Pattern of Infant Mortality in Titabor Block of Jorhat District, Assam

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ABSTRACT

Introduction: Death of infants is not only tragic but also one of the leading public health problems in developing nations like India. Infant Mortality Rate (IMR) is defined as the probability of dying between birth and exactly one year of age expressed as per 1,000 live births. The study was conducted to study the pattern of infant mortality in Titabor block of Jorhat district of Assam.2.

Methodology: The study was a record based descriptive study. Retrospective data were taken from records which were maintained at Titabor Block PHC. All the records of infants born from1stApril 2014 to 31stMarch 2016 were considered in this study.

Results: Most of the death occurred in early neonatal period followed by post- neonatal period and late-neonatal period. More death occurred in male infants. It was found that the most common cause of death remained unknown (19.78%) followed by birth asphyxia (15.38%), septicaemia (13.74%) and VLBW (13.19%).

Conclusion: The present study concludes that the infant mortality was due to preventable causes of death. This emphasizes the need to improve the quality of antenatal and perinatal care. The high deaths due to undiagnosed cases call for strengthening of health care centre through better diagnostic equipments, human resource development, early recognition of danger signs by health workers through rigorous and periodical training and timely referral.

Key Words: Infant death, IMR, Infant Mortality Rate, birth asphyxia

INTRODUCTION

Infants are said to be the future of a nation. In the words of Wordsworth, "The Child is the Father of the Man". Their death is not only tragic but also one of the leading public health problems in developing nations including India. Infant Mortality Rate (IMR) is defined as the probability of dying between birth and exactly one year of age, expressed as death per 1000 live births.[1] According to World Health Organisation (WHO) IMR is a leading indicator of the level of child health and overall development in a country. It is also a Millennium Development Goal (MDG) indicator.[2]

Global IMR in 1990 was 59.1 which declined to 36.8 in 2010-2015. The IMR in Asia declined from 145.9 in 1991 to 31 in 2010-2015.[3] IMR of India has declined considerably from 80 per 1000 live births in 1991 to 58 per 1000 live births in 2006.[3]IMR of Assam was found to be 48/1000 live births according to the most recent NFHS-4.[4] Though there has been a consistent decline in IMR of India and its states but the rate of decline was not enough to meet the MDG goal to decrease IMR by two-third by 2015.[5]

Various studies that were conducted across the globe found that the first 28 days of life, i.e. the

neonatal period is the most vulnerable and critical for their survival; especially in the 1st week of life. Important causes of Infant and neonatal mortality being prematurity, low birth weight, birth asphyxia, septicaemia and diarrhoea.[6-9]

IMR vary within states and regions[9]according to the local context. The present study was thus conducted with an objective to study the pattern of infant mortality in Titabor block of Jorhat district of Assam.

MATERIALS AND METHODS

The study was a record based descriptive study. Retrospective data were taken from records which were maintained at Titabor Block PHC. All the records of infants born from1stApril 2014 to 31st March 2016 were considered in this study.

The study was undertaken in Titabor BPHC of Jorhat District of Assam which is the rural field practice area of Department of Community Medicine, Jorhat Medical College, Assam, India.All the records of infants born from1st April 2014 to 31st March 2016 under Titabor BPHC of Jorhat District of Assam were included in the study. However, Stillborn, dead in utero, abortion and entries with incomplete record were excluded. Permission from Sub Divisional Medical and Health Officer of Titabor BPHC was obtained in written.

Data were entered in Excel 2010 and analysed using Epi info Version 7.0 for Windows. Results were presented as numbers, percentage, tables, bar diagram and pie chart.

RESULTS

A total of 182 infant deaths were observed during the study period.

Birth weight of the infants

Weigh record of 6 out of total 182 babies were not available and hence they were excluded from analysis. Out of the total 176 infant deaths, most of them were low birth weight babies (LBW) (n=103, 58.52 %) as compared to normal birth weight babies (n=73, 41.48%).

Classification of Infant deaths as per period of life

Most of the death occurred in the first week of life, i.e, early neonatal period (n=99, 54.39%) followed by post- neonatal period (n=58, 31.87%), i.e, from 28th day upto 1 year of life, and late-neonatal period (n=25, 13.87%), i.e, from 7th day upto 28 days of life. In total majority of the deaths (n= 124, 68%) thus have occurred in the neonatal period, i.e., first 28 days of life.

Table 1: The different observations

Parameters	Frequency (%)
Birth weight (n=176)	
Normal weight	73 (41.48)
Low birth weight	103 (58.52)
Period of death (n=182)	
Early neonatal death	99 (54.39)
Late neonatal death	25 (13.87)
Post neonatal death	58 (31.87)
Causes of death (n=182)	
Birth asphyxia	28 (15.38)
Cleft lip and palate	3 (1.65)
Congenital cardiac anomaly	9 (4.95)
Down syndrome	1 (0.55)
Esophageal atresia	2 (1.1)
Fever	8 (4.4)
Hypothermia	5 (2.75)
Jaundice	3 (1.65)
LBW	7 (3.85)
Pneumonia	1 (0.55)
Road traffic accident	1 (0.55)
Septicemia	25 (13.74)
Severe dehydration	6 (3.3)
Severe pneumonia	22 (12.09)
Snake bite	1 (0.55)
Unknown	36 (19.78)
VLBW	24 (13.19)
Place of delivery (n=182)	
Home	11 (6.04)
NICU	1 (0.55)
Nursing Home	11 (6.04)
PICU	1 (0.55)
SCNU	5 (2.75)
Secondary centre	78 (42.86)
Tertiary centre	7 (41.2)
Place of death (n=182)	
Home	43 (23.63)
NICU	4 (2.2)
Nursing Home	2 (1.1)
PICU	4 (2.2)
SCNU	12 (6.59)
Secondary centre	13 (7.14)
Tertiary centre	104 (57.14)

Most of the death occurred in male infants (61.5%, n=112). On further classification, it was found that male infants faced more number of deaths than female during all the three vulnerable period of life, i.e., early-neonatal, post neonatal and late neonatal period.

