



# Female Education And Its Association With Antenatal Health Care In India: Evidence From Nfhs-4 Data

**Mrs. Sarin Giji**

Assistant Professor on Contract, Department of Economics, St. Michael's College, Cherthala, University of Kerala

**Abstract:** Education has a very important role to play when it comes to the overall development of various demographic and socio-economic indicators, and as such higher literacy rate is said to have a strong effect on such indicators of development. Female literacy rate in India have risen from 29.8 percent in 1981 to 65.5 percent in 2011(Census, 2011). This study attempts to analyze the relation between female literacy and antenatal care across various states in India. Health care services during pregnancy and childbirth and after delivery are important for the survival and well-being of both the mother and the infant. Antenatal care (ANC) can reduce the health risks for mothers and their babies by monitoring pregnancies and screening for complications. The proportion of women age 15-49 in India who received Antenatal Care (ANC) has risen from 77 percent in NFHS-3 (2005-06) to 84 percent in NFHS-4 (2015-16). However, it is observed that this rise in ANC is more concentrated in those states which have a higher literacy rate among women. The states which have higher female literacy rates such as Kerala (92 %), Mizoram (89.4%), Lakshadweep (88.2%), Tripura (83.1%), Goa (81.8%) etc have a higher ranking when it comes to the antenatal care taken by their women. Percentage of women who received different types of antenatal care (ANC) during the pregnancy is lower when it comes to states with lower female literacy rate like Bihar, Jharkhand, Uttar Pradesh etc. Percentage of women who had four or more ANC visits during pregnancy was only 14.4 percent in Bihar, 30.3 percent in Jharkhand and 26.4 percent in Uttar Pradesh. Also, the mother's educational status is highly correlated with skilled delivery and postnatal care.

**Index terms-** Education in India, Female literacy, Antenatal care, World Health Organization (WHO), Infant Mortality Rate

## I. INTRODUCTION

The Sustainable Development Goals of 2015 has laid emphasis on improving health of the people in its 3<sup>rd</sup> goal of good health and well-being and also to improve the Quality of education through its 4<sup>th</sup> goal. The overall health status of people living in the sub-Saharan African and South Asian countries are not very impressive. In case of India, the overall mortality rates have been witnessing a declining trend but when it comes to Infant Mortality Rates and Maternal Mortality Rates, the states in India paints a different picture. Even though the Infant Mortality Rate of the country has declined from 66 per 1000 live births in 2001 to 34 per 1000 live births in 2016 (NITI Ayog), there are States within India whose IMR are way above the national average. Madhya Pradesh has the highest Infant Mortality Rate (47 per 1000 live births) followed by Assam and Orissa (44 per 1000 live births), Uttar Pradesh (43 per 1000 live births), Rajasthan (41 per 1000 live births), Chhattisgarh (39 per 100 live births), Bihar (38 per 1000 live births), Andhra Pradesh (34 per 1000 live births) etc. The Neonatal and Maternal Mortality Rates are also higher in these states. Further it has been observed that the mortality rates in Empowered Action Group (EAG) States are the worst.

In order to improve the pregnancy outcomes and health status of the newborn, appropriate care has to be given to the mother and the child during pregnancy, and as such Antenatal Care (ANC) plays a vital role in the same. ANC consists of a routine number of scheduled visits aiming at screening and detection of conditions likely to increase adverse effects during pregnancy to ensure healthy outcomes for women and newborn; provide therapeutic interventions and timely treatment of possible complications in pregnancy; and educate pregnant women about planning for safe birth, emergencies during pregnancy, and how to deal with these. Through the focused antenatal care (FANC) approach, WHO recommends four ANC visits in low-risk pregnancies, with the first visit in the first trimester, ideally before 12 weeks, but no later than 16 weeks, and the second, third, and fourth visits at 24–28, 32, and 36 weeks, respectively. The proportion of pregnant women who obtain the recommended minimum number of four visits is still very low. The first consultation is often made late in pregnancy, whereas maximum benefit requires early initiation of ANC within the first trimester.

Antenatal care is one important component of maternal health services for a healthy pregnancy. In order to help reduce the burden of maternal and new-born mortality, in 2001, WHO issued guidance on a new model of ANC called goal-oriented or FANC for implementation in developing countries. FANC increases the quality of ANC by ensuring that women receive four visits and all the evidence-based interventions that are critical for the well-being of both the child and the mother during and after pregnancy. One of the interventions is the vaccination of first-time pregnant women with the recommended two doses of tetanus toxoid (TT2+). Management and control of syphilis/STIs in pregnant women through universal antenatal screening and treatment is another intervention under FANC. Other interventions include management of preeclampsia, intermittent preventive treatment for malaria in pregnancy (IPTp), and providing insecticide-treated bed nets (ITNs). Also, the prevention of mother-to-child transmission of HIV (PMTCT) as well as birth and emergency preparedness at home demand for care all in an effort to reduce both maternal and neonatal mortality.

