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## Demographic Determinants of Child Mortality India: An Analysis Based on Sample Registration System Data, 2018

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### Abstract

*In demography sense, child mortality denotes to the death of children under the age of five. It is a chief indicator of the level of child health and overall progress in countries. In populations living under low socio-economic situations, other factors have also been observed. Demographic factors are such others factors responsible for child mortality rate. Hence, the paper aims at examine the demographic determinants of child mortality India based on sample registration system data, 2018. The results reveal that demographic aspects associated with child mortality in India.*

**Keywords:** Child mortality; Infant mortality; Age at marriage & first birth; Total fertility rate; Birth order & interval; Birth attendant

### Introduction

Mortality is one amongst the fundamental components of population change and therefore the related data is crucial for demographic studies and public health administration. It is the chief element for population projections and life tables. Mortality, especially the child death rate is a crucial indicator of the health status of the country. It's the mortality of child under the age of 5 also called child mortality rate. It refers to the probability of dying between birth and exactly five years old expressed per 1,000 live births. It encompasses neonatal mortality and infant mortality. It is calculated because the number of deaths of kids in 0-5 ages in an exceedingly year divided by the amount of live births within the same year and multiplied by 1,000. The world under-five death rate had declined

by 59 per cent, from 93 deaths per 1,000 live births in 1990 to 38 in 2019. The very best child mortality rates are in Sub-Saharan Africa, where we still have countries big mortality rates greater than 10 percent-it means one out of 10 children born never reach their 5th birthday. In 1998, about 2.5 million under-5-year-olds died in India, the very best total of any country (United Nations Children's Fund, 2000). Over the 15-year period before the National Family Health Survey (NFHS, 2019-20), all measures of childhood mortality declined in India at rates slightly greater than the typical for other low-income countries, excluding China (International Institute for Population Sciences).

Sample Registration System (SRS) has continued to supply data for estimating various mortality measures since its inception.

The crude death rate in the least India level has declined significantly from 14.9 to 12.5 during 1971 to 1981 and thereafter from 9.8 to 6.2 during 1991 to 2018. The decline has been steeper in rural areas as compared to urban areas. The infant mortality rate, which plays a very important role in health planning, has shown a substantial decline from 129 per 1000 live births in 1971 to 110 in 1981 and from 80 in 1991 to 32 in 2018. The child mortality rate has depicted a perceptible decline from 51.9 in 1971 to 41.2 in 1981 and from 26.5 in 1991 to 8.9 in 2018. In 2018, about 47.8 percent of the deaths were institutional and 52.2 percent received medical attention aside from in institutions. The death rates for children below age 5 by residence are collected separately for males and females. At the National level, child death rate is estimated at 8.9 and it varies from 9.9 in rural areas to six in urban areas. Among the larger States/UTs, this varies from 2.1 in Kerala to 14.2 in Madhya Pradesh. Child mortality isn't only caused by infection and disorder: it's also caused by premature birth; birth defect; newborn infection; birth complication; and diseases like malaria, sepsis, and diarrhea. In less developed countries, malnutrition is that the main reason behind child mortality.

## Review

Hobcraft, J. N., et al (1985) examined the demographic determinants of infant and early child mortality. Singe, S., et al (1989) studied the determinants of infant and child mortality in rural Haryana. Khan, J.R and Awan, N. A (2017) made a comprehensive analysis of child mortality and its determinants in Bangladesh. Krishan Kumar; et al (2017) examined the socio-demographic determinants of under-five mortality in rural Agra of Uttarpradesh. Chilupula. N. F (2020) has examined demographic and socio-economic determinants of child mortality. Paul, P (2020) studied child marriage and its association with morbidity and mortality of children under 5 years old in India.

## Importance

Apart from other determinants of child mortality, demographic aspects are also responsible for child mortality rate. Hence, it is important to examine the influence of these factors to reduce child mortality.

## Objective

The paper aims at exploring the demographic determinants of child mortality India and its bigger States/UTs, 2018.

