Caesarean Delivery and Its Correlates in Northern Region of Bangladesh: A Comparison of Logistic Regression and Cox Proportional Hazard Model

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Abstract

Caesarean section (c-section) rates have been increasing dramatically in the past decades around the world. This increase has been attributed to multiple factors such as maternal, socio-demographic and institutional factors and is a burning issue of global aspect like in many developed and developing countries. Data was collected through a cross-sectional survey from a proportionate random sample of 1142 women delivering in four private and four public hospitals. Logistic regression and Cox proportional hazard models are the statistical tools of the present study. The logistic regression of multivariate analysis indicated that the risk of having an previous c-section, pregnancy-induced swollen of leg, prolonged labour, higher educational level, mother age 25 years and above, lower order of birth, length of baby more than 45 cm and irregular intake of balance diet were significantly predict for caesarean delivery (CD). With regard to survival time, using the Cox model, fatal distress, previous c-section, mother's age, age at marriage and order of birth were also the most independent risk factors for CD. By the forward stepwise selection, the study reveals that the most common factors were previous c-section, mother's age and order of birth in both analysis. As shown in the above result suggests that these factors may influence the health-seeking behaviour of women. Findings also suggest that program and polices need to address the increase rate of caesarean delivery in Northern region of Bangladesh.

Key words: Caesarean delivery, risk factors, logistic regression, Cox model, Bangladesh

Introduction

Deliveries may occur either by caesarean or non-caesarean. Caesarean delivery, also known as caesarean section (c-section), is a form of childbirth in which a surgical incision is made through a mother's abdomen and uterus to deliver the baby. Higher rates of caesarean delivery are associated with increased maternal and neonatal morbidity. Miller found that the maternal mortality rate associated with caesarean delivery is 3 to 7 times greater than that associated with non-caesarean delivery. In the United States, the mortality rate of infants delivered by caesarean birth was 10.1 per 1,000 deliveries. The overall mortality rate from caesarean delivery alone is 6 per 100,000 procedures. In a study of medical interventions by caesarean sections highlighted that mothers who have their babies delivered by caesarean take longer to first interaction with their child when compared with mothers who had non-caesarean deliveries. Over the last few years, the rates of c-section have risen substantially in many countries such as United States of America (5% in 1998 to 24.4% in 2001), Chile (40% in 1997 to 42% in 1999), Brazil (32% in 1994-1997 to 35% in 2001), Malaysia (10.5% in 2000 to 15.7% in 2006), and Bangladesh (2.5% in 2003-2004 to 12.2% in 2010), despite, the World Health Organization recommendation standard caesarean birth of 10 to 15%. This increase has been attributed to multiple factors such as maternal, socio-demographic and institutional factors. The most common ones are maternal age, order of birth, baby weight, socio-economic status, high levels of maternal education, previous c-section, obstetric complications and high income level.

For the lack of reliable administrative records, no early studies were carried out to identify the possible risk factors associated with c-section in Bangladesh. However, several numbers of studies have been conducted in other