



ORIGINAL RESEARCH PAPER

Gynecology

PERINATAL MORTALITY IN A ZONAL HOSPITAL OF ARMED FORCES IN CENTRAL INDIA, A PROSPECTIVE STUDY

KEY WORDS: Perinatal mortality rate; Infant mortality rate, maternal and fetal causes,

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ABSTRACT

The aim of this study was to carry out a prospective analysis of Perinatal morbidity and mortality in a military hospital in central India and compare to figures and data available in respect to India and worldwide and also to analyze the reasons of the same and understand the implications. The study was carried out under controlled conditions where more than three fourth of the patients were booked in antenatal period and followed through pregnancy rest one fourth joined during second or third trimester as and when the husbands were posted in the station, all were managed during delivery and neonate was managed up till one year after birth. The study was carried out between July 2011 and may 2017. 2665 newborns were delivered during this period and were followed up to one year after birth.

INTRODUCTION

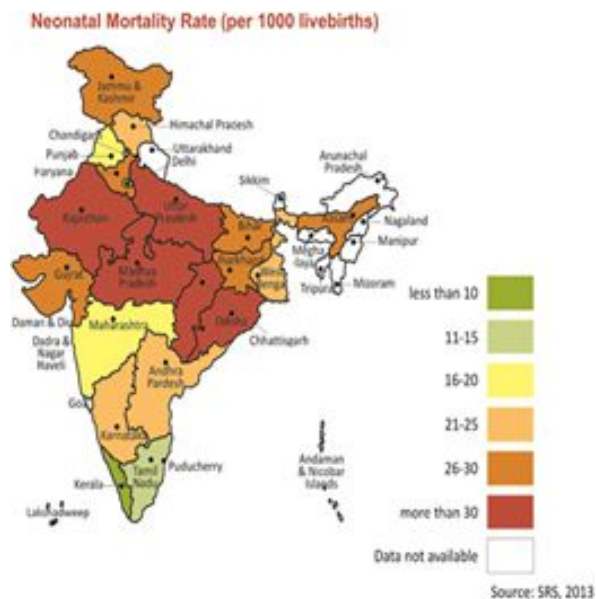
Mortality rates are good indicators to measure the level of health and health care in a hospital, district, state or country. It also helps in assessing the overall socioeconomic development of a country. Perinatal mortality rate has assumed greater significance as a yardstick of obstetric and pediatric care before and around the time of birth. Although Perinatal period occupies less than 0.5 percent (less than 168 hrs) of average lifespan, there are more deaths within this period than during the next 30-40 years of life in many developing countries(1,2). Perinatal mortality is one of the most sensitive indices of maternal and child health. The Perinatal mortality rate is an indicator of the extent of pregnancy wastage as well as of the quality and quantity of health care available to the mother and the newborn. It reflects the results of maternal care more clearly than the neonatal death rate. A prospective study was carried out on 2,665 births in a zonal service hospital in central India between July 2011 - May 2017. About 0.75 million neonates die every year in India, the highest for any country in the world it is more than 25% of the total global neonatal deaths which occur in India.(3,4). Out of the total neonatal deaths two thirds of the infant deaths and half of the under five child deaths are during neonatal period. The neonatal mortality rate (NMR) declined from 52 per 1000 live births in 1990 to 28 per 1000 live births in 2013, (5) but the rate of decline has been slow and lags behind that of infant and under-five child mortality rate. Among neonatal deaths, the rate of decline in early NMR is much lower than that of late NMR. The high level and slow decline in early neonatal death are also reflected in the high and stagnant Perinatal mortality rate. The rate of decline in NMR, and to an extent ENMR, has accelerated with the introduction of National Rural Health Mission in mid-2005. Almost all states have witnessed this phenomenon, but there is still a huge disparity in NMR between and even within the states. The disparity is further compounded by rural-urban, poor-rich and gender differentials. There is an interplay of different demographic, educational, socioeconomic, biological, commercial and care-seeking factors. This study gives a brief analysis and comparison of the trends of neonatal mortality, as well as Perinatal mortality, stillbirths vis a vis mortality in various national and international centres according to studies published. Perinatal mortality is one of the most sensitive indices of maternal and child health. The Perinatal mortality rate is an indication of the quality and quantity of health care available to the mother and the newborn. Various factors are known to be associated with Perinatal morbidity and mortality including socioeconomic status, parity of the mother, quality and quantity of prenatal, intranatal and neonatal care among others (5,6). Identification and Provision of special care to mothers at high risk is mandatory to bring about a reduction in preventable deaths. In a military hospital medical facilities are available to authorized clientele free of cost where dedicated specialized medical personnel are responsible for providing medical care throughout the year round the clock and are fully accountable to the client and organization. All basic and advanced equipment and

assistance is made available.

