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Levels and Trends of Infant and Child Mortality in Meghalaya: Result from Life Table and Hazard Analysis

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This article examines the levels and trends of infant and child mortality in Meghalaya state utilising the data on NFHS 2 and NFHS 3. This article reveals the relevance of some of the socio-economic and demographic factors in explaining child mortality in the state of Meghalaya. Utilising life table and hazard model, the present studies shows that rural residence, mother's low educational status, mother's working status, the low standard of living, etc., all these variables are associated with high infant and child mortality. The study also reveals that the relative risk of dying for the first five years decreases with the increase in the preceding birth interval. Young mothers and those with short interval births are also at higher risk of child death. As far as the sex of the child is concern, male mortality is higher than those of females.

Keywords: Child Mortality, Infant Mortality, life table, hazard model

Introduction

Reducing mortality and improving the health of young children has long been a concern of the international community. One of the eight Millennium Development Goals (MDGs) adopted after the Millennium Summit in 2000 is to reduce child mortality (MDG4). Donors and development agencies, the United Nations and national governments around the world committed themselves to the goal of reducing the under five mortality rate by two-thirds between 1990 and 2015 (UN Millennium Declaration). Two of the key indicators for monitoring progress towards this goal are the under-five mortality rate (U5MR) and the infant mortality rate (IMR) (UN Development Group, 2003). Country estimates of the level and trends in infant and under-five mortality are needed to help set priorities, shape policies, design programmes and monitor progress towards the MDG at the national and sub national level. These estimates are also needed at every levels to inform funding decisions for activities directed towards reducing child mortality. Child mortality is a key indicator not only of child health and nutrition but also of the implementation of child survival interventions and, more broadly, of social and economic development.

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As global momentum and investment for accelerating child survival grow, monitoring progress at the global and country levels has become even more critical. In India the infant mortality has improved over time. It has decreased by 14.73 percent between 1971 and 1981, 27.27 percent between 1981 and 1991 and by about 15 percent between 1991 and 2001. Most infant deaths occur in the first month of life; up to 47 percent in the first week itself. While the infant mortality rate slowed a rapid decline during the 1980's, the decrease has showed down during the past decade according to the sample registration system (ORGI, 2004).

Infant and child mortality depends upon a large number of factors such as socio-economic, demographic and environmental factors and these vary across population. These aspects of determinants of infant and child mortality are over studied but the fact remains that findings varies across population. The covariates, which explain child mortality in one population, may not have bearing in other population. However, much of what we know about the correlates of child mortality in India may not apply to communities which are inaccessible and isolated from mainstream Indian culture. The state of Meghalaya, the abode of tribal peoples viz, Khasi, Garos and the Jaintia who live in their traditional homelands and have different socio-cultural beliefs and practices from mainstream Hindu or Islamic culture. Mountainous terrain and seasonal problems with communication mean that much of the state is separated from the rest of the country physically and culturally. Therefore, this paper attempt to showcase the levels and trends of infant and child mortality in the state of Meghalaya and also measure covariates of child mortality that are relevant to the specific circumstances of the state.

Review of Literature

Child spacing is clearly associated with infant and child mortality, while high orders and high ages of mothers at birth show little such association were highlights by using results from 39th World Fertility Survey (Hobcraft et al. 1985). There is also an influence of inter birth intervals and breastfeeding on infant and early childhood of mortality (Palloni and Millman 1986). The concept and aspect of death clustering in child mortality among women in socio-economic and educationally less advance women have been highlighted in the study in rural Punjab (Das Gupta 1990).

In the examination of the relevance of socio-cultural and environmental factors in explaining child mortality in Northeast India by using data from the Indian National Family Health Survey 2(Ladusingh and Holendro Singh 2006), provide evidence that lack of hygiene in the household and poor women's engagement in physically demanding agriculture based work contributes to higher risk of child mortality. The authors also shows that unlike in other parts of India, female children have an edge over boys in childhood survival and living with paternal grandmother tends to lower the risk of child death in the first five years of life. According to the authors community education is found as the dominant factor outside the household to have a significant effect on child mortality.

