Analysis of Morbidity Profile of Neonates Admitted in Special New-born Care Units of Gujarat

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Abstract :

Introduction: Facility Based Newborn Care (FBNC) is a critical intervention to improve child survival & to reduce neonatal mortality rate Neonatal Mortality Rate (NMR) is major challenge. **Objectives:** Toanalyze morbidity profile of neonates admitted in special newborn care units of a tertiary level hospitals and medical college attached hospitals of Gujarat State. **Method:** A cross sectional descriptive study where record based secondary data collected & analysed for key indicators from all Govt. supported Sick Newborn Care Unit (SNCUs) which are in Medical college attached hospitals, district hospitals and grant in aid trust hospitals. April 2014 to March 2016 was the study period. **Results:** The study found near proportions of (53%) inborn, (47%) out born admission and 44% admission of female. Out of 69,662 admissions, 67% were discharged, 16% died, 10% leaving against medical advice, and 7% referred to higher centers. Major reasons for admission were respiratory distress syndrome (RDS) (22%) and infection (21%). **Conclusion:** Strengthening of appropriate facility care is essential to address neonatal mortality. The health interventions needed to tackle NMR differ from those needed for infant mortality rate and under-five mortality rate.

Key Words : Facility Based Newborn Care, Morbidity Profile, Neonatal Mortality Rate, Special Newborn Care Units

Introduction :

The newborn deaths are now in greater proportions of global child deaths than in 1990. The newborn has become a different category of vulnerable population, and it seems far to achieve child survival if priorities are not set. [1,2]

Globally, neonatal deaths now constitute 44% of all deaths in children younger than five years.[3] There are many simple interventions available that found to be effective in reducing the neonatal mortality [4,5] More than 70 % estimated neonatal deaths are preventable with evidence-based practices, but coverage of these interventions is insufficient and low in geographic areas with highest burden of mortality.[6] Still, focused efforts are required to understand the effectiveness of these interventions.

In India, neonatal mortality contributes almost two-thirds of the infant deaths and half of the under-five deaths. Furthermore, neonatal mortality rate (NMR) of Gujarat accounts for 58% of total under-five-aged children mortality. Gujarat has achieved child mortality rate of 33/1000 live births, infant mortality rate of 30/1000 live births, and 21/1000 live births NMR. Wide geographical variations in mortality rates were also a concern for Gujarat state.[7] Gujarat has witnessed significant reduction in infant and neonatal mortality, and over the period, 35% reduction was seen in NMR. In this context, Facility Based Newborn Care (FBNC) is critical intervention to strengthen care of sick, premature, and low birth weight newborn. Gujarat has put concentrated efforts in achieving the Sustainable Development Goals (SDG) for health with priority to the mothers and children. Minimal or absence of data leads to gaps in specific areas knowledge and views on newborn morbidity and mortality in larger proportions. Hence, the current study was aimed to analyse the profile neonates' admission from Special Newborn Care Units (SNCUs) of a tertiary level hospitals and medical college attached hospitals.

FBNC is composed of three-tier structure, namely, Newborn Care Corners at all delivery points for essential newborn care, Newborn Stabilization Units (NBSUs) at secondary care, and SNCUs at tertiary care facilities. The SNCUs are advanced newborn care

centres located in tertiary care hospitals, district hospitals, and medical colleges. [8] These SNCUs are financially supported by Gujarat State Health and Family Welfare Department and National Health Mission.

Objectives:

- To analyse morbidity profile of neonates admitted in special newborn care units of a tertiary level hospitals and medical college attached hospitals of Gujarat State.
- To provide data of newborn morbidity for health planners and care givers with analysis of specific variables.

Method:

It was a cross sectional descriptive study conducted based on secondary data collected from SNCUs necessary permission taken from Health & family welfare department, Government of Gujarat. In Gujarat, there were 37 designated SNCUs during the year April 2014–March 2015 and 40 designated SNCUs during April 2015-March 2016. The study includes all Government-supported SNCUs which are in medical college attached hospitals, district hospitals, and trust hospitals.

Study Population: Neonates admitted in SNCUs were considered as study subjects. These were categorised in two sections as inborn; who have delivered in same facility via any route and outborn; who have referred to the facility from outside.

Study Period: April 2014 to March 2016 was the study period.

Data Collection: The source of information was primary records of SNCU monthly reports generated from admitted newborns in SNCUs (IPD cases only). Neonates are routinely referred to SNCUs by MCH level 1 & 2 facilities, sometimes private health facilities and from community by direct contact admission or referral by front line health workers. The primary data has been recorded in pre-defined registers and case sheets of SNCUs filled up by paediatricians and staff nurses.

