

Trends of Mortality Indicators in Nagaland: A Time Series Analysis

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KEYWORDS Health. Birth Rate. Death Rate. Antenatal Care. Post Natal Care

ABSTRACT Health is one of the vital aspects of human life. In the present modernized era, people are more conscious about their health. Since the last 62 years after independence, India has developed significantly in the health sector and as a result the country succeeded in many ways in controlling various diseases. Nagaland, being a poor tribal hill state also succeeded in many ways in controlling infant mortality rate, birth rate, death rate etc. Basic objective of the present study is to study the trend of infant mortality rate, birth rate and death rate in relation to various factors associated with their changes in Nagaland in comparison to the country as a whole, mostly during the period 1997-2008. This study is based entirely on secondary data. Infant mortality rate in Nagaland showed an increase over the years as against a declining trend seen in the country. However, infant mortality rate was recorded a bit low in Nagaland as compared to the rest of the country. Increase in infant mortality rate was reported in Nagaland mostly because of improper and unhygienic delivery at home for most of the cases. The percentage of pregnant women who received all types of care, pre and post natal, in Nagaland was recorded the lowest among the North Eastern States.

INTRODUCTION

Health is one of the vital aspects of human life. In the present modernized era people are more conscious about their health. During the last 62 years after independence, the country developed significantly in health sector and as a result India succeeded in many ways in controlling various diseases. Nagaland, one of the tribal hill states of North East India has different peculiarities in different aspects. It is the only state in the country that has contributed the highest decadal growth rate of population during the last two – three decades as per the census data. The fertility level in Nagaland is the fourth highest among all Indian states and the second highest among the North Eastern States. The contraceptive prevalence rate in Nagaland is the second lowest among all states in India. About 9 out of 10 births in Nagaland take place at home, and only 15 percent of home deliveries are assisted by a health professional. Under the above circumstances, the present study is designed to examine the development of some important aspects of health in Nagaland. Basic objective of the present study is to study the trend of infant mortality rate, birth rate and death rate in relation to various factors associated with these changes in Nagaland in comparison to the country as a whole, especially during the period 1997-2008.

METHODOLOGY

This study is based on secondary data collected from various sources viz. SRS bulletin, Census of India, the Reports of National Family Health Survey, Govt. of India etc. This study was confined to Nagaland state only but in some cases a comparative analysis was done in relation to the country as a whole. In some cases, a comparison was also made in relation to various other states of North East India.

OBSERVATIONS AND DISCUSSION

The degree of control in respect of birth rate and death rate is one of the important indications of development of health sector. Table 1 reveals the birth rate and death rate for the state of Nagaland and the country. It indicated that the birth rate in case of Nagaland showed an almost increasing nature over the years. In case of urban population, it was 7.9 in 1997 that increased to 19.2 in 2006 but after that it declined to 16.4 in 2008, whereas in case of rural population it showed a continuous increase of birth rate over the years. An almost similar trend could be viewed in case of death rate also. Death rate increased over the years from 1997 to 2007 but after that it declined in 2008. On the other hand, the country as a whole showed a completely opposite picture indicating a declining

nature of both birth rate and death rate over the years although on an average country's position is much worst than Nagaland. In most of the cases, birth rate and death rate among rural population were seen to be more as compared to the urban population with some exceptions indicating that rural people are not much conscious about health. This is mainly due to the illiteracy among the rural population as well as lack of awareness about various family welfare programmes. Moreover, birth rates were seen much higher than the death rates during the period under study. Dey and Goswami (2007) also reported similar results in case of Meghalaya. They reported that death rates were less than one-third of birth rates in case of total and rural population and it was one-fourth in case of urban population.

Table 1: Trend of birth rate and death rate in Nagaland vis-à-vis the country by residence

State/ Country	Year	Birth rate			Death rate		
		T	R	U	T	R	U
Nagaland	1997	NA	NA	7.9	NA	NA	2.7
	2003	NA	NA	11.8	NA	NA	2.4
	2004	13.9	13.5	15.9	3.7	4.0	2.3
	2005	16.4	16.5	16.1	3.8	4.0	3.1
	2006	17.3	16.8	19.2	4.8	4.9	4.1
	2007	17.4	17.7	16.1	5.0	5.4	3.8
	2008	17.5	17.8	16.4	4.6	5.0	3.3
	India	1997	27.2	28.9	21.5	8.9	9.6
2003		24.8	26.4	19.8	8.0	8.7	6.0
2004		24.1	25.9	19.0	7.5	8.2	5.8
2005		23.8	25.6	19.1	7.6	8.1	6.0
2006		23.5	25.2	18.8	7.5	8.1	6.0
2007		23.1	24.7	18.6	7.4	8.0	6.0
2008		22.8	24.4	18.5	7.4	8.0	5.9

Source: SRS Bulletin

On the other hand, Table 2 shows death rate by both sex and residence. It indicates that in almost all the cases, death rate was recorded more for males as compared to females. Otherwise, it showed an increasing trend of birth rate and death rate over the years with few exceptions.