Accurate and timely estimates of infant and under-five mortality are needed to help countries set priorities, design programmes to reduce mortality, and monitor progress towards the MDG 4. Developing these estimates poses a considerable challenge because

of the limited data available for many developing countries and lack of agreement on the best way to calculate infant and child mortality levels and trends. In response, experts at the United Nations Children's Fund (UNICEF), The World Bank, the World Health Organization (WHO), the United Nations Population Division (UNPD) and members of the academic community joined together in 2004 to form the Inter-agency Group for Child Mortality Estimation. The Inter-agency Group has worked to seek out and share new sources of data on child mortality, to improve and harmonize estimation methods, and to produce consistent estimates on the levels and trends in child mortality worldwide. This report describes the methods used by the Inter-agency Group to calculate infant and under-five mortality rates and presents the 2006 estimates. Births of order 6+ with a short preceding interval had the highest risk of infant mortality and that the infant mortality risk associated with multiple births was 2.08 times higher relative to singleton births ($p<0.001$)(Joshua and Ginneken 2009). They also reveals that socioeconomic variables did not have a distinct impact on infant mortality and concluded that determinants of child mortality were different in relative importance from those of infant mortality. Among the methodological papers, which consider mortality experience of children with respect of survival times are those of (Guo and Rodriguez 1992: Sastry 1997: Chan 2004).

Need for the study

In terms of infrastructure facilities, economic development and accessibility, Meghalaya state lack behind the forward states in the country. However, the state is socially advanced in terms of literacy, women empowerment, women autonomy, and exposure to mass media. According to NFHS-3, infant mortality rate in Meghalaya is estimated at 45 deaths before the age of one year per 1,000 live births, down from the NFHS-2 estimate of 89 and the NFHS-1 estimate of 64. However, about 1 in 22 children still die within the first year of life, and 1 in 14 die before reaching age five. The infant mortality rate is similar in both urban and rural areas(NFHS-3 2006). Due to lack of explorative studies of infant and child mortality for the state, not much is clear about its levels and trends. Consequently, there is a need to investigate more closely the intensity of child mortality in the matrilineal state of Meghalaya. Though infant and child mortality declined appreciably since 2000, yet still a considerable emphasis has to be put up by the governments to intensify their efforts to improve child health and survival. An attempt has been made in this study to critically analyze the level, trends, differentials and determinants of infant and child mortality in the state and examine the influence of various socio-economic, demographic and health care factors on infant and child mortality.

This paper provides information on levels, trends and differentials in neonatal, post neonatal, infant, child, and under-five mortality in the state of Meghalaya. These mortality rates are relevant to a demographic assessment of the population and are important measure for determining of the level of socioeconomic development and quality of life. They can also be used for monitoring and evaluating population and health programmes.

Data sources and Methodology

The data for the present study is obtained from the Indian National Family Health

Survey(NFHS), conducted in the year 1998-99 for NFHS-2 and 2005-06 for NFHS-3. The survey was conducted under the stewardship of the Ministry of Health and Family Welfare (MOHFW), Government of India who designated International Institute for Population Sciences (IIPS), Mumbai, as the nodal agency for the survey. In Meghalaya, NFHS-2 is based on a sample of 1,240 households and 1,900 households for NFHS-3, which is representative at the state level and within the state at the urban and rural levels. The survey interviewed 945 women in NFHS-2 and 2,124 women in NFHS-3 in the age group 15-49 from all the sample households to obtain information on population, health, and nutrition in the state. All women surveyed by the NFHS were asked to provide a complete birth history, including sex, date of birth, and survival status for each live birth. According to NFHS-2, a total of 962 live births were recorded and out of the total of 1065 births five years preceding the survey,103 children died. In the following survey i.e, NFHS-3 a total of 1108 single live births were recorded in the survey and 56 of these were followed by deaths before the fifth birthday. In order to study the levels and trends of infant and child mortality for the state, the author firstly, perform a univariate analysis of child mortality by different background characteristics of mother and child for both the survey respectively. The mortality measures used are:

Neonatal mortality:	the probability of dying during the first month of life.
Post neonatal mortality:	the probability of dying after the first month of life but before the first birthday.
Infant mortality (IMR)($_1q_0$):	the probability of dying before 12 months of age.
Child mortality ($_4q_1$):	the probability of dying between exact ages 1 and 5 years.
Under-five mortality (U5MR)($_5q_0$):	the probability of dying before five years of age.

