

An Analysis of Infant Mortality Rates in Southern States of India

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Abstract

Infant Mortality Rate (IMR) is one of the most important sensitive indicators of the socio-economic and health status of a community in a country. Also, it is an important item in the Millennium Development Goals (MDG). Moreover, MDG aims to reduce the infant and child mortality by two-thirds between the years of 1990-2015. The paper intends to study the status, trend and disparities of the Infant Mortality Rate in the southern state of India. This study has applied the log-linear growth models to capture the trends of infant mortality rate. In addition, the ANOVA and Duncan multiple comparison techniques were used to compare the infant mortality among the south Indian states along with India. This study result shows that the average IMR is very low in Kerala, moderate in Tamil Nadu and Karnataka and high in Andhra Pradesh. Therefore, the state of Tamil Nadu needs to further reduce the IMR to the possible minimum level. In addition, states like Karnataka and Andhra Pradesh have to essentially concentrate more in order to reduce the IMR further. In effect to that, the state government has needed to implement all child health care programs appropriately. Especially in our southern states of India, where the IMR is more. This will help further to reduce the national average of IMR and to attain MDG as soon as possible in India.

Keywords: ANALYSIS, IMR, MDG, DISPARITIES.

Introduction:

Infant mortality is one of the major concerns of development discourses. Each country and state has been driven to reduce the Infant Mortality Rate. The level of Infant Mortality Rate (IMR) is on the across various countries different. The countries like Australia and Canada have IMRs well below 10 per 1,000 live births; most of the African countries are struggling with mortality levels over 50 and in some cases 100 deaths per 1,000 live births based on the data 2006. According to the United Nations estimates, 10 million infant deaths occur annually in the world. India accounts for a quarter of those. Thus any study of Indian infant mortality has global significance. As a national representation India and as a state study, the Indian states have also compelled to reduce the infant mortality rate to the possible minimum level. This paper aims in analysing the status of various states in southern part of India. Accordingly, in the present study, an attempt has been made to analyze the status, manners, behaviour and discrepancy in the infant mortality rate.

Reviews regarding IMR

Marian Claeson and Eduard R Bos (2000) examine the trend in infant mortality rates since 1981. This study reveals that slowing decline in infant mortality rates in India is a departure from the longer-term trends. The researcher also reviews the causes of childhood mortality and proposes strategic options for the different states of India taking into account current mortality rates and the level of progress in individual states.

Pakti Padhi (2001) analyses the Infant and Child Survival in Orissa with the help of NFHS Data. The author finds that the level of infant mortality rate (IMR) is the highest, under-five mortality is the second highest (after Uttar Pradesh) and age 0-4 death rate is again the second highest (after Madhya Pradesh) in Orissa among the major states of India. The study confirms that infant and child deaths to overall mortality burden in Orissa.

Satish B Agnihotri (2001) analyses the infant and child mortality data for West Bengal through the district-level estimates and in time through the state-level estimates, comparing these with all-India figures. The analysis uses mapping techniques to identify regions of high mortality levels using the 1981 and the 1991 district-level estimates. The study reveals that regions, especially urban, where the gender gap in the mortality levels is considerable. Also, a study reveals that Infant and child mortality rates are significantly higher among the SC and the ST at the all-India level. The differences are less sharp in West Bengal, especially in rural West Bengal. Further, noticed that the mortality rates among Muslims and Christians are considerably higher than those among Hindus.

Umakant Dash and v. r. Muraleedharan (2008) analyzes technical efficiency in the production of aggregate health outcomes of reduced infant mortality and increased life expectancy, using the health data at the district level of the State of Tamil Nadu. The study findings indicate that 52 percent of the districts are inefficient as far as life expectancy is concerned whereas 72 percent are inefficient for infant mortality rate as an outcome.

