SOCIO-DEMOGRAPHIC FACTORS AFFECTING INFANT MORTALITY RATE IN ASSAM

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Abstract: One of the most important indicator or index of socio-economic development of a country or region is infant and maternal mortality rate. It is generally observed that in a backward country both infant and maternal mortality rate is too high in comparison to that of a developed country. Specially infant mortality rate (IMR) serves as an excellent index of development as well as healthiness of a community. The issue of infant mortality is getting too much importance as most social scientists view that infant mortality rate is an excellent indicator of socio-economic development and hence the international and national government has intensified their efforts to reduce the IMR and to enhance the level of child survival. The infant mortality rate is effected by a large number of socio-demography and economic factors.

The state Assam is economically a backward state and infant mortality rate is found to be higher in comparison to that of some other economically advanced states of India. So, an attempt has been made to find out the different socio-demography factors affecting the infant mortality rate in the state of Assam. Here in this paper an analysis regarding the IMR in Assam will be made highlighting the different factors affecting the infant mortality rate. Apart from this, the trend of IMR in the state of Assam will also be analysed for last few years. Thus, it has been tried to find out the different socio-demographic and economic factors affecting the infant mortality rate in the state of Assam and to make some humble suggestions to reduce the intensity of the factors affecting the IMR so that infant mortality can be reduced to a certain extend in the state of Assam.
Keywords: IMR, ASDR, Fertility, Mortality, NPP.

I.I Introduction

Infant mortality is the most sensitive index to measure socio-economic development and the quality of life. According to Barclay, "Infants are defined in demography as an exact age group, namely, age 'zero', or those children in the first year of life, who have not yet reached age one."[1]

Symbolically, the death rate for infants (i.e., children under 1 year of age) is defined as

IMR. = (D_0/B) X 1000

Where D_0 = Number of deaths among children of age 0 l. b. d. (last birth day).
B = Number of live births.

The age-specific death rate (ASDR) for age 0 l. b. d., which has the same numerator, has for its denominator the number of infants. It is known that infants are grossly under-

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[1] George W. Barclay, Techniques of Population Analysis, New York, John Wiley and sons, 1958, P. 47

enumerated in a population census. As such, the ASDR tends to the highly overstated. Moreover, estimates of population by age are seldom obtainable annually. The IMR is generally used, in lieu of the ASDR m_0, as the measure of infant mortality. The IMR can be computed for any population and for any time period, provided only the number of infant deaths and the numbers of live births are available. The same cannot be said to the corresponding ASDR, for in the case of a small area and estimate of the population of age 0 l. b. d. may not be found. The IMR has been called the most sensitive of all measures of mortality. For in most countries the great risk of death under one year of age is not equaled at any other part of the live span, except at very old age. But unlike deaths at very old age, infant deaths are highly responsive to improvements in environmental and medical conditions. The IMR serves as an excellent index of the general healthiness of the community.

The infant mortality rate is generally computed as a ratio of infant deaths (deaths of children under one year of age) registered in a calendar year to the total number of live birth registered in the same year. This rate is only an approximate measure of the true risk of death between the birth of the baby and its first birthday, for no adjustment is made for the fact that some of the infants, who died in the year considered, were born in the preceding year. The infant mortality rate is specially important in the analysis of mortality because infant deaths account for a substantial number of all deaths, especially in those countries where health conditions are poor. The study of infant mortality gains importance, especially because mortality during the first year of life is invariably high for all countries, irrespective of whether the overall levels of mortality are high or low.

Infant mortality is commonly used for monitoring an evolution of population and health programmes and policies. Infant and child mortality form a large faction of the deaths of all ages. In India, one out of every fifth death is of infant and a total of about 1.8million infants are dying annually (based on infant mortality rate of 2000) as compared to 2.6 million in 1971 (National Workshop on IMR, 11-12 April, 2002, organized by ORGI in collaboration with UNICEF, UNPF, MH & F.W. and NCP). Most social scientist as today view infant mortality rate as an excellent indicator of socio-economic development. The issue has prejudiced international as well as national governments to intensity their efforts to reduce the IMR and to enhance the level of child survival. But there is surprisingly little evidence to suggest that people in the rural area throughout the less developed countries have released the seriousness of the problem. Countries, which are committed to reducing the rate of growth of

population through vigorous programme of family planning, have realized that the reduction of infant and child mortality rates to a low level is an urgent necessary precursor for achieving rapid reduction in fertility.

