

## Research Article

## Clinical profile of neonates admitted to Sick Newborn Care Unit (SNCU) at Regional hospital in Himachal Pradesh

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**Abstract: Background:** Neonatal deaths constitute major proportion of under-five mortalities in India. Neonatal period is very important and precious period because most of the preventable morbidities and mortalities occur in this period. In our country, prematurity, infection and perinatal asphyxia are three major causes for neonatal mortality. Various SNCU are established in different district hospitals to provide neonatal care which further decrease neonatal mortality. **Method:** This observational retrospective study was planned to determine the clinical profile and outcome of various neonatal admissions at SNCU, Regional Hospital solan. The data was collected for a time period of one year from 01/04/2019 to 31/03/2020. Detailed information was collected from files and registered onto the pre-set proformas and results were compiled. **Results:** A total of 469 new-borns were enrolled for this study. 220 (46.9%) babies were inborn and 249 (53.1%) were out born. There were 270 (57.5%) males and 199 (42.5) females. Most of the patients were full term and weight  $\geq 2.5$ kg. Major indications for admissions were neonatal jaundice 244 (52%), sepsis [48 (10.2%)] and respiratory distress [15 (0.35%)]. Out of total, 398 newborns were discharged successfully after treatment, 61 new-borns are referred to tertiary centre for further management. Only two newborns were died during treatment. **Conclusion:** Neonatal period is a very crucial period for development of morbidity and mortality. SNCUs with skilled staff can prevent the worst outcomes by early interventions. Also SNCU at District level will decrease patient load at tertiary centres.

**Keywords:** SNCU, Neonate, Morbidity, Mortality, Outcome.

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## INTRODUCTION

Neonatal period is a very crucial time for a neonate as it has to survive on its own in extra uterine life. Neonatal period is the most vulnerable period of human life as it accounts for very high morbidities and mortalities and most of these are preventable. It is estimated that 130 million neonates are born each year and out of these, 4 million die in first 28 days of their life (Saini, N. *et al.*, 2016). Neonatal mortality statistics serve as sensitive indicators of the availability, utilization, and effectiveness of maternal child health service in the community (Ugwu, G. I. M. G. 2012). In India, neonatal mortality contributes almost two-thirds of the infant deaths and half of the under-five deaths (Anurekha, V., & Kumaravel, K. S. 2018). The major causes (78%) which contribute to neonatal mortality in developing countries are prematurity, low birth weight, neonatal infections and birth asphyxia (Million Death Study Collaborators. 2010). Most of these conditions are preventable by good antenatal care and by early interventions in neonatal period. Establishment of

Special Care Neonatal Units (SNCUs) in rural hospitals can play a critical role in reducing the neonatal morbidity and mortality. SNCU at District Hospital is expected to provide various services (UNICEF, N. 2009). like resuscitation of asphyxiated new-borns, management of sick new-borns, post-natal care, follow-up of high risk new-borns, referral and immunization services. These SNCUs are equipped with lifesaving equipment's like radiant warmers, phototherapy units, oxygen concentrators, pulse oximeter and intravenous infusion pumps. This study was conducted at SNCU district hospital Solan in Himachal Pradesh to study the clinical profile of all new-born admitted during study period and to evaluate their outcome.