Ellen Van De Poel and Eddy Van Doorslaer (2009) explain the rural-urban gap of infant mortality rates by using a new decomposition method that permits the identification of the contribution of unobserved heterogeneity at the household and the community level. Using Demographic and Health Survey data for six Francophone countries in Central and West sub-Saharan Africa, the study finds that differences in the distributions of factors that determine mortality not differences in their effects explain almost the entire gap. Higher infant mortality rates in rural areas mainly derive from the rural disadvantage in household characteristics; both observed and unobserved, which explain two-thirds of the gap.

Elsie R. Pamuk, Regina Fuchs and Wolfgang Lutz (2011) assess the relative effects of human and material resources on infant mortality in developing countries by measuring the impact of individual, community, and country levels of education and wealth on the likelihood of infant death. The study indicates that a substantial role for factors other than economic resources and education in determining the likelihood of infant death; considerable variation remains at the community and country levels after adjustment for education and economic resources.

K S James (2014) examines the trends of the IMR in different decades to understand the pace and magnitude of the decline particularly in the last few years. This study is much deeper analysis given the larger socio-economic and demographic changes taking place in the country and has its own effect on reducing the IMR. The researcher found that the pace of decline in infant mortality in India has quickened in recent years after the introduction of the National Rural Health Mission.

Dr. Nityananda Barman and Dipul Talukdar (2014) made a study on socio-demographic factors affecting the infant mortality rate of Assam in India. This study is generally observed

that in a backward country both infant and the maternal mortality rate is too high in comparison to that of a developed country. The research confirms that the infant mortality rate is affected 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.

Damodar Sahu (2015) examines levels, trends and socio-demographic factors associated with infant and child mortality among scheduled tribes in rural areas. The study reveals that significant change is observed in infant and child mortality over the time period from 1992-2006 among Scheduled Tribes in rural areas. The hazard of infant mortality is highest among births to mothers aged 30 yr or more as compared with births to the mother's aged 20-29 yr.

NEED OF THE STUDY

Infant mortality rate (IMR) is one of the most important sensitive indicators of the socioeconomic and health status of a community. This is because more than any other age-group of a population, infant's survival depends on the socioeconomic conditions of their environment. It is one of the components of the United Nations human development index. Hence, its description is very vital for the evaluation and planning of the public health strategies. One of the most important items in the Millennium Development Goals (MDG) is to reduce infant and child mortality by two-thirds between the years of 1990-2015. On considering the various factors like divergence, inequality, disproportions, different cultural styles and the imbalance the need for studying the infant mortality rate in India have increased to a greater extend.

OBJECTIVE OF THE STUDY:

The objective of the study is to analyze the status, trend and disparities in infant mortality rate. India (IND) and four states namely, Tamil Nadu (TN), Andhra Pradesh (AP), Karnataka (KA) and Kerala (KL) have considered for analysis.

METHODOLOGY:

The study is based on analytical research which uses available facts and information. Also, this study is descriptive in nature. It employs descriptive Statistics and econometric tools. The status of infant mortality has presented in the form of graphs. The trends in infant mortality have captured with log-linear growth models. The comparison of infant mortality among the south Indian states along with India has made with the help of ANOVA and Duncan multiple comparison techniques. India (IND) and four states namely, Tamil Nadu (TN), Andhra Pradesh (AP), Karnataka (KA) and Kerala (KL) have considered for analysis.

SOURCES OF DATA

The researchers have relied upon the secondary data which have been collected from Sample Registration System Statistical Reports for different years, Office of RGI, New Delhi and SRS Bulletins for different years, Sample Registration System, Office of RGI, and New Delhi. Infant mortality rates (IMR) in South Indian states for the period from 1999 to 2013 have presented.

Result Analysis of IMR:

A detailed study has carried out for the country India and for the southern states of India. The final statistical report of the study has been listed below.

