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# Paternal Deprivation and Child Mortality[t]

## Introduction

THE past decade witnessed a dramatic growth in the research effort to understand the determinants of infant and child mortality. Data from large-scale demographic surveys such as the World Fertility Survey were analyzed and reanalysed in order to clarify the relative significance of the factors involved (e.g., Hobcraft, McDonald and Rustein, 1985; United Nations, 1985). The importance of maternal education was firmly established while that of breast feeding and child spacing were hotly debated. Curiously, while all sorts of differentials came under scientific scrutiny, the effect of mother's marital status on child mortality received hardly any attention. This is particularly surprising because the plight of orphaned children has been a much exploited theme in art and literature. But one rarely comes across a precise quantitative assessment of higher risk of mortality among orphaned children.

A study of the impact of orphanhood on child mortality may also be relevant in understanding reasons for the rapid fall in infant and child mortality during mortality transition. The unprecedented decline in mortality since the 1920s had meant that children who would have lost at least one of their parents by the tender age of five has declined from around 20 per cent to under 3 per cent. This dramatic improvement in survival chances of parents could have accelerated the fall in infant and child mortality. In general, implication of a fall in the level of mortality in one age interval on another interval has been least understood; however, in recent years the topic appears to be receiving some scholarly attention (e.g., Feachem *et al*,, 1992; Strong, 1992; Elo and Preston, 1992).

Recent analyses of large-scale survey data have highlighted the role of the mother in the provision of health care to her children, and tended to marginalize the importance of the father in the process. Inadequate data on household income in these surveys may have dwarfed the role of father as a care taker of family's health. A more precise assessment of father's role vis-a-vis that of the mother's is possible by eamining mortality risks of paternally and maternally orphaned children.

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From some sparingly used data from Indian censuses, it is possible to estimate child mortality levels by mother's marital status. These estimates can be made separately for major states of India and for important socio-economic groups. They provide a ready basis for assessing the importance of father as a provider of health care in the Indian social milieu. However, a comparison with that of mother is not possible from them because of non-availability of similar data by father's marital status.

**Data and Methods**

The 1981 census of India collected some extremely valuable data on children ever born and children surviving from which indirect estimates of child mortality could be derived (United Nations, 1983). They have been used for deriving much-needed estimates of infant mortality at the district-level and for assessing the child mortality variations in different strata of India's highly pluralistic society (India, Registrar General, 1988). However, few have taken advantage of the fact that the basic data required for the indirect estimation of child mortality are tabulated for both ever-married women and currently-married women. The data thus allow estimates of child mortality to be made for; (i) women whose husbands are currently alive, and (ii) for women who are either widowed or divorced or separated from their husbands (i.e., women who are ever-married but are not currently-married). One may call women in the latter category as being in post-married state. As per the 1981 census, about 65 per cent of the women in this category in the relevant age groups were widowed and the rest were either divorced or separated from their husbands. Thus estimates of child mortality derived from the responses of these women, if not reflect wholly the impact of paternal orphanhood, it does reflect the effect of paternal deprivation.

From the 1981 census tabulations, it is possible to derive estimates of child mortality by mother's marital status for rural and urban areas of all the states and union territories of India. Also it is possible to make these estimates by religion and educational level of the mother. In addition to the 1981 census, data useful for the computation of child mortality were collected in the 1951 census in Madhya Pradesh and Travancore-Cochin, which were also classified by women's marital status (India, Registrar General 1953). The 1951 census data permit the estimates to be made separately for the livelihood class of women's household. Analyses of all these data provide wealth of information on differentials and time trend in the impact of paternal deprivation on child mortality.

