

## THE EFFECT OF DIVORCE ON INFANT MORTALITY IN A REMOTE AREA OF BANGLADESH

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**Summary.** The process of divorce is usually lengthy and hazardous, and can start quarrels that can lead to the abuse of women and their children. This study examines the effects of divorce on neonatal and postneonatal mortality of babies born before and after divorce in Teknaf, a remote area of Bangladesh. The longitudinal demographic surveillance system (DSS) followed 1762 Muslim marriages in 1982–83 for 5 years to record divorce, deaths of spouse, emigration and births. It recorded 2696 live births during the follow-up period, and their survival status during infancy. Logistic regression models were used to estimate the effect of divorce on neonatal and postneonatal mortality, controlling for maternal age at birth, parity, sex of the child and household economic status. The odds of neonatal and postneonatal deaths among babies born after divorce or less than 12 months before mothers were divorced were more than double the odds of those born to mothers of intact marriages. The odds of postneonatal deaths were two times higher among babies born more than 12 months before divorce happens than their peers. The high mortality of infants born before and after mothers were divorced may reflect how abusive marriage and divorce increase the vulnerability of women and children in rural Bangladesh. Divorce and abuse of women are difficult and intractable social and health problems that must be addressed.

### Introduction

Discord between spouses often results in separation or divorce. The process of divorce is usually lengthy and hazardous and can start quarrels that can lead to the physical and mental abuse of women. The victims of such abuse are likely to be depressed and to have different attitudes towards their own health and that of their children than women who have not been abused. Abuse can be recurrent and severe, eventually forcing women to flee from their husband's home and seek divorce. Persistent abuse

in the period before divorce may increase the vulnerability of women and their children, but its consequences for women's lives, pregnancy outcome and infant mortality are largely unknown in Bangladesh and elsewhere.

Divorce in Bangladesh usually results in the wife leaving the husband's home. Usually she returns to her parents' home together with her child or children, but the position of the returning mother is weakened since she has no income of her own. The maintenance support due from the husband after divorce is often not forthcoming (Bhuiya *et al.*, 1999). And there are no effective social institutions to help a woman whose marriage is in discord or has disrupted to get economic support. Her divorce status limits her scope to undertake remunerative work requiring entrance into men's space. She eventually becomes dependent on her parental family for her livelihood. Her parents may have some soft corner for her, but not for her child. The child is rather seen as a barrier to her remarriage, although the chances of this are not high for a divorced woman. Her parental family regards her child as a burden. Therefore, the social and economic support of her natal family may not readily be available to cope with health crises, particularly those of her child. Divorce, through economic and social insecurity, limits her access to food and health services for herself and her children. The alternative for infants of divorced parents is to stay with the father, but this may not be of any advantage. His remarriage puts the child under the step-mother's treatment. The step-mother cares less for step-sons and step-daughters than for her biological children. Eventually, divorce increases the vulnerability of infants born before and after it occurs in societies where women lack gainful employment and social support.

There is some evidence for an adverse effect of divorce on child health. Children of separated or divorced parents have higher morbidity and mortality than children in intact marriages in developed and developing countries (e.g. United Nations, 1985; Mauldon, 1990; Bhuiya & Chowdhury, 1997). None of the existing studies has been able to differentiate between the effects of divorce on child health in the periods before and after it occurs. The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) has longitudinal demographic datasets of unique quality from two culturally different rural areas – Matlab and Teknaf – to examine the consequences of divorce before and after it occurs. Teknaf is characterized, in comparison with Matlab, by very high rates of divorce and remarriage (including polygyny), and high rates of fertility and infant mortality (Alam, Saha & van Ginneken, 2000). For this reason, an assessment of the effect of divorce on child health in each of the two areas is warranted. Bhuiya & Chowdhury (1997) report for Matlab that the survival chances of infants after divorce are significantly lower than those of intact marriages. This article reports on the consequences of divorce before and after it happens in terms of neonatal and postneonatal mortality in Teknaf.

The objective of this study was to estimate neonatal and postneonatal mortality of babies born after divorce, born less than 12 months before divorce and born more than 12 months before divorce and to compare their mortality with that of babies born to non-divorced mothers, controlling for maternal age, parity and sex of the child, which are known to have an effect on infant mortality in Teknaf (Alam, 1995). Identification of the adverse effects of marital disruption on child health before and

after it occurs may draw attention to an important social cause of infant and child mortality and morbidity.