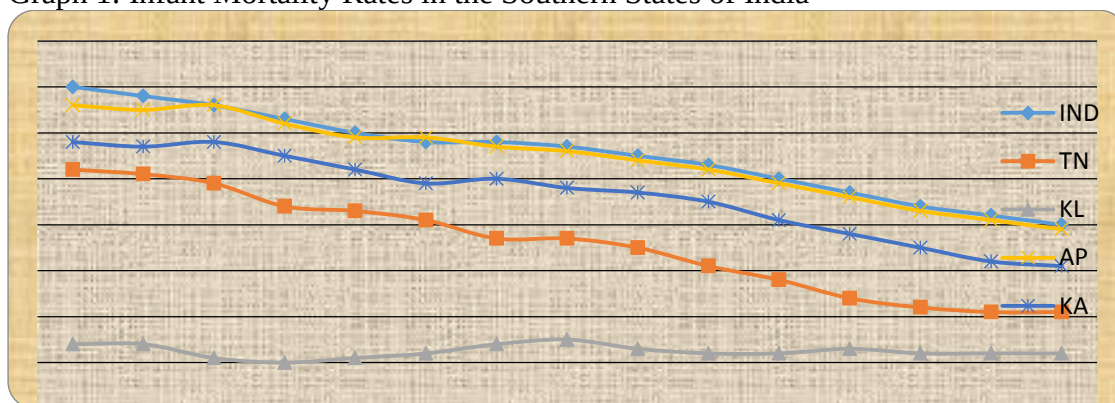
Table 1: Infant Mortality Rates in the southern States of India (1999-2013)

year /state	India	TamilNadu	Kerala	Andhra Pradesh	Karnataka
1999	70	52	14	66	58
2000	68	51	14	65	57
2001	66	49	11	66	58
2002	63	44	10	62	55
2003	60	43	11	59	52
2004	58	41	12	59	49
2005	58	37	14	57	50
2006	57	37	15	56	48
2007	55	35	13	54	47
2008	53	31	12	52	45
2009	50	28	12	49	41
2010	47	24	13	46	38
2011	44	22	12	43	35
2012	42	21	12	41	32
2013	40	21	12	39	31
2014	39	20	12	39	29
2015	37	19	12	37	28

Source: 1. Sample Registration System Statistical Reports for different years, Office of RGI, New Delhi.

2. SRS Bulletins for different years, Sample Registration System, Office of RGI, New Delhi.

Graph 1: Infant Mortality Rates in the Southern States of India



Source: 1. Sample Registration System Statistical Reports for different years, Office of RGI, New Delhi.

2. SRS Bulletins for different years, Sample Registration System, Office of RGI, New Delhi.

Infant mortality rates (IMR) in South Indian states for the period from 1999 to 2013 have presented in the above graph. It has found from the graph that infant mortality rates were high during 1999 and declined over the period of time in India, Andhra Pradesh, Karnataka and Tamil Nadu. The infant mortality rate in Kerala was low and stable. The specific growths have computed and presented in the following table.

Table 1: Trends in Infant Mortality Rates in the Southern States of India

Country/ State	CAGR	t-ratio	P-value
India	-3.85	-21.12	0.000
Tamil Nadu	-7.14	-20.82	0.000
Andhra Pradesh	-3.80	-17.06	0.000
Karnataka	-4.57	-13.96	0.000
Kerala	-0.12	-0.1759	0.863

Source: Computed by the researcher.

Growth in infant mortality rates has computed and presented in the above table. The growth of infant mortality is negative in India and in all the Southern states. In Kerala, the infant mortality is already low and further it has not further reduced significantly. The reduction in infant mortality is significant in India, Tamil Nadu, Andhra Pradesh and Karnataka. However, reduction in infant mortality is moderate in Karnataka and Andhra Pradesh. At the same time, reduction in infant mortality is very high in Tamil Nadu. Therefore, infant mortality has been significantly reduced in Tamil Nadu.

Table 2: Comparison of Infant Mortality Rates among the Southern States of India

Comparison of Infant Mortality Rates among the Southern States of India					
States	N	Subset for alpha = 0.05			
		1	2	3	4
Kerala	15	12.467			
Tamil Nadu	15		35.733		
Karnataka	15			46.400	
Andhra Pradesh	15				54.267
India	15				55.400
Sig.		1.000	1.000	1.000	.721
ANOVA F-Value: 62.658			P-value: 0.000		
Means for groups in homogeneous subsets are displayed.					
a. Uses Harmonic Mean Sample Size = 15.000.					

