

# Gender Differentials in Literate Life Expectancies in Rural Areas of Nagaland

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## ABSTRACT

*Mortality and literacy are two important components in measuring the quality of life of a population. Literate life expectancy (LLE) which combines both mortality and literacy into single indicator is used to measure the average number of years that a person can expect to live in literate state. The objective is to find the gender differentials in LLEs in rural Nagaland. Sullivan's method is applied to estimate the age and sex specific LLEs. The age and sex specific proportion of literate persons are obtained from Census, 2011 data and mortality rates are from life table constructed by Barman, 2012. The LLEs at birth for female and male is found to be 35.86 and 46.00 years respectively. A clear gender differential is found in LLEs at all ages with females having higher risks than males of living in illiterate state indicating a dismal scenario of women empowerment in rural Nagaland.*

**Keywords:** Literate Life Expectancy, Gender differential, Rural Nagaland.

## 1.1 Introduction:

Literacy is an important indicator of social and economic development. It plays an important role in determining the human health as it is directly associated with the quality of life lived by a person. Low literacy is associated with several adverse health outcomes (Darren et al., 2004). Limited literacy is independently associated with a nearly 2-fold increase in mortality in the elderly (Rebecca et al., 2006). Poorer understanding of basic health related information is associated with higher mortality (Bostock and Steptoe, 2012). The consequence of illiteracy on deteriorating human health can be better understood from the fact that it prevents people from being able to read the instructions on a medicine bottle (United Nations, 2008).

Literacy adds quality to life of any individual in terms of employment, earnings and social status. A survey carried out by Gould in 1993 revealed that the expansion of education has greatly contributed to the quality of life, economic and social development. Therefore, life with literacy is valued by every society. The Literate Life Expectancy (LLE) comprises literacy and mortality into a single indicator and was developed by Lutz (1995) as an innovative, objective and useful simplified single indicator of sustainable social development and quality of life. The LLE indicator is interpreted as the "average number of years a person lives in a literate state", i.e., able to read and write under the current mortality and literacy conditions (Lutz, 1995; Medina, 1996). The higher LLE indicates not only development but also social improvement and quality of life in a very comprehensive and sensitive manner (Nair et al., 2000).

This innovative indicator is based on clearly observable and measurable non-material individual characteristics and combines in one number the two basic aspects of social development, namely, life expectancy and literacy. Life expectancy is one of the most comprehensive indicators of measuring longevity of life of a person while literacy is the indicator of empowerment. The government policies and programmes on health and education in developed and developing countries are directly influenced by these two factors.

One may be interested to know how many years a person would live out of his total life with the possession of literacy. The answer is obtained by using the life table technique to find the average number of years lived by a person in literate state. The life table literature already contains the ordinary life table providing the life expectancy. Since literacy besides mortality, is a very important aspect that determine the quality of life, therefore, one may be interested to combine mortality and literacy together to estimate the average number of years lived by a person in literate state, i.e., life expectancy under literate state or literate life expectancy (LLE). LLE has advantages over other indicators of social and educational development such as literacy rate by sex and age-specific literacy rate and life expectancy.

Nagaland is a far north eastern hill state of India. The rural Nagaland has its literacy rate of 78.96% for male and 71.51% for female in the rural areas according to 2011 census. On the other hand, the life expectancy at birth for rural Nagaland is 65.8 years for male and 69.3 years for female in 2011.

**1.2 Objective:**

The objective of this paper is to estimate the gender differentials in literate life expectancies (LLEs) in the rural areas of Nagaland in 2011.

**1.3 Materials and Methods**

**1.3.1 Data:**

Sullivan’s method is applied to estimate the age and sex specific LLEs in the rural areas of Nagaland. To estimate LLEs, the data requires is the age and sex specific proportion of literate persons and age and sex specific mortality information. The age and sex specific proportions of literate persons are obtained using census 2011 data of rural areas of the state of Nagaland. Here, the number of literate persons aged 7 years and above is considered .The age and sex specific mortality information of rural areas of Nagaland is taken from the life table constructed for both sexes for rural Nagaland, 2001-05 by Barman (2012).

**1.3.2 Methodology:**

**Estimation of Literate Life Expectancy (LLE):**

The estimation of LLE is performed without any complex mathematical operation in a life table which is used for summarizing the mortality experience of a population. The only new element is the weighted number of person-years at each age by the age-specific proportions literate, i.e.,

$${}_n\pi_x = \text{Age-specific proportions literate in age group } (x, x + n)$$

$$L_n L_x = \text{Literate person-years lived in age group } (x, x + n)$$

In the life table, the  ${}_n L_x$  column is multiplied by  ${}_n\pi_x$  to generate the  $L_n L_x$  column.

$$\text{i.e., } L_n L_x = {}_n L_x \times {}_n\pi_x$$

$$= \text{Weighted number of person-years lived in literate state in age group } (x, x + n) \text{ and } l_x^0 = \frac{LT_x}{l_x}$$

=literate life expectancy at age  $x$  ;

Where,  $LT_x = \sum L_n L_x = \text{Cumulative literate person-years at age } x$  ;

$l_x = \text{Number of survivors at age } x$  .

The estimation of Standard Error of literate life expectancy (LLE) is done in the same way as that of the health expectancy.