The mortality estimates are not rates, but are true probabilities, calculated according to the *conventional life table approach*. For any calendar period, deaths and exposure in that period are first tabulated for the age intervals 0, 1-2, 3-5, 6-11, 12-23, 24-35, 36-47 and 48-59 months. Then age-interval-specific probabilities of survival are calculated, denoted as q_i. Finally, probabilities of death over larger age intervals are calculated by multiplying the relevant age-interval survival probabilities together and subtracting the product from one (Rutstein, 1984):

$$_nq_x = 1 - \prod_i (1 - q_i)$$

The levels in infant and child mortality rates were derived directly from the maternity history data. The mortality estimates by socio-economic and demographic characteristics were made for 5 years period preceding the survey. The percent change of the various characteristics with the mortality rate indicators is also evaluated to demonstrate the degree of levels and trends in infant and child mortality.

To control confounding background factors in the investigation of determinants of child mortality, Cox proportional hazard model (Cox 1972) is adopted. Survival variable

(time) required for survival analysis is taken as the survival age of children in months and it is uncensored in the case of event of death of child under 59 months, while it is treated as censored cases for children surviving beyond five years. The dependent variable of the hazard model in the multivariate analysis is a measure of the force of mortality for an individual i, in the age interval t and is given by $\lambda_i(t)$. The hazard in the age interval t, which can be interpreted as the probability of dying between t and delta-t, given that the child has survived at the beginning of the age interval, is assumed to have the following functional form.

$$\ln[\lambda_i(t)] = \alpha(t) + x_i(t)\beta(t),$$

where $\lambda_i(t)$, is the risk of dying in age interval *t* for child *i*
$\exp[\alpha(t)]$ is the underlying age specific risk of dying
$x_i(t)$ is a vector of characteristics for individual i and
$\beta(t)$ is the set of associated co-efficients

Estimates of the coefficients, when exponentiated, can be interpreted as the risk associated with a set of characteristics, related to an omitted reference category. Coefficients are estimated using maximum likelihood methods and Z- statistics (the estimated coefficient divided by the standard error) is used to assess whether an effect is statistically significant.

Discussion and interpretation of the Results

This paper examines levels and trends of infant and child mortality and their determinants for Meghalaya state, using data from the NFHS-2 and NFHS-3. Neonatal (first month), post neonatal (age 1–11 months), infant (first year)(IMR), child (age 1–4 years) and under five mortality(U5MR) mortality are estimated, as well as the effects of socio-economic and demographic characteristics on childhood mortality using information from women's birth histories pertaining to children born during the 5-year period before the survey.

The comparison of the mortality estimates from the two surveys given in Table 1,Table 2, Table 3 and Figure. The datas shows that infant mortality in Meghalaya has significantly decreased by almost 16 percent(Table 3) in the (from 92 to 48). This decrease is mainly accounted for by the decrease in neonatal mortality from 54 deaths per 1,000 births in the five years before the NFHS-2 survey to 25 deaths per 1,000 for the NFHS-3 survey. All childhood mortality measures has witness a significant reduction by more than 40 percent between the surveys. These figures suggest that overall, childhood mortality in Meghalaya state has reduced from the year 1999 to 2006. In the state of Meghalaya, living conditions are generally not good in rural areas and health-care facilities are less readily available and tend to be of poorer quality. A peculiar trend is observed in the interval between the surveys by which IMR increases in urban areas whereas the same is showing a declining trend with women living in rural areas. Infant mortality rate have risen by almost 55.6 percent from 9 to 14 deaths per 1,000 live births in urban areas while the same is showing decreasing trend in rural areas, declining by almost 60.2 percent from 83 to 33 deaths per 1,000 live births. This rise is accounted mainly by the

rise in post neonatal mortality during the same period. The opposite trend observed in the urban rural differential in connection with childhood mortality needs further studies. The data from the tables and figure shows that children of working women are experiencing lesser incidence of childhood mortality compares to those who do not work. Between the two surveys, infant mortality declined by 72.7 percent for working women compared with 28.6 percent who are non working. This decline is accounted mainly by a significant reduction of childhood mortality in the post neonatal period(82.6 percent) and also followed by the neonatal period(61.9 percent). During the same period, the U5MR declined by 75.9 percent for working women, compared with 14.0 percent for non working women. Infant and U5MR rates have declined faster for working women than those who are non working.