Source: Computed by the researcher.

The average IMR in India and Southern states during the reference period were estimated and presented in the above table. It is found from the above table that the average IMR in Kerala is 12.467 and it is 35.733, 46.4, 54.267 and 55.4 in Tamil Nadu, Karnataka, Andhra Pradesh and India respectively. The ANOVA test has been conducted to find a significant difference among the states. It has been found from the ANOVA test that there are significant differences among the states. It is also found from the Duncan test that the average IMR is

very low in Kerala, moderate in Tamil Nadu and Karnataka and high in Andhra Pradesh and India. Therefore, the state of Tamil Nadu needs to further reduce the IMR to the possible minimum level.

Conclusion

India has an extremely significant responsibility to play in global efforts to end the avoidable demise of infant. According to the study it can be clearly seen that India has declined the infant mortality rate to a negative value. By conducting the study across the southern states of India, it is clear from the analysis that Tamilnadu has to a great extent reduced the infant mortality rate. In addition, the study also found that, at state level, Kerala has minimum infant mortality rate compared to the state Tamilnadu. But, Tamilnadu infant mortality rate has been reduced drastically for the past years. It is also found from the study that the IMR is very high in Karnataka and Andhra Pradesh when compared to Tamilnadu and Kerala. As a state level study Tamilnadu, Karnataka and Andhra Pradesh need a special attention as some of districts in these states have lack of awareness and lack of quality in health care program. By considering the analysis result the average infant mortality rate can be reduced further. This will facilitate in attaining the MDG as soon as possible in India.

Reference

1. HISHAM ELMAHDI MUSTAFA AND CLIFFORD ODIMEGWU 2008 “Socioeconomic Determinants of Infant Mortality in Kenya: Analysis of Kenya DHS 2003” *journal of humanity and social science* ISSN:1934 7227 VOL-2 ISSUES -2.
2. MARIAN CLAESON AND EDUARD R BOS –“Reducing child mortality in India in the New Millennium”-Bulletin of the World Health Organization, 2000, 78 (10).
3. SAKTI PADHI (2001) “Infant and Child Survival in Orissa -An Analysis with NFHS Data” *Economic and Political Weekly* August 25, 2001.
4. DAMODAR SAHU(2015) “Levels, trends & predictors of infant & child mortality among Scheduled Tribes in rural India” *Indian J Med Res* 141, May 2015, pp 709-719, National Institute of Medical Statistics, (ICMR), New Delhi, India.
5. K S JAMES (2014) ‘Recent Shifts in Infant Mortality in India-An Exploration’ *Economic & Political Weekly* January 18, 2014, vol xlix 14, no -3
6. ELSIE R. PAMUK, REGINA FUCHS AND WOLFGANG LUTZ (2011) “Comparing Relative Effects of Education and Economic Resources on Infant Mortality in Developing Countries.” *Population and Development Review*, Vol. 37, No. 4 (December 2011), pp. 637-664
7. ELLEN VAN DE POEL, OWEN O'DONNELL AND EDDY VAN DOORSLAER (2009) “What Explains the Rural-Urban Gap in Infant Mortality: Household or Community Characteristics?” *Demography*, Vol. 46, No. 4 (Nov., 2009), pp. 827-850.
8. SATISH B AGNIHOTRI (2001) “Infant Mortality Variations in Space and Time Analysis of West Bengal Data” *Economic and Political Weekly* September 8, 2001.
9. UMAKANT DASH, S. D. VAISHNAVI AND V. R. MURALEEDHARAN (2008)

“Technical Efficiency in the Use of Health Care Resources: A Case Study of Tamil Nadu”- Indian Economic Review, New Series, Vol. 43, No. 1 (January-June 2008), pp. 69-82
10. DR. NITYANANDA BARMAN AND DIPUL TALUKDAR (2014) *“Socio-demographic factors affecting infant mortality rate in Assam” International Journal of Science, Environment and Technology, Vol. 3, No 5, 2014, 1893 – 1900.*