



IMPACT OF A SPECIAL NEWBORN CARE UNIT ON NEONATAL MORTALITY RATE IN REGIONAL HOSPITAL HIMACHAL PRADESH

Internal Medicine

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ABSTRACT

Introduction: Concurrent expansion and scaling-up of clinical care for sick neonates is essential to achieve the reduction in neonatal deaths to meet the millennium development goal for child survival.

Aims and objective: Impact of SNCU on neonatal mortality rate.

Materials and method: It was an observational study done at Regional hospital Bilaspur catering rural area population of Bilaspur, surrounding areas of Mandi, Hamirpur and Dolan districts. Study includes both inborn and out born babies admitted in SNCU between 2015 to 2019.

Result : total deliveries (7468) from Jan 2015 to May 2019, after 2015 the labor room neonatal mortality during the first year of operation was reduced.

Conclusion: Creation of a modern SNCU can reduce neonatal mortality.

KEYWORDS

SNCU (special newborn care unit), mortality rate.

INTRODUCTION:

An estimated 130 million babies are born each year and about 4 million of them die in the neonatal period.^[1] Nearly 99% of all neonatal deaths occur in low- and middle-income countries. A quarter of the global neonatal deaths occur in India and little progress has been made in reducing it in the last decade. A combination of universal outreach and family-community care intervention at 90% coverage has been estimated to avoid 18 to 37% of neonatal deaths^[2]. These interventions include family care of the new-born, essential new-born care, resuscitation of the new-born, care for low birth weight babies, and emergency new-born care. However, concurrent expansion and scaling-up of clinical care for sick neonates is essential to achieve the reduction in neonatal deaths to meet the millennium development goal for child survival^[3].

The new-born health challenge faced by India is more formidable than that experienced by any other country in the world. It is estimated that out of 3.9 million neonatal deaths that occur worldwide, almost 30% occur in India^[2]. The traditional practices like applying cow dung on the umbilical stump, oil instillation into nose etc also contribute to new-born's risk of morbidity and mortality.

Despite all these measures Cluster of neonatal deaths within hours or a day at SNCUs of medical colleges across the country in recent past created hue and cry among political, social and health arena^[3-5]. The inception of NBCC, NBSU and SNCU as a part of strategy of neonatal survival has been initiated in recent past and hence operation research in this arena are very less till date. This study will bring out the impact of this facility in new-born care practices. This is the new concept in research field.

MATERIALS AND METHOD:

It was an observational study done at Regional hospital Bilaspur catering rural area population of Bilaspur, surrounding areas of Mandi, Hamirpur and Solan districts. Study includes both inborn and out born babies admitted in SNCU between 2015 to 2019. The new-borns who referred to medical college for further management were excluded from the study.

As the first step of the study, a research protocol was developed. The topic was selected, aim and objectives were specified. Literature relevant to the study was searched and reviewed. Appropriate tools necessary for data collection were developed on the basis of the objectives of the study. Constructed a research plan and study objectives.

The case records of both in-born and out-born babies were retrieved from the Medical Records Department of the Hospital, and relevant data extracted and analysed. The SNCU monthly report is predefined format from Ministry of Health and Family Welfare, Government of India, which includes data on admission information, reasons of admission, course of admission, and mortality reasons (if any) with treatment outcomes. It also includes information on gender, birth

weights, gestation age, and duration of stay. Ethical clearance from pediatric department of concerned hospital, and the aggregated data of SNCU reports were analyzed and due efforts were made to conceal identity of hospitals and patients.

RESULTS

As expected, development and functioning of an SNCU created awareness among doctors and nurses of the hospital. As stated earlier, the nurses of the pediatric ward also attended orientation workshop on neonatal care at the start. Further, the trained doctors and nurses at the SNCU were available round the clock and their assistance could be sought by the pediatric and maternity ward and the labour room. An observational study was adopted, in which the total deliveries (7468) from Jan 2015 to May 2019, were included.

The labour room data for live or still birth, the number of deliveries, term babies, weight of the baby, new-borns referred and the new-borns who needed special care is mentioned is available in Table no. 1. Death percentage in year 2015 was 1.2%, then in year 2016 it was 0.4%, in following years in 2017: 0.2%, in 2018 : 0.3%, and in 2019 the death percentage was 0.2%. So after 2015 the labour room neonatal mortality during the first year of operation was reduced.