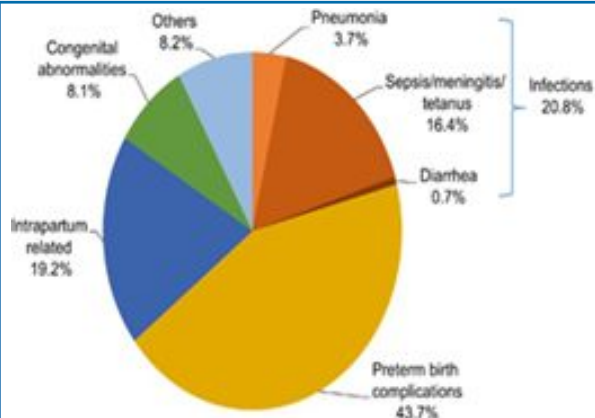
MATERIALS AND METHODS

This study was conducted by the Department of Pediatrics and Department of obstetrics & gynecology, in a service zonal hospital in central India which has technology with trained & dedicated staff along with latest equipments. Indian Armed Forces comprises of people from all corners of Indian subcontinent. Almost three fourth of pregnant women of defense personnel were booked for antenatal examination right from conception and followed through to delivery along with the child up to one year. The rest one fourth joined in second or third trimester as and when they got posted to station. The medical facilities in a military hospital is available to authorized clientele free of cost. Clientele has an average female literacy rate. The antenatal coverage was hundred percent for booked patients and all deliveries were institutional deliveries. The initial aim of the study was to determine the perinatal mortality rate, (PNMR), Neonatal mortality rate (NMR), Infant mortality (IMR) ascertain the causes and compare the available trends to national and international data. The study included all births whether live or still.

STATEWISE NMR IN INDIA

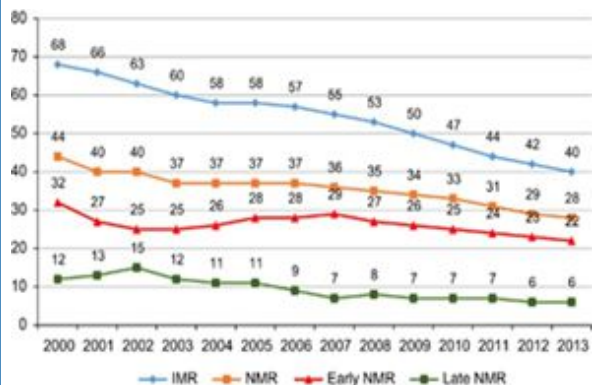


State-wise distribution of NMR in India.



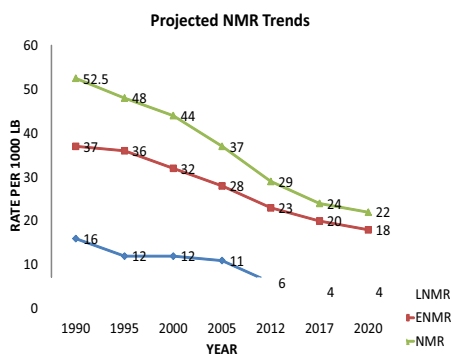
Causes of neonatal deaths in India.

Trends in IMR, NMR, ENMR & LNMR IN INDIA (Source: SRS Statistical Re



Under-five child mortality rate (U5MR)	52
Infant mortality rate (IMR)	42
Neonatal mortality rate (NMR)	29
Early neonatal mortality rate (ENMR)	23
Late neonatal mortality rate (LNMR)	6

Note: Rates expressed per 1000 live births (Source: SRS Statistical Report, 2012 [2])ports (2000-2012)



PROJECTED NMR TRENDS Note: The projections are based on the AARR of NMR from 2000 to 2012; the intervals in X-axis are not uniform(State of India's Newborns 2014)