## STATEMENT OF THE PROBLEM

In this new strategy of FANC, WHO recommends four ANC visits in low-risk pregnancies and prescribes the evidence-based content for each visit. It also constitutes screening for health and socioeconomic conditions likely to increase the possibility of specific adverse pregnancy outcomes, providing therapeutic interventions known to be effective, and educating pregnant women about planning for safe birth, emergencies during pregnancy, and how to deal with them. Therefore, pregnant women generally are expected to attend an average of four antenatal visits during pregnancy, and they are supposed to schedule their first prenatal appointment as soon as they think they are pregnant. Prenatal tests can provide valuable information about the baby's health. Doctors might offer ultrasound, blood tests, or other screening tests to detect fetal abnormalities, which if not corrected may lead to complications later.

However, many of the pregnant women do not attend ANC in the first trimester. This means that many pregnant women fail to book for the recommended four ANC visits and are not benefiting from the services offered during this period. Many of them end up with complications leading to high maternal and infant mortality rates. Poor ANC visits are due to various socio-economic-demographic factors. In addition, the knowledge about ANC, intention to get pregnant, and substance use as well as social services and cultural beliefs are some of the factors likely to be associated with late booking and utilization of prenatal care services. One of the most important and vital factor critical in health promotional activities is said to be educational attainment. Studies focusing on examining whether educational status is associated with poor ANC attendance are limited. Hence this study is carried out to find whether educational attainment is associated with ANC utilization, given the potential impact educational attainment could have on maternal and child survival.

## REVIEW OF LITERATURE

Children are important assets of a nation, therefore reduction in infant and child mortality has been the most important objective of the Millennium Development Goals (MDG). Infant and child mortality rates reflect a country's level of socio-economic development and quality of life and are used for monitoring and evaluating population, health programs and policies. It is an outcome rather than a cause and hence directly measures results of the distribution and use of resources, Haines (1995).

India has experienced an impressive decline in infant mortality since the 1970s. From 130-140 deaths per 1,000 live births in the early 1970's, mortality levels have declined to as low as 60 deaths per 1,000 live births in 2000. This represents an annual rate of decline of around 2.6 percent<sup>2</sup>. However, the absolute levels of infant and child mortality are still too high (about 68 infant and 95 child deaths per 1,000 live births in 1998-99). According to the Registrar General of India, the IMR for the country<sup>3</sup> as a whole is 57 infant deaths for every 1,000 live births in the year 2006. The National Population Policy 2000 aims at achieving IMR of 30 by

the year 2010, Government of India (2000). In the case of India this would imply a reduction of the IMR to 27 and of the under-five mortality rate to 32 by 2015, The World Bank (2004).

The data from the sample registration system shows that the infant mortality rates for the urban and rural regions are 40 and 64, respectively, for every 1,000 live births in the year 2004, Government of India (2006). While there has been a significant decline in IMR in India over the last three decades, its performance with respect to other countries in Southeast Asia is not that impressive. Countries such as Indonesia, Sri Lanka, and Bangladesh have managed to reduce their IMR levels by between 3-5% annually.

As far as the performance of individual states goes in terms of reducing their IMRs, the results are intriguing. Kerala was the lowest; it reduced its infant mortality at an annual rate of 12% between 1990 and 2006. On the other hand Bihar and U.P. which had the highest level of infant mortality achieved significant reductions (almost 30%) during the same period. States like Andhra Pradesh and Karnataka which are usually perceived to be good human development performers had the highest rate of decline in the above-mentioned periods. Rajasthan, U.P., M.P. Bihar and Orissa are the high mortality states, Shruti Kapoor (2010).

From the above review of literature, we are able to understand the depth of the issue. Some of the states including the EAG states are on the highest rank when it comes to Infant Mortality Rate. It is interesting to note that the states which have the highest mortality rates are also the states which have the lowest female literacy rates and vice versa. From this it quite evident that there is some sort of a relation between educational attainment among women and antenatal care taken by them.

## **OBJECTIVES OF THE STUDY**

The broad objective of the study is to identify the association or relation between educational attainment and Antenatal Care.

1. To identify the relation between female literacy and Antenatal Care.
2. To analyze the trend of Infant Mortality Rates in different States of India in relation to ANC.
3. To analyze the rural-urban utilization of ANC.
4. To observe the importance and impact of Antenatal Care (ANC).



## METHODOLOGY

The study is carried out mainly using NFHS-4 data. A total of 6,28,900 households were selected for the sample, of which 6,16,346 were occupied. Of the occupied households, 601,509 were successfully interviewed, for a response rate of 98 percent. The Woman's Questionnaire collected information from all eligible women aged 15-49; who were asked questions on a large variety of topics. In the interviewed households 7, 23,875 eligible women aged 15-49 were identified for individual women's interviews. Interviews were completed with 6, 99,686 women, for a response rate of 97 percent.

The study has made use of statistical methods like correlation and scatter diagram. A  $p$  value of  $<0.01$  was taken as significant with 99% confidence intervals.

Apart from NHFS data the study uses data from sources like Census, NITI Ayog, Press Information Bureau (PIB), World Bank Report and UNICEF. Information is also obtained from various research reports and journal articles.