Table 2: Death rate by sex and residence in Nagaland

Year	Total			Rural			Urban		
	P	M	F	P	M	F	P	M	F
2004	3.7	4.2	3.2	4.0	4.6	3.5	2.3	2.7	1.9
2005	3.8	4.4	3.2	4.0	4.8	3.1	3.1	2.6	3.7
2006	4.8	5.7	3.8	4.9	5.8	4.0	4.1	5.2	3.0
2007	5.0	7.0	3.0	5.4	7.5	3.2	3.8	4.9	2.5
2008	4.6	4.8	4.4	5.0	5.2	4.7	3.3	3.6	3.0

Source: SRS Bulletin

Trend of Infant Mortality Rate (IMR)

IMR is the number of deaths per 1000 live births before the age of one year. As per the survey made by NFHS, MOHFW, Govt. of India IMR during 1993-94 in Nagaland was 17 (17 deaths per 1000 live births), that increased to 42 during NFHS II (1998-99). And according the latest survey of NFHS III (2005-06), Infant Mortality Rate (IMR) declined to 38. IMR can also be viewed from the data of SRS bulletin published by Office of the Registrar General and Census Commissioner, India. Table 3 reveals the infant mortality rate in Nagaland and the country for the period 1997 – 2008 as per SRS data.

Table 3: Trend of IMR in Nagaland vis-à-vis the country (1997-2008)

Country	Total/Rural Urban	1997	2003	2004	2005	2006	2007	2008
		Nagaland	Total	NA	NA	17	18	20
	Rural	NA	NA	17	17	18	18	25
	Urban	16	16	16	22	27	29	28
India	Total	71	60	58	58	57	55	53
	Rural	77	66	64	64	62	61	58
	Urban	45	38	40	40	39	37	36

Source: SRS bulletin

From the Table 3 it is observed that IMR showed an increasing trend over the years in Nagaland and this increasing trend was more visible in urban Nagaland. In 1997, IMR in urban Nagaland was 16, that increased to 29 in 2007, whereas, during the same period, the country showed a continuous declining trend of IMR. In the country, IMR declined from 71 in 1997 to 53 in 2008. Increasing IMR in Nagaland over the years should be viewed seriously and it may be due to improper and unhygienic delivery at home for most of the cases. On the other hand, the position of Nagaland is better than the country as a whole.

IMR by sex can be viewed from Table 4. IMR showed an almost increasing trend over the years (2004 – 2008) in Nagaland by some fluctuations at certain level and both male and female showed the same trend. During 2004 – 05, IMR for males was more than females and during 2006-2009 IMR for males was less than infant mortality rate of females.

Table 4: Trend of IMR by sex (2004 – 2008)

Year	Person	Male	Female
2004	17	18	16
2005	18	19	18
2006	20	17	23
2007	21	21	20
2008	26	23	29

Source: SRS bulletin, Census of India

Factors Responsible for Increasing IMR in Nagaland

There may be various factors responsible for increasing IMR in Nagaland viz. status of antenatal care and post natal care, places of delivery etc. The status of antenatal care by pregnant women in Nagaland as per the various NFHS reports is shown in Table 5. Antenatal care means the treatment required by a pregnant woman before live birth and this one is very important factor for controlling the IMR. Percentage of pregnant women who received antenatal care during NFHS I was 39.3 that increased to 59.9 per cent in NFHS II and again during the latest survey (NFHS III) it declined to 56.9 per cent. The percentage of women who received at least three antenatal care visits and percentage of women who received antenatal care within first trimester of pregnancy both increased steadily over time. Percentage of women who had at least three antenatal care visits increased from 15.0 per cent in NFHS I to 21.9 per cent in NFHS II and to 31.6 in NFHS III. Similarly, percentage of women who received at least one antenatal care visit during first trimester of pregnancy increased from 15.2 per cent in NFHS I to 23 per cent in NFHS II and to 28.6 in NFHS III. Disaggregated study,

however, indicated that rural areas were lagging behind as compared to urban areas in all the parameters mentioned in the table below. On the other hand, percentage of births delivered in health facility recorded 6.1 in NFHS I increased to 12.1 in NFHS II and to 12.2 in NFHS III.

Table 6 reveals the delivery and post natal care in Nagaland as per NFHS III. Place of delivery as well as assistance during delivery are another two very important factors for controlling IMR. In Nagaland only 12.2 per cent women delivered in health facility against 87.6 per cent at home. In rural areas, number of institutional deliveries was quite low as compared to urban areas. Not only that, only 11.9 per cent women got assistance from doctors during delivery. And among the eight north- eastern states, Nagaland recorded the lowest proportion of institutional deliveries as per the NFHS III followed by Assam (22 %) against the country's figure of 39 % (Table 7). Kumari and Singh (2006) reported that almost 89 per cent children were born at home in case of both poor and non- poor households in a study at North Bihar. It was mainly because of fragile infrastructure of PHC, irregular visit of doctors/ nurses to PHC, low literacy rate and poor health consciousness.