As we can observe in table no. 2 total new-born's admitted in SNCU, : 1388, During the first year of SNCU service 2015, 196 new-borns were admitted, 50% of them were having low birth weight, 37.7% were pre term babies and 6% new-borns were died. In 2016 total admissions in NICU 394, 42% were low birth weight, 32% pre term and 2% died. In 2017 out of total 460 admissions, 38% were low birth weight, 31% pre term, and 1.5% died. In 2018 total admissions were 608, 31 % low birth weight, 29% pre term and 1.8% died. Till may 2019 total admissions were 175, 37% were having low birth weight, 35% were pre term and 0% died. Here we can clearly observe that the introduction of SNCU also improved labour room practices and neonatal survival.

DISCUSSION :

The results of the assessment of the eight units suggest that quality level II newborn care can be provided at the district level within the public-health system. According to the estimates, about 10-15% of all newborns have a complication requiring level II care. On the other hand, in the scenario where the surveyed unit was the only facility available for special care, most admissions took place in that hospital.

Yousuf et al. reported 85% successful discharge out of 336 neonates from a secondary level of NICU in Bathinda, Punjab, in 2017^[6]. Neogi et al. studied the functioning of eight SNCUS in rural districts of India within 2 years of establishment in 2009^[7]. The case-fatality rate was found to be reduced by 40% within 1 year of their functioning.

In Duncan SNCU, despite its remote location survival rate of 87.6% could be possible because of certain key points in the functioning of the hospital. Standard operating protocols in Duncan labor room and SNCU are regularly reviewed, revised if necessary and communicated

to both the nursing and medical teams through weekly in-house teaching sessions. Emergency admissions and deaths are reviewed daily by the entire team of doctors. The management of complicated patients is discussed with experts from higher institutions. Essential equipment is well maintained and regularly serviced.

Apart from the fact that a modern SNCU remained operational within the government health system in a remote district hospital of a district with poor developmental indicators, that it had consistent impact in reducing NMR. Agarwal et al. described the mortality effect of strengthening sick newborn care at a leading teaching hospital of India^[8]. Although their model of care may be replicated in teaching hospitals with pre-existing SNCUs (mainly a handful of teaching hospitals in India), it is not relevant for the overwhelming majority of the district hospitals in India which have no separate newborn care unit.

CONCLUSION

We conclude that creation of a modern SNCU can reduce neonatal mortality. The SCNUs are a critical investment to curb the neonatal mortality rate in India. About three-fourth of newborns admitted can be treated successfully even in a secondary-level NICU by quality neonatal care, within the existing health-care infrastructure. Multicentric, prospective studies are required to identify the targets to reduce neonatal mortality in SNCUs and planning public health measures accordingly.

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Table no. 1: labour room data

	2015	2016	2017	2018	2019 (till may)	
Total deliveries	1405	2201	1551	1734	577	
Cesarean section	218	253	147	177	48	
Live –births	1389	2208	1568	1729	576	
Still births	9	23	14	9	5	
Term babies	766	2146	1496	1654	558	
Birth weight of babies	≥2500 gm	1165	1876	1316	1452	506
	<2500 gm	193	333	252	277	69
	1500-2499 gm	29	295	242	265	62
	1000-1499 gm	7	3	6	4	7
	<1000 gm	2	2	4	8	0
Preterm births (gestation) - < 37	37	62	72	75	17	
No of newborns who required resuscitation at	93	68	34	223	34	
Total number of newborns death (LR/Postnatal)	17	8	3	6	1	
Number of referrals made (to higher facilities)l	26	46	42	38	6	

Table no. 2: SNCU data

	2015	2016	2017	2018	2019 (till may)	
Admission in the unit	196	394	460	608	175	
Male	117	235	271	354	95	
Female	79	159	180	254	90	
Birth weight of the baby at the time of admission	≥2500 gm	98	226	286	421	110
	1500-2499 gm	82	154	149	163	61
	1000-1499 gm	15	14	19	22	4
	<1000 gm	1	1	7	3	0
Gestation	>37 weeks	122	269	319	432	114
	34-37 weeks	55	90	109	141	56
	< 34 weeks	19	36	33	36	5
Died	12	10	7	11	0	

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