In deriving the estimates of child mortality from the data on children ever born and children surviving, a set of multipliers that depend upon the age-pattern of mortality of the poulation studied is necessary. In the estimates presented in this paper, we employed the South model coefficients given in the UN Manual X (United Nations, 1983). The child mortality estimates derived from this procedure are also sensitive to the assumption on the age pattern of fertility which is usually inferred from the ratios"of average parities of all women in the age intervals 15-19,20-24 and 25-29. Since the children of currently-married

1. The percentage of widowed women among post-married women increases with age. As in this paper we have employed an average estimate of child mortality derived from the responses of women aged 20-34, we have reported the proportion for this age interval.

and post-married women may not have the same age distribution, it would be incorrect to use the same set of average parities in deriving the estimates of child mortality. Therefore, we employed a hypothetical set of average parities of all women (i.e. irrespective of marital status) in each case, which was computed by multiplying the reported average parities of each group of women by the observed proportion of ever-married women in the corresponding age interval. The assumption underlying this computation is that currently married women and post-married women had the same distribution of age at first marriage, but their fertility behaviour differed after marriage.

The application of the indirect method of estimating child mortality produces estimates of proportion of live births failing to survive to various childhood ages, depending on the age of the mother. Although estimates based on younger women are generally more reliable, the number of post-married women involved could be very small, leading to significant sampling fluctuations. Therefore, we have computed an unified estimate of under-five mortality rate (proportion who do not survive to age 5 among 1,000 live births) from the estimates of child mortality derived from the responses of women of age interval 20-24, 25-29 and 30-34. This is done by graduating the child mortality estimates using the Brass logit transformation (Brass *el al.*, 1968). The graduated estimate of under-five mortality refers to a period approximately 4.5 years before the census (i.e., 1976-77).

In scrutinizing the estimates of child mortality so derived, it is useful to keep in mind that we know the marital status of the mother as on the day of the census, whereas her children's mortality experience could be ascertained for a time span before the census. As child mortality experience of two groups of women is not being compared for a perspective interval, we may somewhat be underestimating the impact of paternal deprivation in this paper.

Before examining the estimates of child mortality presented in the next section, it may be important to know just how many children are exposed to the risk of paternal deprivation. As per the 1981 census data, the proportion of children ever born to post-married mothers among children ever born reported by all woman rises from just one per cent when the mother is aged 15-19 to 13 per cent when she is aged 45-49. Among children of mothers in the age interval 20-34, whose mortality experience was mainly employed in deriving the estimates presented in this paper, only about two per cent belonged to post-married women. Thus, at least under the current mortality situation, paternal deprivation is not an important factor in the determination of child mortality level. However, mortality experience of this small group of children could be invaluable in assessing the role of the father in child care.

## Results

### *1981 Census*

Table 1 presents estimates of child mortality derived from the data on children ever-born and children surviving for currently married women and post married women. Estimates are shown separately for male and female children. These estimates indicate that at ages under five years, children of post-married women had experienced 22 per cent higher mortality

than children of currently married women. The estimates of cumulative mortality for higher ages suggest that mortality differentials by mother's marital status tend to narrow down as children become older.[2] The table also reveals that mortality risk increases almost equi-proportionally among male and female children when deprived of paternal care.

TABLE 1 : ESTIMATES OF CHILD MORTALITY BY MOTHER'S MARITAL STATUS FROM THE 1981 CENSUS, ALL INDIA

| *Age interval of women in 1981* | *Derived child mortality index* | *Probability of dying before attaining age x* | | | | *Excess mortality among children of post married women (%)* | |
|---|---|---|---|---|---|---|---|
| | | *Currently-married women* | | *Post-married women* | | | |
| | | *Son* | *Daughter* | *Son* | *Daughter* | *Son* | *Daughter* |
| 15-19 | q(1) | 0121 | 0107 | 0147 | 0134 | 211 | 243 |
| 20-24 | q(2) | 0125 | 0120 | 0155 | 0147 | 238 | 221 |
| 25-29 | q(3) | 0130 | 0133 | 0159 | 0162 | 223 | 216 |
| 30-34 | q(5) | 0146 | 0156 | 0180 | 0189 | 230 | 208 |
| 3539 | q(10) | 0164 | 0181 | 0196 | 0210 | 195 | 165 |
| 40-44 | q(15) | 0178 | 0202 | 0214 | 0238 | 203 | 182 |
| 45-49 | q(20) | 0189 | 0219 | 0218 | 0243 | 153 | 107 |
| Under-5 mortality rate* | | 147 | 150 | 180 | 181 | 226 | 211 |

*For 1,000 live births. Derived from the graduation of the estimates of q(2), q(3) and q(5).