### **Methods**

The data used in this study came from five villages of Teknaf where ICDDR,B maintained a demographic surveillance system (DSS) for recording births, deaths, marriages, marital disruptions and migrations during 1976–89. The Teknaf-DSS has been described elsewhere (Rahman *et al.*, 1987). Teknaf is at the south-eastern tip of Bangladesh bordering Myanmar. The people of Teknaf are mostly illiterate, conservative Muslims. Men are employed in agriculture and fishing in nearby rivers and the Bay of Bengal, while women are engaged in household chores.

The DSS recorded 1762 marriages during 1982–83, visiting each household monthly. Marriage refers to a union that is established by civil or religious procedures. During the follow-up period of 5 years, 451 marriages ended in divorce, 40 marriages were disrupted due to the death of a spouse, and another 28 marriages were lost to follow-up due to emigration of both partners. Divorce is dissolution of marital union through civil, religious or social procedures. Most marriages and divorces were not registered with the government system.

These couples had 2696 live births during the follow-up period. Births were followed for 1 year to ascertain their survival status. The birth form contained information on mother's age at birth, parity and education and sex of the child. Mothers were mostly illiterate, 4.9% having one or more years of schooling. Mother's education was therefore not included in the analysis.

The Teknaf Household Socioeconomic Census 1982 provided information on the socioeconomic status of the husband's family. Ownership of land was coded '1' if the family owned more than 0.30 acres of land. Ownership of a fishing boat and net, betel leaf and betel nut garden, or a remittance received from abroad were coded '1', and '0' otherwise. The number of economic assets a household owned was used to determine socioeconomic status.

### *Data analysis*

The explanatory variable of interest was divorce, which is the outcome of extreme incompatibility whatever the cause, usually over a long period of time. Divorce may have strong effects on the mortality of infants born not only after divorce occurs, but also on those born long before divorce has occurred. It is hypothesized that infants born after divorce, born less than 12 months before mothers were divorced and born more than 12 months before mothers were divorced, experienced higher mortality than infants of mothers whose marriages were intact.

Children of divorced mothers were likely to be of lower birth order, especially first order, than those of non-divorced mothers. The first-order births commonly occurred among teenage mothers. The association between maternal divorce and infant mortality could be confounded for lack of control for birth order and maternal teenage. In addition to these two variables, other confounding variables could be the

gender of the child and household economic status. All these variables were made binary, and so was the dependent variable, 'death/survival during the neonatal and postneonatal periods'. Separate logistic regression analyses for neonatal and postneonatal deaths were conducted to estimate the net effect of marital disruption, controlling for all other variables.

### Results

Table 1 shows that 2.7% of the 2693 births occurred to mothers after divorce, 4.5% to mothers less than 12 months after divorce took place and another 5% more than 12 months before mothers were divorced. Of these births, 223 died as neonates and 136 as postneonates. Neonatal and postneonatal death rates were higher among births of all three groups of women whose marriages ended in divorce. As expected, the death rates were higher for first births and for babies born to teenage mothers.

The logistic regression models reveal that the odds of neonatal and postneonatal deaths were higher not only among babies born after divorce, but also among those born before mothers were divorced (Table 2). The shorter the interval between birth and divorce, the higher the odds of neonatal and postneonatal deaths. Moreover, the odds ratios were higher for postneonatal deaths than for neonatal deaths. Consistent with the bivariate results, the odds of dying were elevated for infants born to teenage mothers in the neonatal period, and for first births in the postneonatal period.

### Discussion

This study highlights the higher odds of neonatal and postneonatal deaths if births occurred after divorce or less than 12 months before divorce, or occurred more than 12 months before mothers were divorced in comparison with births that took place among mothers whose marriages remained intact. Mother's divorce status has a demonstrable effect on mortality in the period preceding divorce. This effect on mortality was greater in the postneonatal period than in the neonatal period, and among babies born less than 12 months than among those born more than 12 months before divorce occurs. In particular, the high neonatal and postneonatal mortality of babies born before divorce occurred, other things being equal, could be the result of family hazards such as women's negative social interactions or conflict with spouses or in-laws in the period preceding divorce. Conflict with intimate family members whose assistance is needed regularly may cause significant distress to women and weaken access to social and economic resources and health care. The finding that the shorter the birth-divorce interval the higher the neonatal and postneonatal mortality provides indirect evidence of family hazards to women in the long process of divorce.