Study Subject Criteria: Inclusion Criteria: All babies who aged less than 28 days of life admitted in SNCUs. **Exclusion Criteria:** babies who had life of more than 28 days and not admitted in SNCUs.

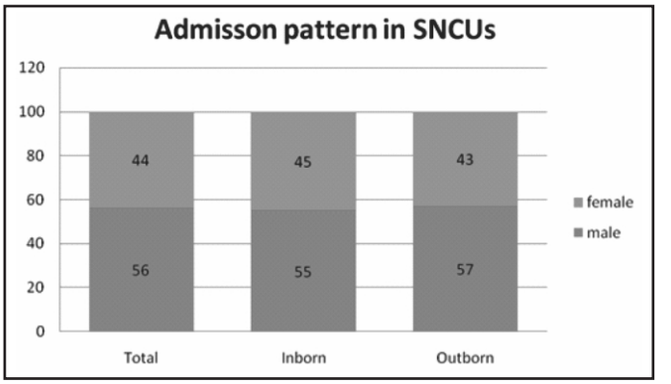
Limitation of analysis: The study was done on aggregated data of, individual information was not collected through reports. The study was done only on SNCU monthly reports of Govt supported SNCUs; private SNCUs were not included because of lack of availability of their SNCU reports.

Data analysis: The data was analysed using Microsoft Office Excel 2007 and SPSS ver. 17.

Results:

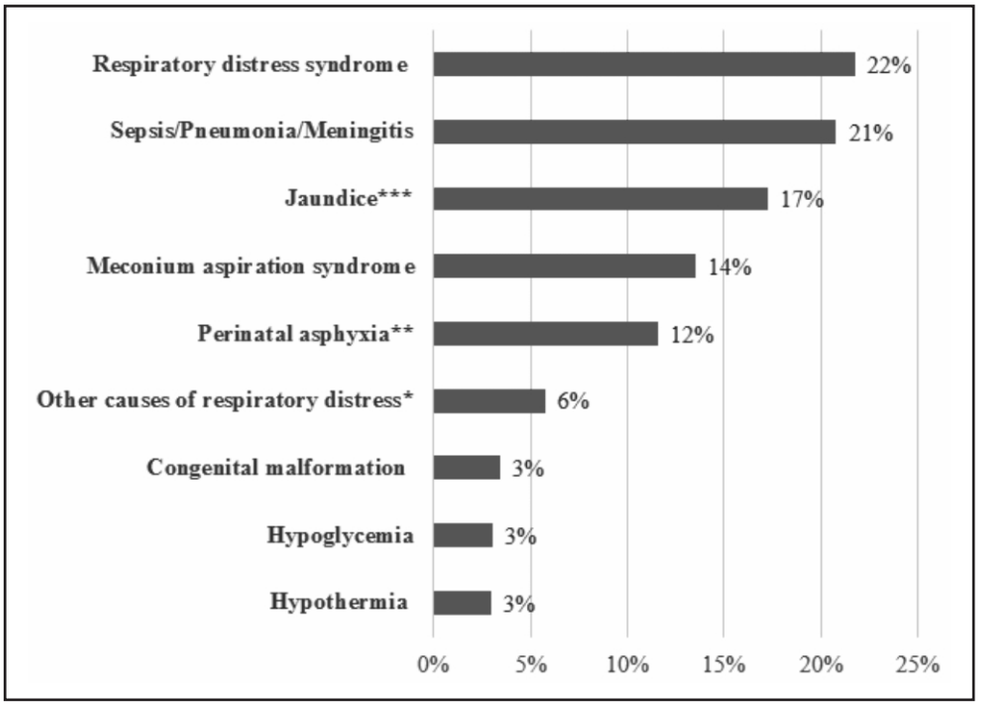
During the study, there were 69,662 neonates admitted in SNCUs across the State with having 36,994 (53%) inborn and 32,668 (47%) outborn admissions. During April 2014 to March 2016, admission of male neonates (56%) was more than female admission (44%). Same pattern was observed with further inborn and outborn distributions. **(Figure 1)**

Figure 1: Admission pattern of neonates based on gender distribution in percentage (N = 69,663)



