Original Article

Facility Based Newborn Care Programme (FBNC) Assessment in Buldhana District of Maharashtra

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How to cite this article: Vikas Kshirsagar, Shekhar Rajderkar. Facility Based Newborn Care Programme (FBNC) Assessment in Buldhana District of Maharashtra. Indian Journal of Public Health Research and Development / Vol. 15 No. 4, October-December 2024.

Abstract

Introduction: The first week of life is the most crucial period in the life of an infant. They have health issues and problems due to structural and functional immaturity of various body organs depending upon their gestational age and birth weight.

Aim and objectives: To find out the present status of neonatal health care services in terms of manpower availability, infrastructure, equipments, drugs and performance in Buldhana district of Maharashtra.

Material and methods: Health system research was carried out in Buldhana district of Maharashtra to assess various FBNC health care facilities with respect to availability of infrastructure, equipments availability, human resources, infection control etc. and performance indicators by health care facilities.

Results: The neonatal mortality was significantly more in the facilities who were born with low birth weight. The important reasons for mortality were respiratory distress syndrome, jaundice, infections etc. The equipments were available at Special Newborn Care Unit but some equipments like sphygmomanometer and phototherapy were not available at one of the Special Newborn Care Unit. The staff was recruited at the facilities to maintain neonatal health.

Key words: Facility Based New Born Care, Special Newborn Care Units, Neonatal care

Introduction

Newborn period is most vulnerable phase of life. They have health issues and problems due to structural and functional immaturity of various body organs depending upon their gestational age and birth weight.[1] The Sample Registration System (SRS) 2012 indicates that, Neonatal Mortality Rate (NMR) is 29 per 1000 live births. In 2020, Neonatal Mortality Rate is reduced to 20 per 1000 live births in India in SRS 2020.

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Submission date: November 2, 2023 **Revision date:** December 15, 2023 **Published date: September 20 , 2024**

It is worth to note that, two –third of the newborn die in the first week of life and among them two – third of newborn die on day one.[2] A child's risk of death in the first four weeks of life is nearly 15 times greater than any other time before his or her first birthday. Two regions account for almost 80 per cent of all neonatal deaths in 2019; Sub-Saharan Africa accounted for 42 per cent of all such deaths and Central and Southern Asia accounted for 37 per cent. A child born in Sub-Saharan Africa or in Southern Asia is 10 times more likely to die in the first month than a child in a high-income country[3]. According to analysis of neonatal deaths from 192 countries, the main direct causes of neonatal deaths include preterm births (29%), severe infections (29%), birth asphyxia (23%) and congenital malformations (8%)etc[4].

Neonatal special care units in the last two decades have given new dimensions to the previously available neonatal care. There has been steady improvement in the quality of perinatal care in India.[5] Even though there has been a substantial improvement in neonatal survival, the incidence in chronic morbidities and adverse outcome in survivors continues to be high. Many avoidable handicaps during childhood, such as cerebral palsy, mental subnormality, learning disabilities and recurrent seizures, have their origin in the perinatal period.[6-12] In view of this situation, the National Health Mission (NHM) of India has invested heavily in the expansion of Facility Based Neonatal Care (FBNC). In India, Special Newborn Care Units (SNCUs)[13] in the district hospitals, New Born Stabilization Units (NBSUs) at the community health centres and New Born Care Corners (NBCC)[14] at every point of child birth has been created. This will help to address the challenge of bringing down neonatal mortality in the country. It has been estimated that health facility-based interventions can reduce neonatal mortality as much as 25-30%[15-16]. So, Health System Research study was planned with the aim to evaluate impact of Facility Based New Born Care at various levels of health care system in the Maharashtra to provide the evidence in improvement neonatal health.

Aim and objectives:

To find out the present status of neonatal health care services in terms of manpower availability, infrastructure, equipments, drugs and performance in Buldhana district of Maharashtra.

Material and Methods

The study was conducted to assess the Facility Based Newborn Care services provided for neonatal health in Buldhana district, Maharashtra. The Facility Based Newborn Care is provided through the establishments of New Born Care Corners at Primary health centers, New Born Stabilization Units at Sub-district hospitals/rural hospitals and Special Newborn Care Units at district hospitals. The facilities are provided to improve the neonatal health care services and reduce Neonatal Mortality Rate. Health System Research was conducted to do the situational analysis of the programme and to identify the current situation in relation to the neonatal health care services due to implementation of the Facility Based Newborn Care programme. Permission from the institutional ethics committee was taken prior to the study. The district hospital, two rural hospitals and two primary health centres from Buldhana district were studied for the existence of neonatal health care facility in terms of Infrastructure, Equipments availability, Human resources, Processes and research protocols (SOPs), Facilities for thermoregulation, Drugs, fluid and nutrition, Resuscitation equipments, Laboratory services, Infection control policies, Transport facilities, Case record maintenance and Miscellaneous facilities. The mandatory elements and essential elements available at all the facilities were assessed.