As found in an earlier study (Bhuiya & Chowdhury, 1997), mother's divorce status is related to higher mortality of infants born after divorce than infants born to non-divorced mothers. This high infant mortality could be the effect of reduced resources available to divorced mothers for raising infants. Divorce, therefore, marks the end of the persistent abuse to which a woman has been exposed in the process of divorce, and the start of precarious economic and social conditions in this rural area of Bangladesh. Wife-beating is one of the manifestations of physical violence and

**Table 1.** Percentage distribution of live births by mother's marital status and other sociodemographic variables and neonatal and postneonatal death rates per 1000 live births

Maternal factors	No. live births <sup>a</sup> (%)	Neonatal death rate	Postneonatal death rate
All	2693 (100.0)	83	50
Mother's marital status			
Birth after divorce	74 (2.7)	189	135
Birth <12 months before divorce	121 (4.5)	141	136
Birth >12 months before divorce	134 (5.0)	97	99
Birth of intact marriage	2364 (87.8)	76	41
$\chi^2$ (3 df)		18.2, $p < 0.001$	39.3, $p < 0.001$
Birth order			
First birth	1341 (49.8)	96	69
Second birth	942 (35.0)	84	39
Third birth	410 (15.2)	37	20
$\chi^2$ (2 df)		14.7, $p = 0.001$	19.5, $p < 0.001$
Mother's age (years) at birth			
<17	801 (29.7)	112	62
17-19	764 (28.4)	79	44
20+	1128 (41.9)	65	47
$\chi^2$ (2 df)		14.3, $p = 0.001$	2.8, $p = 0.25$
Sex of child			
Male	1357 (50.4)	93	52
Female	1336 (49.6)	73	50
$\chi^2$ (1 df)		3.6, $p = 0.06$	0.1, $p = 0.8$
Husband's household assets			
None	1669 (62.0)	82	54
Some	786 (29.2)	79	40
Unknown	238 (8.8)	105	69
$\chi^2$ (3 df)		1.7, $p = 0.42$	4.0, $p = 0.14$

<sup>a</sup>At the start of the neonatal period.

Note: three live births were excluded due to emigration as neonates.

these findings are, therefore, in agreement with the results of a study in rural India, in which significant associations were found between wife-beating and a high rate of fetal and infant deaths (Jejeebhoy, 1998). In general, the unfavourable social, economic and living conditions of mothers of unhappy but intact marriages (indicated by their later divorce status) or divorced mothers may have increased their vulnerability, as well as that of their children.

Though marital unhappiness and divorce would not in general lead to interruption of breast-feeding and nursing, infants affected by these factors may suffer in terms of

**Table 2.** Logistic model odds ratios (and 95% CI) of neonatal and postneonatal deaths on mother's marital status and other sociodemographic correlates

Maternal factors	Neonatal deaths	Postneonatal deaths
Mother's marital status		
Birth after divorce	2.51** (1.36-4.63)	2.97** (1.46-6.0)
Birth <12 months before divorce	1.88** (1.09-3.24)	2.98** (1.67-5.32)
Birth >12 months before divorce	1.16 (0.63-2.12)	1.96* (1.05-3.65)
Birth of intact marriage	1.0	1.0
Birth order		
Third birth	0.48* (0.27-0.85)	0.34** (0.16-0.73)
Second birth	1.05 (0.77-1.44)	0.67* (0.44-1.02)
First birth	1.0	1.0
Sex of child		
Female	0.75* (0.57-0.99)	0.93 (0.66-1.32)
Male	1.0	1.0
Mother's age (years)		
<17	1.63** (1.15-2.3)	1.02 (0.66-1.55)
18-19	1.16 (0.81-1.67)	0.86 (0.55-1.35)
20+	1.0	1.0
Husband's household assets		
Unknown	1.39 (0.87-2.21)	1.23 (0.7-2.16)
Some	0.97 (0.7-1.33)	0.78 (0.51-1.19)
None	1.0	1.0
Model $\chi^2$ , 10 df	435.0**	52.2**