The sample size taken in both surveys may not be enough to captures the picture of children who died and belonging to the women with highest educational status. As a result no data could be extracted and analyzed for this group of children. The childhood mortality scenario in the present study is describe only for those children who died and belonging to illiterate, primary and secondary completed groups of women. The Tables 1 through 3 depicts that the mortality measures are showing declining trends between NFHS-2 to NFHS-3 in all categories of women educational status. The rate at which infant mortality decreases is highest for women with primary education by which the decline is 77.8 percent (from 36 to 8 deaths per 1,000 live births) , followed by those who no education by 44.4 percent (from 36 to 20 deaths per 1,000 live births) and finally by those who have completed secondary education by 20 percent(from 20 to 16 deaths per 1,000 live births). This differences in the rate of decline of childhood mortality, especially those exhibits by women with primary education needs further studies.

In order to study the relationship of childhood mortality with the economic status, the household standard of living index is constructed. The household standard of living index (SLI) is ranked into low, medium and high and the ranking is based on the total scores assigned to certain consumer durables, housing conditions, ownership of agricultural land and livestock and other items in the household graded numerically in terms of their value or importance.Here also, the sample size taken in NFHS-2 surveys may not be enough to captures the picture of children who died and belonging to the women with highest standard of living. As a result no data could be extracted and analyzed for this group of children. Nevertheless, Table 1 to 3 reveals that all infant and child mortality rates declined steadily for both low and middle standard of living groups of women between the two surveys .The decline in infant mortality rate is 68.1 percent (from 47 to 15 deaths per 1,000 live births) for low SLI categories of women and the same decline is 52.4 percent (from 42 to 20 deaths per 1,000 live births) for medium SLI categories of women. The NFH-3 indicated that, in the state of Meghalaya, except for the neonatal phase where male mortality is 33% higher than female mortality, in the other phases, male mortality is more than 50% higher than female mortality. Table 1 to 3 indicates that Infant mortality has shown a decreasing trend by 41.8 percent(from 55 to 32 deaths per 1,000 live births) for males and by 52.9 percent (from 34 to 16 deaths per 1,000 live births) for females from NFHS. This reduction is mainly accorded to the huge reduction in neonatal mortality. In addition to the higher male mortality levels in both the surveys

in the state, childhood male mortality is reducing at a lesser rate compared to those of females from NFHS-2 to NFHS-3. When the size of the child at birth is considered, the mortality of all the three categories of child size viz., small, average and large size babies are showing considerable decrease in connection with the childhood mortality .The trend from NFHS-2 to NFHS-3, given in tables 1 through 3 depicts that infant mortality decreases by 60.0 percent(from 10 to 4 deaths per 1,000 live births) for large size babies, by 63.8 percent(from 47 to 17 deaths per 1,000 live births) for average size babies and by 55.9 percent(from 34 to 15 deaths per 1,000 live births) for small size babies.

First-order births are more likely to have a difficult birth process than later births, thus increasing the risk of neonatal mortality. In addition, first-born children are likely to be raised by parents with limited skills and experience, possibly increasing the risk of infant and child mortality. Births of very high order may have mothers who are physically depleted at the time of conception and throughout pregnancy. They are thus more likely than other children to suffer from conditions associated with high mortality risk such as fetal growth retardation and low birth weight. Table 1 to 3 reveals that childhood mortality is declining between the two surveys. The rate of this decline is higher for first and the third order births , whereby the decline is 47.6 percent(from 21 to 11 deaths per 1,000 live births) for first order births and 50 percent(from 10 to 5 deaths per 1,000 live births) for third order births. The fourth birth order of the post neonatal period is however showing a reverse trend by which the rise in mortality is 29 percent (from 7 to 9 deaths per 1,000 live births) from NFHS-2 to NFHS-3. By preceding birth interval, those babies born between the 24 and 36 months shows higher rate of decrease of infant mortality between the two surveys in which the decline is 59 percent(from 17 to 7 deaths per 1,000 live births). Those children born between within the first 24 months and those between the 36 and 48 months also shows declining childhood mortality trends.