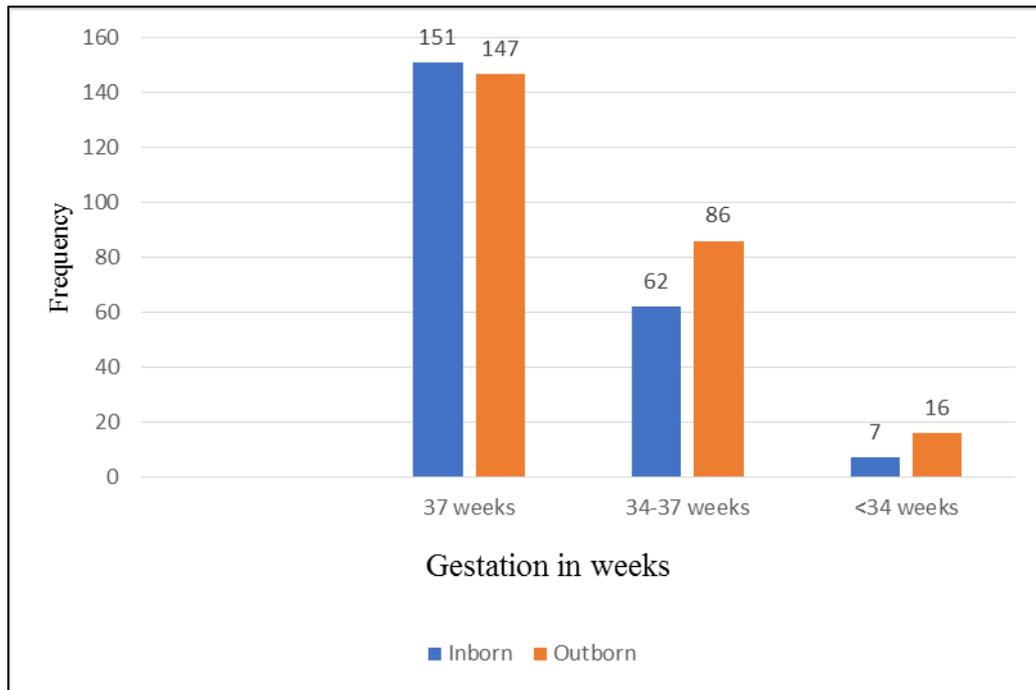
## METHODS

This is a hospital data based retrospective study conducted at SNCU Zonal hospital Solan a hospital, serving rural and urban population. All newborn born from 1<sup>st</sup> April 2019 to 31<sup>st</sup> March 2020 fulfilling inclusion criteria were including in this study.

Information regarding epidemiology, clinical presentation, morbidities and outcomes was recorded from patient’s files on pre-formed proformas. All admitted babies of less than 28 days were included except those where parents denied for the consent. Exclusion Criteria were babies who had life of more than 28 days (postneonates) and neonates who were not admitted in SNCUs. Statistical analysis was done by using Microsoft Office Excel. The standard case definitions of National Neonatology Forum were used.

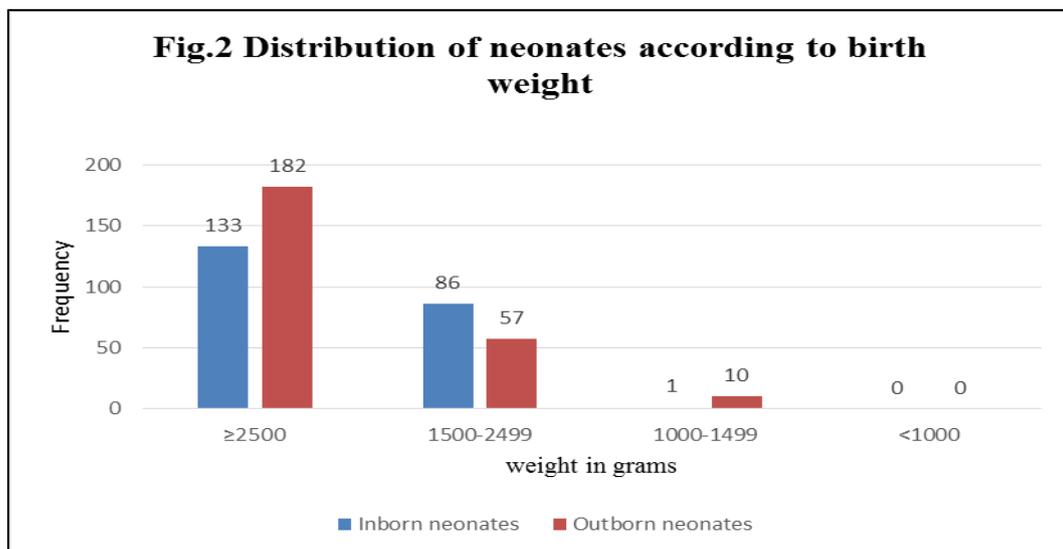
## RESULTS

A total of 469 new-borns were enrolled for this study. Out of them 46.9% neonates were inborn that born in the same hospital and 53.1% were outborn and were referred to our hospital from various health institutes. There were 270(57.5%) males and 199(42.5%) female.



