Relationship of Total Fertility Rate, Birth Rate, Death Rate, Infant Mortality Rate and Life Expectancy at Birth with Literacy Rate in India

Dr. Roselin Basumatary

Assistant Professor, Economics,

Kokrajhar Govt. College,

Kokrajhar, Assam, 783370

ABSTRACT

Literacy is traditionally defined as the ability to read and write, with understanding, a short, simple statement about one's everyday life (United Nations, 2008). All the states and union territories of India have not achieved 100 per cent literacy, according to the census 2011. Literacy rate affects development of an economy. The paper aims to find out the correlation between total literacy rate and major demographic variables namely total fertility rate, birth rate, death rate, infant mortality rate and life expectancy at birth in India. The paper uses secondary data of literacy rate (total) for the year 2011 and total fertility rate, birth rate, death rate, infant mortality rate and life expectancy rate for 2013 to study their correlation with scatter diagram. It is found that literacy rate and total fertility rate are linearly negatively correlated, literacy rate and birth rate are linearly negatively correlated, literacy rate and death rate have a linear moderate negative correlation, literacy rate and life expectancy at birth have a linear moderate positive correlation and, literacy rate and infant mortality rate have a moderate negative correlation in India.

Key words: Literacy, correlation, demographic, scatter.

INTRODUCTION

Literacy is traditionally defined as the ability to read and write, with understanding, a short, simple statement about one's everyday life (United Nations, 2008). Beyond the traditional concept, literacy is now understood as a means of identification, understanding, interpretation, creation and communication in an increasingly digital, text-mediated, information rich and fast- changing world. Literacy has a multiplier effect in that it empowers and enables people to participate fully in society and contribute to improve livelihoods. Literacy improve child and family health and nutrition, enables greater participation in the labour market, reduces poverty and expands life opportunities and therefore is a driver to sustainable development (United Nations Educational, Scientific and Cultural Organisation, n.d.). Although United Nations Educational, Scientific and Cultural Organisation (UNESCO) made efforts since long back for a literate world still not all people of the world are literate. The effect of it is an exclusion of low literate and low skilled youth and adults from full participation in their communities and societies.

Literacy is a key measure and a key skill of a population's education. Gender inequality in literacy rate is an obstacle for the society's development. In the Preamble of the Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal four (Education 2030), the participants committed to ensuring that all youth and adults, especially girls and women, achieve relevant and recognised functional literacy and numeracy proficiency levels and acquire life skills, and that they are provided with adult learning, education and training opportunities (The World Economic Forum, 2015). According to a report by UNESCO, India had the highest population of illiterate adults at 287 million in 2014 (United Nations, 2014). Moreover, according to UNICEF (2014), 6 million children were out of school in India in 2014.

Illiteracy retards the development of an individual, society and the country. Literacy can affect development by affecting the total fertility, birth, death, infant mortality and life expectancy. Therefore, the paper aims to find out the correlation between total literacy rate and total fertility rate, total literacy rate and birth rate, total literacy rate and death rate, total literacy rate and infant mortality rate and, total literacy rate and life expectancy at birth in India.

REVIEW OF RELEVANT LITERATURE

Qureshi (2012) in his study "The Gender Differences in School Enrolment and Returns to Education in Pakistan" revealed that both father's and mother's education were found to have significantly positive impact on education of both sons and daughters. He also found that, mother's education compared to father had much more impact in terms of magnitude at all levels of education and especially the role was more pronounced for daughters.

Janine Eldred (2013) in her paper " Literacy and Women's Empowerment- Stories of Success and Inspiration" explored how literacy learning can support women's empowerment and the development of greater equality, benefitting not only individual women, but families, communities and economies too. In her paper, she mentioned that the stories drawn demonstrate how with imagination and determination, literacy learning was taking place and making a difference.

Venkatanarayana (2015) found that it is impossible to achieve 100% literacy rate in the near future for the country unless there is a policy intervention through adult education programme. He mentioned the need for revitalizing and rejuvenating the National Literacy Mission and revamped adult literacy programmes of Total Literacy Campaign.