Table 6 : Delivery and post natal care in Nagaland (NFHS III)

Particular	Total	Rural	Urban
<i>Place of Birth</i>			
(1) Health facility	12.2	6.7	29.2
(2) At home	87.6	93.2	70.7
<i>Assistance During Delivery</i>			
(1) Doctor	11.9	7.3	28.7
(2) ANM/Nurse/Midwife	11.3	8.5	21.1

Table 5: Status of antenatal care by pregnant women in Nagaland (Three years preceding the survey)

Indicator	NFHS I			NFHS II			NFHS III		
	T	R	U	T	R	U	T	R	U
Percentage who received antenatal care	39.3	37.0	53.4	59.9	56.1	80.5	56.9	48.9	84.2
Percentage who had at least three antenatal care visits	15.0	12.2	32.8	21.9	18.0	42.8	31.6	23.9	57.9
Percentage who received antenatal care within first trimester of pregnancy	15.2	13.0	29.3	23.0	20.4	37.3	28.6	22.2	50.5
Percentage of births delivered in health facility	6.1	5.0	13.0	12.1	8.9	28.2	12.2	6.6	32.0

Source: NFHS, GOI

Table 7: Institutional delivery by state in NE States (%)

State/Country	Percentage
Nagaland	12.2
Assam	22
Arunachal Pradesh	29
Meghalaya	29
Manipur	46
Tripura	47
Sikkim	47
Mizoram	60
India	39

Table 8 shows the status of five maternal care indicators for births during the five years preceding the survey as per the NFHS III in the states of north eastern region. The percentage who received all recommended types of antenatal care (three or more antenatal care visits with the first visit within the first trimester of pregnancy, two or more tetanus toxoid injections, iron and folic acid tablets for three or more months) recorded lowest in Nagaland (1.9 per cent) against the country's figure of 15 per cent. Percentage of births delivered in a health facility as well as percentage of deliveries assisted by health personnel both also recorded lowest in Nagaland. Also, in case of the status of post natal check up after the delivery, Nagaland recorded lowest among the North Eastern States.

Table 8: Maternal care indicators by state in NE India (NFHS III)

State/Country	1	2	3	4	5
Arunachal Pradesh	6.5	28.5	30.2	23.7	22.7
Assam	9.6	22.4	31.0	15.9	13.9
Manipur	10.5	45.9	59.0	50.1	46.4
Meghalaya	8.1	29.0	31.1	33.2	28.8
Mizoram	8.7	59.8	65.4	53.5	50.6
Nagaland	1.9	12.2	24.7	11.8	10.6
Sikkim	27.2	47.2	53.7	52.4	44.9
Tripura	10.6	46.9	48.8	33.7	30.3
India	15.0	38.7	46.6	41.2	37.3

1. Percentage who received all recommended types of antenatal care
2. Percentage of births delivered in a health facility
3. Percentage of deliveries assisted by health personnel
4. Percentage of deliveries with a post-natal checkup
5. Percentage of deliveries with a post-natal check-up within two days of birth.

Table 9 indicates the infant mortality rate by some important characteristics in Nagaland accor-

Table 9: Infant mortality rate (IMR) by certain important characteristics in Nagaland (NFHS III)

Characteristics	IMR
<i>Residence</i>	
a) Urban	43.3
b) Rural	49.7
<i>Education</i>	
a) No education	67.0
b) < 10 years complete	42.2
c) 10 or more years complete	23.6
<i>Mother's Age at Birth</i>	
a) < 20	65.1
b) 20-29	43.2
c) 30-39	49.3
<i>Birth Order</i>	
a) 1	44.5
b) 2-3	36.2
c) 4+	62.7
<i>Previous Birth Interval</i>	
a) < 2 years	72.1
b) 2-3 years	38.5
c) 4 years or more	27.4

ding to NFHS III (2005-06). IMR was recorded high in case of rural areas. Children whose mothers have no education are more vulnerable to infancy death. Again children born to mothers under age 20 or more than 30 are more likely to die in infancy than children born to mothers in the prime childbearing ages. According to birth order also IMR varied. In case of first child, IMR was recorded a bit high, of course IMR was recorded a bit low in case of 2nd and 3rd children, again it increased for four and more children. The risk of death in the first year of life is more for children born less than two years of interval than for children whose mothers waited for 2-3 years birth interval.

CONCLUSION

Study revealed that infant mortality rate in Nagaland showed an increasing trend over the years as against a declining trend by the country as per the census data. However, infant mortality rate recorded a bit low in Nagaland as compared to the country. On the other hand, NFHS data recorded higher infant mortality rate than that of census data. In case of birth rate and death rate also, Nagaland showed an increasing trend over the years except the year 2007. On the other hand, the country showed a declining trend of birth rate and death rate over the years during the same period. It can also be concluded that although the infant mortality rate, birth rate and death rate were seen to be much low in Nagaland

as compared to the country, increasing trend over the years indicates some seriousness of the problem that needs immediate attention. Increasing infant mortality rate was reported in Nagaland mainly because of improper and unhygienic delivery at home for most of the cases. The percentage of pregnant women who received all recommended types of antenatal care recorded lowest in Nagaland (1.9 per cent) against the country's figure of 15 per cent. So far, the status of post natal check up after delivery Nagaland recorded lowest among the North Eastern States.

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