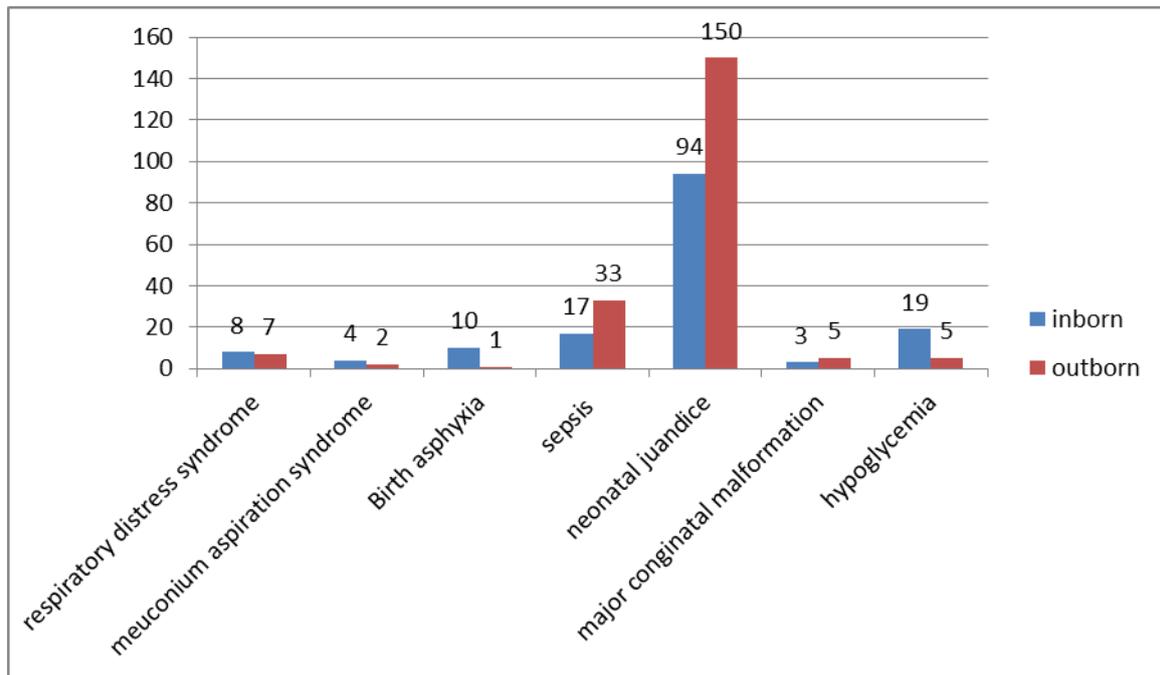
**Fig. 1 :** Distribution of the participants according to gestation.

A total 298(63.5%) newborn had gestation  $\geq 37$  weeks, 148 newborn was preterm with gestation 34 to 37 weeks and 23 had gestation even  $< 34$  weeks. So, out of total 171(36.5%) were preterm.