Table 2 shows estimates of under-five mortality rate by mother's marital status for major states of India. As one would expect, in every state, children of post-married women were exposed to higher mortality than children of currently married women. But there are significant variations in the degree to which this is observed in different states. The excess mortality of children of post-married women is least in Punjab, Haryana and Uttar Pradesh where it does not exceed 10 per cent. The relative deprivation appear to be larger in Maharashtra, Kerala, West Bengal and Bihar were the excess mortality among paternally orphaned children exceeds 30 per cent.

Table 2 also presents estimates of child mortality by mother's marital status in rural and urban areas of India. If the excess mortality of children of post-married women is 17 per cent in rural areas, it is 44 per cent in urban areas. Thus there appears to be greater need for paternal care in urban areas than in rural areas.

The 1981 census data allow estimates of under-five mortality rate by mother's marital status be made separately by religion and educational level of mother. Such estimates derived from all-India data are shown in Table 3. If the excess mortality of paternally deprived children is of the order of only 2 per cent among Sikhs, it is over 35 per cent among Jains and Buddhists. However, the three major religious groups, Hindus, Muslims and Christians, do not show significant variation in the excess mortality of paternally deprived children. Among them, the excess mortality is of the order of 20 per cent.

2. The decline in the differential may also be because of the fact that estimates of child mortality derived for older women refer to periods further back from the census for which date mother's marital status at the census may not serve as a good proxy.

TABLE 2: ESTIMATES OF UNDER-FIVE MORTALITY RATE BY MOTHER'S MARITAL STATUS FOR MAJOR STATES* OF INDIA, 1981 CENSUS

(per 1,000 births)

| *Major States* | *Mother's marital status* | | *Excess mortality among children of post-marrried women* | |
|---|---|---|---|---|
| *Currently married* | | *Post-married @* | *Absolute* | *Percentage* |
| Andhra Pradesh | 132 | 163 | 31 | 23 |
| Bihar | 138 | 183 | 45 | 33 |
| Gujarat | 125 | 151 | 26 | 20 |
| Haryana | 142 | 157 | 15 | 10 |
| Karnataka | 133 | 156 | 23 | 17 |
| Kerala | 72 | 106 | 34 | 47 |
| Madhya Pradesh | 193 | 246 | 53 | 27 |
| Maharashtra | 139 | 207 | 69 | 49 |
| Orissa | 184 | 228 | 44 | 24 |
| Punjab | 119 | 124 | 5 | 4 |
| Rajasthan | 176 | 216 | 39 | 22 |
| Tamil Nadu | 127 | 160 | 33 | 26 |
| Uttar Pradesh | 186 | 204 | 18 | 9 |
| West Bengal | 123 | 167 | 44 | 36 |
| India; | | | | |
| Total | 148 | 181 | 32 | 22 |
| Rural | 164 | 192 | 28 | 17 |
| Urban | 96 | 138 | 42 | 44 |

*Excludes Assam where the 1981 census was not conducted. @ Includes widowed, divorced or separated women.

Does mother's education help in reducing the impact of paternal deprivation on child survival? Estimates presented in Table 3 indicate that although the survival chances of paternally deprived children improve with the rise in mother's education, in relative terms, they become worse off. Thus, with the increase in mother's education from illiteracy to matric and over, under-five mortality rate among paternally orphaned children reduces to one-third of its original value; but in comparison to children living with both of their parents, their excess mortality rises from 17 per cent to 30 per cent, even though the absolute difference in mortality between the two groups of children does fall.