## Method and material

The paper is based on the descriptive type of research and secondary data collected from sample registration system

statistical report of 2018. In this paper, Infant mortality, age at marriage and first birth, total fertility rate, birth order and interval and birth attendant are considered as determinants of child mortality.

## Infant mortality

In demography, child mortality refers to 'the death of children under the age of five (U5MR)', while infant mortality refers to 'the death of those under the age of one year'. Infant mortality is one of the components of child mortality. Hence, higher the infant mortality, greater will be the under-five mortality rates (U5MR). Singhi, S. et al (1989) found that increased risk of infant and child mortality was associated with previous infant or child death(s) in the family. Table-1 shows that the states like Assam, Chhattisgarh, Madhya Pradesh, Odisha, Rajasthan and Uttar Pradesh with higher infant mortality had registered higher rate of child mortality. On the other hand, lower child mortality recorded in the states like Himachal Pradesh, Karnataka, Maharashtra, Punjab, Tamil Nadu and West Bengal with lower infant mortality rate. Thus, infant mortality is positively related to child mortality. Hence, to reduce child mortality rates, infant mortality has to be minimized.

## Age at marriage

Mean age at effective marriage of females is 'the average age of a female when she first gets married'. For a given calendar year, the mean age of a person at first marriage can be calculated using first marriage rates by age. The prevalence of morbidity and mortality were significantly higher among the births of women who married before 18 years of age compared to those births whose mother married at 18 years of age or older (Paul, 2020). Table-1 depicts that states like Himachal Pradesh, Jammu & Kashmir, Kerala, Punjab, and Tamil Nadu with higher mean age at effective marriage of females had registered lower child mortality rate and vice versa in the states with lower mean age at effective marriage of females. Hence, it can be said that the mean age at effective marriage of females is inversely related to child mortality rate.

## Mean age of Fertility

Mean age of fertility is the average age of women at the time of the first birth of a child. In general, earlier and older reproductive age associated with higher child mortality, because of complicated reproductive health issues in these ages. Hobcraft, J. N., et al (1985) examined the age of the mother at the time of the birth have significant influence on under-five mortality. Table-1 shows states such Assam, Bihar, Gujarat, Haryana, Odisha, Rajasthan, Uttar Pradesh and Uttarakhand with females with higher mean age of fertility had higher child mortality rate and vice versa in states

**Table 1. Child mortality rates (U5MR) and its determinants for India and bigger States/UTs, 2018**

India and bigger States/UTs	Under-Five Mortality Rates (U5MR)	Infant Mortality Rates	Mean age at effective marriage of females	Mean age of Fertility	Total Fertility Rate	Current live birth 4 <sup>th</sup> & above birth order (%)	Percent of interval between current and previous live birth (10-12 months)	Medical attention at delivery
India	36	32	22.3	28.4	2.2	8.1	1.6	82.5
Andhra Pradesh	33	29	22.1	27.0	1.6	1.1	1.6	97.4
Assam	47	41	22.1	29.1	2.2	5.5	1.2	82.8
Bihar	37	32	21.7	29.3	3.2	17.4	1.6	70.3
Chhattisgarh	45	41	22.0	27.7	2.4	7.2	1.3	77.0
Delhi	19	13	23.7	28.6	1.5	5.0	0.5	95.8
Gujarat	31	28	22.6	27.8	2.1	4.1	1.7	94.6
Haryana	36	30	22.4	28.5	2.2	7.6	2.6	85.6
Himachal Pradesh	23	19	23.6	28.2	1.6	2.4	1.3	78.9
Jammu & Kashmir	23	22	25.6	31.7	1.6	4.3	3.2	89.0
Jharkhand	34	30	23.4	28.7	2.5	9.3	0.8	61.7
Karnataka	28	23	22.6	28.0	1.7	3.4	0.9	97.6
Kerala	10	7	23.2	28.3	1.7	3.6	0.4	99.8
Madhya Pradesh	56	48	21.4	27.9	2.7	9.2	2.1	83.1
Maharashtra	22	19	22.6	27.5	1.7	2.4	1.3	97.0
Odisha	44	40	21.9	28.2	1.9	5.2	0.8	81.0
Punjab	23	20	23.8	29.0	1.6	2.4	2.3	89.7
Rajasthan	40	37	21.7	28.1	2.5	9.6	2.6	88.5
Tamil Nadu	17	15	23.2	27.6	1.6	0.6	1.1	96.0
Telangana	30	27	21.9	27.5	1.6	1.5	1.8	94.2
Uttar Pradesh	47	43	22.3	29.9	2.9	12.8	1.4	67.6
Uttarakhand	33	31	22.3	28.7	1.8	8.2	2.4	73.1
West Bengal	26	22	20.9	26.7	1.5	2.3	2.3	86.1