Katiyar (2016) found that India had the dubious distinction of having one of the world's highest rates of adult illiteracy. He also found that, according to 2011 census, more than one fourth of the country's population is still illiterate.

Shukla and Mishra (2019), found that literacy deprivation is different across the age cohorts. They also found that group disparity in literacy is highest among the oldest age cohort and lowest for the youngest age cohort.
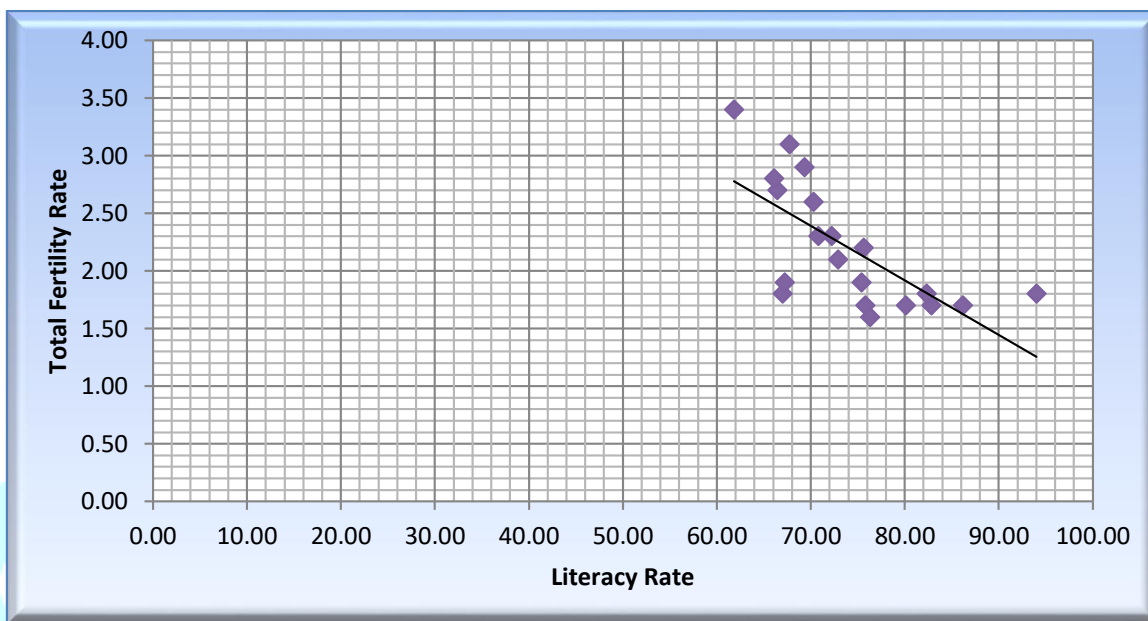
METHODOLOGY

The paper uses secondary data upon literacy rate (total) for the year 2011 and total fertility rate, birth rate, death rate, infant mortality rate and life expectancy rate for 2013 to study the correlation between literacy rate and total fertility rate, literacy rate and birth rate, literacy rate and death rate, literacy rate and infant mortality rate and, literacy rate and life expectancy at birth in India. In the paper scatter diagrams are drawn to examine their correlation.

FINDINGS AND CONCLUSION

Diagram 1 shows the correlation between literacy rate and total fertility rate in India (see Table 1). As shown in the diagram, the variables i.e., literacy rate and total fertility rate are linearly negatively correlated. It implies that as literacy rate increases, total fertility rate decreases.

