

**Summer Training at
Unicef, Rajasthan**

**Assessment of Special Newborn Care Unit in District Hospital, Barmer
(Rajasthan)**

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**MBA- Hospital & Health Management (MBA-HM)
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**INSTITUTE OF HEALTH
MANAGEMENT RESEARCH**

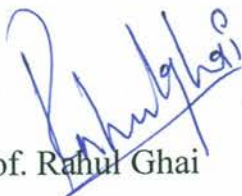
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CERTIFICATE

This is to certify that Ankita Tiwari, student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from the Institute of Health Management and Research, Jaipur (Batch 18th) has successfully undergone summer training in UNICEF, Rajasthan from 1st April to 31st May 2014.

The candidate has successfully carried out the study (Assessment of Special Newborn Care Unit in Barmer, Rajasthan) assigned to her during summer training and her approach to study has been sincere, scientific and analytical.

I wish her success in all her future endeavours.


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Dr. Ankita Tiwari

IHMR, Jaipur

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EXECUTIVE SUMMARY:

Special Newborn Care Unit (SNCU) is recognized as an essential asset in a hospital to reduce neonatal mortalities. SNCU is a vital component in hospital for newborn care. Throughout India all state governments are making efforts to reduce mortality of neonates and in this SNCU's play a critical role. My summer training assignment with UNICEF Rajasthan gave an opportunity to understand the functioning of SNCU.

The assignment involved assessing the workings of SNCU of District Hospital Barmer according to the guidelines laid down by National Neonatology Forum (NNF). The criteria for its assessment were Infrastructure, Human Resource, Equipment and Infection control practices. Apart from assessing SNCU, an attempt was made to understand the major causes of admission of newborns and the causes of their death in SNCU, and follow up of the admitted newborns after one month.

Assessment of the unit highlights major gaps in the availability of infrastructure, human resources and the practices followed by them. Though SNCU is working efficiently in saving lives of newborns, many more deaths could be averted by taking simple steps towards providing quality care.

Following are the key findings:

- Ample space is available in SNCU, which is wasted as corridors. This space can be used to make Hand washing station, Feeding area, Gowning area and Utility holding area with the help of partitions.
- Shortage of Human resource is a major issue. Pediatricians and Nursing staff is not adequate as per NNF guidelines. Nursing staff handling the newborns were not trained. Even the cleaning staff was on contract basis. There is a need to recruit more staff members for better care of newborns.
- All equipment necessary for newborn care were present in SNCU, but general equipment were non-functional.
- Infection control practices were not followed by staff members. Even the basic protocols like hand washing, changing of slippers before entering SNCU and use of face mask were not practiced.

Based on these following are some of the recommendations:

Appointment of guard to manage attendants with every patient, self-closing doors, cleaning staff should be appointed to ensure cleaning of the unit thrice a day.

ABOUT THE ORGANIZATION:

UNITED NATIONS CHILDREN'S FUND (UNICEF) :

- UNICEF has been working in India since 1949. The largest UN organization in the country, UNICEF is fully committed to working with the Government of India to ensure that each child born in this vast and complex country gets the best start in life, thrives and develops to his or her full potential.
- The challenge is enormous but UNICEF is well placed to meet it. The organization is engaged in quality research and uses creditable data to understand issues, implements new and innovative interventions that address the situation of children, and works with partners to bring those innovations to fruition.
- UNICEF uses its community-level knowledge to develop innovative interventions to ensure that women and children are able to access basic services such as clean water, health visitors and educational facilities, and that these services are of high quality. At the same time, UNICEF reaches out directly to families to help them to understand what they must do to ensure their children thrive.
- UNICEF also wants them to feel a sense of ownership of these services. That same knowledge and interface with communities enables the organization to tackle issues that would otherwise be difficult to address: the complex factors that result in children working, or the growing threat that HIV/AIDS poses to children.

What makes UNICEF unique in India

- Is its network of 13 state offices. These enable the organization to focus attention on the poorest and most disadvantaged communities, alongside its work at the national level.
- UNICEF knows that key to addressing these challenges are its partnerships with sister UN agencies, voluntary organizations active at the community level, women's groups and donors.
- The organization also works with an array of celebrities, including members of the Indian cricket team and leading actors from the Indian film industry, as well as hundreds of thousands of unnamed volunteers who tirelessly give their time and influence to ensure that, together, they are able to help every child realize his or her full potential.

Assessment of Special Newborn Care unit (SNCU) in district hospital of Barmer (Rajasthan)

INTRODUCTION:

India accounts for 30 per cent of the neonatal deaths globally. In India, the neonatal mortality rate is 31/1,000 live births (SRS 2009). Most of these deaths occur within the first days of life. NMR contributes to about two-thirds of infant deaths & nearly half of all under-5 deaths.

Thus, there is an increasing need to focus on newborn care & survival for significant reduction in IMR & U5MR and strengthen the care of sick, premature, low birth weight newborns at the various levels of facilities right from birth through the neonatal period.

While simple, known, preventive and promotive interventions within the home environment – such as exclusive breastfeeding or keeping the baby warm – remain the corner-stone in tackling newborn mortality, an effective link between healthcare facilities and community based newborn care is needed. Provision and delivery of services for both essential newborn care and the care of sick newborns in the existing health facilities at the district and sub-district levels has been found to be lacking.

Special Newborn Care Units (SNCUs) are being set up under NRHM at District level across the state to address the issue of high neonatal mortality and to ensure the provision specialized care to increasing load of newborn in line with rise in institutional delivery as well as referrals from community.

First set up by Government of M.P with technical support of UNICEF, these units are now being set up in other states as well. These units are helping to reduce the mortality of sick newborn particularly among the low birth weight babies.