The data was collected regarding the neonatal health care service delivery provided at these facilities, admissions in these facilities and outcome of the admitted babies over a period of one year. The study was conducted from April 2018 to March 2019. Percentages and Chi square trend test was used for comparing the results among various groups.

Results

The study was conducted to assess the Facility Based Newborn Care services provided for neonatal health care in Buldhana district of Maharashtra. The different health care facilities assessed during the study were Special Newborn Care Unit of the district hospital, two New Born Stabilization Units of the sub district hospitals and two New Born Care Corners at the primary health centers.

Table 1: Admissions at Buldhana SNCU

Sr. No.	Gender	Inborn		Outborn		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
1	Male	326	55.2	360	55.9	686	55.5
2	Female	265	44.8	284	44.1	549	44.5
Total		591	100	644	100	1235	100

The number of admissions in the Buldhana Special Newborn Care Unit for the various reasons were 1235. Out of these 644 (52.1%) were outborn admissions referred from other facilities whereas 591 (47.9%) were inborn admissions. There were 686 (55.5%) male babies and 549 (44.5%) female babies admitted at the facility.

Table 2: Mortality pattern by birth weight at Buldhana SNCU

Sr. No.	Birth weight	Total admissions	Deaths	Odd's ratio
1	>= 2500 grams	506	6 (1.2%)	1.000
2	1500 -2499 grams	619	14 (2.3%)	1.928
3	1000- 1499 grams	85	19 (22.4%)	23.990
4	<1000 grams	25	15 (60%)	125.00
Total		1235	54 (4.4%)	

$\chi^2 = 144.61$ $p < 0.001$

It was found that, in Buldhana SNCU, maximum number of admitted babies had low birth weight i.e., 619 (50.1%), followed by babies having normal weight i.e., 506 (41%). 85 (6.9%) babies had very low birth weight whereas 25 (2%) had extremely low birth weight. The death rate was inversely proportional as the birth weight of admitted babies. Among the admitted babies 15 out of 25 (60%) died in the extremely low birth weight group followed by 19 out of 85 (22.4%) died in very low birth weight, 14 out of 619 (2.3%) died in low-birth-weight group whereas 6 out of 506 (1.2%) deaths occurred in the normal birth weight group. The neonatal deaths were significantly higher in low-birth-weight babies than normal weight babies.

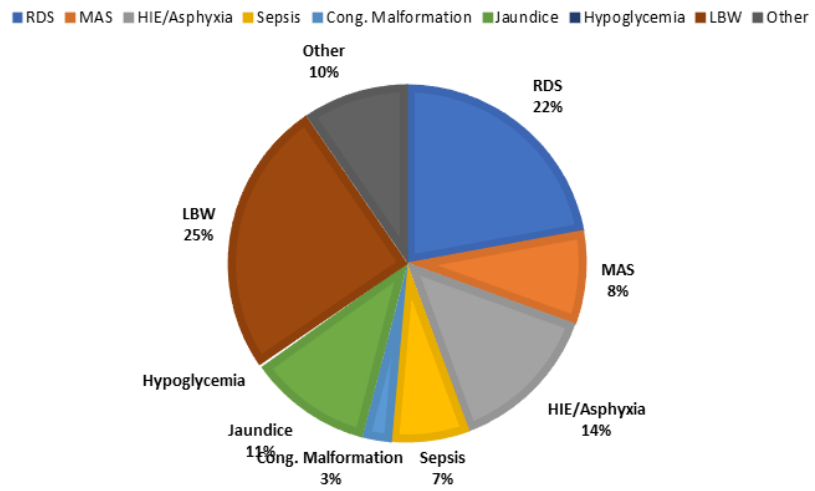

Figure 1: Morbidity profile at Buldhana SNCU

The various reasons for admissions to Buldhana SNCU: 273 (22.1%) respiratory distress syndrome followed by 171 (13.8%) with birth asphyxia, 137 (11.1%) had jaundice, 104 (8.4%) with Meconium Aspiration syndrome, 87 (7.0%) with sepsis/ pneumonia/meningitis, 33 (2.8%) with congenital

malformations, 3 (0.2%) with hypoglycemia and 427 (34.6%) suffered with other diseases. The admissions among other diseases include 25% neonates with only low birth weight. The deaths occurred in children suffering from respiratory distress syndrome i.e., 18 out of 273 babies (6.6%), 14 out of 87 (16.1%) babies suffering from infections whereas 7 out of 171 i.e. (4.1%) newborn babies who suffered from birth asphyxia.

