

EXTENDED ABSTRACT

Does anemic condition of women effect pregnancy complications: Evidences from North-Eastern states of India

Introduction:

Anemia associated with iron deficiency is one of the major public health problems, particularly among women and children in developing countries. In India where about 55 percent women aged between 15- 49 suffering from anemia because of low dietary habit and other related causes. More than half of the pregnant women in the world have hemoglobin levels indicative of anemia. Although only 15 percent of pregnant women are anemic in developed countries, the prevalence of anaemia in developing countries is relatively high ranging from 33 percent to 75 percent (WHO: 1992). Prevalence of anaemia in South Asia is among the highest in the world, mirroring overall high rates of undernutrition. It is one of the most common nutritional disorders all over the world but much more so in developing countries including India.

Need for the study:

Many studies reveal that iron deficiency anemia among women in general and, particularly among pregnant women are the cause of most of the maternal morbidity and mortality. Anemia has been associated with adverse reproductive health, including intrauterine growth retardation, preterm births, low birth weight, etc. In India north-eastern states are more vulnerable to anemia where Assam has the high privileged state constitute 72 percent of anemic women. The vulnerability of anemia among women and children shows the higher risk of maternal and infant mortality and it is imputed to nutritional deficiency and lack of quality of care. Therefore, it is very much important to understand the level as well as vulnerability to anaemia among women mainly at the reproductive age group.

Study area:

The present study will focus on North-East region, which contains seven states (Assam, Manipur, Meghalaya, Tripura, Nagaland, Mizoram and Arunachal Pradesh). The main reason of selecting the north-east region is that the anaemia level among women and children is quite high in the region and varies within the region. For instance, prevalence of anemia ranges from 36 percent in Manipur to about 72 percent in Assam, the highest in the country. As the North east region show high level of anaemia it will be interesting to understand the within variations as well as the different socio-economic and demographic characteristics and the effects on pregnancy complications and birth outcomes.

Data source and methodology:

Third round of National Family Health Survey (2005-06) is used in the present study and appropriate bivariate and multivariate analysis has been used to find out the relationship between anemia among women and pregnancy complications and outcomes. The calendar data is also analyzed to estimate the pregnancy outcomes like preterm delivery and experience of abortion among anemic and non-anemic women. All the pregnancy outcomes and complications are considered as the dependent variable in the regression analysis where socio-economic variables are taken as independent variable.

Results:

Prevalence and severity of anemia: A total of 58% of women in India were anemic including severe, moderate and mild anemia. In Assam 72.1% women were anemic (4.3% women were severely and 24% moderately anemic) which is the highest among the states (table 1). In severity of anemia Arunachal Pradesh is in the next with 2.8% followed by Meghalaya (2.6%) and Sikkim (2.2%) in North-East region.

Table 1: Prevalence of anemia among currently married women (age 15-49), in North-eastern states of India, 2005-06.

States	Level of Anemia				N
	Mild (10.0-11.9 g/dl)	Moderate (7.0-9.9 g/dl)	Severe (<7.0 g/dl)	Any Anemia (> 12.0 g/dl)	
Assam	43.9	24.0	4.3	72.1	864
Arunachal Pradesh	37.8	14.9	2.8	55.6	577
Manipur	35.3	6.6	0.7	42.5	1382
Meghalaya	35.6	15.8	2.6	54.1	688
Mizoram	35.4	10.7	0.5	46.7	526
Tripura	51.6	17.6	1.7	70.9	500
Sikkim	39.7	16.7	2.2	58.6	525
India	39.6	16.9	1.6	58.1	23180

Socio-demographic characteristics in Anemia:

Result shows that women with no education were more vulnerable to anemia in India with the total of 60%, where north-eastern region having 57.5% as compared to highly educated women. Rural women were more vulnerable to anemia than their counterparts having 54.2% in North-eastern region and 58.1% in all over rural India. It is found that 60% of women were anemic belonging to lower economic group (poor) in north-eastern region and it was around 63% in all India level as compared to the upper economic strata (table 2). It is also found from the result that schedule caste group women were more exposed of anemia than other caste groups.

Table 2: Percentage of currently married women age 15-49 with any anemia by background characteristics India and Regions, 2005-06.