I. II Aims and objectives of the study:

Following are the two objectives in our study:

1. To high-light the trend of infant mortality rate in Assam.

2. To study the socio-demographic factors affecting infant mortality rate in Assam.

I. III Methodology:

The study is based on the analytical research which has to use available facts and information. The researchers have relied upon the secondary data which have been collected from the different research works, Journals and magazines, and internet sources.

II. Factors Affecting Infant Mortality:

A variety of factors affecting infant mortality are customarily classified as biological and socio-economic or environmental factors, though these two categories should not be treated as water tight compartments, for there is a great deal of interaction between the two[2]. The reduction in mortality was considerably greater in the younger age groups than in the older age groups. In general, it may be said the low level of infant mortality appears to be associated with the low level of general mortality.

The level of mortality is very high in the first few hours, days and weeks of life. The reasons for infant deaths at the earlier and later stage of infancy differ to a certain extent. Hence in a study of infant mortality, infant deaths are carefully grouped into two categories according to the age at death. The first category consists of those infants who dye before they complete four weeks of life. The other category consists of those infants who dye between 28 days and 365 days of their life. The rate based on the first period is known as the neo-natal mortality rate, while that on the second period is referred to as the post-neo-natal mortality rate. Factors, which affect fatal and neo-natal deaths, are primarily indigenous, while those which affect post-neo-natal deaths are primarily exogenous.

i)   Endogenous Factors:

The endogenous factors are biological factors related to the formation of the foetus in the womb. Among the biological factors affecting foetal and neo-natal infant mortality rates, the important ones are the age of the mother, the birth, prematurely, weight at birth and the fact

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[2] Bhande Asha A, Kanitkar Tara, Principles of Populatio Studies, Himalaya Publishing House, Mumbai, 14th Edition, 2001, P. 193

of multiple births. It has been observed that foetal and neo-natal mortality rates are higher at the younger age of the mother (below 19), at first parity and for the first birth order. Up to the age of 29 of the mother these mortality rates declined and increase after it.

The maturity of an infant is an important factor affecting neo-natal and infant mortality rates. Similarly, the weight of the baby at birth is also an important factor affecting neo-natal and post-neo-natal deaths. In 1950, low birth weight was in cause of two-thirds of all the neo-natal deaths in USA. It was also found that the changes of survival increased considerably with even a moderate increase in the birth weight – the optimum birth weight ensuring survival being 3,501 – 4,000 gms[3]. The still birth rate and the neo-natal mortality rate are both very high in the case of multiple births. Endogenous factors are also known as genetic factors.

ii) Exogenous Factors:

These include social, cultural, economic and environmental factors affecting infant mortality particularly during the post neo-natal period. One of the causes of high infant mortality in some countries is the lack of availability of medicine. Most of the post-neo-natal deaths are due to communicable diseases of digestive and respiratory system such as Diarrhea and Pneumonia, etc. the adverse environmental factors including congestion, insanitation, lack of sufficient sun shine and fresh air. Illegitimacy is also an important factor contributing to a high infant mortality rate. The difference between infant mortality rates of legitimate and illegitimate birth is usually found to be quite marked. A child conceived and corn out of wedlock is generally unwanted both by the mother as well as society.

One interesting feature of the role of endogenous and exogenous factors in determining infant mortality rates is worth noting. In countries where infant mortality rates are very low, a higher proportion of infant deaths occur during the neo-natal stage, because, being developed, they have been successful in almost completely eliminating the environmental factors responsible for such deaths. The main causes of infant mortality in these countries are mainly genetic or biological in nature. In countries where infant mortality rates are high, the majority of infant deaths occurs after the neo-natal stage and is due mainly to environmental factors.

