

An analysis of utilization of maternal health care services in eag states and Assam

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Abstract

Utilisation of ante natal care is one of the most important aspects of maternal care to prevent maternal mortality. It is evident that all over the world every year, many women die due to pregnancy complications. These deaths could have been prevented if the mothers would have been provided timely health care before pregnancy, and or during pregnancy. In India, regional variations can be seen in terms of utilization of these health care services. EAG (Empowered Action Group) states and Assam are at very poor level in utilization of these services. Only 12 percent of the mothers receive full recommended ante natal care services. Even mothers in these states do not receive ante natal care from skilled health personnel. Again there are socio-economic barriers which pay role in affecting the utilization of ante natal care services in these states. There is urgent need to increase the utilization of ante natal care services among these states, for this government should make some region specific maternal health scheme so that overall development can be done in the given region.

Keywords: ante natal care, socio-economic factors, EAG states and Assam, NFHS

Introduction

Since the Ancient period, in human civilization the prime role of women was childbearing. The situation has not changed much since then in many parts of India, mainly in rural areas, where the main role of women is still determined as child bearer. As stated in Indian epic Mahabharata a women was always blessed as "Sau Putravati Bhavh" (a mother of hundred sons). Thus, pregnancy has been one of the most important events in life of every woman in India as well as all over the world. Women in reproductive age group (15- 49) are most vulnerable segment in our population in terms of health issue, especially when they going to be a mother. So, maternal health is significant area of concern.

Globally 259000 women died during pregnancy and child birth period in 2017. The majority of these deaths (94%) occurred in low and middle income countries. Sub-Saharan Africa and southern Asia accounted for approximately 86% (254000) of the global maternal deaths in 2017. While southern Asia accounted for one-fifth portion (WHO report, 2019). The higher number of maternal deaths considered as inequalities in access to quality health care facilities and that highlights the gap between developed and underdeveloped countries. The maternal mortality rate in low income countries in 2017 was 462 per 100000 live births as compared with high income countries as 11 per 100000 live births (WHO report, 2019). This indicates that socio-economic development is directly related to quality maternal health services as well as low maternal death rate. Most of mothers die as a result of severe complications during pregnancy and child birth. Most of these complications occur due to some socio-economical and religious-cultural barriers in accessing quality health care services. Young adolescent women (15-19) face higher risk of complications and death than higher age group (20-25) women. In order to address maternal health and reduce the rate of MMR, United Nations focused on Millennium Development Goal (5) in

2000 to with a target to reduce 75% Maternal Mortality, safe delivery 100% and institutional delivery 80% by 2015. In order to achieve the MDG 5, The Government of India introduced various plan and strategies. In developing country like India, where maternal health care services are not sufficient as per requirement which is ultimately leads to higher maternal deaths. There has been a regional variation in the context of socio-economic development in reducing MMR among Indian states. The central and eastern states accounted for higher number of mortality and the southern parts of India has lower number of maternal deaths. The highest MMR was registered in Assam (229) and the lowest in Kerala (42). Among EAG states, Uttar Pradesh has the highest maternal mortality rate (216 MMR), Madhya Pradesh (188), Rajasthan (186), Orissa (168), Bihar (165), Chhattisgarh (141) and lowest rate was found in Uttarakhand and Jharkhand (89 and 76 respectively) SRS, 2015-16.

Maternal health refers to the important phase of life of women in pregnancy, child birth and postpartum period. Maternal health depends on three main aspects of maternity care such as prenatal care, delivery care and postnatal care. Prenatal care is most important among all the aspects of maternal care, for controlling maternal mortality as well as morbidity. In the prenatal period, every mother should take minimum number of 4 antenatal visits, ANC visit in their first trimester of pregnancy along with two doses of TT (Tetanus Toxic) immunization and 100 days consumption of IFA (Iron and Folic Acid) tablets during pregnancy. Besides three more important check-ups has to be done during pregnancy such as Hemoglobin test (blood test), regular blood pressure check up and abdominal examination. The main component of ANC visits is to gave information and advice to women related pregnancy complications and counseling for a better family planning method.