The assessment of health care facility was done by observing the various resources available in terms of Infrastructure, Equipments availability, Human resources, Processes and research protocols (SOPs), Facilities for thermoregulation, Drugs, fluid and nutrition, Resuscitation equipments, Laboratory services, Infection control policies, Transport facilities, Case record maintenance and Miscellaneous facilities. The mandatory services such as resuscitation at birth by NRP trained doctor preferably paediatrician, care of sick neonate etc. were available at SNCU. The equipments like Glucometers in unit, one CPAP per six beds, centrifuge, glucometer with Dextrostix, generator of appropriate load bearing capacity and voltage servo stabilizer were not available. Regarding the Mandatory elements in human resources, in charge of the unit as Paediatrician, Ophthalmologist for ROP screening was available at SNCU. The orientation of new staff and refresher course was not conducted in Buldhana SNCU. The facilities required for thermoregulation and labour room resuscitation; emergency drugs, laboratory facilities except ABG analysis were available at the SNCU. The Biomedical waste guidelines were followed at the district facility. The research in community-based neonatology to improve the provided services was not conducted at the unit.

The follow up of NBSU admitted newborns was not done in all NBSUs in Buldhana. The blood bank/ storage unit services 24 x 7 were not available NBSUs in Buldhana. The paediatrician was available to provide neonate care at the NBSUs. The breast-feeding policy, policy for KMC provision and communication policy regarding neonatal care, admission and discharge policy were followed in all the NBSUs.

Discussion

This health system research was carried out to assess the status of the equipments, human resources etc. and output indicators in the facilities provided under Facility Based Newborn Care (FBNC) programme. The study included one Special Newborn Care Unit, two New Born Stabilization Units and two New Born Care Corners from Buldhana district, Maharashtra for assessment.

The study revealed that, 52.1% were outborn admissions referred from other facilities whereas 47.9% were inborn admissions. In a study carried out in Jalgaon district of Maharashtra, out of all admitted neonates, inborn (60.01%) neonates outnumbered the outborns (39.99%).[16] This study revealed that, the important reasons for mortality were infections and congenital malformations whereas in a study carried out in Gujrat by Shah H D et al[17] causes of death were low birth weight (25%), respiratory distress syndrome (RDS) (22%), Asphyxia (14%) and followed by jaundice, meconium aspiration syndrome, sepsis and major congenital malformations.

It was observed in the study that, the equipments were available at the SNCU facility to provide the neonatal care. It was observed that, in SNCU the equipments like sphygmomanometer, phototherapy unit etc, were not available to improve neonatal health. The study carried out in Gujrat by Oza JR et al[18] revealed that, some neonatal equipments were not available in majority of health facility while in the study in Bihar by Chauhan et al[19] shows neonatal equipments were available and functional in most of the facilities and in study Neogi et al[20] in Haryana. India shows shortage of basic equipments and supplies at most of the special baby care units.

The present study revealed that, paediatrician, ophthalmologist and other staff were recruited in the facilities and were trained adequately as per the guidelines. In the study carried out in Bihar by Chauhan et al showed that, 66.4% medical officers, 72.7% Staff Nurses/ANMs and 62.2% ancillary staff were trained. In the study conducted in Gujrat by Oza JR et al[18] showed that, total 68 (67.3%) of 101 respondents were found trained in Navjat Shishu Suraksha Karyakram (NSSK) at the time of survey. While regarding Facility based Integrated Management of Neonatal and Childhood Illnesses (FIMNCI) and FBNC training status, only 16 (15.8%) and 2 (1.9%) respondents were trained respectively. Paediatrician (20%) and MBBS medical officers (52%)

were the least trained personnel in Navjat Shishu Suraksha Karyakram (NSSK). In the present study, the emergency drugs were available at the facilities and similar observations were found in the study carried out in Bihar by Chauhan M. et al which revealed that, essential drugs such as adrenaline and Vitamin K injections were not available in majority of the New Born Care Corners[19].

Conclusion

The study identifies the strengths of the Facility Based Newborn Care services as well as the deficiencies that need strengthening to achieve the neonatal mortality reduction. The trained health care personnel provide the services to the community but some equipments were not available in the centres. The study revealed various reasons for admission to health care facilities like respiratory distress syndrome, birth asphyxia, jaundice, meconium aspiration syndrome etc.

Ethical Clearance: Name of Ethical committee: B. J. G. Medical College & Sassoon General Hospitals-Pune 1, Date of ethical clearance: 8.12.2015, Reference number of Certificate : BJGMC/IEC/Pharmac/Ph. D-1215152-152

Funding: None

Conflict of Interest: None

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