RESULTS

Results of the study (July 2011 to May 2017)

Total no of births	2665 (M-1352, F-13152)
Preterm	114 (4.27%)
Low birth weight	Total--262(9.8%)
< 2500 gms to 1500 gms	217(8.1%)
< 1500 gms to 1000 gms	32(1.2%)
<1000 gms	13(0.48)
Preterms	110(4.1%)
IUGR	152(5.7%)
Stillbirth	12 (0.45%)
Neonatal deaths	17(0.64%)

Rates in %
 Perinatal Mortality Rate (PNMR) --- - 1.08
 Neonatal Mortality Rate (NMR) ---- 0.457
 Early Neonatal Mortality rate ----(0.56)
 Late neonatal mortality Rate ----(0.075)
 Infant mortality rate (17+8) --- 25 (0.93)
 Causes of Neonatal Mortality in this study

Total Neonatal deaths -17,

	Early neonatal deaths	Late neonatal deaths	Deaths during infancy
Congenital anomalies	4(23.5%)	--	--
Complex cyanotic congenital heart disease	3(17.6%)	--	--
ELBW	3 (17.6%)		--
Sepsis		2(11.7%)	--
Intracranial hemorrhage	2(11.7%)	--	--
RDS	3(17.6%)	--	--
Pneumonia	--	--	2
Bronchiolitis	--	--	1
Head injury	--	--	2
Drug reaction			1
HIV			2

Causes of Neonatal & Infant Morbidity in this study (n=2665)

Respiratory distress	14
Physiological jaundice	912
Fever	275
Upper respiratory infection	700
Sepsis	10
Hypoglycemia	06
Hypocalcemia	05
Diarrhea	35
Dermatitis	36
Conjunctivitis	25
Umbilical sepsis	10
Pathological jaundice	2
Meningitis	2
Seizures	10
Anemias	40
Acute otitis media	17
Encephalitis	2
Malaria	2
HIV	3

DISCUSSION

Mortality rates are good indicators to measure the level of health and health care in a hospital, district, state or country. It also helps in assessing the overall socioeconomic development of a country. Perinatal mortality rate has assumed greater significance as a yardstick of obstetric and pediatric care before and around the time of birth although Perinatal period occupies less than 0.5 percent (less than 168 hrs) of average lifespan, there are more deaths within this period than during the next 30-40 years of life in many developing countries. The infant mortality rate(IMR) has come down to 34 per thousand in 2016 from 37 per 1000 in 2015(7,8)here has been a significant reduction in the quantum of

neonatal and child deaths in the last two decades. The annual burden of neonatal deaths has reduced from 1.35 million in 1990 to 0.76 million in 2012 (Table 1.1). [3] The rate of decline in the child, infant, and neonatal mortality rates has gained momentum only in the last decade – for example neonatal deaths reduced by 32 percent in the period from 2000 to 2012, but only by 17 percent from 1990 to 2000 (Table 1.1).

Perinatal, Neonatal Infant Mortality Rates and Still birth rates in India & bigger states (SRS 2013)

India and bigger states	Perinatal mortality rate	Still birth rate	Early neonatal mortality rate	Neonatal mortality rate	Post neonatal mortality rate	Infant mortality rate
India	28	5	23	29	13	46
Andhra Pradesh	28	6	22	27	14	41
Assam	31	8	23	29	27	55
Bihar	25	1	23	28	16	43
Chhattisgarh	36	11	25	31	15	47
Gujarat	28	7	21	28	10	38
Haryana	30	9	21	28	14	42
Himachal Pradesh	31	12	20	26	10	36
Jharkhand	23	1	23	27	10	38
Karnataka	33	14	20	23	9	32
Delhi	16	6	11	16	-	-
Maharashtra	19	6	14	18	7	25
Kerala	10	6	4	7	5	12
J&K	32	8	24	30	-	-
MP	35	8	29	39	17	56
Odisha	37	6	29	39	14	53
Punjab	20	7	13	17	11	28
Rajasthan	33	6	27	35	14	49
Uttar Pradesh	31	3	28	37	16	53
Tamil Nadu	19	8	11	15	6	21
West Bengal	22	5	17	22	10	32

Infant mortality rates in selected countries 1990–2013 (UNICEF(2014),Committing to Child survival, A Promise Renewed Progress Report,2014