NFHS-4 reveals of the fact that in India, only 21% of pregnant women utilize full ANC. Prenatal care is the initial

time for adopting other healthy behavior during pregnancy and after delivery, such as institutional delivery, providing new born care, exclusive breast feeding and many more. In order to Safe delivery ANC visits plays important role to motivate women and their family for institutional delivery. MMR can be reduced if the delivery occurs in any government or private health institution and by skilled health attendance. In addition, every mother should take postnatal check up after delivery from any trained health practitioner. However, postnatal checkup is highly associated with prenatal checkups as well as the place of health checkup. The utilization of maternal health care services is not same across all the states. The huge variation was found between Northern and Southern states. Southern states are more developed in respect of better health care facilities and at the top of health care coverage scale. Whereas, socio-economically and demographically lagging Northern and Northeastern states, which are at the bottom in the health coverage. For development and reduce all problems related to maternal health, Indian Government specially focused on EAG(Empowered Action Group) states with relatively high fertility and mortality accounted for about 48 percent of the total population in the country. These states are Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Madhya Pradesh, Uttarakhand, Chhattisgarh, Orissa and Assam. These states are more affected with acute poverty and account for more population in comparison to other states. In order to improve health quality, Government of India has launched NRHM (National Rural Health Mission) in 2005 to reduce the regional inequality as well as to provide quality health care with free of costs throughout the whole country. Through this policy, Indian government implemented "Janani Suraksha Yojana" to raise institutional delivery with free transport costs and delivery costs for the economically weaker section women. Furthermore, government initiated many more schemes and strategies to provide a quality maternal care services to all people in India. Even then it has been found that still maternal mortality rates are higher in comparison to other developed nations. Thus present study is an attempt to investigate the levels of utilization of maternal health care services in India, as well as economically poor states (EAG states). Further an attempt has been made to analysis the factors affecting the

utilization of maternal health care services in these states.

Objectives

- To analyze the pattern of utilization of Prenatal health care services in EAG states and Assam.
- To examine the factors and barriers which affect utilization of prenatal health care services in EAG states and Assam.

Methods and Materials

The study analysis the data from National Family Health Survey round 3 and round 4, conducted during 2005-06 and 2015-16 respectively. National Family Health Survey are a series of Nationally representative, cross-sectional survey that produce data on a range of demographic, socio-economic maternal and child health outcomes, reproductive health with family planning. The data has been analyzed using Statistical Package for Social Science (SPSS) data set, both cross-tabulation and Multivariate logistic regression methods were used. Cross-tabulation is a method to quantitatively analyze the relationship between multiple variables and also used to show how correlation changes from one variable to another. Multivariate logistic regression analysis is used to correlate among two or more variable, where the value of a dependent variables(Y) depends on two or more independent variable(X) and it reflects the degree of association between two or more variables.

Results

Results from NFHS-3: Table 1 represents utilization of prenatal care services within EAG states and Assam who had their last child birth five year preceding the survey (2005-06). From the analysis it was found that utilization of Full ANC care (including four ANC visit, Two TT injection, 100days intake of IFA tablet) in EAG states along with Assam was only 11.5 percent. The percentage of full ANC is ranging from 4.1 percent in Uttar Pradesh to 18.4 percent in Orissa followed by Uttarakhand (16.1). In case of any ANC visit, only 34.1 percent women accounted in Bihar while 88.5 percent women had ANC visit in Chhattisgarh. Here also, Bihar (17.9) has the lowest utilization of four or more ANC visit while it is as high as in case of Orissa (61.8). The same picture also noticed in case of Bihar (18.7) women has gone in their first trimester, while 48.3 percent women accounted in Orissa.