III. Trend of Infant Mortality Rate in Assam:

The Government of India has set up the target of infant mortality rate to 30 per thousand live births by 2016. The possibility of the target stated in NPP 2000 can be assessed from the

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[3] United Nations, The Determinants and Consequences of Population Trends, Volume 1, OP. Cit., P. 126

available data estimated through Sample registration System (SRS) for the state of Assam. The 15 years trend may suggest that approachability of the target. Data presented in Table provides data on the possibility of the set target.

Infant Mortality Rate, Assam 1998 – 2012

Year	Total	Rural	Urban
1998	76	80	36
1999	76	79	36
2000	73	76	33
2001	70	74	33
2002	68	72	34
2003	67	70	35
2004	66	69	38
2005	68	71	39
2006	67	70	42
2007	66	68	41
2008	61	66	39
2009	61	64	37
2010	58	60	36
2011	55	58	34
2012	55	58	33

Source: Statistical Hand Book, Assam, 2013

From the above table it is observed that in Assam around 55 out of 1000 live births are bid good bye to their parents before completing one year of their life span in the year 2012. Like all India, the state has achieved IMR from 76 in 1998 to 55 in 2012, thus reducing the rate by during these 15 years period. But it is big question whether the state will be able to achieve the NPP 2000 target, i.e., IMR of 30 per 1000 live births. The trend suggests little different from what has been targeted. With the data, let us draw a graph and see what may happen in 2016. The following Chart presents IMR, Assam for the period 1998 – 2012.

On the data an exponential trend equation $Y = ab^X$ is fitted. The value of 'a' and 'b' are estimated by using the method of least squares and these values are obtained as a = 65.4787 and b = 09779. The trend equation thus obtained as $Y = 65.4787 (0.9779)^X$. With this trend equation, the estimated value of IMR for the year 2016 is 51.22 per thousand live births. The trend therefore suggests that IMR may come down to around 51 per thousand live births until and unless no extra or any special efforts are being made to bring down infant mortality rate.

Chart: IMR in Assam, 1998-2012 and the estimated Trend Curve
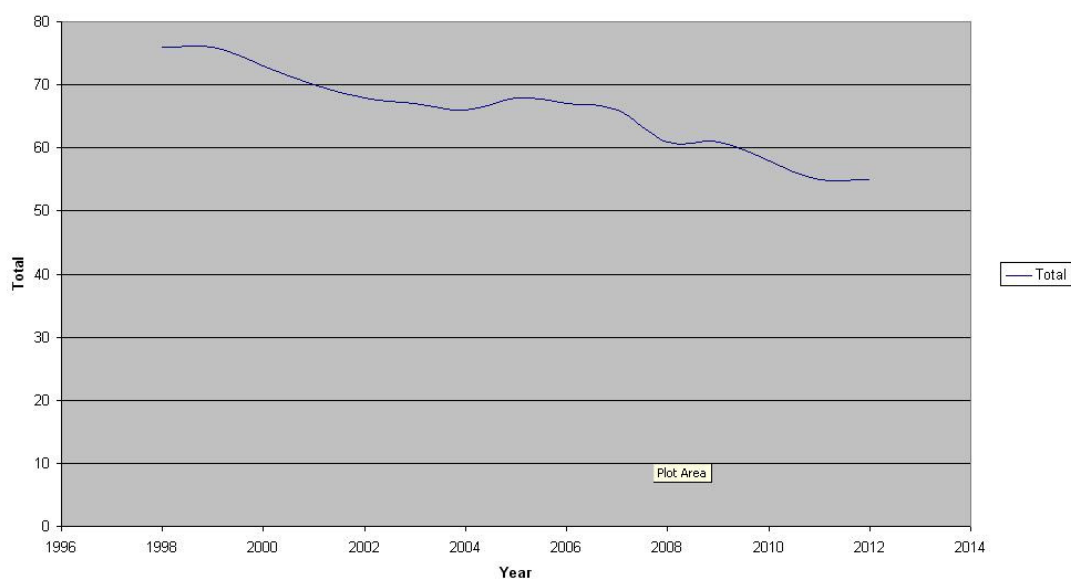
IV. Findings and Conclusions:

