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Access to special newborn intensive care: An evidence from King George hospital, Visakhapatnam district

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Abstract
This study aimed to determine the prevalence of use and access to special newborn intensive care services for the last three years. It is an observational study at King George Hospital, a tertiary hospital in Visakhapatnam district. Data highlighted that the concepts of neonatal advanced life support and kangaroo mother care, maternal morbidity, maternal and neonatal mortality and newborn intensive care are applied to admission how the use can be improved by modern health services. Intensive care refers to a specialized treatment given to patients who are acutely unwell and require critical medical care. Findings of the study indicate that the newborn advanced life support to the BPL families after admission is desirable, continuity of maternal and child health care is considered and improved by better mutual adjustment of the frontline care providers involved.

Keywords: kangaroo mother care, morbidity, newborn advanced life support, SNCU

1. Introduction

Maternal health is closely linked to newborn survival, as vulnerabilities to illness can pass from mother to child. While great strides have been made in reducing global under-five child mortality by two thirds, newborns now account for 47 percent of all childhood deaths. Each year, 2.4 million newborns die within their first month of life in 2019. Children who die within the first 28 days of birth suffer from conditions and diseases associated with lack of quality care at birth or skilled care and treatment immediately after birth and in the first days of life (WHO, 2019) [11]. Until recently, newborn health was often overlooked by health decision makers, who have devoted too little attention or funding to this grave problem. India accounts for 25.6 million of annual births it is the highest number and average 30% of global neonatal death burden (0.76 million). The target of MDG-5 is to reduce the maternal mortality ratios by 75 per cent, between 1990 and 2015. As a result, the world has yielded a decline of less than 1 per cent in maternal mortality ratios, when the required rate to achieve this goal was 5.5 per cent (WHO *et al*., 2007) [10].

The team of research reported that postpartum care (PPC) is one of the neglected components of RMNCH services which require improvement (Duysburgh *et al*. 2015) [1], it is emerged the idea of scaling up integrated packages of essential services across the continuum of care delivered through three platforms: communities, primary health care facilities and hospitals. The third Sustainable Development Goal (SDG) highlights "ensure healthy lives and promote well-being for all at all ages by 2030 specifically addresses reproductive, maternal, newborn and child health (RMNCH) issues under Targets as "reduce the global maternal mortality ratio to less than 70 per 100 000 live births (Target-3.1); end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births (Target-3.2) and ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes (Target-3.7)." In fact, investment in maternal, newborn and child health along the continuum of care from pre-pregnancy to childhood and beyond will strengthen a nation's health system, whether public or private (Karthik *et al*., 2016; G Babu *et al*., 2012; Sehgal *et al*., 2001) [4, 2, 9]. Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines. These interventions could prevent about two-thirds of child deaths, half to two-thirds of newborn deaths and many maternal deaths (Ronsmans C, Graham WJ. 2006) [8].

The Government of India supports both public and private sector provision of hospital care for newborn babies, has made a significant progress in establishing SNCUs over the past 5 years, however now is the time to focus on quality under this intervention. The challenges in the intensive care of a special newborns are many. The important ones include no opportunity to advise antenatal intervention, incomplete availability of antenatal and family history at admission, loss of time and physiological instability inherent to transport and carriage of pathogens, often multidrug resistant, from units where the neonate has been previously admitted. In public facilities alongside a rising number of private-for-profit providers, special newborn intensive care is offered. There is paucity of published data on newborn intensive care. Keeping in view, the present study was carried out on access to special newborn intensive care, it is an evidence from King George Hospital, Visakhapatnam district. This study is a part of PDF (ICSSR, New Delhi) study which is focused on impact of Government schemes on maternal morbidity.

1.1 Relevance of the Study

Adequate newborn's health and well-being is an important step for universal health coverage. This study has much contemporary social relevance and quite useful for young scholars of anthropology, sociology, psychology, social preventive and community medicine etc. It is aimed to assess the utilization of modern health services, and to reduce neonatal mortality in order to boost the access to quality intensive care to grow into complete individuals, mental health and physical wellbeing. Therefore, the up-to-date data related to the utilization status and access to SNCUs of the district as a whole, in rural areas is required for effective public health and nutritional interventions.