Table 1: Percentage of women received prenatal care services for their most recent birth in EAG states and Assam, 2005-06

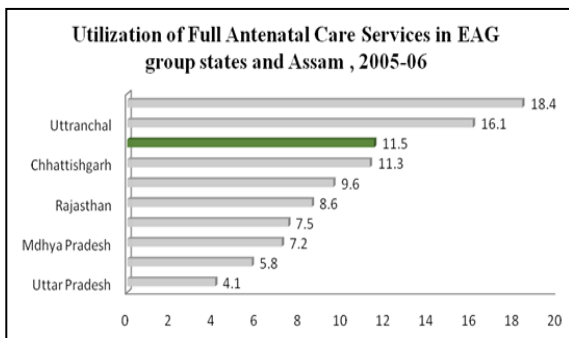
States	Any ANC visit	At least four ANC visit	ANC visit in first Trimester of pregnancy	2 TT injections	100 days IFA tablet or syrup	Full ANC
Assam	70.7	39.3	40.0	65.4	16.2	9.6
Bihar	34.1	17.0	18.7	73.2	9.7	5.8
Chhattisgarh	88.5	54.2	46.0	74.6	20.7	11.3
Jharkhand	58.9	35.9	33.2	67.6	14.2	7.5
Madhya Pradesh	79.5	40.7	39.3	70.6	12.4	7.2
Orissa	86.9	61.8	48.3	83.3	33.8	18.4
Rajasthan	74.9	41.2	34.0	65.2	13.1	8.6
Uttar Pradesh	66.0	26.6	25.7	64.5	8.8	4.1
Uttarakhand	69.4	44.9	43.3	68.5	26.4	16.1
EAG states	69.9	40.2	36.5	70.3	17.3	11.5

(Source: NFHS-3, 2005-06)

Intake of Two TT injection is almost universal (83.3) in Orissa while lowest intake has been found in Uttar Pradesh (64.5). In case of IFA consumption, in all the EAG states utilization is very low (only 17.3 percent). It was also found that consumption of IFA tablets was found to be higher in Orissa (33.8), Uttarakhand (26.4), and Chhattisgarh (20.7),

while Bihar (9.7) and Uttar Pradesh (8.8) has the lowest percentage of women who took 100 days of IFA tablets. From the above analysis it can be said that women having any ANC (69.9) visit (one or two) and intake of two TT injection (70.3) has a good picture within EAG states and

Assam. On the basis of all prenatal care practices, Orissa, Uttarakhand has better performance in comparison to Bihar, Jharkhand, and Uttar Pradesh which had poor performance. Fig no 2.6 represent state wise utilization of Full ANC care in EAG states and Assam.



(Source: NFHS-3, 2005-06)

Fig 1

Results from NFHS-4

Table 2 represent the utilization of prenatal care services within EAG states and Assam of women who had most recent live birth during before five year preceding the survey during 2015-16.

The percentage of utilization of prenatal care indicators slightly increase in this time period than previous period.

EAG states as a whole, merely 12.5 percent women had full ANC care and which is comparatively lower than the national level. Among pre-natal care services, a very least proportion of women of about 22.4 percent take IFA tablets/liquid for 100 days. It was found very low utilization in every state. It was examined that Orissa (36.5) has a better condition followed by Chhattisgarh (30.3), Assam (32.0), Uttarakhand (24.9), Madhya Pradesh (23.5) while Bihar (9.7), Uttar Pradesh (12.9), Jharkhand (15.3), Rajasthan (17.3) has very low level of consumption among women which is lower than the average proportion of EAG state. It has been found that 80.3 percent women had any ANC visit but its declined in case of four ANC visit of 38.2 percent. In Orissa any ANC (92.9) and four ANC (61.9) visit both are still high while Bihar has 55.7 percent of women having any ANC visit and 14.4 percent of women having four ANC visit in the counterpart. The proportion of women who had ANC visit in the first trimester during their last pregnancy was ranging from 34.6 percent in Bihar to 70.8 percent in Chhattisgarh. The utilization of at least one TT injection is almost uniform in all EAG states of about 84.7 percent women have used in average. Bihar (81.5) & Uttar Pradesh (81.4) are less in 3 points whereas Orissa (89.3) & Chhattisgarh (89.7) are ahead in 8 points than the average proportion.