## MAJOR FINDINGS

One of the main objectives of the study was to show that there existed a positive correlation between female literacy rate and Antenatal Care (ANC). The study classified the bigger states in India into those having low and high-female literacy, Antenatal Care and Infant Mortality rate. The table below shows the top 5 and bottom 5 states with highest and lowest literacy rate, IMR and ANC:

TABLE 1

BIGGER STATES	FEMALE LITERACY RATE	ATLEAST 4 ANC VISITS	INFANT MORTALITY RATE
KERALA	91.98	90.1	2.6
HIMACHAL PRADESH	76.60	69.1	8.9
MAHARASHTRA	75.48	72.2	6.5
TAMIL NADU	73.86	81.1	4.7
PUNJAB	71.34	68.4	7.3
MADHYA PRADESH	60.02	35.7	19.5
UTTAR PRADESH	59.26	26.4	20.1
JHARKHAND	56.21	30.3	14.2
BIHAR	53.33	14.4	18.1
RAJASTHAN	52.66	38.5	20.3

Source: Census 2011, NFHS-4

From the above table it is quite evident that the states with comparatively lower female literacy rate have low ANC Visits. It is also seen that the Infant Mortality Rate in these states are very high as compared to those states with higher literacy rate and ANC visits.

TABLE 2

BIGGER STATES	FEMALE LITERACY RATE	PERCENTAGE OF DELIVERIES ASSISTED BY A SKILLED PROVIDER	PERCENTAGE WHO RECEIVED ALL RECOMMENDED ANC
KERALA	91.98	98.9	61.2
HIMACHAL PRADESH	76.60	78.9	36.8
MAHARASHTRA	75.48	91.9	32.0
TAMIL NADU	73.86	99.2	45.0
PUNJAB	71.34	94.1	30.7
MADHYA PRADESH	60.02	78	11.4
UTTAR PRADESH	59.26	70.4	5.9
JHARKHAND	56.21	69.6	8.0
BIHAR	53.33	69.9	3.3
RAJASTHAN	52.66	86.5	9.7

Source: Census 2011, NFHS-4

The above table portrays that the states having higher literacy rate have a tendency towards acquiring proper ANC from a skilled professional. It is also evident that, those states which haven't received the recommended ANC are also the states with higher Infant Mortality Rates.

TABLE 3

	PERCENTAGE RECEIVED ATLEAST 3 ANC VISITS	DELIVERED IN A HEALTH FACILITY	RECIEVED AN ULTRASOUND	DELIVERED BY SKILLED PROFESSIONAL
URBAN	77.0	88.7	78.4	90.0
RURAL	59.4	75.1	54.5	78.0

Source: NFHS-4

It is quite disturbing to see that there is an inequality in the utilization of ANC when differentiating between rural and urban areas. Pregnant women in rural areas are less exposed to ANC than women in urban areas.

One of the major findings of the study was that there was a significant positive correlation between Literacy Rate among women and Antenatal Care ( $r=.51$ ,  $p=0.005$ ). This was justified by the scatter diagram and the correlation value as given:

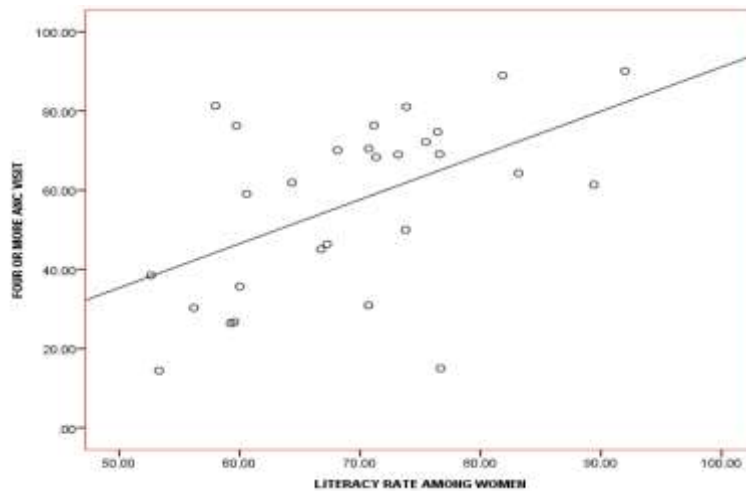


Figure 1: Scatter Plot Showing Positive Correlation Between Female Literacy Rate and ANC Visits

The scatter diagram shows a positive correlation between the two variables.

## CONCLUSION

The study found evidence suggesting that higher education or literacy level of the woman was a very significant and important factor in determining optimal ANC utilization. Antenatal Care visits are crucial for better pregnancy outcomes and health status of the newborn and the mother. In this study, we have demonstrated that ANC attendance is still limited and below acceptable levels. Higher educated urban groups were more likely to meet the required levels of ANC attendance. This in turn suggests that the poor rural and low-educated women are missing out on the benefits of adequate ANC attendance, thereby raising questions of inequity in accessing health care in ANC. Hence, there is an urgent need to examine how this problem could be resolved by increasing access to ANC services and direct interventional efforts toward these women through peer strategies in the communities to increase awareness about the importance of ANC. This in turn could help reduce both maternal and neonatal mortality in India.

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