7957 *Census*

Estimates of under-five mortality derived from the maternity data of 1951 census for Madhya Pradesh and Travancore-Cochin are shown in Table 4. Estimates for Madhya Pradesh show almost no difference in child mortality between currently married and post-married women. Estimates for Travancore-cochin however show 24 percent higher child mortality among post-married women. The territorial configuration of these provinces were quite different from that of the present, but one may attempt a rough comparison. By comparing estimates of Madhya Pradesh in Table 2 and Table 4 one finds that under-five mortality has declined from about 400 in 1951 to about 250 in 1981 among paternally deprived children but their excess mortality vis-a-vis that of paternally non-orphaned Children

TABLE 3 : ESTIMATES OF UNDER-FIVE MORTALITY RATE BY MOTHER'S MARITAL STATUS: DIFFERENTIALS BY RELIGION AND EDUCATIONAL LEVEL OF MOTHER, ALL INDIA 1981 CENSUS

(per 1.000 births)

| *Mother's Characteristic* | *Mother's marita status* | | *Excess mortality among children of post-married women* | |
|---|---|---|---|---|
| | | *Post-married* | *Absolute* | *Percentage* |
| Religion | | | | |
| Hindus | 153 | 186 | 33 | 22 |
| Muslims | 130 | 163 | 33 | 26 |
| Christians | 97 | 117 | 20 | 20 |
| Sikhs | 117 | 119 | 2 | 2 |
| Jains | 80 | 114 | 34 | 42 |
| Buddhists | 178 | 239 | 61 | 35 |
| Others | 155 | 165 | 11 | 7 |
| Education Level | | | | |
| Illiterate | 168 | 197 | 29 | 17 |
| Primary or less | 110 | 130 | 20 | 18 |
| Middle | 76 | 93 | 17 | 24 |
| Matric & above | 49 | 64 | 15 | 30 |

has gone up from 4 per cent to 27 per cent. Similarly, comparison of Travancore-Cochin with Kerala quite different from that of the present, but one may attempt a rough comparison. By comparing estimates of Madhya Pradesh in Table 2 and Table 4 one finds that under-five shows that under-five mortality has declined from about 300 to 100 among children of post-married women but their excess mortality has gone up from 24 per cent to 47 per cent. Thus, though mortality has declined substantially among paternally orphaned children during the 30-year period, they have not fared so well as those who are fortunate to have their father living with them.

TABLE 4 : ESTIMATES OF UNDER-FIVE MORTALITY RATE BY MOTHER'S MARITAL STATUS FOR MADHYA PRADESH AND TRAVANCORE -COCHIN DERIVED FROM THE MATERNITY DATA OF 1951 CENSUS

(per 1,000 births)

| *Livelihood* | *Madhya Pradesh** | | | *Tranvancore-Cochin @* | | |
|---|---|---|---|---|---|---|
| *class of households* | *Currently married mothers* | *Post-married mothers* | *Excess mortality (per cent)* | *Currently married mothers* | *Post married mothers* | *Excess mortality (per cent)* |
| Landlords or tenants | 373 | 387 | 3.8 | 211 | 262 | 24.2 |
| Agricultural labourers | 401 | 394 | -1.7 | 279 | 348 | 24.7 |
| Non-agricultural workers | 384 | 414 | 7.8 | 241 | 291 | 20.7 |
| All Classes | 380 | 395 | 3.9 | 240 | 297 | 23.8 |

*For the territory before reorganisation of states. @
Mainy the southern Kerala.

Table 4 also gives estimates of child mortality by livelihood class of households. The estimates show that child mortality was highest in agricultural households and lowest in households of landlords and tenants. The differential was quite large in Travancore-Cochin but almost negligible in Madhya Pradesh, where the overall level of mortality was quite high. Child mortality levels also did not vary significantly by mother's marital status in Madhya Pradesh whereas in Travancore-Cochin children of post-married women experienced significantly higher mortality than children of currently married women in all livelihood classes. These mortality differentials indicate that while Tran vancore-Cochin was in the midst of mortality transition around 1951, it had hardly begun in Madhya Pradesh.

**Discussion**

In order to interpret the above results, we should have a clear idea of what the excess mortality of children of post-married women may signify. In all patrilineal cultures, the absence of the father, ought to imply a loss of revenue to the household. But the impact of this loss on child mortality could vary from community to community depending on the adequacy of the support-system for the widow. Thus large excess mortality of children of post-married mothers should normally be associated with poor support-system for widowed/divorced/separated women. Unfortunately our society is not well known for treating such women with kindness. Not surprisingly, the Indian data examined here show significant differentials in child mortality by mother's marital status.

