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ETIOLOGICAL EVALUATION OF NEONATAL MORTALITY

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ABSTRACT: OBJECTIVE: To find out the common causes of neonatal mortality of NICU in Fakhruddin Ali Ahmed Medical College & Hospital (FAAMCH), Barpeta- a newly opened academic centre located in rural area. **STUDY DESIGN:** Retrospective study. **SETTING:** Tertiary-level teaching hospital (level III NICU). **PERIOD OF STUDY:** From 01-01-2013 to 31-12-2014. **INCLUSION CRITERIA:** Neonate between 0 to 28 days of life admitted in NICU which included baby born at FAAMCH (INBORN) as well as those referred from periphery (OUTBORN). **EXCLUSION CRITERIA:** Neonate born at FAAMCH but not admitted in NICU. **RESULTS:** There were 670 neonatal deaths out of 3368 admitted at NICU accounting for 19.89% approx.20%. Among these Birth Asphyxia (57%) being the most common cause followed by Sepsis (22%) & prematurity (15%). Around 87% neonatal deaths occurred during the first 7 days of life & males die more than the females. **CONCLUSIONS:** The study has been designed in a rural hospital with minimum facility, little resources & man power. To decrease the neonatal mortality & to improve the neonatal outcome, home delivery to be discouraged, community interventions to improve hygienic delivery, essential newborn care to be promoted, adequate resources to be made available & neonatal resuscitation to be done by skilled personals.

KEYWORDS: Mortality, Neonate, Gender, Birth asphyxia, Sepsis, Prematurity.

INTRODUCTION: Approx. 3 million neonatal deaths occurred globally, most of which could have been prevented with optimal care. Although neonatal mortality is decreasing, the rate of reduction has been slower than that observed for under-5 mortality and neonatal deaths now constitute 44% of all deaths in children younger than 5 years. Slow progress in reducing neonatal deaths will contribute to many countries' inability to meet the Millennium Development Goal 4 (MDG-4) target of reducing child mortality by two thirds between 1990 and 2015. To accelerate progress in reducing neonatal mortality, the every newborn: an action plan to end preventable deaths was launched in June 2014 to provide a strategy for implementing effective cause-specific interventions.

Understanding the neonatal cause-of-death distribution is important for identifying appropriate interventions and programme priorities. Information about the distribution should be as current and as locally derived as possible, and use cause categories that are programmatically relevant for decision-making. Moreover, separate cause-of-death estimates are required for the early (0–7 days of age) and late (8–28 days of age) neonatal periods since both biology and empirical data suggest that the cause-of-death distribution differs substantially between these periods. Around three-quarters of neonatal deaths occur during the early period and most interventions to prevent these deaths need to be delivered within a very short time frame.

So the purpose of our study is to find out the common causes of neonatal mortality so that the effective interventions can be taken to decrease the neonatal deaths.

METHOD OF STUDY: We recorded the admission rate, diagnosis, timing and causes of neonatal mortality at NICU from 01-01-2013 to 31-12-2014. Neonate between 0 to 28 days of life admitted in NICU which included baby born at FAAMCH as well as those referred from periphery.

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Neonate born at FAAMCH but not admitted in NICU has been excluded from the study. The cause of death & percentage being calculated by plotting the values in bar diagram & Pie diagram.

The definition of birth asphyxia has been taken as per as National Neonatology Forum of India & WHO. The criteria for neonatal sepsis is taken based on clinical & laboratory parameters & prematurity is taken as gestational weeks less than 37 completed weeks based on modified Ballard score.

The research was approved by the ethical board of the institute.

RESULTS: There were 670 neonatal deaths out of 3368 admitted at NICU accounting for 19.89% approx. 20%. A total of male newborn admitted were 2063(61%) & total of female newborn admitted were 1305(39%). Out of total 670 neonatal deaths, male accounts for 399(60%) & female of 271(40%). Birth Asphyxia accounts for 382(57%), sepsis 148(22%), prematurity 97(15%) & other causes like congenital anomaly, neonatal hyperbilirubinaemia 43(6%),

Again it has been seen that 580 neonatal deaths occurred during the first 7 days of life accounting for approx. 87% & between 8 to 28 days, it accounts for 13%.

In our study, the percentage of death from Birth asphyxia is similar in both inborn (56%) & out born (57%) but the percentage of death from sepsis is high among the out born (28%) than the inborn (16%). Prematurity accounts for 19% among the inborn & 9% in out born.

Thus of cause specific neonatal mortality, Birth Asphyxia being the most common cause followed by Sepsis & prematurity. Around 87% neonatal deaths occurred during the first 7 days of life & males were more likely to die than the females.

DISCUSSION: Our study demonstrated that the rate of birth asphyxia is very high (57%) in this part of rural area as comparison to National Neonatology Forum of India (20%), India Newborn Action Plan (20%) & WHO (29%).^[1,2,3] This large variation may be due to lack of knowledge & antenatal care, illiteracy and increased home delivery practices. It has also been shown that neonatal sepsis as a cause is low (22%) in our set up as compared to that of NNF (52%), India Newborn Action Plan (33%) but similar to WHO (21%).^[1 to 4] The low incidence of sepsis may be because a large proportion of neonatal sepsis may be hidden or may have died prior to seeking any treatment.

Prematurity as a cause is found to be low (15%) when compared to India Newborn Action Plan (35%) but comparable to NNF (15%) & WHO (14%) [1 to 4]. The high proportion of male death was found to be similar as in other studies.^[5 to 8]

The limitation of our study is that although the incidence of birth asphyxia is very high, it is very difficult to comment about the exact causes of birth asphyxia from our study. So it needs detailed study & research to find out the exact causes of birth asphyxia in this part of rural area.

To conclude-to decrease the neonatal mortality effective wise delivery protocol to be maintained in every hospital, neonatal resuscitation to be done by skilled personals, health education & effective training programme on neonatal resuscitation to be implemented.

Contributors: 1) have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data and have given final approval of the version to be published.; 2) have been involved in drafting the manuscript or revising it critically for important intellectual content; Each author has participated sufficiently in the work to take public responsibility for appropriate portions of the content. Authors serve as "guarantors," i.e. persons who take responsibility for the integrity of the work as a whole, from inception to published article.

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Fig. 1: Shows neonatal mortality of male & female

Fig. 2: Shows cause specific rate of neonatal mortality 2013-14

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Fig. 3: Shows early & late neonatal deaths 2013-

Fig. 4: Shows cause specific neonatal mortality in inborn & out born

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