1.2 Objective of the Study

The basic objective is to examine the status of utilization and access among BPL families to modern health care services particularly special newborn intensive care as it relates to their future prospects.

2. Materials and Methods

This study is based on the secondary sources, it was conducted at King George Hospital, Visakhapatnam. The quantitative data highlighted for the January 2017 to February 2020 period that the number of admissions including in-born babies, out-born babies or extramural and kangaroo mother care (KMC) in special newborn intensive care unit (SNCU), adequacy and availability of essential equipment, beds and human resources (doctors and nurses) were collected though observation method.

3. Results

The results highlight the fact that a special newborn's intensive care, a heterogeneous group. During this period, all newborns admitted in SNCU were reviewed. The researcher reported that the conditions of King George Hospital (KGH) are much better than in most Government hospitals in the state of Andhra Pradesh. The KGH is a 1085 bedded tertiary care hospital located in Visakhapatnam rendering services to the people of Andhra Pradesh and adjacent districts of Orissa and Chhattisgarh. The hospital has a 24/7 hours casualty department, 20-bedded surgical intensive care unit, several open wards with capacity for around 250 surgical patients, and equipped with two emergency operating rooms. According to authorities of the KGH, more pregnant women from rural areas who are forced to adapt to the conditions prevailing. About 20-30 deliveries are conducted per day. Table 1 highlights that the ambience and amenities in the gynecology ward of KGH, four wards with more beds for antenatal and postnatal care and two special wards. Each ward has four units with 10 beds each. As per government guidelines, hospitals in public sector had only 1 instead of 4 pediatricians per 10 beds as recommended. Each unit coordinated by a chief doctor. The wards have eight doctors on duty round-the-clock and the UG/PG medicos of Andhra Medical College assist the doctors during deliveries and conduct checks on the pregnant women.

The redeeming feature of the labour room which has renovated with good infrastructure, advanced high resolution laparoscopic equipment worth of 15 lakh, ultra sound scan and X-ray machines. Figure 1 reflects that a facility-based newborn care unit (M. Sai Gopal, 2020) [5], thus, has a significant potential for improving the survival of newborns. Three levels of neonatal care are envisaged. Newborn-care corners are established at every level to provide essential care at birth, including resuscitation. Level-I care includes referral of sick newborns from Primary Health Centers (PHCs) to higher centers and care at Neonatal Stabilization Units (NSUs) in the first referral units. Level-II care includes functioning of Special Care Newborn Units (SCNUs) at the district hospital. The SNCU services include:

- Advanced Level-3 NICU care for premature and low birth weight neonates
- Special care for Very low birth weight and Extremely low birth weight neonates
- CPAP (continuous positive airway pressure) and NIV (non-invasive ventilation)
- Conventional and High Frequency Ventilation
- Monitoring and support of vital functions not available in a general pediatric department or community hospital
- Specialty medical and surgical care for all neonates – inborn and out born
- Neonatal care after surgery
- Therapeutic hypothermia or Cerebral cooling (for newborns with hypoxic brain injury)
- Continuous hemodynamic monitoring,
- Neonatal echocardiography and neurosonography

The present study reveals that a positive trend of newborn's admissions in the Gynecology ward at KGH, Visakhapatnam. Admission notes document the reasons why a patient is being admitted for inpatient care to a hospital or other facility, the patient's baseline status, and the initial instructions for that patient's care (Hoholik, Suzanne, 2011) [3]. The PG Medical students often develop their clinical reasoning skills by writing admission notes and may record a patient's baseline status such as additional on-service, progress, preoperative, operative, postoperative, procedure, delivery, postpartum, and discharge.