A study based on longitudinal data for Madab, Bangladesh had shown that the death of the father is important only for children 5-9 years old (Strong 1992). Our results suggest that it is also important in younger ages, though due to the nature of our data we cannot measure the timing factor very precisely. It should however be noted that due to the small number of deaths involved, the Madab study could detect only large differences. According to the study, mortality risk is three times higher among paternally orphaned children in the age interval 5-9 years in comparison to 20 per cent we find in ages below five years. The Matlab study had also shown that mother's death is far more catastrophic to the child than the death of the father; unfortunately this could not be tested from our data.

The regional variation in the effect of paternal deprivation on child mortality indicated by our estimates is particularly intriguing. They suggest that the excess child mortality of post-married women is generally low in northern India, especially so in the geographically contiguous states of Punjab, Haryana and Uttar Pradesh. Could we then conclude that support-system for widows is better in northern India? Since direct government support for widows and her family only reach the tip of the iceberg, we must look for probable differences in family and inheritance systems for an explanation. In this respect, data from the Indian censuses do suggest that joint families are more common in northern India than in either southern or eastern India (see Table 5), and thus one might be tempted to conclude that widows get relatively better protection in northern India. But it was observed that correlation between the proportion of households with two or more married couples and our estimates of excess mortality of children of post-married women is, though negative, not statistically significant ($r$ = -0.37).

Perhaps more relevant comparison to make is between the excess mortality of children of post-married women and the proportion of women left to themselves to take care of their family after dissolution of marriage from death, divorce or separation. Unfortunately, state-level data on broken-nuclear households managed by widow/divorced/women are not readily available to make his comparison. However, the 1981 census do provide separately data on female-headed households and broken-nuclear households headed either by a male or a female. These are shown in Table 5. The correlation between our estimate of excess mortality of paternally deprived children and percentage of fragmented-nuclear huseholds is positive as expected, but still not statistically significant *(r=OAG)*. However, its correlation with percentage of female-headed households is not only positive but statistically significant (r=0.53).

Thus our results suggest that women may be enjoying greater autonomy in South India, but the same system has weakened the social-support base for a widow and her family in times of crisis. Greater the incidence of female-headed households larger is the excess mortality of paternally-deprived children. In north-western India, especially among Jats (who could either be Sikh or Hindu), a widow is often forced to remarry her ex-husband's brother. Although such a custom may now be frowned upon, it has historically ensured some security to the widow and her children.

Interestingly, in one of the most comprehensive studies to date on the condition of widows in northen India, Chen and Dreze (1992) have questioned the belief that joint family and extended kin network provide greater protection to widows. Their claim is based on the field observation that overwhelming majority of widows either live alone or with their children even in north India, and the conditions of those who live with their in-laws is pathetic as reported by the widows themselves, and as suggested by a study from Bangladesh which had shown that mortality is higher among widows who live in households not headed by self or son (Rahman, Foster and Menken, 1992). If true, this would be a strong negation of the results of our study.

In defence we would like to submit that living arrangements of widows are likely to be strongly age-dependent, with young widows living more in joint families than older widows (Chen-Dreze study unfortunately throws no light on this). This paper is mainly concerned with the condition of the young widow with her small children. For us it seems logical to assume that her condition ought to be better if she were a member of a joint family than if she were a member of a nuclear family as the loss of an adult male member would cause less economic hardships to a joint family. This, however, does not mean that a widow in a joint family will not feel discriminated or harassed, but it would be wrong to judge this on the basis of only what the widow reoports. Indeed, sexual harassment may even be greater if the widow lives alone than if she lives with her in-laws.