**1.4 Results and Discussion:**

The age-and-sex specific literate life expectancies (LLEs) of rural people of Nagaland are presented in Table 1 given below.

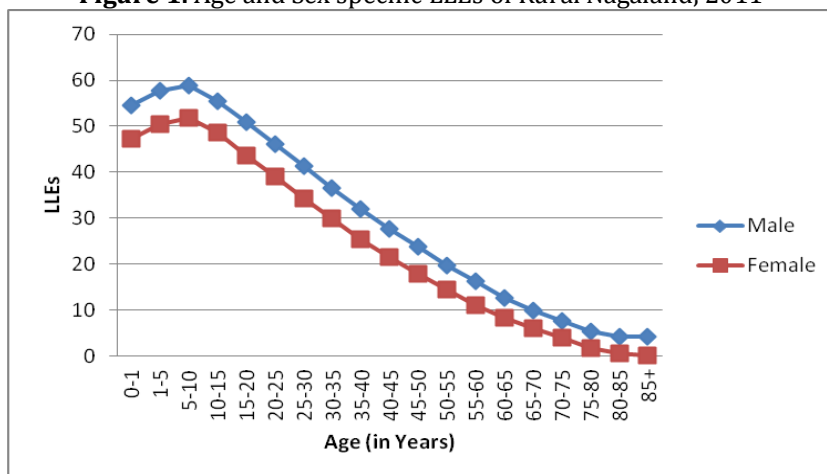
**Table 1:** Literate life expectancies (LLE) and life expectancies (LE) and their percentage difference in rural Nagaland, 2011:

Age	Male			Female		
	LLE	LE	% of diff. (LE-LLE)	LLE	LE	% of diff. (LE-LLE)
0-1	46.00	67.48	31.83	35.86	67.07	46.53
1-5	48.69	70.42	30.86	38.35	70.72	45.77
5-10	49.76	67.93	26.75	39.46	68.72	42.58
10-15	46.10	63.27	27.14	37.67	64.12	41.25
15-20	41.94	58.42	28.21	33.53	59.28	43.44
20-25	37.68	53.59	29.69	29.32	54.48	46.18
25-30	33.53	48.78	31.26	25.32	49.7	49.05
30-35	29.44	43.99	33.08	21.49	44.93	52.17
35-40	25.42	39.23	35.2	17.84	40.2	55.62
40-45	21.58	34.54	37.52	14.51	35.52	59.15
45-50	18.01	29.98	39.93	11.54	30.93	62.69
50-55	14.66	25.59	42.71	8.97	26.45	66.09
55-60	11.77	21.5	45.26	6.82	22.2	69.28
60-65	9.14	17.74	48.48	5.02	18.25	72.49
65-70	7.00	14.44	51.52	3.63	14.7	75.31

70-75	5.11	11.57	55.83	2.51	11.58	78.32
75-80	3.90	9.2	57.61	1.86	8.96	79.24
80-85	2.90	7.28	60.16	1.37	6.84	79.97
85+	2.30	5.75	60.00	1.17	5.20	77.50

From this table, it is evident that the females of rural areas of Nagaland had lower LLE at birth (35.86 years) than males (46.00 years). It suggests that a new born female can expect to live almost 10 years shorter life than a new born male in literate state in rural areas of Nagaland. A male and female of 5 years old can expect to live respectively 49.76 years and 39.46 years in literate state. It is also seen that females in all ages can expect to live a shorter life than their male counterparts in literate states (Table 1 and Figure 1).

**Figure 1: Age and Sex specific LLEs of Rural Nagaland, 2011**



The percent difference between the life expectancy and literate life expectancy are also given in Table 1. The table has revealed a clear gender differential with the females exhibiting a disadvantage in the total number of remaining years in illiterate state compared to males in all ages. For example, a new born female have a risk of living 46.53% of his remaining life in illiterate state compared to 31.83% of remaining life by a new born male. Similarly, a fifty year old female have a risk of living 17.48 years (or 66.09%) of remaining life in illiterate state compared to 10.93 years (or 42.71%) for a male of same age. This is a reflection of low literacy rate among women compared to men. It is found that as literacy rate increases, the life expectancy also increases. For example, the literacy rate of India in 2001 was 75.26% for male and 53.67% for female increased to 80.94% for male and 62.98% for female in 2011 (Census of India, 2001 and 2011). Accordingly, the life expectancy for male and female respectively increased from 62.3 years and 64.6 years to 65.8 years and 69.3 years during 2001 to 2011 (SRS, 2009-13). Literacy is considered as one of the most powerful indicator of socio-economic empowerment. At the individual level, better education is associated with better health, better economic opportunities, and more autonomy, especially for women (Jejeebhoy, 1995). Thus lower LLE of women indicates a dismal scenario of women empowerment in rural Nagaland.

**1.5 Demerits:** The possible demerit of this study might be in the reference period of the estimates. For estimating the literate life expectancy, the primary data on age-and-sex specific proportion of literate persons were collected from the household survey done in 2011, whereas the age-and-sex specific mortality information were taken from the life table for rural people of Nagaland for the period 2001-05. But, it is believed that the demographic measures do not change drastically over short time period and hence the estimates produced are assumed to be reliable.

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