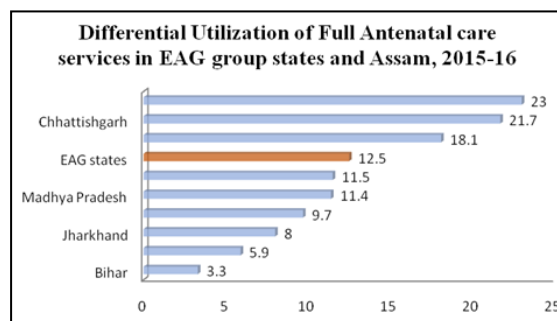
Table 2: Distribution of percentage of women received Prenatal care services for their most recent birth in EAG states and Assam, 2015-16

STATES	Any ANC	four ANC visit	ANC visit in first Trimester of pregnancy	two TT injections	100 days IFA	Full ANC
Assam	87.8	46.4	55.1	83.6	32.0	18.1
Bihar	55.7	14.4	34.6	81.5	9.7	3.3
Chhattisgarh	95.7	59.1	70.8	89.7	30.3	21.7
Jharkhand	76.3	30.3	52.0	85.9	15.3	8.0
Madhya Pradesh	75.6	35.7	53.0	83.3	23.5	11.4
Orissa	92.9	61.9	64.0	89.3	36.5	23.0
Rajasthan	85.5	38.5	63.0	81.9	17.3	9.7
Uttar Pradesh	76.1	26.4	45.9	81.4	12.9	5.9
Uttarakhand	77.0	30.9	53.5	85.7	24.9	11.5
India	82.7	51.2		83.0	30.3	20.9
EAG states	80.3	38.2	54.6	84.7	22.4	12.5

(Source: NFHS-4, 2015-16)

Hence, Orissa, Chhattisgarh, Assam accounted for better utilization of all Antenatal Care Services (23.0%, 21.7%, and 18.1 percent respectively), which is roughly well than the average proportion. Whereas Bihar, Uttar Pradesh, Jharkhand, Madhya Pradesh, Uttarakhand, Rajasthan accounted for lower utilization of all kind of antenatal care components. In case of Rajasthan, although there was well

utilized of antenatal visit but a minimum number of consumption of Iron and folic acid tablet for 90 days or more and at least 2 does intake of Tetanus injection has less utilization, moreover in Uttarakhand and Madhya Pradesh has less number of women who had gone for any ANC and four or more ANC visit although other services has more or less in better condition.



(Source: NFHS-4)

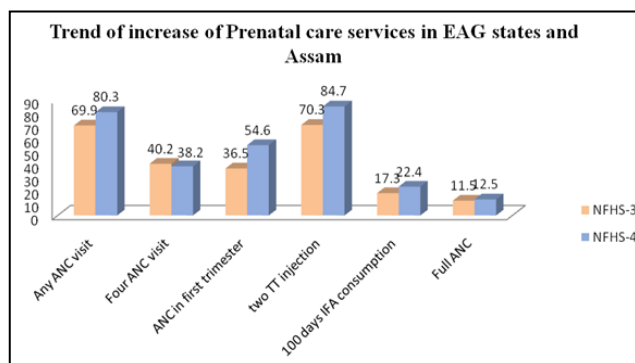
Fig 2

Trends of prenatal care services from 2005-06 to 2015-16 time period

To analyze the trend of prenatal care services, comparison between the two data series conducted during 2005-06 of NFHS-3 and 2015-16 of NFHS-4 has been carried out. In this comparison it is noticeable that all prenatal care services slightly increased excluding four antenatal visit. It is interestingly to note that 40.2 percent women had all recommended number of four antenatal visit during 2005-06 which is less in 2 points of 38.2 percent women had during 2015-16. But in case of any ANC visit 69.9 percent women had at least one antenatal visit during 2005-06 which increased to 80.3 percent during 2015-16. Like previous discussion, here also the same thing occurred that is the proportion of women having any ANC visit is significantly increased but the recommended type of four ANC visit has no change over the time. Moreover, women having their antenatal visit in their first trimester has increased significantly from 36.5 percent to 54.6 percent during the same time period.