This study is based on analysis of admissions to the Special Newborn Intensive Care Unit (SNCU) at the Gynecology Ward, King George Hospital during the three years period from January, 2017 to February, 2020. The table 2 shows that a frequency distribution of the 24234 newborns who were admitted in the SNCU, there were 6156 (25.4%) were inborn babies and 17003 were out-born babies (70.2%) respectively. Out of them, it is examined that a slightly about 4.4% of newborns (1075) preponderance were admitted in the kangaroo mother care unit, more number of newborn babies as pre-term delivered that too gestational age between 34-37 weeks. Figure 2 also highlighted that the status of utilization and access to special newborn intensive care with concern that about 59.4% of newborns arrived in 2019 with intimation to admitted in SNCU followed by 14.4% of out born admissions in 2018.

The table 3 denotes that year-wise distribution of total admissions by newborns, it is observed that on average, the rate of In-born admissions increased from 17.8% in 2017-18 to 56.2% in 2019-20 across the SNCU. Out-born admissions (extramural) varied from 17.9% in 2017-18 to 61.6% in 2019-20. Around 43.6% of admitted babies preferred in Kangaroo Mother Care in 2019. Figure 3 shows that ambulance vehicle for the Neonatal Advanced Life Support to the rural areas. As per hospital records, the major cause of newborn morbidity was RDS (19%) followed by HIE/birth asphyxia (18%), neonatal jaundice (16%), sepsis (12%) and

miscellaneous causes (14%). As of 2019, 43.2% of deliveries (10470) take place without skilled birth attendants. In 2017, it is reported that 13.7% of all newborns are out born babies, they suffer from significant asphyxia which a condition is arising when the body is deprived of oxygen.

3.1. Discussion

The policies to improve childbirth and newborn care in India have led to a large increase in the number of women delivering in health facilities (39% in 2005-06 to 79% in 2015-16). There has been a concerted effort to address the needs of maternal and child intensive care through different Government schemes like Pradhan Mantri Matru Vandana Yojana Scheme (PMMVY), Janani Suraksha Yojana (JSY), Janani Shishu Suraksha Karyakaram (JSSK), Talli Bidda Express, Neonatal Advanced Life Support, etc. The fourth round National Family and Health Survey reported that more than 90% of births are in health facilities in the states of Andhra Pradesh and Telangana, of which at least half are in private facilities (NFHS-4, 2015-16) [7].

The present study reported that between January 2017 and February 2020, about 24.2 thousands newborns were admitted from surrounding villages of the Visakhapatnam district. Of these, 43.2% were out-born (born in another place and referred). A similar study from rural Uttar Pradesh reported that more families of neonates required care at private facilities (Willis J *et al*., 2009) [12]. As per the report of Ministry of Health and Family Welfare on Care of Small and Sick Neonates in Special Newborn Care Units (SNCUs), 2013–2015, 39% of SNCU admissions were out-born (MoHFW, 2015) [6]. The present results reveal that a trend of newborn admissions are relatively a slight good improvement than national values, which is possible because of a large spread of the population dependent on the hospital, the entitlement for admission.

Table 1: Distribution of Health Personnel of the Gynecology Ward at KGH

Unit/ Health Facility	Designation of the Health Personnel						Total
	Professor/ Superintendent	Associate Professor	Assistant Professor	Medical Officer	Pedia-trician	Specialist (CAS)	
1st Unit	1	1	4	--	--	--	6
2nd Unit	1	1	2	--	--	--	4
3rd Unit	1	1	3	--	--	--	5
4th Unit	1	1	2	--	--	--	4
Labour Room	--	--	--	2	--	--	2
SNCU	--	--	--	--	1	--	1
Blood Bank	--	--	--	1	--	--	1
Family Planning	--	--	--	2	--	--	2
Anesthesia	1	--	1	--	--	1	3
Total	5	4	12	5	1	1	28