Diagram 1

Sources:
1. Government of India, *Census report, 2011*.
2. Government of India, Office of the Registrar General and Census Commissioner, *SRS   Statistical Report 2013*, Government of India. (www.censusindia.gov.in/vital_statistics/SRSReports-2013.html)

Diagram 2

Sources:
1. Government of India, *Census report, 2011*.
2. Government of India, Office of the Registrar General and Census Commissioner, *SRS   Statistical Report 2013*, Government of India. (www.censusindia.gov.in/vital_statistics/SRSReports-2013.html)
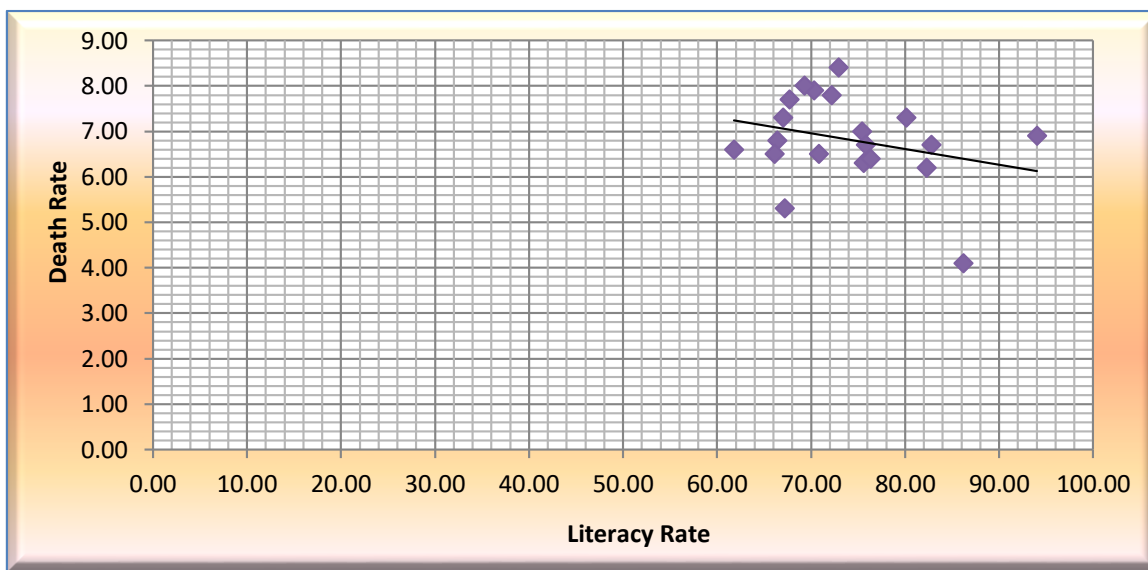
Diagram 2 shows the correlation between literacy rate and birth rate in India (see Table 1). As shown in the diagram, the variables i.e., literacy rate and birth rate are linearly negatively correlated. It indicates that if literacy rate increases, birth rate decreases.
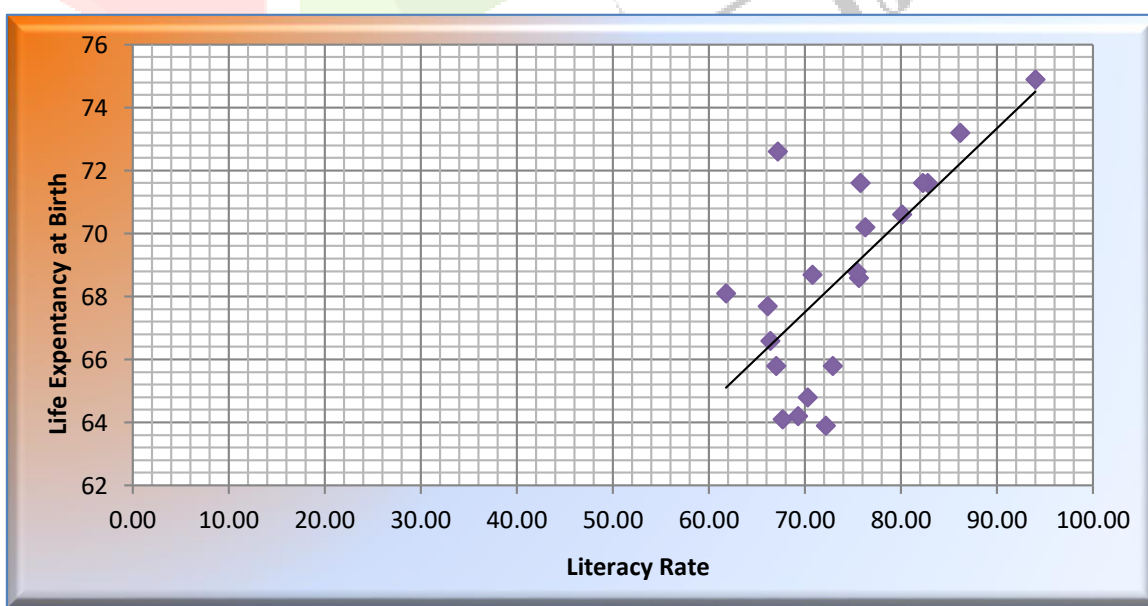
Diagram 3