Mothers age to first born is taken as a proxy to mothers age for every new born as these two variable are directly associated to one another i.e., the lesser the age of the mother to first born, the lesser will be the mothers age for every new born. In this connection, the researcher examines the effect of mother's age at childbirth for first-born children. Children born to mothers under 20 years old are likely to have elevated risks of mortality. Both children born to mothers less than equal to 20 years and those greater than 20 years are showing signs of decline in the infant mortality rate. The fall of IMR is 63 percent(from 64 to 24 deaths per 1,000 live births) for mothers less than equal to 20 years and 48 percent(from 27 to 14 deaths per 1,000 live births) for mothers greater than 20 years. If the present trend continues, then the figures depicts a good picture of childhood mortality in connection with women age at birth, especially when the rate of childhood mortality is faster for mothers less than equal 20 years between the two surveys.

Correlates of Child Mortality

To control confounding background factors in the investigation of childhood mortality Cox proportional model is utilized. The model is adopted for investigating the determinants in terms of Hazard ratios or relative risks (RR) and the result of the analysis is presented in Table 4. The results show that there is prominent sex bias towards male children in the risk of dying during childhood in both the surveys and this is statistically

significant. With reference to female child, male children are more likely to die during childhood. The result also shows that rural children are almost twice as much expose to the risk of dying compare to their urban counterparts. The results are not statistically significant because NFHS samples in urban areas may be small. The occupation status of women does play a role in determining the risk of dying during childhood. Compare to women who are working, non working women are more likely to experiencing loss of children during childhood. With birth order, there is indication of a direct relationship with the risks of dying during childhood, but this is found to be not significant. Table 4 shows that with advancement in the age at delivery, the less is the child likely to experience risks of dying during childhood. The table reveals that children born to women which are more than 20 years of age is less likely to die during childhood. Now coming to the size of the child at birth in determining the risks of child mortality, it is noted from the results of the proportional hazard model, as the size increases there is also an enhancement in the chance of childhood survival. With reference to small size children, average and large size children are less likely to experience childhood mortality.

Summary and Discussion

The effects of some socioeconomic characteristics on infant and child mortality, as estimated by hazard models(Table 4), are consistent with findings based on period life tables that are given in Tables 1 and Table 2 a evaluated in the present study. Rural residence, low mother's educational status, mother's working status and low standard of living are associated with high infant and child mortality when the author examine each variable one at a time. Also, in general, demographic characteristics have consistent and substantial effects on mortality before age five. The present study reveals that it is evident that the relative risk of dying the first five years decreases with the increase in the preceding birth interval. This implies that a woman needs some minimum period to recover from physical and hormonal changes accompany with pregnancy. These findings suggest that under-five mortality can be reduced substantially by encouraging women to delay the onset of childbearing. Helping families stop having children after four births will also enhance the survival chances of children. As far as the sex of the child is concern, the differential in survival chance is very much pronounced whereby there is an excess male deaths.

It would be difficult to reduce infant and child mortality by changing socioeconomic characteristics such as mother's literacy or ownership of household goods in a short period of time. The findings in this section, however, can be used to identify the households most likely to experience high levels of infant and child mortality. Family health programmes should concentrate their efforts on such households. High-risk households include those belonging to a lower educational status, lower economic status identify by lower standard of livings and non working women. These results call for close examination of the customs practiced by different tribal communities in the state relating to childbirth and the care of newborns and young children. By considering the preceding child status, a child whose previous sibling is alive has less relative risk of dying during childhood. Finally, family health programmes should provide families that have experienced an infant or child death with intensified maternal and child health support to avoid further mortality. Such support should include basic antenatal care, guidance on

home care of well babies, immunizations, and treatment of common childhood illnesses such as diarrhoea and respiratory infections.

Table 1. Life table estimates of Childhood Mortality in Meghalaya state by background Characteristics (NFHS 2).

Background Characteristics		Neonatal mortality	Postneonatal mortality	Infant mortality	Child mortality	Under-5 mortality
	NFHS-2 INDIA*	43.4	24.2	67.6	29.3	94.9
	NFHS-2 MEGHLAYA	54	40	92	11	103
Place of Residence	Urban	6	3	9	1	10
	Rural	48	37	83	10	93
Working Status	Working	21	23	44	9	54
	Not Working	33	17	49	1	50
Highest Educational Level	No Education	21	15	36	7	44
	Primary	21	15	36	2	38
	Secondary	12	8	20	1	21
	Higher	NA	NA	NA	NA	NA
Standard of Living	Low	28	20	47	6	54
	Medium	25	17	42	4	46
	High	NA	NA	NA	NA	NA
Current age of Women	15-24	14	11	25	3	28
	25-34	28	22	50	4	55
	35-44	11	8	19	2	21
Sex of the Child	Male	35	21	55	7	62
	Female	19	15	34	3	38
Size of the Child at birth	Large	5	5	10	1	11
	Average	28	20	47	4	51
	Small	18	16	34	4	38
Birth order	1	13	8	21	2	23
	2	9	5	14	1	15
	3	4	6	10	2	13
	4	6	7	15	1	14
Preceding Birth Interval	< =24 months	22	9	31	4	35
	25-36 months	9	8	17	4	22
	36-48 months	4	3	7	0	7
Mothers Age At first birth	<=20 years	37	28	64	7	72
	>20 years	17	10	27	3	30