Special Newborn Care Units (SNCUs) is a neonatal unit in the vicinity of Labour room which provides level 2/3 care for sick newborns. All District Hospitals and Sub-District Hospitals with more than 3000 deliveries per year should have a SNCU.

| These units have been empanelled under Rashtriya Swasthya Bima Yojana (RSBY). These packages include Bed charges (in SNCU for baby and for mother in general ward), Nursing and boarding charges, Medical Officer and Consultant fees, Oxygen, Cost of Equipment like Radiant Warmer, Phototherapy etc., Medicines and Consumables, X-Ray and Diagnostic Tests, Food to mother etc. Expenses incurred for Diagnostic Tests and Medicines from admission up to 5 days of discharge from the hospital from the same ailment and transport charges will also be the part of the package. The package should cover the entire cost of treatment of the patient from the date of reporting to his discharge from hospital and 5 days after discharge and any complication while in hospital, making the transaction truly cashless to the patient.

GUIDELINES FOR SNCU:

A.1 Services at the unit

The configuration of the SCNU at the district level should be such that it supports delivery of necessary quality services and meets the potential need to expand in order to accommodate increased demand. The SCNU at the district hospital is expected to provide the following services:

- Care at birth, including resuscitation of asphyxiated newborns
- Managing sick newborns (except those requiring mechanical ventilation and major surgical interventions)
- Post-natal care
- Follow-up of high risk newborns
- Referral services
- Immunization services

A.2.1 Location within the district hospital

- The unit should be in a distinct area within the healthcare facility, with controlled access and environment.
- The Unit should preferably be situated close to the labour room
- If obstetric and neonatal services are on separate floors of the hospital, provision for quick access like a ramp or an elevator should be provided for service between the birthing unit and the care unit.
- Transport of newborns within the hospital should be possible without using public corridors. It should provide effective circulation for staff, family, and equipment. Passage for accessing other services should not be through the unit.

A.2.2 Size (projected bed demand) of the unit

As a general guide for all deliveries occurring within the health facility, three beds for every 1,000 annual deliveries may be dedicated to the newborn care unit. This demand is for intramural deliveries (those occurring within the district hospital). Additionally, for newborns delivered outside the hospital (extramural) and being brought to the hospital for special care, an extra allowance of 30 per cent of the estimated beds should be considered.

It is universally felt that units providing special care should have a minimum of eight beds and a maximum of 16 beds. A unit with fewer beds becomes unviable and with more than 16 beds becomes unwieldy. For an optimum size, one has to consider economic realities and sustainability.

A.3 Minimum space requirements

Each newborn space shall contain a minimum of 100 square feet (9.9 square meters) of clear floor space, excluding hand washing stations and columns.

This 100 sq.ft. per bed of space should be utilized as follows: Baby care area: 50 sq.ft. per bed and General Support and ancillary areas: 50 sq. ft. per bed.

A.4 Configuration of the unit

The SCNU design should be driven by a systematic plan of space utilization, projected bed space demand, staffing requirements and other basic information related to the unit. The ideal design should provide constant surveillance of each bed area from the nurses' station, with minimal walking distance for the staff. The design should allow for flexibility and creativity to achieve the stated objective.

A.4.1 Baby care area

The baby care area (50 sq. ft. per bed) may be divided into two interconnected rooms separated by transparent observation windows with the nurses' work place in between. This facilitates temporary closure of one section for disinfection.

A.4.2 Space for ancillary (supplementary) services

Distinct support space should be provided for all clinical services that are routinely performed in the SCNU. The ancillary area should include space for the following:

- Gowning area at the entrance, Hand washing station, Examination area, clean area for mixing intravenous fluids and medications, Mother's area for expression of breast milk, breastfeeding and learning mother crafts, Side laboratory, Boiling and autoclaving

A.4.2.1 Gowning room – The unit should provide clear floor space, excluding entry work area, for gowning. A hands-free, elbow-operated hand-washing station for hand hygiene and areas for gowning and storage of clean and soiled materials should be provided near the entrance. The room should have self-closing devices on all exits

A.4.2.2 Hand washing stations – Hand washing stations should be so positioned that every newborn bed is within 20 feet (6 meters). Hand washing stations should be no closer than three feet (0.9 metres) from a newborn bed or clean supply storage.

- It should be a hands-free, elbow operated handwashing station.
- Hand washing sinks should be large enough to control splashing and designed to prevent standing or retained water. Preferably, the hand washing sink should be 24" wide x 16" front to back x 10" deep. The size of a sink is also a consideration in infection control. Very deep sinks create big splashes, as the water usually strikes from a distance. The splashed water must be considered to be contaminated whether the sink is made of stainless steel or porcelain. Very wide (front to back) sinks cause the hand washer to lean into the sink, again contaminating clothing. Countertops around sinks should also be avoided, as staff and parents tend to put items on them. These counters must also always be considered to be contaminated.
- Space for pictorial hand washing instructions should be provided above all sinks.
- Walls adjacent to hand washing sinks should be constructed of non-porous/non-absorbent material to prevent growth of moulds.
- Space should be provided for soap and towel dispensers, and for appropriate trash receptacles.

A.4.2.3 Examination area – This should include comfortable seating and allow complete visual and acoustic privacy.

A.4.2.4 Mother's area – Comfortable seating and privacy should be provided within the unit to allow mothers to breastfeed comfortably. This area should have communication aides so that families can learn about newborn care practices.

A.4.3 General support space:

Distinct facilities should be provided for clean and soiled utilities, medical equipment storage and unit management services.

