100)	0
Mizoram (0)	NA	NA	NA	NA
Total (7)	0	2 (28.6)	5 (71.4)	0
Non High Focus States				
Gujarat (23)	2 (8.7)	1 (4.3)	14 (60.9)	6 (26.1)
Goa (1)	0	1 (100)	0	0
Karnataka (25)	4 (16.0)	10 (40.0)	7 (28.0)	4 (16.0)
Haryana (2)	0	1 (50.0)	1 (50.0)	0
Tamil Nadu (30)	5 (16.7)	15 (50.0)	10 (33.3)	0
West Bengal (6)	0	1 (16.7)	5 (83.3)	0
Total (87)	11 (12.6)	29 (33.3)	37 (42.5)	10 (11.5)
ALL INDIA TOTAL (164)	20 (12.2)	56 (34.1)	74 (45.2)	14 (8.5)

There was **not much difference** in the proportion of High Admission load SNCUs seen in the High Focus States (both Non NE & NE) and the Non High Focus States (11.7% vs. 12.6%) (**Table 5**). However for the Intermediate load and Low load SNCUs, a marginal increase in the proportions was seen for the High Focus states compared to the Non High Focus States (Intermediate Admission load: 35% vs. 33%, Low Admission load: 48% vs. 45%).

Among the High Focus states, **Bihar (43%)** had the highest proportion of High admission load SNCUs followed by Rajasthan while Tamil Nadu and Karnataka had the highest proportion of high admission units in the Non High Focus States.

Figure 5 compares the admission load in the 5 states (M.P, Rajasthan, Gujarat, Karnataka & Tamil Nadu) with more than 50% operational SNCUs and the number of such units more than 10. Data was inadequate to calculate this indicator for 26% SNCUs in Gujarat and 16% in Karnataka. Rajasthan, Tamil Nadu and Karnataka had **similar proportion** (16.7%, 16.7% and 16% respectively) of high admission load SNCUs while Gujarat had 8.7% of such units. However, half of the operational SNCUs in Tamil Nadu and 1/3rd in MP, Rajasthan and Karnataka had showed Intermediate Admission Load. **Two thirds of SNCUs in Madhya Pradesh and 60% in Gujarat had shown Low Admission load.**

Figure 5: Distribution of Admission Load in SNCUs in the States with Operational SNCUs more than 50% & number of such units more than 10



An attempt was made to further analyze the pattern/type of admissions in the three categories of admission load SNCUs in the above 5 states. Since the morbidity profile of admitted babies was unavailable, the indicator **proportion of LBW admissions was used for comparison** and it was further categorized into less than equal to 25%, 26-50%, and more than 50%.

Table 6: Distribution of LBW admissions in the three categories of admission load SNCUs

Sl. No	State	Admission Load Category (n = no. of SNCUs)	Number (%) of SNCUs with LBW Admissions			Number (%) of SNCUs with missing data
			≤ 25%	26-50%	>50%	
1	Madhya Pradesh (n=23)	Low (n= 15)	0	6 (40)	9 (60)	-
		Intermediate (n=8)	1 (12.5)	2 (25.0)	5 (62.5)	-
		High	0	0	0	-
2	Rajasthan (n=36)	Low (n=16)	(75.0)	3 (18.8)	1 (6.2)	-
		Intermediate(n=12)	1 (91.7)	0	1 (8.3)	-
		High (n=6)	1 (16.7)	4 (66.7)	1 (16.7)	-
3	Gujarat (n=23)	Low (n=14)	2 (14.3)	5 (35.7)	2 (14.3)	5 (35.7)
		Intermediate (n=1)	0	1 (100)	0	-
		High (n=2)	0	1 (50)	1 (50)	-
4	Karnataka (25)	Low (n=7)	1 (14.3)	2 (28.6)	4 (57.1)	-
		Intermediate(n=10)	4 (40)	4 (40)	1 (10)	1 (10)
		High (n=4)	3 (75)	0	1 (25)	-
5	Tamil Nadu (30)	Low (n=10)	4 (40)	5 (50)	0	1 (10)
		Intermediate (n=15)	6 (40)	6 (40)	1 (6.7)	2 (13.3)
		High (n=5)	2 (40)	1 (20)	0	2 (40)

Table 6 shows the distribution of LBW admissions in the three categories of admission load SNCUs in the 5 states. Comparing the LBW admission load among the **Low Admission Load SNCUs**, it was observed that nearly **60% of such units in Madhya Pradesh and Karnataka had a high proportion of LBW admissions (more than 50%)**. Half of such SNCUs in Tamil Nadu and one-third in Gujarat showed LBW admissions between 25-50%. **Rajasthan had the lowest LBW admission load** with three-fourths of such SNCUs showing proportion of LBW admissions less than equal to 25%.