Table 2: Distribution of Newborns by Admission type for the three years

Type of Admission	2019-20	2018-19	2017-18	Total
In Born Babies (IB)	3461 (14.28)	1602 (6.61)	1093 (4.51)	6156 (25.4)
Out Born Babies (OB)	10470 (43.20)	3478 (14.35)	3055 (12.61)	17003 (70.16)
Kangaroo Mother Care (KMC)	469 (1.94)	350 (1.44)	256 (1.06)	1075 (4.44)
Total admissions	14400 (59.42)	5430 (22.41)	4404 (18.17)	24234 (100)

*Numbers in parentheses and brackets are percentage

Table 3: Year-wise percentage of total admissions by Newborns

Parameter	2019-20	2018-19	2017-18
% of In-Born admissions by year	56.22	26.02	17.76
% of In-Born to all the admissions	24.03	29.5	24.82
% of Out-Born admissions by year	61.58	20.46	17.97
% of Out-Born to all the admissions	72.71	64.05	69.37
% of KMC admissions by year	43.63	32.56	23.81
% of KMC to all the admissions	3.26	6.45	5.81

Fig 1: Basic Facilities of Special Newborn Care Unit at Gynecology Ward, KGH

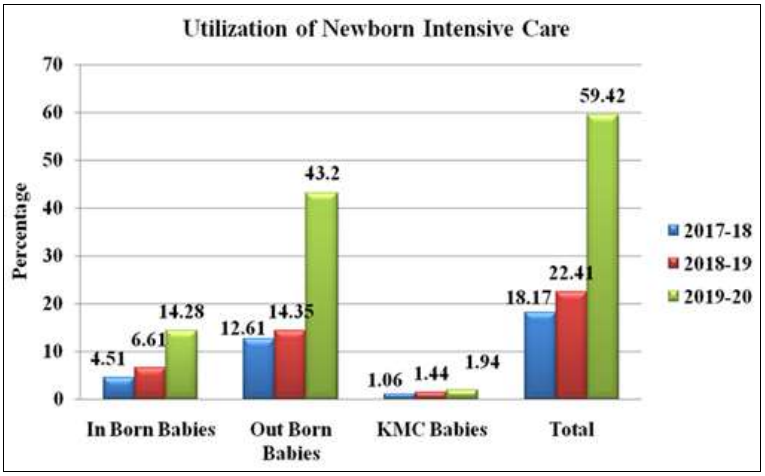

Fig 2: Utilization and Access to Newborn Intensive Care at Gynecology Ward, KGH

Fig 3: Ambulance vehicle for the Neonatal Advanced Life Support

5. Conclusions

It is possible to set up and manage quality SCNUs and improve the survival of newborns with LBW and severe morbidity in India, although several challenges relating to human resources, maintenance of equipment, and maintenance remain. The setting-up of Special Newborn Care Units (SNCUs) in Andhra Pradesh state to save lives of severely critical infants, a majority of them being low birth weight, seem to be yielding results.

The present study concluded that there was a need to improve newborn care facilities that would go a long way in saving infants further. The last three years, the SNCUs have saved 24,234 lives of critically ill infants who otherwise would have struggled to make it a few years ago. Most admissions were those out-born (extramural), constituting 72.7% of the total number of admissions in 2019-20. The admission overload was a concern, the fact that the number of deliveries had increased in most units and the bed occupancy rate exceeded 100%, the number of beds for each unit needs to be revaluated. An increased admission overload also gives rise to sharing of beds often by 2-3 babies which poses a risk. Overall, according to the analysis of the study, the access to modern health care, particularly the newborn intensive care far better compared to last two years 2017 to 2018 and there have been more cases of 'institutional deliveries' indicating better utilization of medical services. The survival rate of infants less than 1,800 grams has improved when compared to last year but more efforts were needed for further lives.

This study recommended that the SNCUs are primarily for care of sick and small newborn. Delaying to reach in time the out-born admissions could lead morbidity of infants, which will increase mortality of the newborn in the unit. It is suggested that the transport and life support may provide in timely to the newborn in rural especially interior tribal villages.

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7. Conflicts of Interest

There are no conflicts of interest.

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