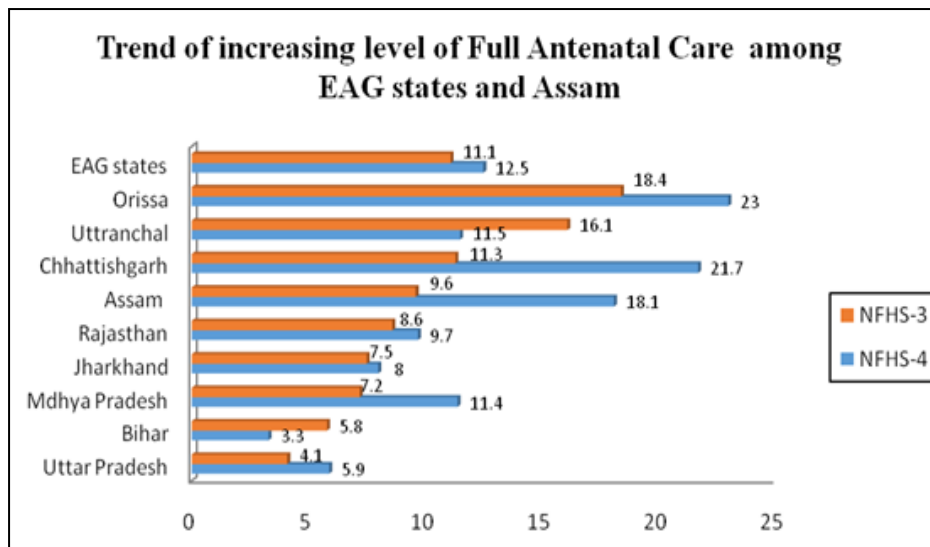
The proportion of women who had at least two TT injections has much improved from 70.3 percent to 84.7 percent over the time. The consumption of IFA tablets for minimum 100 days has little bit increased from 17.3 percent to 22.4 percent. All the indicators of prenatal care yet not improved over the period of time, thus the percentage of mother having full antenatal care improved only 1percentage point from 11.5 to 12.5 percent.

If we find out the improvement on states basis, we can found that Bihar has the least development. The proportion of women having ANC visit decreased rather than improvement from 17.0 to 14.4 over these two rounds of NFHS surveys. It was also found that 100 days consumption of IFA tablets did not improved over the time. But utilization of ANC visit, ANC visit in first trimester and TT injection has slightly improve from 34.1 to 55.7, 18.7 to 34.6 and 73.2 to 81.5 respectively. The proportion of women having four antenatal visit also not shown any improvement (from 26.6 to 26.4) over the same period, while percentage of women who received antenatal visit in first trimester of pregnancy has increased from 25.7 to 45.9 percent and any ANC visit, two TT injection, IFA consumption has improved from 66.0 to 76.1, 64.5 to 81.4, 8.8 to 12.9 percent respectively. Besides, the proportion of women having four antenatal visit has unfortunately decrease in some states such as Jharkhand (35.9 to 30.0), Madhya Pradesh (40.7 to 35.7), Rajasthan (41.2 to 38.5), and Uttarakhand (44.9 to 30.9).



(Source: NFHS-3 & NFHS-4)

Fig 3



(Source: NFHS-3& NFHS-4)

Fig 4

Over the same period of time, Assam has shown much improvement in all services such as any ANC visit (70.7 to 87.8), four ANC visit (39.9 to 46.4), ANC within first trimester (40.0 to 55.1), at least two TT injections (65.4 to 83.6), and IFA consumption (16.2 to 32.0). Orissa and Chhattisgarh were at the top in utilization of prenatal care services among all EAG states. In NFHS-4 Bihar is at the bottom, where the full antenatal visit has declined from 5.8

to 3.3 percent of women.