Source:NFHS 2 , * NFHS 2 Report , NA – Not Available

Table 2. Life table estimates of Childhood Mortality in Meghalaya state by background Characteristics (NFHS 3).

Background Characteristics		Neonatal mortality	Postneonatal mortality	Infant mortality	Child mortality	Under-5 mortality
	NFHS - 3 INDIA*	39	18	57	18.4	74.3
	NFHS - 3 MEGHLAYA	25	24	48	9	57
Place of Residence	Urban	7	7	14	1	15
	Rural	18	15	33	8	41
Working Status	Working	8	4	12	1	13
	Not Working	17	18	35	8	43
Highest Educational Level	No Education	10	10	20	8	28
	Primary	4	4	8	0	8
	Secondary	11	5	16	1	17
	Higher	NA	NA	NA	NA	NA
Standard of Living	Low	6	9	15	7	22
	Medium	10	10	20	2	22
	High	6	3	9	0	9
Current age of Women	15-24	8	2	10	3	13
	25-34	8	16	24	6	30
	35-44	6	4	10	1	11
Sex of the Child	Male	15	17	32	6	38
	Female	10	6	16	3	19
Size of the Child at birth	Large	4	0	4	0	4
	Average	4	13	17	2	19
	Small	8	7	15	3	18
Birth order	1	8	3	11	1	12
	2	6	5	11	1	12
	3	3	2	5	1	8
	4	3	9	12	2	14
Preceding Birth Interval	< =24 months	8	8	16	5	21
	25-36 months	4	3	7	1	8
	36-48 months	1	3	4	1	5
Mothers Age At first birth	<=20 years	11	13	24	9	33
	>20 years	9	5	14	1	15

Source:NFHS 3 , * NFHS 3 Report , NA – Not Available

Table 3. Percent change of Childhood mortality by background characteristics from NFHS 2 to NFHS 3.

Percent changes from NFHS- 2 to NFHS- 3		Neonatal mortality	Postneonatal mortality	Infant mortality	Child mortality	Under-5 mortality
	NFHS INDIA	-10	-26	-16	-37	-22
	NFHS MEGHLAYA	-53.7	-40.0	-47.8	-18.2	-44.7
Place of Residence	Urban	16.7	133.3	55.6	0.0	50.0
	Rural	-62.5	-59.5	-60.2	-20.0	-55.9
Working Status	Working	-61.9	-82.6	-72.7	-88.9	-75.9
	Not Working	-48.5	5.9	-28.6	700.0	-14.0
Highest Educational Level	No Education	-52.4	-33.3	-44.4	14.3	-36.4
	Primary	-81.0	-73.3	-77.8	-100.0	-78.9
	Secondary	-8.3	-37.5	-20.0	0.0	-19.0
	Higher	NA	NA	NA	NA	NA
Standard of Living	Low	-78.6	-55.0	-68.1	16.7	-59.3
	Medium	-60.0	-41.2	-52.4	-50.0	-52.2
	High	NA	NA	NA	NA	NA
Current age of Women	15-24	-42.9	-81.8	-60.0	0.0	-53.6
	25-34	-71.4	-27.3	-52.0	50.0	-45.5
	35-44	-45.5	-50.0	-47.4	-50.0	-47.6
Sex of the Child	Male	-57.1	-19.0	-41.8	-14.3	-38.7
	Female	-47.4	-60.0	-52.9	0.0	-50.0
Size of the Child at birth	Large	-20.0	-100.0	-60.0	-100.0	-63.6
	Average	-85.7	-35.0	-63.8	-50.0	-62.7
	Small	-55.6	-56.3	-55.9	-25.0	-52.6
Birth order	1	-38.5	-62.5	-47.6	-50.0	-47.8
	2	-33.3	0.0	-21.4	0.0	-20.0
	3	-25	-67	-50	-50	-38
	4	-50	29	-20	100	0
Preceding Birth Interval	< =24 months	-64	-11	-48	25	-40
	25-36 months	-56	-63	-59	-75	-64
	36-48 months	-75	0	-43	-	-29
Mothers Age At first birth	<=20 years	-70	-54	-63	29	-54
	>20 years	-47	-50	-48	-67	-50

