Study of factors affecting neonatal mortality and morbidity in Andhra Pradesh population

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Abstract
Background: Factors which affects neonatal morbidity and mortality is still un-clear especially in developing countries like India. **Method:** 500 Newborns were studied. Diagnosis was based on WHO guidelines for prematurity and LBW (low birth weight), admitted at respective treating units. **Results:** Out of 500 neonates 432 (86.4%) had morbidity. 310 (71.7%) were having BW >2000 gm and 122 (28.2%) were having BW <2000 gm, total mortality of neonates were 63 (12.6%), of which 25 (39.6%) had LBW>2000 gm and 38 (60.3%) had BW<2000 gm. 180 (36%) neonates had respiratory distress. 98 (19.6%) neonates had Hyperbilirubinemia. 222 (44.4%) neonates had sepsis. 63 (12.6%) neonatal deaths had different type of presentation at delivery. **Conclusion:** The present pragmatic study will be helpful to evaluate the various factors affecting neonatal morbidity and mortality, so that preventive measure can be taken to minimize the mortality and reduce the morbidity rates, because it is a global problem especially under developed countries.
Key words: LBW = Low birth weight, HMD = Hyaline Membrane disease, Hyperbilirubinemia, Septicaemia, Respiratory distress.

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INTRODUCTION

The global burden of neonatal death is primarily concentrated in developing countries, where care of neonates is practically non-existent[1]. Of the 4 million neonatal deaths that occur every year, 98% are in the poorest countries[2]. In India as many as 1.72 million children die annually before reaching their first birth day and of these, 72% die during their first month of life, the neonatal period[3]. The neonatal mortality rate varies by state. Overall it is reported to be 23 per 1,000 live births[4]. Rural, tribal and remote areas from cities of India are particularly lacking in health care facilities in this country[5].

Thus population specific systemic and comprehensive strategies are required to reduce neonatal, neonatal morbidity and mortality[6]. One of the causes of morbidity and mortality is little known about the natural history of pregnancies and of neo-natal birth in the rural and tribal are in India[7]. Hence attempt is made to study the both morbidity and mortality of the newborn which are admitted mainly from rural areas.

MATERIAL AND METHOD

500 newborns admitted at Nimra institute of medical sciences hospital Jupudi (V) Vijayawada, Krishna district (AP)-521456 were studied.
Inclusive Criteria: Newborn brought alive and delivered at the hospital with different clinical manifestations were selected for study.
Exclusive Criteria: No exclusion (only dead babies brought to or delivered in the hospital).
Procedure: Each newborn was studied with reference to the maternal and / neo-natal factors affecting mortality and morbidity. Place of birth, sex, birth weight, gestational age, mode of delivery was noted. Diagnosis was mainly based on WHO definition for prematurity, low birth weight (weight <2500 gm) and high risk low birth weight (weight

<2000 gm). Neonates were admitted at respective treating unit after diagnosis. The duration of study was December 2017 to November 2019 (2 years)

Statistical analysis: As Newborn admitted at different treating units with their diseases were classified with percentage. The statistical analysis was done in SPSS software. The ratio of male and female was 2:1.

OBSERVATION AND RESULTS

Table 1: Study of Neonatal Mortality and Morbidity with their Birth weight (Total No.: 500)

Particulars	No. of Patients	Percentage
A) Morbidity	432	86.4%
B) Birth weight		
a) >2000 gm	310	71.7
b) < 2000 gm	122	28.2
C) Mortality	63	12.6
D) Birth wt		
a) >2000 gm	25	39.6
b) < 2000 gm	38	60.3

Table 2: Aetiology of Respiratory distress in Neonates (Total No.: 180)

Sr. No.	Particulars	No. of patients	Percentage
1	HMD	48	26.6
2	Meconium aspiration syndrome	17	9.4
3	Transient tachypnea of newborn	99	55
4	Congenital heart disease	07	3.88
5	Congenital Malformation	9	5

Table 3: Study of Neonatal Hyperbilirubinemia No. of patients: 98 (19.6%)

Sr. No.	Aetiology	No. of Patients	Percentage
1	Prematurity with ABO incompatibility	83	84.02
2	ABO incompatibility	12	12.24
3	Rh incompatibility	3	3.06

Table 4: Study of sepsis as Neonatal Morbidity No. of Patients: 222 (44.4%)

Sl. No.	Particular	No. of Patients	Percentage
1	Culture negative Sepsis	119	53.6
2	Culture positive Sepsis	82	36.9
3	Congenital Pneumonia	21	9.45