In the present era one of the burning problems of all the nations in the world is high growth of pollution, particularly in the developing economics. There are three components of population growth such as fertility, mortality and migration. Of course, the contribution of migration is found to be negligible in the growth of population. The two major factors that contribute in the growth of population are fertility (birth rate) and mortality (death rate). In the first demographic transitional period both birth rate and death rate are high and growth of population is minimum. But in the 2nd demographic transitional period the growth of population is maximum because in this stage birth rate is high and death rate is low. On the other hand, in the third demographic transitional period both fertility and mortality are low and the growth of population is minimum.

The state, Assam is economically a backward state and mortality is found to be higher in comparison to that of some other economically advanced states of India. So, a study has been undertaken to find out the various causes of infant mortality in the state.

The major findings of our analysis are as:

i)   The death rate in Assam is further declining. In 2012, the death rate in rural areas becomes 8.3 per thousand and in urban areas it is 5.6 per thousand. The total death rate from 8.0 per thousand on 2011 is declined up to 7.9 per thousand on 2012.

ii)   One of the major causes of infant mortality is education of females. It has been found in our study that the rate of maternal mortality is higher in case of illiterate females in comparison to those literate females.

iii)   Absence of doctor and nurse is also an important factor of infant mortality.

iv)   The gap between two births is also one of the major factors of infant mortality. It is found that longer is the gap lower is the rate of mortality and shorter is the gap higher is the infant mortality.

v)   Again one of the major findings of our analysis is that the age of marriage also affects the infant mortality rate. Both under-age and over-age of marriage adversely affect the infant mortality.

vi)   In case of uneducated mother the infant mortality is found to higher in comparison to that of educated mother.

vii)   Another important finding of our study is that vaccination is one of the important factors that affect the infant mortality. It has been found in our analysis that the rate of infant mortality is lower in case of vaccinated babies or infants in comparison to that of non-vaccinated babies.

viii)   Hygienic conditions are also an important factor or component that affects the infant mortality rate. It has been found that the possibility of death of infants is low brought up in a hygienic condition. During the field survey it has been found that the infant mortality rate is higher is case of non-hygienic condition then the rate of mortality in case of hygienic condition.

Some Remedial measures and Humble Suggestions:

Some remedial measures and humble suggestions to be adopted to reduce the infant mortality rate have been mentioned below.

Firstly, there must be spread of education, specially among the women in the state of Assam to reduce the infant mortality rate in the state as the educated women are more conscious regarding infant mortality. On the other hand, the field survey made by the researcher clearly reveals that the percentage of infant mortality rate among the illiterate mother is much higher than that of the literate mother.

Secondly, the level of income of the family must be increased to reduce the infant mortality rate in the society as one of the major causes of high infant mortality rate is poverty or low level of income of the family.

Thirdly, the status of women in our society is found to be too low and it is generally considered that low status of women in the society is an important cause of high infant mortality rate. So, by lifting the status of women upward in the society, the rate of infant mortality can be reduced to a certain extent.

Fourthly, It is generally observed that maximum women population are of ill-health in our society for which they can not give birth a healthy child and it leads to high mortality of infant. Since ill- health is due to lack of nutrious food, sufficient nutrious food must be supplied to women in the state of Assam which will lead to decline both maternal and infant mortality rate.

Fifthly, To reduce the infant as well as maternal mortality rate in the state the standard of living must enhanced by providing housing facilities, pure drinking water, medical facilities, educational facilities and so on, particularly in the remote and rural areas of the state. Apart from these attention should be given in the technological advancement for enhancing the standard of living of the people.

Sixthly, one of the major causes of high infant mortality rate is early and late marriage of women in the society because in both cases we can not expect a healthy birth which has empirically been proved by the field survey. So, the check the high infant and maternal mortality rate in our state both the early marriage as well as the late marriage must be stopped.

Seventhly, last but not the least, to control the high infant mortality rate in the state of Assam the vaccination facilities must be provided regularly at a cheap rate specially in the rural and remote areas.

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