Causes of death

Upon analysis it was found that the most common cause of death remained unknown (n=36, 19.78%) followed by birth asphyxia (n=28, 15.38%), septicaemia (n=25, 13.74%) and VLBW (n=24, 13.19%).

On further classification our study showed that the most common cause of death in the early-neonatal group, was unknown, i.e. undiagnosed (n=23, 23.33%) followed by birth asphyxia (n=22, 22.22%), VLBW (n=13, 13.13%) and septicaemia (n=13, 13.13%).Most common causes of late neonatal mor-

tality came out to be VLBW (n=7, 28%), birth asphyxia (n=4, 1%) and septicaemia (n=4, 16%).Most common causes of death in post-neonatal group came out to be severe pneumonia (n=13, 22.41%), undiagnosed (n=12, 20.69%) and septicemia (n=8, 13.79%).

Place of birth and death

Our study showed that maximum numbers of infants under the study were delivered in secondary health care centre (n=78) followed by tertiary centre (n=75).Maximum number of death of infants occurred in tertiary health care centre (n=104) followed by death at home (n=43).

DISCUSSION

This study was an attempt to find the pattern of death in infants born under Titabor block of Jorhat District of Assam from 1st April 2014 to 31stMarch 2016. It was seen in the present study that mortality was higher amongst male infants than in female infants. Our results were similar to other studies.[8,9]

In our study, it was observed that the major causes of death among neonatal group remained undiagnosed or unknown followedby birth asphyxia, VLBW, septicaemia. Shah et al [10] also reported that the major cause neonatal deaths were birth asphyxia, prematurity (including LBW), septicaemia and pneumonia.

The present study showed that the major causes of death amongst the post neonatal group to be severe pneumonia, undiagnosed or unknown cases and septicemia which were similar to the study done by Vaid et al .[8]

Reports from Lucknow and Dhaka showed that Tetanus was an important cause of death in the early neonatal period, as late as till 1990's. [11,12] However, our study did not find a single case of neonatal tetanus. This may be due to good immunization coverage amongst the pregnant women.

One of the interesting finding of this study concerns the relationship between institutional delivery and infant mortality. It is perceived that institutional delivery is the most important intervention for saving the lives of the newborns. Government schemes for conditional cash transfers are based on this. In our study, it was found that the maximum number of infants were born in secondary and tertiary health care facilities whereas maximum number of death occurred in tertiary health care centre followed by at home.

Despite the established benefits of institutional delivery, several studies have failed to demonstrate a significant difference in the risk of death between infants born at home and at health facility.[13-16] Cohort studies from Tanzania reported that the survival rate of children born in the community and in health facility was not different.[13] Another study done at Andhra Pradesh have revealed that an increase in institutional delivery was not associated with a significant decline in IMR[14]. Other studies have also revealed similar facts that an increase in institutional delivery was not associated with a significant decline in IMR.[15,16] Over presentation of high risk deliveries and infants in higher health facilities is a plausible explanation for this.

Recent evidences suggest that peripheral hospitals do not intimate before referral to higher centre.[17] Studies also have shown that standing at the receiving end of delayed referral, tertiary centres could do little.[18] Again, lack of capacity in managing serious illness and emergencies in private as well as peripheral public hospitals has been indicated earlier for higher death in tertiary centers.[19,20] A huge chunk of infants died at home. The possible reason could be delay in seeking care by the family.

Another interesting finding of this study is that there were fewer deaths in female infants than in male infants in both the early neonatal and late neonatal period and later in infancy. Explanation given for these differences in deaths in both sexes can be that females have more vigorous immune responses and greater resistance to infection[21], female infants have lower mortality from infections[22] and respiratory ailments.[24] The male disadvantage begins *in utero* when gonadal steroid production already differs strongly by sex [24]. Males are more likely to be born prematurely and to suffer from respiratory conditions in the perinatal period [25,26] Thus, the studies shows a clear disadvantage of male over female infants in terms of survival.

CONCLUSION

The present study concludes that the infant mortality, particularly the neonatal mortality were due to preventable causes of death. This emphasizes the need to improve the quality of antenatal and perinatal care to improve survival in the neonatal period. The high deaths due to undiagnosed cases call for strengthening of health care centre through better diagnostic equipments, human resource development, early recognition of danger signs by health workers through rigorous and periodical training and timely as well as correct referral system.

Present system of incentives upon institutional delivery by itself only cannot be expected to bring down IMR to a low level in the absence of parallel improvement in human resource and referral

sytem. Further research is required to unfold the exact.

Limitations

Since the present study was based on one block, it is not the intention of the authors to generalize the results of the study to Jorhat district altogether. Also, the proportions of infants who were born outside Titabor Block PHC could not be considered in this study.

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