A.4.3.1 Clean utility/holding area(s): Such areas should be there for storage of supplies frequently used in the care of newborns. Routinely used supplies such as diapers, linen, cover gowns, charts, etc., may be stored in this space. Space should also be provided for storage of syringes, needles, intravenous infusion sets and sterile trays.

A.4.3.2 Soiled utility/holding room: This is essential for storing used and contaminated material before its removal from the care area. Ideally the ventilation system in the soiled utility/holding room should be engineered to have negative air pressure with all air being exhausted to the outside; a simple exhaust fan can also improve ventilation in the area. The soiled utility/holding room should be so situated that it enables removal of soiled materials without passing through the baby care area.

A.4.3.3 Charting/staff work areas: Along with the provision of charting space on each bedside, an additional separate area or desk for tasks, such as compiling records, completing requisitions, etc., should be provided. Dedicated space can also be allocated for electronic medical record keeping.

- A clerical area in a 12-bedded SCNU should be located near the entrance to the unit. This will also enable personnel to supervise traffic into the unit. Newborns' charts, computer terminals and hospital forms may be located in this space. Design of the unit must anticipate use of electronic medical record devices, such as computers, so that their introduction does not significantly disrupt functions of the unit or impinge on the space designed for other purposes.

A.4.3.4 Linen washing/laundry area: If laundry facilities are not provided, a separate laundry room can serve the functions of laundry. Space should accommodate a washing machine with dryer. Placement of an automatic washing machine with dryer promotes the efficiency and effectiveness of the aseptic cleaning process.

A.4.4 Staff support space

Space should be provided within the unit to meet the professional, personal and administrative needs of the staff. These areas include doctors' duty room, nurses' changing room, etc.

A.4.5 Step down area (rooming in facility):

An additional five bed step down area whererecovering neonates can stay with their mothersbefore discharge is of added advantage to aSCNU. This will relieve the pressure on the SCNUto some extent. The additional space requirement should be about40-50 sq.ft. per bed: the space can be in theSCNU or in the vicinity or in the postnatal ward.

Civil, electrical and mechanical works are essential for effective functioning of SNCU.

- A) **POWER SUPPLY:** The unit requires 24 hr. uninterrupted stabilized power supply, sufficient to take the load of equipment.
- B) **FLOOR SURFACES:** The floor surfaces should be easily cleanable and minimize the growth of microorganisms.
- C) **WALLS:** The ease of cleaning, durability and acoustical properties of wall surfaces must be considered.
- D) **WATER SUPPLY:** The unit should have 24 hour uninterrupted running water supply. An overhead tank of appropriate size should be provided for.
- E) **LIGHTING:** Light surfaces should be as free as possible of glare or veiling reflections. No direct view of the electric light source or sun should be permitted in the newborn space.
- F) **TEMPERATURE:** The unit should be designed to provide an air-temperature of78.8F to 82.4F (26-30C).

HUMAN RESOURCES:

A 12- bedded unit (plus 4 beds for the step-down area) requires at least one pediatrician or a trained doctor round-the-clock. Assuming that one doctor provided back-up of 8 hours, at least three to four trained doctors should be available at the facility. It is proposed that one pediatrician trained in neonatology should be posted at the unit, supported by two or three medical officers trained in FBNC.

Such a unit will also require three nurses in each shift, round-the-clock. In addition, there should be sufficient nurses recruited to provide for leave vacancy and contingency. In addition to doctors and paramedics, dedicated support staff should be available to clean the nursery at least once during every shift. A part-time lab technician and data-entry operator will be required for the unit.

OBJECTIVES:

- To assess the quality of services and state of functioning of SNCU and find gaps with reference to standard guidelines given by National Neonatology Forum.
- To understand the major indications for admission to SNCU and causes of death of newborns
- To find out survival status of admitted newborns and after a month by follow up.

METHODOLOGY:

➤ STUDY DESIGN:

A study was carried out in the Special Newborn Care Unit of District Hospital, Barmer (Rajasthan) for the month of Jan to Mar 2014 to assess its functioning.

➤ STUDY AREA:

The study area was District Hospital, Barmer.

- ▶ Barmer in specific was chosen as study area because Neonatal Mortality Rate is 53 which is highest in Rajasthan as compared to average 40(AHS 2010-2011). Women and children have limited accessibility and affordability to quality healthcare and counseling services due to hardships imposed by life in the desert. Sources reveal that in the given district, 4 women die due to pregnancy/ Child Birth related complication, 112 children are not able to complete their first year of life and 84 children are not able to make it for the first month of life.

➤ STUDY POPULATION:

| 417 (Number of new_borns_admitted between Jan to Mar 2014 at SNCU).

➤ STUDY PERIOD:

The study was carried out for 2 months from 1st April -31st May2014.

The study was conducted to assess the quality of care provided at SNCU by observation and to find out the newborn survival rate of admitted newborns and after one month of their discharge from SNCU by analysis of primary as well as secondary data.

Guidelines laid down by National Neonatology Forum were adopted for assessment of quality. Parameters assessed by observation was: Infrastructure, human resources, availability and functional status of equipment, practices followed and IP Protocols.

- Infrastructure was assessed based on the availability of elbow-operated Hand-washing station, different units for inborn/outborn newborns, separate step-down unit, separate feeding and gowning area and attached toilet with the SNCU.
- Human resources were assessed based on their adequate number and their knowledge and practices.
- Equipment was assessed based on their availability and functional status.
- Practices followed was assessed based on the presence of Triage point, practice of Hand-washing before handling of baby, practice of wearing gowns, caps and masks before entering SNCU.
- IP Protocols were assessed based on the number of times wet mopping of the room is done, routine cleaning of walls and sinks and equipment, whether bins are emptied and covered with colored polybags at regular intervals.