Sources:
1. Government of India, *Census report, 2011*.
2. Government of India, Office of the Registrar General and Census Commissioner, *SRS   Statistical Report 2013*, Government of India. (www.censusindia.gov.in/vital_statistics/SRSReports-2013.html)

Diagram 3 shows the correlation between literacy rate and death rate in India (see Table 1). As shown in the diagram, the variables i.e., literacy rate and death rate have a linear moderate negative correlation. Their negative relationship, although moderate implies that if literacy rate increases, death rate decreases.
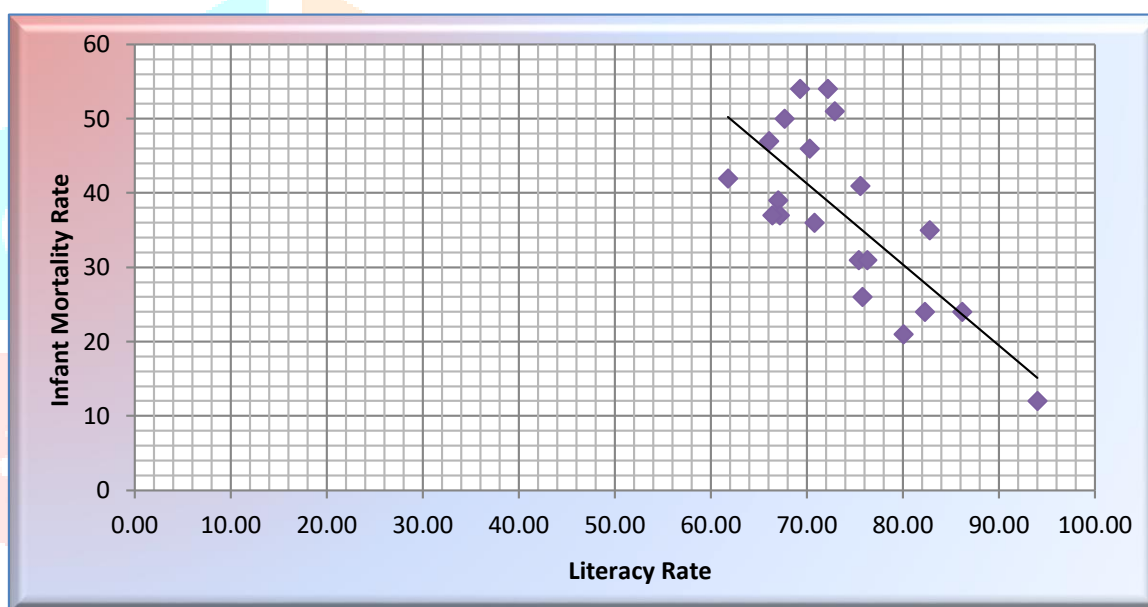
Diagram 4

Sources:
1 Government of India, *Census report, 2011*.
2 Government of India, Office of the Registrar General and Census Commissioner of   India, Abridged Life Tables, 2010-2014, P.5
    (https://en.wikipedia.org/wiki/List_of_India_states_by_life_expectancy_at_birth)

Diagram 4 shows the correlation between literacy rate and life expectancy at birth in India (see Table 1). It is shown in the diagram that, the variables i.e., literacy rate and life expectancy at birth have a linear moderate positive correlation. Although their relation is moderate, their positive relationship implies that if literacy rate increases, life expectancy at birth also increases.