Country	1990	2013
India	88	41
Sri Lanka	18	8
Bangladesh	100	33
Pakistan	106	69
China	78	42
Nepal	42	32
New Zealand	99	5
UK	9	4
Japan	5	2
USA	9	6
World	63	34

About 75 % of all Perinatal death occurs in babies with birth weight of less than 2500gms. The main causes are intra uterine insult, birth asphyxia, low birth weight, birth trauma, antenatal, intranatal and neonatal infections. Neonatal mortality is a measure of intensity with which endogenous factors (low birth weight, birth injuries) affect infant life. It is directly related to the birth weight & gestational weight and Intrapartum related complications. Low birth weight & preterm account for 60 % of neonatal deaths, another 25% occur because of birth asphyxia, all these occur in first week of neonatal life. Perinatal mortality accounts for about 90 percent of all fetal and infant mortality rate in our country. Stillbirths are seldom registered in our country and most of the studies are hospital based. SRS estimates for Perinatal mortality rate in India for the year 2012 was about 32 per 1000 live births and stillbirths with about 35 per 1000 live births for rural areas and 22 per thousand live births for the urban areas (SRS 12). 75 % of

all Perinatal deaths occur in low birth weight. Each year about 2.8 million newborn die before they are four weeks & half of them die in first 24 hours. 98% of these deaths occur in developing countries. Newborn deaths contribute to 44% of all deaths in children under 5 years of age globally and account for more than half of IMR. In India the SRS estimates for the year 2013 was about 23 per 1000 live births in early neonatal period. (1,2,3,15) The percentage of ENMR to total infant deaths during the year 2013 at the national level has been 33(3) and varies from 53 in rural areas to 42.9 in urban areas. The neonatal mortality rate for the country is 29 and ranged from 16 in urban to 33 in rural areas. The highest being in Madhya Pradesh and Odisha (39 each) and lowest being in Kerala (7). The percentage of neonatal deaths to total infant deaths was 68.5 percent. India accounts for 40 % of the global burden of low birth weight i.e 30 % of total annual live births out of this 60% born at term (IUGR), remaining 40% being preterm. (1,23,4) The post neonatal mortality is dominated by exogenous factors (environmental & social). Diarrhea and respiratory infections are the main causes of death during this period in our country and congenital anomalies being the commonest cause in developed countries. Girls die more as compared to male due to negligence of female child. The SRS estimates for post neonatal mortality in India is 13 per thousand live births (14 rural & 12 for urban). IMR is the most important indicator of the health status of a community, effectiveness of MCH services and standards of living of people and is quickly and directly affected by health programmes. The world average of IMR for 2013 was about 34 per thousand live births and varied from 5 per thousand live births in developed countries to 61 per thousand live births in developing countries. IMR in India during the year 2013 was 41 per thousand live births and it has further come down to 34 in 2016 (2,15). The rates are very high as compared to developed nations. In a military hospital medical care is available to authorized clientele free of cost where dedicated specialized medical personnel are responsible for providing medical care throughout the year round the clock and are fully accountable to the client and organization. All basic and advanced equipment and assistance is made available. It is in this scenario the above study was done and it is seen that still birth rate 0.45% neonatal mortality rate of 0.64% , and infant mortality rate of 0.93% is comparable to the best of the centers in the world and same has been achieved by a dedicated organization which maintains all records of the patients with motivated and focused doctors and paramedical staff with no commercial angle and full accountability at all levels.

CONCLUSION

Mortality rates are good indicators to measure the level of health and health care in a hospital, district, state or country. It also helps in assessing the overall socioeconomic development of a country. Perinatal mortality rate has assumed greater significance as a yardstick of obstetric and pediatric care. Therefore to conclude although hospital deliveries have increased but PNMR has not shown decline, NRHM strategy should look into into quality of medical care in first few days of life through the existing infrastructure along with time to time augmentation of equipment , manpower with complete accountability. Strong and sustained political support and public ownership needs to be developed which is guaranteed by the state to provide care for all the newborns. By focusing on priority actions and core principles, countries are already achieving progress, bending the curve on child mortality and moving towards a world where no mother or child dies from a preventable cause. Maintaining this momentum towards a sustainable goal must be our top priority and our study indicates that focused and dedicated approach with accountability and reasonable infrastructure can produce results comparable to best in world.

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