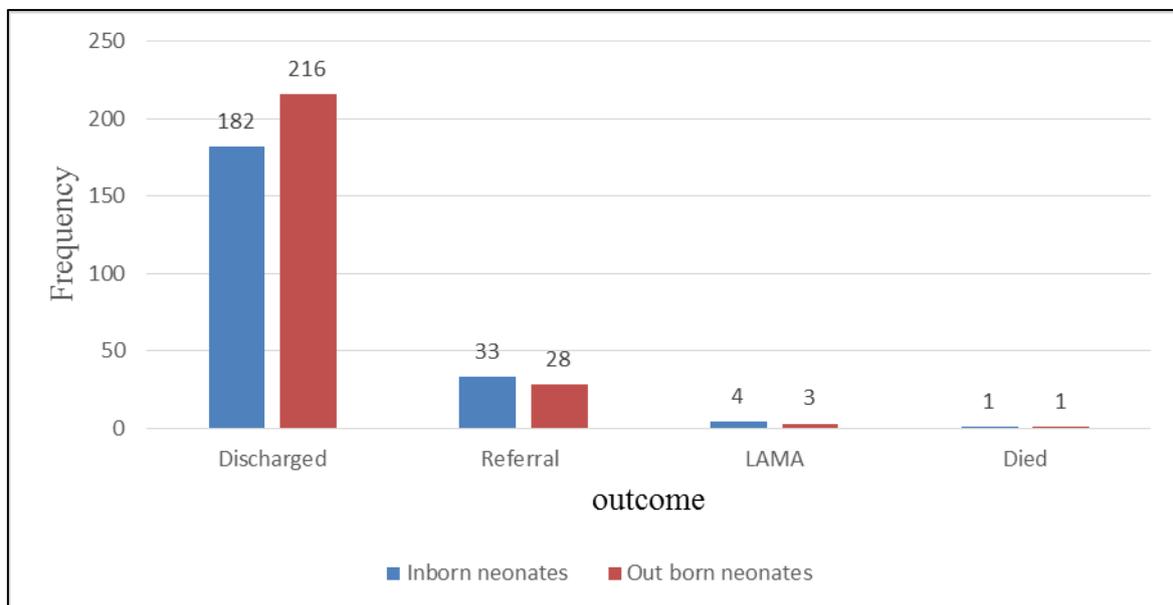
**Fig. 2:** Distribution of Neonates according to birth weight

A total 315(67.1%) out of 469 are born with birth weight of > 2500g, 143 new-born born with low birth weight and only 11 newborns had weight <1499 kg. No new born was admitted with weight less than 1000 gm.



**Fig 3** Clinical profile of neonates admitted in SNCU

Major indications for admissions were neonatal jaundice 244(52%), sepsis [48(10.2%)] and respiratory distress [15(0.35%)]. Others were environmental hyperthermia, hypothermia, neonatal seizures, hypoglycaemia and meconium aspiration syndrome.



**Figure 4:** Outcomes in Neonates

398 newborns were discharged successfully after treatment, 61 new-borns are referred to tertiary centre for further management. Only two newborns were died during treatment.

## DISCUSSION

Establishment of SNCUs and skilled staff is one of the active interventions to reduce neonatal mortality at district level setups. Our study had no

gender difference which is different from studies by Shakya *et al.*, and Shreshtha *et al.*, Total 298(63.5%) new born had gestation >37 weeks, 148 newborn was preterm with gestation 34 to 37 weeks and 23 had

gestation even <34 weeks. out of total 171(36.5%) preterm which is consistent within the range of 25.8%-50.4% as reported from other studies (Omoigberal, A. I. *et al.*, 2010; & Uganda Bureau of Statistics, & ORC Macro. MEASURE/DHS+ (Programme). 2007). Most of preterm were of gestation between 34-37 weeks.

In our study, we observed that higher number of inborn new born had birth weight less than 2500gm, this is possible due increase antenatal counselling regarding safe institutional delivery in cases of IUGR which was antenatal diagnosed. It also indicates that neonates with low birth weight and pre-term deliveries constitute large number of SNCU admission these days.

Neonatal jaundice was leading cause of admission in 94(20.0%) inborn neonates and 150(31.98%) of out born neonates. The incidence of hyperbilirubinemia in our study is 52.0%. A similar high incidence of 35% was observed in study by Simiyu *et al.*, (Simiyu, D. E. 2003) and 21 .97% in study by Shakya *et al.*, (2014).