Table 5: Type of presentation at delivery in Neonatal deaths No. of Patients: 63 (12.6%)

Sl. No.	Presentation	Neonatal death	Percentage
1	Vertex	40	63
2	Breech	17	26.9
3	Transverse lie	04	6.34
4	Cord Prolapse	02	3.17

Table-1: Study of Neonatal mortality and morbidity with their birth weight (BW). In the morbidity group out of 500, 432 (86.4%) neonates were observed.
   a) 310 (71.70%) neonates were with BW >2000 gm and 122 (28.2%) neonates with LBW < 2000 gm were observed.
   b) There were deaths of 63 (12.6%) neonates out of 500. Mortality observed in the birth weight > 2000 gm were 25 (39.6%) and 38 (60.3%) in the low birth weight < 2000 gm.

Table-2: 180 (36%) neonates had respiratory distress. Aetiology wise 48 (26.6%) had HMD, 17 (9.4%) had Meconium aspiration syndrome, 99 (55%) had transient tachypnea of newborn, 07 (3.88%) had congenital heart disease and 9 (5%) had congenital malformation.

Table-3: 98 (19.6%) neonates had neonatal hyperbilirubinemia. Aetiology in 83 (84.2%) neonates were prematurity with ABO incompatibility, 12 (12.24%) had ABO incompatibility alone and 3 (3.06%) had Rh in compatibility.

Table-4: There were 222 (44.4%) cases of neonatal sepsis out of which, 119 (53.6%) had Culture negative Sepsis, 82 (36.9%) had culture positive Sepsis and 21 (9.45%) had Congenital pneumonia.

Table-5: Type of presentation at delivery in 63 (12.6%) cases of neonatal deaths were 40 (63%) vertex, 17 (26.9%) Breech, 4 (6.34%) transverse lie and 02 (3.17%) cord prolapse.

DISCUSSION

In the present study of factors affecting mortality and morbidity in Andhra Pradesh population – 432 (83.4%) had morbidity, 310 (71.7%) had Body weight (B.W) > 2000 gm, 122 (28.2%) had BW< 2000 gm. There were 63 (12.6%) neonatal deaths, 25 (39.6%) had BW > 2000 gm and 38 (60.3%) had LBW was < 2000 gm (Table-1). Out of 180 (36%) neonates having respiratory distress – 48 (26.6%) had HMD, 17 (9.4%) had Meconium aspiration syndrome, 99 (55%) had transient tachypnea of newborn, 7 (3.8%) had congenital heart disease, 9 (5%) had congenital malformation (Table-2). Out of 98 (19.6%) neonates having neonatal hyperbilirubinemia, 83 (84.0%) had prematurity with ABO incompatibility, 12 (12.2%) had ABO incompatibility alone, 3 (3.06%) had Rh incompatibility as aetiological factor (Table-3). There was sepsis in 222 (44.4%) neonates, 119 (53.6%) had culture negative Sepsis, 82 (36.9%) had culture positive Sepsis and 21 (9.45%) had Congenital pneumonia (Table-4). Type of presentation at delivery in 63 neonatal death cases, 40 (63%) had vertex, 17 (26.9%) had Breech, 4 (6.34%) had transverse lie, 2 (3.17%) had cord prolapse (Table-5). These findings are more or less in agreement with previous studies[8,9,10]. The main root cause of morbidity and mortality was associated birth asphyxia. It was mainly observed in rural tribal and remote area of the cities i.e., Lower middle socio-economic status mothers [11] moreover, in urban or district place where Laboratory facilities available. It was also observed that majority of morbidity and mortality due to sepsis. Socio-economic factors like education and occupation of parents. Maternal factors include age, parity, height, Blood pressure, fever, and ability to perform physical activities. These play vital role in Antenatal care (ANC) services, maternal morbidity along with treatment and referrals (before and during pregnancy) and maternal mortality[12] The additional risk factors are duration or term of pregnancy delivery outcomes and complications, weight gain after birth immunization fever, infections.

SUMMARY AND CONCLUSION

In the present study of factors affecting neo-natal morbidity and mortality in Andhra Pradesh population will be useful to Paediatrician, Obstetrician and Gynaecologist, Radiologist. So that early diagnose can prevent the undue complications. But this study demands further, embryological, genetic, nutritional, hormonal patho-physiological studies because exact mechanism and formation of stages of zygote, formation of germ layers is still unclear.

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