➤ DATA COLLECTION:

Relevant secondary data regarding number of admissions, indication for admission, survival rate of admitted newborns and causes of newborn mortality was obtained from service providers, referral forms, admission files & data from SNCU online and primary data was obtained by following up with the family members of newborns telephonically.

RESULTS:

1. Assessment of quality of care provided at SNCU

During our visit to Special Newborn Care Unit in District Hospital of Barmer, following observations were made on Infrastructure, Equipment, Human resources and the Practices followed by them.

- **Infrastructure:**

- It was found that SNCUUnit was located on the first floor and was connected to labour room by a ramp with uncontrolled access and environment.
- There was no separate unit for the children born within the Hospital (Inborn unit) and for the children being referred from outside (outborn).
- There was no elbow operated Hand-washing station.
- There was no separate area for feeding the baby, gowning before entering the unit, utility for keeping all the supplies and for examining the baby.
- There was no separate rack available for slippers.



Figure 1: SNCU & Labour room connected by an unhygienic ramp



Figure 2: No Hand-washing station



Figure 3: No separate feeding room.



Figure 4: No separate rack for slippers



Figure 5: No Utility Room



Figure 6: No Examination Room

- **Human resources:**

It was found that though the staff was trained in the management of Hypothermia, jaundice and resuscitation, shortage of staff and rotation of staff to different units was an issue. As per guidelines, 3 Pediatrician and 7 Nursing staff should be available within the unit. But, there were, 2 Pediatrician available in morning shift and available on call in other shifts and 3 nurses available in morning shift and 1 nurse in remaining shifts).

- **SNCU Equipment for individual care:**

Table 1

EQUIPMENT	QUANTITY REQUIRED	AVAILABLE	FUNCTIONAL
RADIANT WARMER	12	10	10
PHOTOTHERAPY UNIT	6	4	4
SUCTION PUMP	2	2	2
OXYGEN HOOD	6	4	2
THERMOMETER	12	1	1
ELECTRONIC WEIGHING MACHINE	4	2	1
STHETHOSCOPE	12	1	1
PULSE OXYMETER	6	4	4

- **General Equipment:**

Table 2

EQUIPMENT	QUANTITY	AVAILABLE	FUNCTIONAL
AC	1	1	0
GENERATOR	1	1	1
ROOM HEATER	4	0	0
VOLTAGE STABILIZER	1	0	0
COMPUTER	1	1	1
REFRIGERATOR	1	1	1
WALL CLOCK	2	2	1

- **Practices:**

- It was found that there was no triage point. Staff did not follow hand-washing practices.
- Cap, mask and gloves were not used before handling the baby.
- Use of single Suction catheter for more than one patient.
- Appropriate sized oxygen hood was not used and their cleaning was not done regularly.
- More than one attendant was present with every newborn.



Figure 7: Overburden of attendants

- **IP protocols:**
 - It was found that wet mopping of the unit was done only once in a day instead of three times.
 - Walls and sinks were cleaned just with plain water instead of disinfectant solution.
 - Radiant warmers were not routinely and properly cleaned.
 - Changing of foot wears was not ensured before entering SNCU.
 - Bins were not covered with colored polybags and emptied routinely.