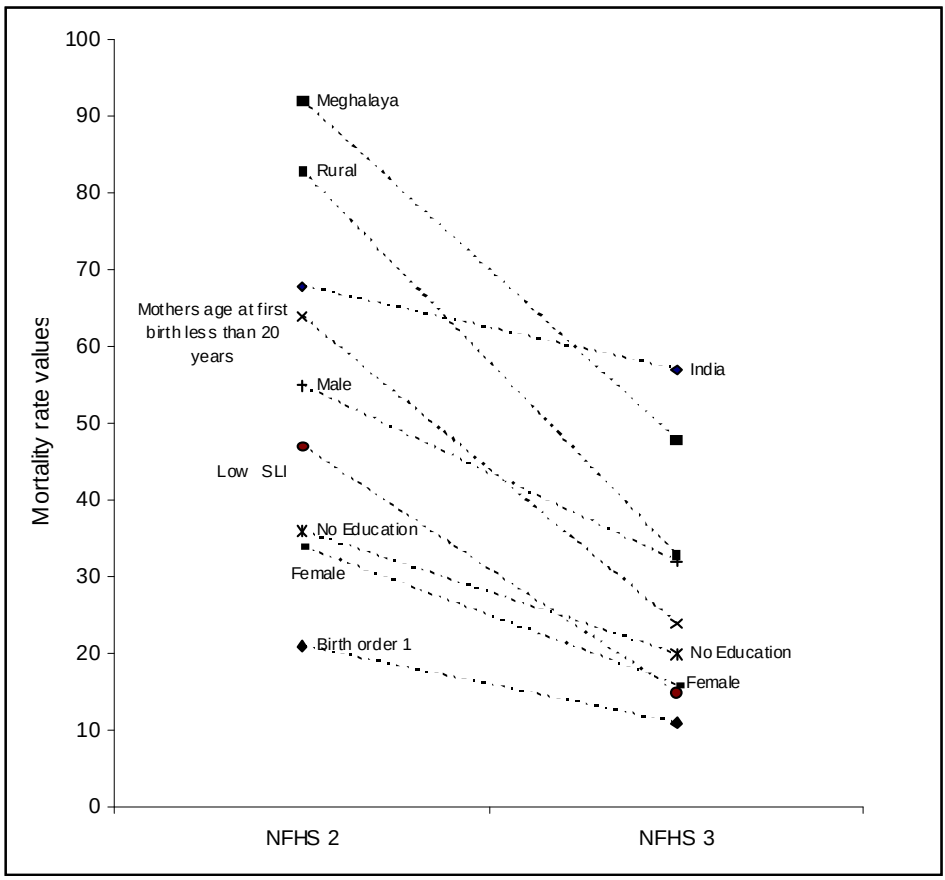
Source: NFHS, NA – Not Available

Table 4. Estimated Relative Risk(RR) of dying in the first five years of Life (Cox Regression Hazard Model)

Variable	Background Characteristics	Hazard ratios/Relative Risk Exp(β)	
		NFHS 2	NFHS 3
Place of Residence	Urban®	-	-
	Rural	1.866	1.585
Working Status	Not Working	®	1.441
	Working	.502	-
Sex of the Child	Male	1.534	9.170
	Female®	-	-
Preceding Birth Interval	< 24 months	.557	2.381
	25-36 months	.392**	1.352
	37-48 months®	-	-
Birth Order	1	1.383	2.724
	2	1.063	4.300
	3	1.715	7.031
	4®	-	-
Mothers age at birth	Less than 20 years	1.233	®
	More than 20 years	®	0.719
Size of the Child at BIrth	Large	.739	0.000
	Average	.794	0.331
	Small®	-	-

R: Reference category, * p <?0.05, ** p <?0.10

Figure. Trends in IMR between NFHS 2 and NFHS 3 by some socio economic and demographic characteristics for Meghalaya state.



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