The Bangladeshi study quoted by Chen and Dreze was exclusively concerned with mortality of widows aged over 45 years and hence might not be very relevant in understating the condition of young widows under different family settings. At best the study showed that in old age, a widow living in households headed by others has significantly higher

mortality than a widow living with her son or all by herself. But were these widows similar in all other respects? Is it not likely that living arrangements of widows were preconditioned

TABLE 5 : HOUSEHOLD STRUCTURE AND ITS RELATION TO EXCESS MORTALITY OF PATERNALLY DEPRIVED CHILDREN, MAJOR STATES OF INDIA, 1981

(Figures in per cent)

| *Major States** | *Households with two or more couples* | *Broken nuclear households @* | *Female-headed households* | *Excess mortality among children of post-married women* |
|---|---|---|---|---|
| Andhra Pradesh | 15.5 | 4.8 | 11.5 | 23 |
| Bihar | 26.4 | 4.7 | 6.6 | 33 |
| Gujarat | 20.9 | 3.3 | 7.7 | 20 |
| Haryana | 26.5 | 4.3 | 6.3 | 10 |
| Karnataka | 16.7 | 5.0 | 11.7 | 17 |
| Kerala | 17.5 | 7.0 | 19.4 | 47 |
| Madhya Pradesh | 23.3 | 3.6 | 6.5 | 27 |
| Maharashtra | 17.5 | 4.5 | 9.1 | 49 |
| Orissa | 18.2 | 5.6 | 8.3 | 24 |
| Punjab | 22.1 | 4.5 | 5.9 | 4 |
| Rajasthan | 23.6 | 3.2 | 5.3 | 22 |
| Tamil Nadu | 11.3 | — | (13.8) | 26 |
| Uttar Pradesh | 23.5 | 4.1 | 4.9 | 9 |
| West bengal | 16.3 | 4.5 | 6.9 | 36 |
| India: | | | | |
| Total | 19.6 | 4.5 | 8.1 | 22 |
| Rural | 20.9 | 4.6 | 8.2 | 17 |
| Urban | 15.3 | 4.2 | 7.6 | 4 |

* Excludes Assam where the 1981 Census was not conducted.

@ Household head living with unmarried children without the spouse.

() Data from the 1971 Census.

by their health status, economic assets, personal traits and survival of male offspring? Since micro data drawn from the same cultural milieu pose serious problem of selfselection, one should be cautious in interpreting the study results as showing that widows living in households headed by others would have been better off had they chosen to live separately with or without their son.

Our results show a widening disparity between the paternally deprived children and their more fortunate counterparts in their survival chances. One explanation for this is that the support system for the widow is weakening because of the slow erosion of the joint family system. However, not all scholars agree that joint family is on the way out in India, and some, as we saw, even question the usefulness of the joint family system in this matter.

Alternatively the rising excess mortality of paternally deprived children may be indicating the changing importance of father's economic contribution. When mortality was high and not much was known about how to prevent death and disease, economic position of housekols mattered very little (Madhya Pradesh in 1951 is a case in point). Children perished in plenty irrespective of whether their fathers are alive or not. But when mortality declined and households began to exert greater influence on vital events, economic wellbeing began to matter and children who are fortunate to have the care of both the parents prospered.

Similarly the observed rural-urban difference in the excess mortality of paternally deprived children is amenable to duel interpretations. The higher excess mortality in urban areas could be reflecting the greater importance of household income in urban areas, and/or stemming from the preponderance of nuclear households.

Unusually large excess mortality of paternally deprived children found among Buddhists and Jains also merits a comment. Most Buddhists in India are converted scheduled castes; the large excess mortality of paternally deprived children among them could be reflecting the fact that they tend to live in nuclear households. But the excess mortality of similar magnitude found among paternally deprived Jain children needs further investigation. Although a Jain widow is not permitted to remarry, in the matter of inheritance and right to succession her interests are relatively better protected under the Jain law (Sangave, 1988).

## Conclusion

Our results reestablish the importance of father in the matter of child care by showing that paternally deprived children in India have 20 per cent higher risk of mortality compared with children who are living with both the parents. However, our results also show that the impact of paternal deprivation is not uniform in all communities. It is larger where families tend to be more nuclear and females receive less social support after the death or separation from the husband. It is also probably larger when knowledge of disease transmission and modern medical technology is sufficiently diffused but the utilization depends on the purchasing power of households.

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