Figure 8: Dirty Corridors

INDICATION FOR NEWBORN ADMISSION

ADMISSION: 417
MORTALITY: 51

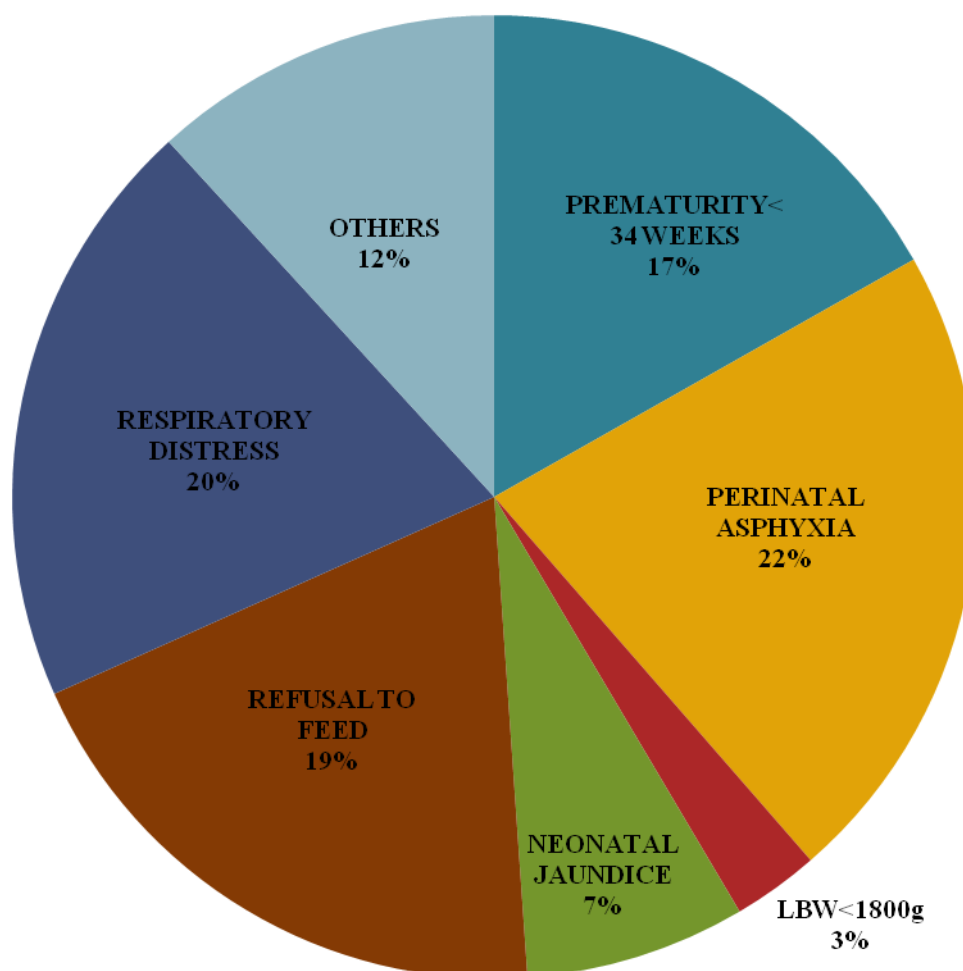


Figure 9: Indication for Newborn Admission

The main indications of Newborn admission in SNCU are respiratory distress, prematurity and birth asphyxia.

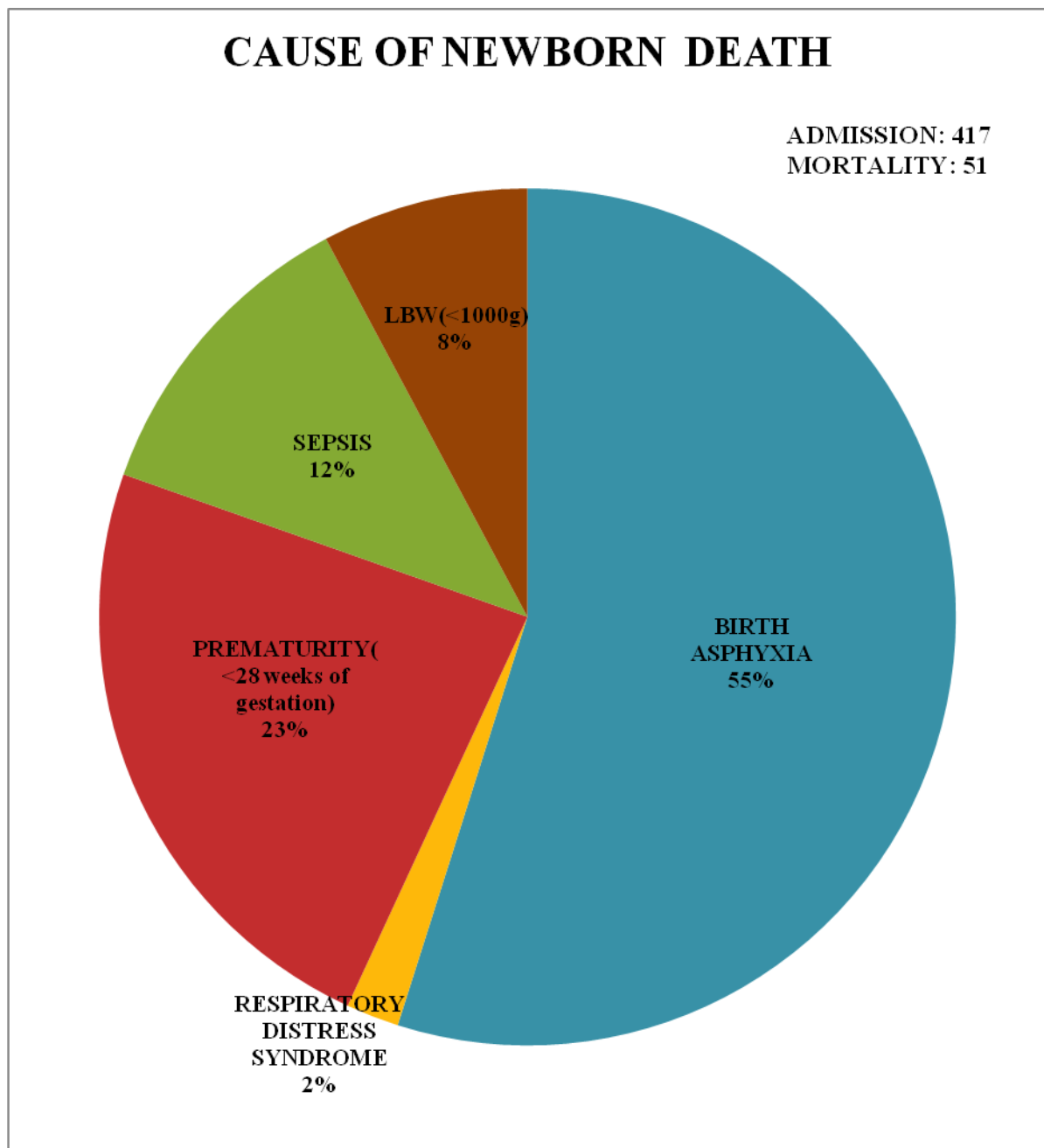


Figure 10: Cause of Newborn Death

The main causes of newborn deaths in SNCU are birth asphyxia, prematurity and sepsis.

Survival Status of Admitted Newborns:

Table 3

	ALIVE	DEAD	SURVIVAL STATUS
MALE(296)	265	31	89.5%
FEMALE(121)	101	20	83.4%
INBORN(222)	187	35	84.2%
OUTBORN(195)	179	16	91.7%
TOTAL(417)	366	51	87.7%

Out of 296 admitted newborns in SNCU from jan-mar 2014, 265 were alive (89.5%), and Out of 121 admitted newborns, 101 were alive (83.4%).

