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Factors associated with gestational health risk and fatal neonatal outcome in rural Bangladesh: A prospective study

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Background: Early termination and health risk of gestation has adverse ramification on neonates including neonatal mortality.

Objectives: The aims of the present study were: to identify the predictors of preterm gestational outcome and factors associated with neonatal deaths in rural Bangladesh.

Methodology: A prospective study was carried out in demographic surveillance system area of Mirzapur from 2008 to 2012. A total of 568 neonates died. World Health Organization's verbal autopsy tools were employed and ICD-10 codes was used for diagnosing the causes of death.

Results: In a rural community of Mirzapur sub-district, neonatal mortality rate was estimated to be 22 per 1000 live birth during 2008 to 2012. Birth rate was 22% in 2008 which significantly decreased in 2012 (16%) (Chi square for trend <0.001; 27% point deceased). On the other hand, a significant increased trend in neonatal death was observed from 15% in 2008 to 26% in 2012 (Chi square for trend <0.001; 73% point increased). In multivariate analysis, severe abdominal pain [aOR=1.59; 95%CI (1.06, 2.39)], water broke before labor [1.56 (1.07, 2.26)], excess bleeding soon after labor [2.14 (1.12, 4.07)] and vaginal delivery [2.94 (1.76, 4.89)] were identified as the risk factors for preterm gestation. Significant associations were observed between early neonatal deaths (≤7-day) and ever able to suckle or bottle fed [0.15 (0.06, 0.38)], fever [0.30 (0.08, 1.06)], fast breathing [0.29 (0.12, 0.70)], grunting [3.36 (1.13, 9.99)], abdominal distention [0.08 (0.02, 0.42)], postural skin rash [0.05 (0.002, 0.92)], and yellow palm or sole [0.15 (0.03, 0.92)]. Perinatal asphyxia (43%) was identified as primary cause of death followed by preterm delivery (24%), sepsis (14%), and pneumonia (9%). Newborns died within 1-day (3 times more), was associated with puffy face of mothers during pregnancy (4 times more), complications during delivery like child stopped moving in the womb (2 times more), and other parts of the body except head came first (3 times more) were likely to be associated with perinatal asphyxia. On the other hand, preterm gestation [0.50 (0.26, 0.95)], water broke before labor [0.32 (0.15, 0.69)], those newborns who died within 0-1 day [0.25 (0.13, 0.50)], and fever in neonates [3.48 (1.43, 8.48)] were associated with sepsis.

Conclusion: Neonatal deaths due to perinatal asphyxia; early gestation (before 37 weeks), and sepsis were associated with poor health condition of mothers during pregnancy and delivery complications as well as pre and post natal care of mothers and their neonates. Improved maternal health, special attention during pregnancy, knowledge about pregnancy complications, and neonatal health related risks, and perinatal care of neonates would reduce the neonatal death.

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