The three states of Rajasthan, Tamil Nadu and Karnataka had reported a high proportion of **High Admission Load SNCUs** (total number of such units in the 3 states = **15**). Two units did not provide relevant data. Out of the remaining 13 units, **only 2 SNCUs had a high proportion of LBW admissions (more than 50%)** while 6 SNCUs had LBW admissions less than equal to 25%.

CONCLUSIONS

- Out of the 632 SNCUs proposed to be established by 2011-2012, **269 (42.6%)** units were found to be operational. The proportion of operational SNCUs was **much less in the High Focus NE States** (18%) compared to the High Focus Non-NE state (45%) and Non-High Focus States/UTs (44%).
- There are **eight (8) states** with more than 50% operational SNCUs and where the number of such units is more than 10. These include Rajasthan, Madhya Pradesh and Orissa from the High Focus States, and Maharashtra, Gujarat, Karnataka, Tamil Nadu & Delhi from the Non High Focus States. Out of these, **Rajasthan** is the only state with **all units operational**.
- States which **do not have a single operational SNCU** include **Uttarakhand** from the High Focus Non-NE region, **Punjab** from the Non-High Focus States/UTs, and **6 states** (Arunachal Pradesh, Sikkim, Meghalaya, Nagaland, Mizoram, Tripura) from the High Focus NE region.
- There are on an average **15 beds, 4.1 doctors, and 8.8 nurses per SNCU** in the 16 states from where data was received. The average number of beds and average number of nurses per SNCU was similar between the High Focus and the Non-High Focus states, but the **average number of Doctors was lower** in the High Focus States.
- **46% of SNCUs had adequate number of doctors** while **41% had adequate number of nurses**. The proportion of SNCUs with adequate number of doctors and nurses was **lower in the High Focus states** compared to the Non High Focus States.
- Almost **three-fourths** of the doctors and nurses working in the SNCUs had received FBNC training, and the proportion of trained doctors/nurses was **higher in the High Focus States** compared to the Non High Focus State.
- While great variation was observed between the states and within the states for Inborn Admission rate, there was **less variation for the % of inborn admissions** with 9 out of the 12 states showing value between **50% and 75%**.
- **Mortality rate** in 9 out of the 12 states ranged between **5% and 15%**.
- It was observed that the **range of results became narrower** (or results became very similar) when the indicators Mortality Rate and % of inborn admissions were compared between the 5 states (MP, Rajasthan, Gujarat, Tamil Nadu, Karnataka) which had **more than 50% operational SNCUs** and **the number of such units was more than 10**. The Mortality Rates ranged between **7% to 12%** while the proportion of Inborn admissions ranged between 63% to 72%.

- The proportion of LBW admissions were **clustered in two ranges** – from 25% to 35% in 5 states and from 50% to 60% in the other 5 states.
- The proportion of **High admission load SNCUs** in the country were only **12%** while **45% were Low Admission load SNCUs** and **34% Intermediate load SNCUs**.
- Comparing Admission Load in the 5 states with more than 50% operational SNCUs and the number of such units more than 10:
 - **Madhya Pradesh** had not reported a single High Admission Load SNCU. **Two-thirds** of its units were categorized as **Low Admission Load** but they had a **high proportion of LBW admissions** (60% units had LBW admissions more than 50%).
 - **In Gujarat, more than 60%** of the units were **Low Admission Load** (missing data from another 26%) and one third of these units had LBW admissions between 26-50%.
 - **Karnataka, Tamil Nadu and Rajasthan** had similar proportion of **High Admission Load SNCUs** (16-17%). Of the 13 such units with relevant data available, 6 Units (46%) had LBW admissions less than equal to 25% and 5 Units (38.5%) between 26-50%.
 - Karnataka had 28% **Low Admission Load SNCUs**, while one-third units in Tamil Nadu and 45% in Rajasthan belonged to this category

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