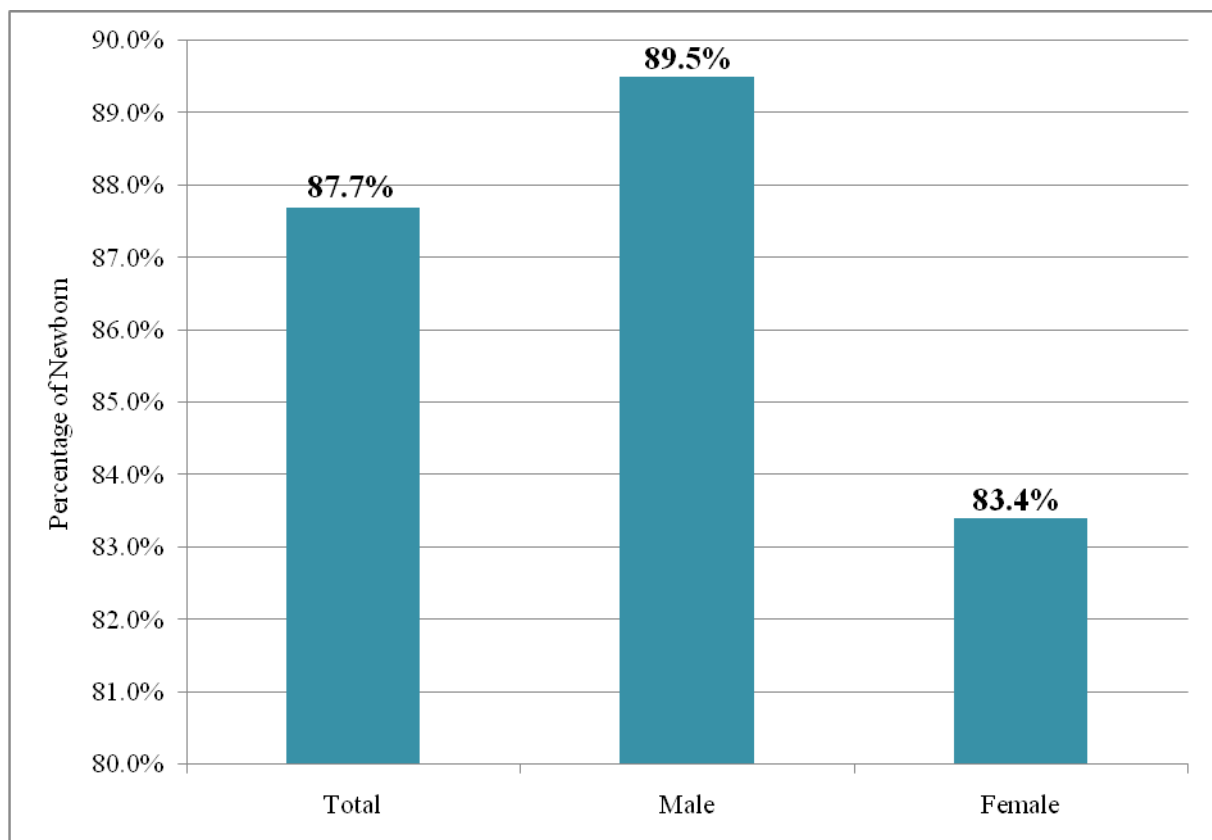


Figure 11: Survival Status by Gender

From January to March 2014, 417 newborns were admitted in SNCU. Out of 222 admitted Inborn (newborns born in same district hospital), 187 were alive (84.2%).

Out of 195 admitted outborns (newborns born at places other than district hospital), 179 were alive (91.7%).