In our study, sepsis was found to be another common reason on SNCU admission. Majority are out born babies (33) as compared to inborn ones (17). This indicates unhygienic deliveries either by unskilled person at septic places or baby's exposure to infections during transport or referral. Faulty traditional practice like pre lacteal feed and application of some herbs on umbilicus are also few contributory factors for this.

In our study, we found 25(3.27%) number of neonates with congenital malformations (CMF) (3 inborn/5outborn) which is less than data from WHO(about 7%). Low incidence may be because of high mortality of newborn with CMF and hence low referral rate. In our study, we observed an incidence of 11(0.03%) birth asphyxia admissions. Various other studies reported incidence ranging from 12.7% to 38.7%. Strengthening of antenatal, intra-partum and post partum care is very important to combat all these complications. Only 2 newborns was died during study period and 61 newborn was referred to tertiary care centre.

## CONCLUSION

Neonatal period is most vulnerable time for development of morbidity and mortality. Neonatal jaundice, prematurity, low birth weight, perinatal asphyxia and sepsis are major causes for SNCU admission and also for morbidity and mortality. SNCU with skilled staff can reduce both morbidity and mortality by early interventions. Neonatal sepsis can be

prevented by enforcing strict hand hygiene and aseptic protocols. Low birth weight and prematurity were the significant contributors to mortality. Hence antenatal programs to prevent prematurity and low birth weight babies should be strengthened.

## REFERENCES

1. Anurekha, V., & Kumaravel, K. S. (2018). Satheesh kumar D. Clinical profile of neonates admitted to a neonatal intensive care unit at a referral hospital in South India. *Int J Pediatr Res*, 5(2), 72-77.
2. Million Death Study Collaborators. (2010). Causes of neonatal and child mortality in India: a nationally representative mortality survey. *The Lancet*, 376(9755), 1853-1860.
3. Omoigberal, A. I., Sadoh, W. E., & Nwaneri, D. U. (2010). A 4 year review of neonatal outcome at the University of Benin Teaching Hospital, Benin City. *Nigerian journal of clinical practice*, 13(3).
4. Saini, N., Chhabra, S., Chhabra, S., Garg, L., & Garg, N. (2016). Pattern of neonatal morbidity and mortality: A prospective study in a District Hospital in Urban India. *Journal of Clinical Neonatology*, 5(3), 183-188.
5. Shakya, A., Shrestha, D., Shakya, H., Shah, S. C., & Dhakal, A. K. (2014). Clinical profile and outcome of neonates admitted to the Neonatal Care Unit at a teaching hospital in Lalitpur, Nepal. *Journal of Kathmandu Medical College*, 3(4), 144-148.
6. Shrestha, S. P., Shah, A. K., Prajapati, R., & Sharma, Y. R. (2013). Profile of neonatal admission at Chitwan Medical College. *Journal of Chitwan Medical College*, 3(4), 13-16.
7. Simiyu, D. E. (2003). Morbidity and mortality of neonates admitted in general paediatric wards at Kenyatta National Hospital. *East African medical journal*, 80(12), 611-616.
8. Uganda Bureau of Statistics, & ORC Macro. MEASURE/DHS+ (Programme). (2007). *Uganda Demographic and Health Survey, 2006*. Uganda Bureau of Statistics.
9. Ugwu, G. I. M. G. (2012). Pattern of morbidity and mortality in the newborn special care unit in a tertiary institution in the Niger Delta region of Nigeria: A two year prospective study. *Global Advanced Research Journal of Medicine and Medical Sciences*, 1(6), 133-138.
10. UNICEF, N. (2009). Toolkit for setting up special care newborn units, stabilisation units and newborn care corners. *Website [https://nrhm.gujarat.gov.in/images/pdf/unice\\_scnu\\_toolkit.pdf](https://nrhm.gujarat.gov.in/images/pdf/unice_scnu_toolkit.pdf)*. Accessed Sept, 16, 2017.