Prenatal care provider in eag states and Assam

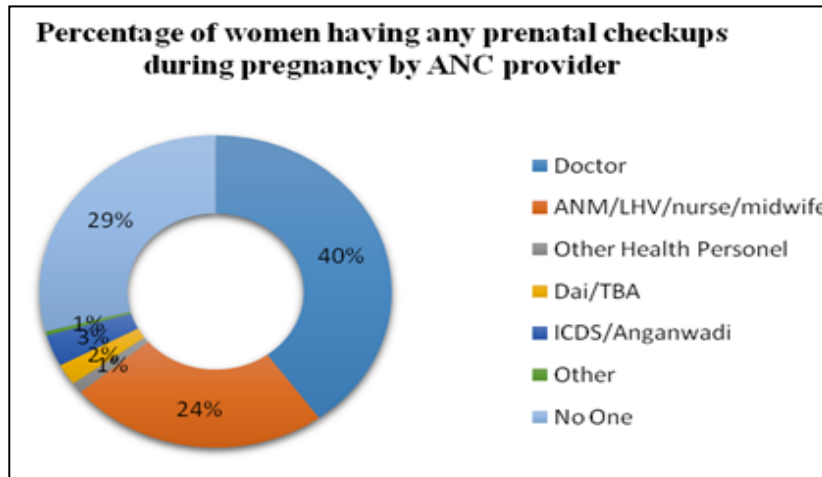
During pregnancy, prenatal care provided by skilled health personnel is also equally important for all pregnant women for a better pregnancy outcome and well-being of both mother and baby. In NFHS, the health care provider has been classified into six categories depends on the qualification. Pregnant women who received antenatal checkups from qualified doctors are more beneficial than

who received care from Dai or Traditional Birth Attendant. Thus, the prenatal care provider gives advice to women during pre natal care and during delivery.

Analysis from NFHS-3

In India seventy nine percent women received prenatal care services from skilled health care provider. EAG states and Assam has less proportion of women having prenatal care services along with less proportion of women having anc by skilled health provider. Around 40 percent women aged (15

to 49) who gave their last live birth prior to the five years survey had received prenatal care from doctor during pregnancy. Whereas, 23.9 percent women receive from ANM/ Midwife/ nurse/ LHV, 3.3 percent women receive from Anganwadi centre or ICDS worker. The proportion of women of about 2.2 percent from Dai or Traditional Birth Attendance, 1.1 percent from other health personnel, 0.4 percent women receive from other health worker. In all EAG states and Assam 29.2 percent women did not received any prenatal checkups during their last pregnancy.



(Source: NFHS-3, 2005-06)

Fig 5

Table shows the wide variation of proportion of women received health checkups during prenatal care services from ANC care provider. In most of states, majority of women received health checkups during pregnancy from a Doctor, Orissa (57.6), Assam (52.9), Uttarakhand (47.9) are on the top. A majority of women in Madhya Pradesh, Rajasthan and Uttar Pradesh, Chhattisgarh accounted for 41.1, 39.2, 42.9 and 33.7 percent women received health advice from ANM, nurse or Lady Health Visitor. Over the same period, women in Bihar (3.9), Uttarakhand (11.4), Assam (13.2) received ANC from ANM nurse/ LHV. Only in Uttarakhand over 10percent women received from ANC checkups from

Dai/ Traditional Birth Attendance of about 12.9 percent. Besides Assam (2.7) and Madhya Pradesh (2.2) has less proportion of women having ANC checkups from Dai/TBA. The use of ICDS or Anganwadi workers for an ANC checkups was highest in Orissa (12.1) and Chhattisgarh (9.8) while least use was found in Bihar (0.2), Uttar Pradesh (0.3).

In all states, very few women received health checkups from other health worker. In this table it is interestingly to note that a majority of women in Bihar (65.7) did not receive any health care during pregnancy along with Jharkhand (40.6), and Uttar Pradesh (33.5).

Table 3: Distribution of prenatal care in EAG states and Assam by health provider