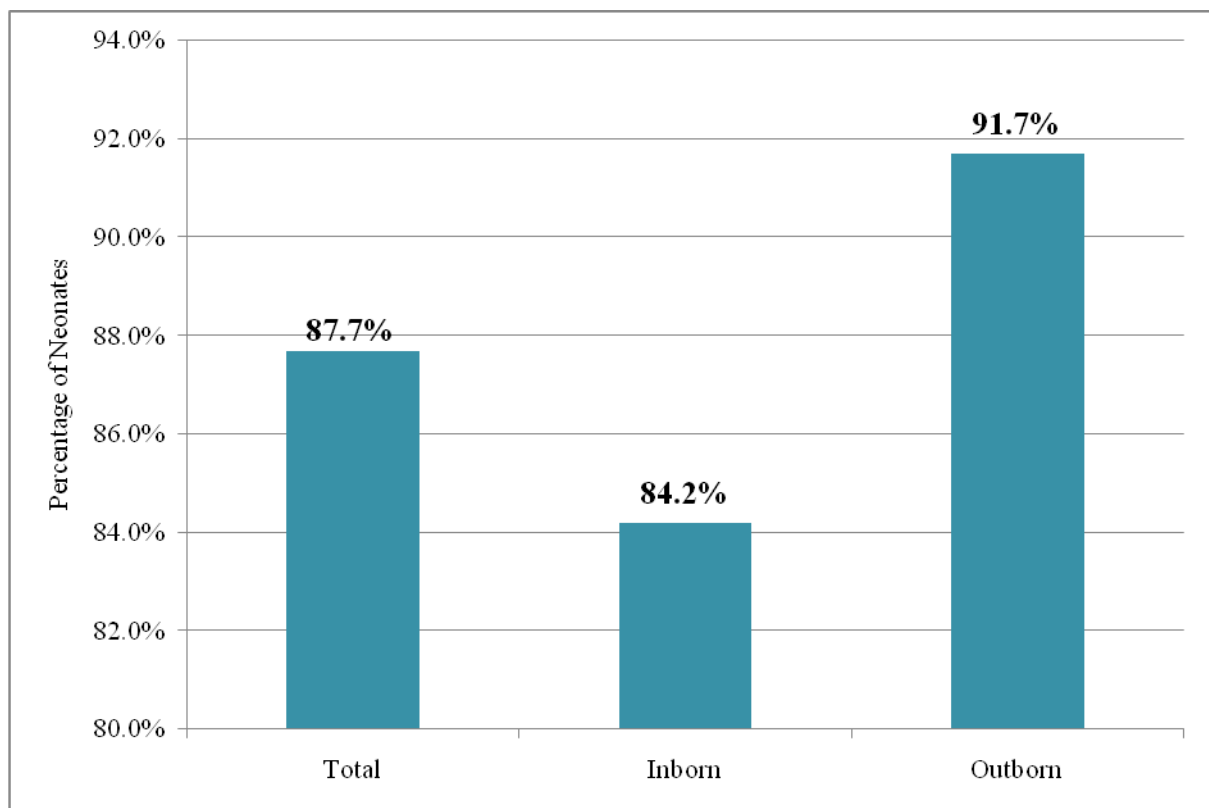


Figure 12: Survival Status by Inborn/outborn

From January to march 2014, in 1000grams, out of 7 admitted newborns in SNCU, 5 were alive (60%). In 1000-1499 grams, out of 31 admitted newborns in SNCU, 23 were alive (65.2%). In 1500-2499 grams, out of 149 admitted newborns, 129 were alive (84.5%). Above 2500 grams, out of 281 admitted newborns, 260 were alive (92%).

This data suggests that survival status of newborns more than 2500 grams is highest.

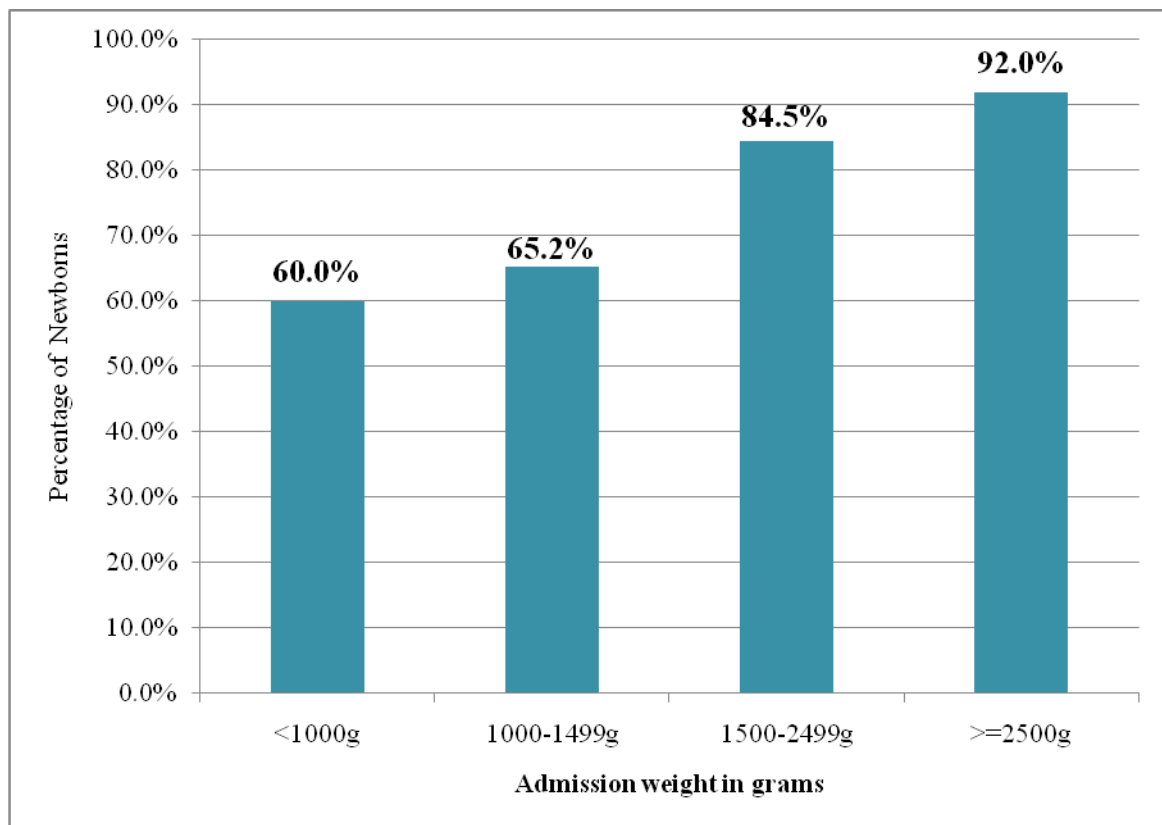


Figure 13: Survival Status by Admission weight

Survival Status at Follow-up:

Table 4

	TOTAL	EXPIRED AT SNCU	CONTACTED	COULD NOT BE CONTACTED	PERCENTAGE OF CONTACTED
TOTAL	417	51	237	129	64.75%
MALE	296	31	179	86	67.54%
FEMALE	121	20	58	43	57.42%