\* $p < 0.05$ ; \*\* $p < 0.01$ .

food intake, sickness care, nutritional status, accidental injury and the like. All these factors may have played a role in increasing mortality of infants of mothers who were not yet divorced or divorced later. An idea of the importance of these factors can be obtained by looking at cause-of-death patterns. In one study in another rural area of Bangladesh it was found that more than half of neonatal deaths were a consequence of low birth weight, and four out of five postneonatal deaths were caused by infectious diseases and malnutrition (Alam & van Ginneken, 1998). Both the endogenous and exogenous causes of death are a consequence of complex interactions between mother and child, both at the biological and behavioural level (Mosley & Chen, 1984).

The causes of the relationship between divorce and high infant mortality need critical evaluation. It can be argued that the death of certain infants could be the cause of the divorce rather than the consequence. This 'reverse causality' exaggerates the effects of divorce on the mortality of infants born before it happens. This phenomenon would only manifest itself in situations where there is a pattern of

repeated child deaths in a family. This cannot be the case in the present study because babies born before divorce happens were mostly first-order births. The relationship between marital discord, infant death and subsequent divorce might be circular. In a patrilocal exogamous system of marriage, a bride joins her husband's family far away from her natal home. Her husband and in-laws, particularly mother-in-law, expect her to adjust to the new place and prove her suitability as a good houseworker. Quite often her workload can be too heavy to bear and result in failure to fulfil their expectations. At this point a crisis begins, and for some it is the beginning of the process of divorce. The crisis may continue and become intense resulting in extreme psychological pressure and physical violence as time passes. In the meantime, if she is pregnant or has a young child, her additional work related to pregnancy or childcare interferes with her physical capacity to perform housework, resulting in recurrent abuse leading to poor care – an important predictor of pregnancy outcome or infant death. Sometimes, poor pregnancy outcome or infant death may be perceived as gross failure to take adequate care and accelerate the process of divorce. Thus, abuse, infant death and divorce can work circularly and synergistically to cause a divorce. The effect that flows from infant death to divorce may be preceded by abuse of women resulting in poor childcare. The pathways outlined above are not meant to be definitive but only illustrative of potential mechanisms linking the divorce process to high infant mortality.

The effect of divorce before it occurs on infant mortality could also be understated. Not all unhappy unions result in divorce; an appreciable proportion result either in separation (another expression of marital unhappiness) or remain intact. The demographic surveillance system in Teknaf had no information on separation or marital discord. Lack of such information may have biased downward the effects of the process of divorce on infant mortality. One study in rural Bangladesh reported that infant mortality was much higher in cases of death of one of the parents than survival of both parents (Over *et al.*, 1993). This factor probably did not play an important role in the present study, since very few parent deaths were recorded.

It can also be argued that divorced mothers in the sample simply differed from mothers in intact marriage in some other unmeasured way. If this is the case, then the apparent effect of divorce was overstated. 'Self selection' probably did not play a significant role in this study because the analysis included a number of important variables – mother's age, parity and household economic status – which are likely to be related to neonatal and postneonatal mortality. The husband's household economic status and younger age at marriage were found to be weakly related to the divorce risk (Alam *et al.*, 2000). The most significant predisposing factors for divorce were the husband's polygamy and the bride's divorce status at current marriage, but these factors were not related to infant mortality (data not shown). The above findings suggest that the social and economic hardships that women face in the long process of divorce, and after divorce, may cause the divorce–infant mortality relationship.

The relationship between marital disruption and high infant mortality gives only a partial view of the vulnerability of a mother of an unhappy but intact marriage or a divorced mother in rural Bangladesh. Vulnerability of women before and after

divorce occurs was the most important of a number of risk factors that were studied with respect to infant mortality. It may be concluded that infants of women in unhappy unions (indicated by their later divorce status) and of divorced women are highly vulnerable groups in this rural area of Bangladesh and deserve special attention for remedial actions and intervention. If marital breakdown had no effect before and after it occurred, neonatal mortality in this community would have been 8% lower, postneonatal mortality 18% lower and infant mortality 13% lower. Abuse and divorce are difficult and intractable social problems affecting the health of women and their children that must be addressed.

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