<i>Background characteristics</i>	<u>Level of anemia</u>	
	North-East	India
Age		
Less than 20	51.0	62.9
20-29	52.7	57.4
30-39	51.3	54.0
More than 40	52.2	54.4
Education		
Uneducated	57.5	60.0
Primary	55.6	56.6
Secondary	48.9	52.1
Higher	43.8	43.0
Residence		
Urban	46.0	51.2
Rural	54.2	58.1
Household Structure		
Nuclear	53.1	56.3
Others	50.4	55.4
Religion		
Hindu	58.6	56.6
Muslim	52.8	55.6
Christian	42.1	51.4
Others	47.2	47.3
Caste		
Schedule Tribe	60.2	69.1
Schedule Caste	51.6	58.5
Other Backward Classes	53.0	55.3
Others	44.8	51.9
Wealth Index		
Poor	60.2	62.9
Non Poor	49.0	51.7
Exposure to Mass Media		
Yes	51.9	54.4
No	62.4	62.2
Smoking Status		
Smoking cigarette/other	51.1	63.2
Not smoking	52.3	55.1
Alcohol consumption		
Consuming Alcohol	55.8	66.2
Not Consuming	51.5	55.8
Total	48.9	56.0
N	17947	87840

Pregnancy complication and birth outcomes among anemic and not-anemic women:

Table 3 and 4 presents the complications and crucial birth outcomes by the level of anemia among women in north-eastern states of India. Swelling of legs, face and body is more common among the anemic women at the time of pregnancy in all the north-eastern states except Manipur and Sikkim. It is found to be highest among anemic women in Mizoram with 47.7% followed by Tripura (46.6%) and Meghalaya (39.3%). The problem of excessive fatigue is found to be high

among the anemic women in Tripura (79.5%) followed by Arunachal Pradesh (60.0%) and Mizoram (57.1%). Another pregnancy complication is that virginal bleeding is high among anemic women in Sikkim (8.3%) which is followed by Arunachal Pradesh (8%) and Assam (7.7%). In the same manner anemic women has more occurrence of give birth of premature baby, having experience of abortion and low birth weight (LBW) baby. The prevalence of giving birth of premature baby is more among anemic women as compare to non-anemic women in NE region as well as in India level which is 8.3% anemic and 4.7% non-anemic women in North-eastern states and 12.7% and 10.3% respectively for all India level. For experience of abortion and LBW is also higher among anemic women than non-anemic women.

Table 3: Percentage of currently married women (age 15-49) having anemia and related pregnancy complications, North-eastern states of India, 2005-06.

State	<u>Swelling</u>		<u>Excessive fatigue</u>		<u>Convulsions</u>		<u>Virginal Bleeding</u>	
	Anemic	Not Anemic	Anemic	Not Anemic	Anemic	Not Anemic	Anemic	Not Anemic
Assam	28.0	22.7	55.0	48.8	18.7	20.1	7.7	9.0
Arunachal	29.2	26.3	60.0	50.0	21.4	27.3	8.0	5.0
Manipur	22.9	25.5	25.0	22.9	13.3	12.2	5.6	6.3
Meghalaya	39.3	34.0	55.4	46.8	13.5	21.2	1.8	0.0
Mizoram	46.7	41.2	57.1	52.9	10.0	21.4	6.7	5.9
Tripura	46.6	41.7	79.5	80.6	10.1	13.8	5.7	5.6
Sikkim	36.4	37.5	54.5	57.1	40.0	42.9	8.3	0.0
INDIA	26.2	25.8	49.8	45.6	16.3	17.5	4.3	4.9

Table 4: Percentage of currently married women (age 15-49) having anemia and birth outcomes, North-East region and India, 2005-06.

	<u>Preterm birth</u>		<u>Abortion</u>		<u>Low birth weight</u>	
	Anemic	Not Anemic	Anemic	Not Anemic	Anemic	Not Anemic
NE Region	8.3	4.7	0.5	0.2	19.1	13.8
India	12.7	10.3	0.4	0.2	20.9	18.9

Logistic regression result:

Result from regression shows that there is a significant relationship between level of anemia and preterm birth, in India level chances of preterm birth is less likely among non-anemic (0.77) women with respect to anemic women. Similarly result is observed in north-east region. In experiencing of abortion non-anemic women are significantly less likely (0.42) than anemic women in India, as well as in Northeast region. Pregnancy complication like excessive fatigue is also significantly associated with anemia level. In India not-anemic women were 0.88 times less likely to be the exposed than anemic one and in northeast region 0.79 times less likely in pregnancy complications (table 5).

Table 5: Odd ratios from logistic regression showing the association between pregnancy complications & birth outcomes with anemic condition of women (any anemia is reference category), North-East region and India, 2005-06.

Complications	India	Assam	North-East
Preterm Birth	0.77***	0.67	0.69**
Abortion	0.42**	0.60	0.65
Swelling	1.02	0.48*	0.82*
Vaginal bleeding	1.13*	1.47	0.78
Convulsions	1.11**	0.84	1.18
Excessive fatigue	0.88***	0.51*	0.79**

*** <0.01, ** <0.05, * <0.10