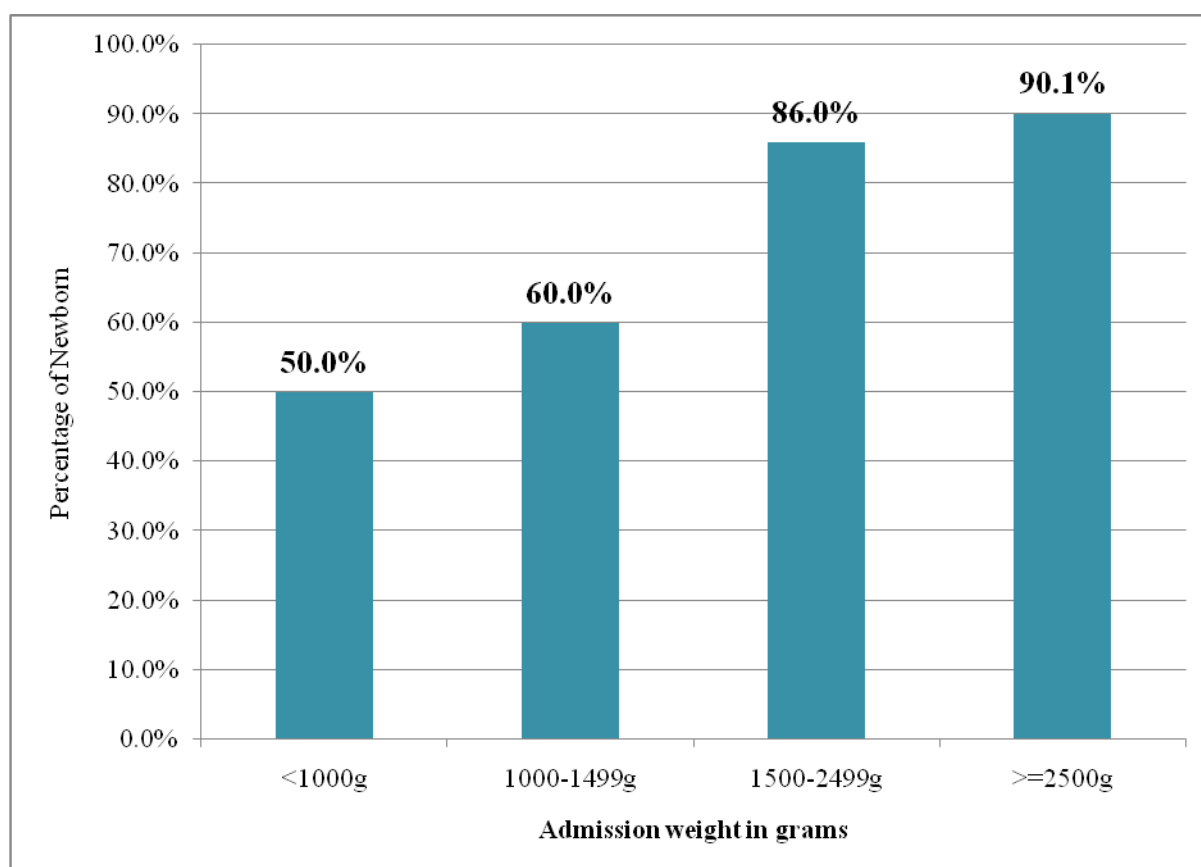


Figure 14: Survival Status after one month

DISCUSSION:

This study highlights the major gaps in the availability of infrastructure, human resources and the practices followed by them. It reveals that though adequate number of equipment is available in the unit for quality newborn care, human resources and the practices followed by them is of utmost importance for reducing neonatal mortality. Human resource forms the backbone of any unit. Their adequate number, knowledge, practices and skills are necessary for efficient functioning of any unit. Though staff was trained in handling Special Care Newborn Unit, their non-availability at some shifts and rotation to other units was an issue. In addition, no hand-washing practices, no wearing of cap, mask and gloves by the staff, before handling the baby and no adherence to standard IP protocols added to the low quality of care provided to the newborn. No separate feeding area and no control over the movement of attendants resulted in overcrowding within the unit and connection to labour room via an unhygienic public ramp, no separate Inborn/outborn unit and no elbow-operated hand washing station could have resulted in increased chances of infection spread.

55% of the newborn deaths were due to Birth Asphxia indicating that staff lacks training and skills in neonatal resuscitation techniques. Low survival status among low-birth weight babies indicates the lack of special care and. High mortality at follow-up raises question on the quality of care provided and the decision of discharging the newborns.

LIMITATIONS:

As the primary data of follow-up was collected by telephonic conversation, it was difficult to contact persons with invalid phone no. and conversing in local language was an issue.

CONCLUSION:

The study provided an overview of the situation in Special Newborn Care Unit in the district hospital of Barmer. Assessment of the unit gave an insight into the challenges and the reasons behind low survival status of newborns. It has been proved that with simple and preventive interventions, a large number of newborn deaths can be avoided. Challenges in terms of infrastructure and human resources need to be addressed. Round-the clock availability of the staff, training and practices of the staff and adherence to IP protocols needs to be ensured for efficient functioning of the unit. Unless the challenges towards providing quality newborn care are solved, the dream of reducing neonatal mortality for which Special Newborn Care Unit were being set-up would not be achieved.

Assessment of the unit highlights the major gaps in the availability of infrastructure, human resources and the practices followed by them. Though SNCU is working efficiently in saving lives of newborns, many more deaths could be averted by taking simple steps towards providing quality care.

RECOMMENDATIONS:

- Guard should be appointed to avoid overcrowding by attendants.
- Token system should be started for attendants.
- Sweepers/ Cleaning staff should be appointed to ensure three times cleaning of the unit.
- Ample area is vacant at the entrance of SNCU that can be used as hand washing and gowning area.
- Self-closing doors should be installed in SNCU.
- Vacant space in staff room can be used as utility/holding area.
- Malnutrition Treatment Centre should be transferred outside SNCU, so as to control excess movement of attendants.

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