Source: Sample Registration System Statistical Report-2018.

with females with lower mean age of fertility.

Total Fertility Rate is 'the number of children who would be born per woman (or per 1,000 women) if she/they were to pass through the childbearing years bearing children according to a current schedule of age-specific fertility rates'. Lower (or higher) mortality might induce lower (or higher) fertility, but it's well established that higher birth rates result in higher infant and child mortality. This higher mortality is said to the effect on infants and kids of earlier weaning and reduced care from mothers. Table-1 reveals that states like Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh and Uttarakhand with highest total fertility recorded had higher child mortality, while vice versa in states with lower total

rate. Therefore, the total rate is inversely associated with child morbidity.

## Birth order

Birth order is that the chronological order of sibling births during a family. In general, higher the birth order, greater will be the child mortality because of mainly reproductive health issues. Singhi, S. et al (1989) found that increased risk of infant and child mortality was related to maternal age but 20 and over 30 years, birth order 4<sup>th</sup> or higher. Table-1 reveals that states like Assam, Bihar, Chhattisgarh, Haryana, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, province and Uttarakhand with a higher percent of current

live births by 4 and above birth order had registered higher child mortality rate and vice versa in the states with lower proportion of current live births having 4 and above birth order.

## Births by interval

Birth interval is the duration of time between two consecutive live births. The preceding birth interval is the variance between birth date of the child and birth date of the preceding child in months. For children of multiple births, the birth date of the preceding child is the number of months since the end of the preceding pregnancy that ended in a live birth. In general, three years is the suggested birth interval for wellbeing of mother and children. Hobcraft, J. N., et al (1985) examined a number of indicators of spacing of adjacent births among the correlates of chances of survival for children below the age of five years. Table-1 reveals that states like Andhra Pradesh, Bihar, Gujarat, Haryana, Madhya Pradesh, Rajasthan and Uttarakhand with a higher percent of interval between current and previous live birth consisting only 10-12 months had a higher child mortality rate. Thus, lower the birth interval, greater will be the child mortality and vice versa.

## Medical attention at delivery

A skilled birth attendant manages normal (uncomplicated) pregnancies, childbirth and therefore the immediate postnatal period, and within the identification, management and referral of complications in women and newborns. The share of births attended by skilled health personnel are calculated because the number of births attended by skilled health personnel (Doctors, Nurses or Midwives) expressed as a percentage of the entire number of births within the same period. The studies have known that the incidence of morbidity and mortality is high when a house is chosen to be the place of delivery attended by untrained dais and others (Haq, Ehsanul, 2008). Table-1 depicts those UT/states like Delhi, Kerala, Maharashtra, Punjab and Tamil Nadu registered with the highest percent of medical attention at delivery had a lower child mortality rate. Thus, medical attention at delivery is inversely associated with child morbidity in general.

## Conclusion

If child mortality (under 5) is reduced, then eventually fertility reduction follows, with the net effect of lower growth of population. In determine the child mortality rate, apart from other factors, demographic aspects also play crucial role. Results show that infant mortality, age at marriage, mean age of fertility, total fertility rate, birth order, birth interval by current and previous live birth and medical attention at delivery are some of demographic determinants of child mortality in India. Hence, health policy-makers and medical profession dealing with child mortality should focus on demographic aspects along other intervention measures in controlling the child mortality rate in India. Finally, counseling on danger signs of the demographic aspects on child mortality are recommended for both mothers in laws and reproductive age females.

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