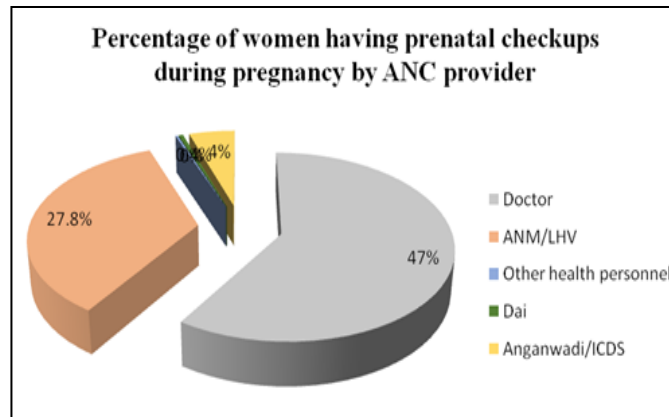
ANC provider	Assam	Bihar	Chhattisgarh	Jharkhand	Madhya Pradesh	Orissa	Rajasthan	Uttar Pradesh	Uttarakhand	EAG states
Doctor	52.9	29.1	41.8	39.3	32.6	57.6	33.9	22.5	47.9	40.1
ANM/nurse /midwife/ LHV	13.2	3.9	33.7	13.4	41.1	16.4	39.2	42.9	11.4	23.9
Other health personnel	0.7	0.9	2.4	4.3	0.3	0.7	0.2	0.5	0.3	1.1
Dai/TBA	2.7	0.2	0.9	0.1	2.2	0.4	0.5	0.3	12.9	2.2
Anganwadi/ ICDS worker	0.4	0.2	9.8	2.0	3.5	12.1	1.1	0.3	0.6	3.3
Other	2.4	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.8	0.4
No ANC	27.8	65.7	11.3	40.6	20.3	12.7	25.1	33.5	25.9	29.2

(Source: NFHS-2, 2005-06)

Analysis from NFHS-4

Table shows the variation of distribution of women who visited skilled prenatal care provider during their pregnancy. The proportion of women having a skilled antenatal care in India was 79.3 percent, over the same period of time in EAG states and Assam was 74.8 percent. Where as 47 percent women received health care from Doctors and 27.8

percent from an ANM nurse or LHV. Merely 4 percent women received health checkups from Anganwadi centre or use ICDS facilities. The least proportion of women used Dai or TBA and Other health personnel for prenatal care services was 0.4 and 0.2 percent respectively. Around 18 percent women did not use any prenatal care services during their last pregnancy.



(Source: 2015-16)

Fig 6

It has been found that in most of the states, the majority of women have visited to a doctor during pregnancy. Orissa (75.9), Assam (58.8), Rajasthan (54.9) and Uttarakhand (52.2) has reported for a highest proportion of women who have received health care from a doctor during pregnancy. The highest proportion of women who received Prenatal care health checkup from an ANM, nurse or Lady Health Visitor has been found in Chhattisgarh (47.2), Madhya Pradesh (37.6), Uttar Pradesh (35.5), Jharkhand (30.7). The

use of an Anganwadi or ICDS worker for health care advice during pregnancy was highest in Orissa (7.8), Madhya Pradesh (6.9) and Jharkhand (5.9). Bihar has the highest percentage of women who did not check their health during pregnancy was about 43.9 percent. Besides, Uttar Pradesh (23.7), Jharkhand (23.4), Madhya Pradesh (22.4), Uttarakhand (21.8) has higher proportion of women who did not take any health advice from any health professional.

Table 4: Prenatal care provider in EAG states and Assam, 2015-16

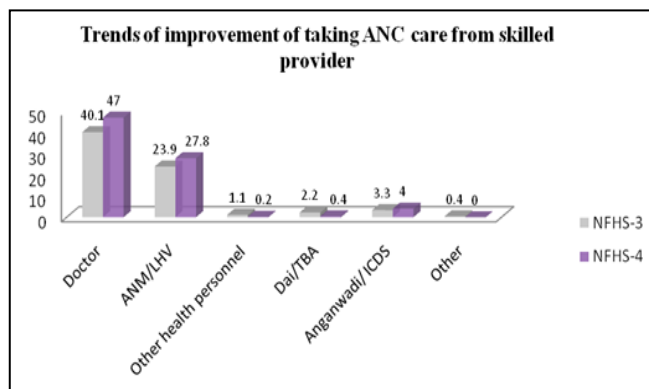
ANC provider	Assam	Bihar	Chhattisgarh	Jharkhand	Madhya Pradesh	Orissa	Rajasthan	Uttar Pradesh	Uttarakhand	EAG states
Doctor	58.8	30.4	44.0	39.0	31.3	75.9	54.9	36.8	52.2	47.0
ANM/nurse /midwife/ LHV	23.6	18.6	47.2	30.7	37.6	7.0	27.8	35.5	22.7	27.8
Other health personnel	0.5	0.3	0.1	0.2	0.1	0.2	0.0	0.1	0.1	0.2
Dai/TBA	0.3	0.4	0.2	0.3	0.5	0.4	0.2	0.4	0.6	0.4
Anganwadi/ ICDS worker	1.4	4.4	4.2	5.9	6.9	7.8	2.5	1.6	1.4	4.0
Other	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.1	0.0
No ANC	10.5	43.9	3.8	23.4	22.4	5.7	14.1	23.7	21.8	18.81