Diagram 5 shows the correlation between literacy rate and infant mortality rate in India (see Table 1). As shown in the diagram, the variables i.e., literacy rate and infant mortality rate have a moderate negative correlation. Their negative relationship, although moderate implies that if literacy rate increases, infant mortality rate decreases.

Diagram 5

Sources:
1   Government of India, *Census report, 2011*.
2   Government of India, SRS Statistical Report (2013), Infant Mortality Rate (per 1000 live births), National Institute for Transforming India, Government of India. (niti.gov.in/content/infant-mortality-rate-imr-1000-live-births)

Table 1
Total Fertility Rate, Birth Rate, Death Rate, Infant Mortality Rate and Life Expectancy at Birth in 2013 and Literacy Rate in 2011 in the Indian States and Union Territories

Sl#	States/UTs	TFR 2013	Literacy Rate (total)	BR 2013	DR 2013	IMR 2013	LEB
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	Andhra Pradesh	1.8	67.0	17.4	7.3	39	65.8
2	Assam	2.3	72.2	22.4	7.8	54	63.9
3	Bihar	3.4	61.8	27.6	6.6	42	68.1
4	Chhattisgarh	2.6	70.3	24.4	7.9	46	64.8
5	Delhi	1.7	86.2	17.2	4.1	24	73.2
6	Gujarat	2.3	70.8	20.8	6.5	36	68.7
7	Haryana	2.2	75.6	21.3	6.3	41	68.6
8	Himachal Pradesh	1.7	82.8	16.0	6.7	35	71.6
9	Jammu & Kashmir	1.9	67.2	17.5	5.3	37	72.6
10	Jharkhand	2.7	66.4	24.6	6.8	37	66.6
11	Karnataka	1.9	75.4	18.3	7.0	31	68.8
12	Kerala	1.8	94.0	14.7	6.9	12	74.9
13	Madhya Pradesh	2.9	69.3	26.3	8.0	54	64.2
14	Maharashtra	1.8	82.3	16.5	6.2	24	71.6
15	Odisha	2.1	72.9	19.6	8.4	51	65.8
16	Punjab	1.7	75.8	15.7	6.7	26	71.6
17	Rajasthan	2.8	66.1	25.6	6.5	47	67.7
18	Tamil Nadu	1.7	80.1	15.6	7.3	21	70.6
19	Uttar Pradesh	3.1	67.7	27.2	7.7	50	64.1
20	West Bengal	1.6	76.3	16.0	6.4	31	70.2

Sources:
1 Government of India, *Census report, 2011*.
2 Government of India, Office of the Registrar General and Census Commissioner of India, Abridged Life Tables, 2010-2014, P.5 (https://en.wikipedia.org/wiki/List_of_India_states_by_life_expectancy _ at_birth)
3 Government of India, SRS Statistical Report (2013), Infant Mortality Rate (per 1000 live births), National Institute for Transforming India, Government of India. (niti.gov.in/content/infant-mortality-rate-imr-1000-live-births)
4 Government of India, Office of the Registrar General and Census Commissioner, *SRS Statistical Report 2013*, Government of India. (www.censusindia.gov.in/vital_statistics/SRSReports-2013.html)

Note: TFR, BR, DR, IMR and LEB represents total fertility rate, birth rate, death rate, infant mortality rate and life expectancy at birth.

It is found that literacy rate and total fertility rate are linearly negatively correlated, literacy rate and birth rate are linearly negatively correlated, literacy rate and death rate have a linear moderate negative correlation, literacy rate and life expectancy at birth have a linear moderate positive correlation and, literacy rate and infant mortality rate have a moderate negative correlation in India. Thus, it can be said that major demographic

variables are affected by total literacy rate in India. Increasing the literacy rate would contribute to the development of the economy by its effects on demographic variables. As all the states and union territories of the country have not achieved 100 per cent literacy, according to the census 2011, therefore the government need to implement policies to achieve 100 per cent literacy in all the states and union territories of the country. Along with it, motivating the people and bringing awareness amongst the people, about the importance of literacy and lifelong learning are important.

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