The neonates were admitted in SNCU through in facility transfer and from out facility transfer either from the community or from the lower health facility centers; Primary Health Centers (PHC), Community health centers (CHC), Sub district hospitals, few district hospitals and also from private health facility. The study revealed that major criteria for admission were respiratory distress syndrome (22%) along with the infection (21%). Rest of the reasons were jaundice (17%), Meconium aspiration Syndrome (MAS) (14%), perinatal asphyxia (12%), other causes of respiratory distress (6%) which involves transient tachypnea, pneumonia, and aspiration pneumonia. Morbidity due to congenital malformation, hypoglycaemia and hypothermia were having lesser percentage (3%) for SNCU admission. **(Figure 2)**

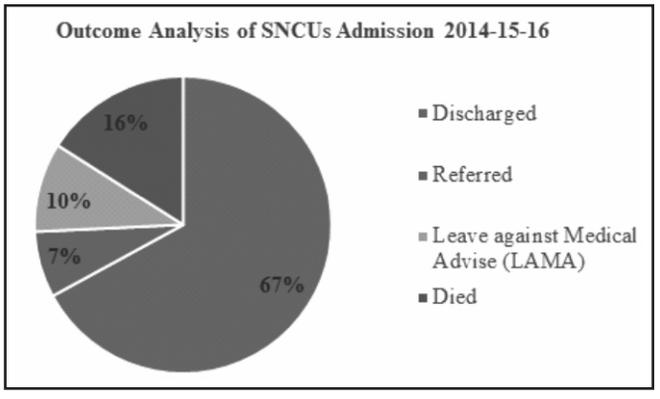
Figure 2: Morbidity profile of neonates admitted in SNCUs during 2014-16 (N = 69663)



*Transient tachypnea of the newborn, congenital pneumonia, and aspiration pneumonia
** Moderate- Severe birth asphyxia
*** Admission due to jaundice who require phototherapy

The outcome was categorized in 4 sections as successfully discharged, referred to higher center, leave against medical advice (LAMA) and died. The analysis showed that 46,714 neonates were successfully discharged (67%), 6,799 were referred to higher centers (7%), 6,799 were left against medical advice (LAMA) (10%) and 11,136 were died during the study period (16%). **(Figure 3)**

Figure 3: Outcome analysis of SNCUs admissions 2014 to 2016. (N = 69,663)



Discussion:

The three-tier structure of FBNC provides comprehensive care approach when it links with community based care. Demographic profiles of SNCU admissions showed high male: female ratio in admissions which requires in-depth community-based observations to identify gender-specific issues. These findings were similar to previous studies of National-Neonatal-Perinatal Database, Rakholia et al. and other rural India studies. [9-12], During the study, the outborn admissions were less in number compared to inborn. The low outborn admission needs to explore the need to strengthen referral system and ratio of private admissions. There is a Govt scheme of Bal Sakha in Gujarat for engaging private sectors but no structural data platform is available for those neonates who are admitted in all private SNCUs. The demand generation is another key area where gender bias and equity are major concerns.

In the present study, RDS (22%), infections (21%), and perinatal asphyxia (12%) were the major causes of neonatal admissions. The pattern of

morbidity is different in developed countries as major causes were admissions due to extreme prematurity, asphyxia, and congenital malformations. [13, 14] The rate of LAMA was similar to or near to other studies.

Conclusion:

In Gujarat, inborn admissions are higher as compare to out born admissions .The analysis found that every 2nd neonates was about to discharge successfully during the course of management. The study had not explored the reasons behind the LAMA and referred to higher center as a limitation.

Recommendations:

Based on observations collected during the study, the following recommendations can be taken into consideration: Comprehensive newborn care policy support for community and facility-based interventions is essential in support with robust referral system. The monitoring framework of each newborn has to be in place to fasten the reduction of neonatal deaths. Use of IT enable monitoring software such as Mother Child Tracking System and SNCU Online Software can play vital role for linkages and follow up system of discharged neonates. A Human resource policy with inbuilt structure of capacity building and supportive supervision is required. Engagement of private hospitals for the promotion of quality care and data sharing so continuum of care can be provided to neonates. Universal implementation of antenatal corticosteroids in preterm labour and use of injection gentamycin along with syrup amoxicillin in infection will prevent the respiratory distress and infections among most of neonates.

A community based study is required for exploring more detailed explanation of present study findings. To summarize, public health actions have been taken to reduce neonatal morbidity and mortality, but still, State has to ensure the strong implementation of available strategies. Scaling up neonatal high impact interventions, private sector involvement, comprehensive human resources policy, securing financial resources through State and NHM Budget and continuous monitoring framework are some of the steps that enables concentrated efforts of newborn survival and development.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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