(Source: NFHS-4, 2015-16)

It has been found that in EAG states a large number of women has motivated to visit a doctor for prenatal checkup during 2015-16 (47.0) than 2005-06(40.1) time period. During pregnancy, prenatal checkup from ANM, nurse or Lady Health Visitor has also improved from 23.9 percent to 27.8 percent. Another improvement has been found in case of health checkups from Anganwadi or ICDS workers in 2015-16 from 2005-06. It is interestingly to note that the proportion of women who has not used any prenatal care services has decreased from 29.2 to 10 percent.

Determinants of prenatal care utilization

To identify the association among the determinants which affect prenatal care utilization, multivariable logistic regression analysis has been carried out. Place of residence has direct link with the utilization of anc care services among mothers. It is generally found that rural mothers are less likely to receive the utilization of anc care services as in the urban areas the availability and quality of health care services is comparatively in better condition. The same findings have been found in the present study. Rural mothers are less likely to receive the ante natal care services in EAG states and Assam. Religion also has relation with the utilization of anc care services. It is found that there are some differential across different religions. It is generally found that mothers who belong to Hindu religion are more likely to get ante natal care services than the other mothers who belong to other religions. Similarly it is generally found that mothers who belong to general category are more likely to receive ante natal care services than the mothers who belong to schedule caste and scheduled tribes. In the present study the same findings has been carried out. Wealth index also has immense impact on utilisation of ante natal care services among mothers. A gradient has been found for the utilization of prenatal care services among different wealth quintile group (3.028 to 1), richer women (3.028) are more likely to use as compared to the poorer section women (1).



(Source: NFHS-3 & NFHS-4)

Fig 7

The likelihood of utilization of services were higher among women with higher educational level than those belong to no education and the value ranges from (3.305 to 1). The likelihood of use prenatal care among women with higher birth order was insignificant in proportion as compared with birth order one or two. However it is noteworthy that women autonomy is a significant variable and its very important variable for the prenatal care services.

Table 5: Multivariable logistic regression analysis of prenatal care services in EAG states and Assam:

Factors	EAG & Assam
Place of Residence	
Urban ^{Ref}	1
Rural	.978***
Birth Order	
1 ^{Ref}	
2	.982**
3	.719***
4+	.423*
Socio-economic Factors	
Religion	
Hindu ^{Ref}	
Muslims	1.128
Other religion	1.795*
Caste	
SC / ST ^{Ref}	
Others	1.713
Wealth index	
Low ^{Ref}	1
Middle	1.882*
High	3.028**
Women's Factors	
Level of Education of Women	
No Education ^{Ref}	
Primary	2.914*
Secondary and higher	3.305**
Mass Media Exposure	
No Mass Media exposure ^{Ref}	
At least one Mass Media exposure	2.984**
Constant	.690*

Source: National Family Health Survey, 2015-16.
 Significant level: *** at 1%, ** at 5% and * at 10%
 (ref.) = Reference category

Results from the logistic analysis reveals that women education is a crucial factor for improving utilization of ante natal care services among mothers. Generally it is found that mothers with higher education are more aware about their health care along with that they are more able to make decision on their own health. Besides, women economic status is also have impact on utilisation of maternity care. Health expenditure or high costs of medical care services are the main barriers at present time. Hence economically weaker women are unable to afford quality health care. Thus, on the utilization of prenatal care services there are different factors which affect it.

Conclusion

A large scale variation has been found among states in utilization pattern of prenatal care services. In EAG states and Assam, Receiving of all recommended type of prenatal care services was very inadequate in proportion to all India level. It was found that 2 in 10 women was covered by full ANC care. Besides, WHO recommended 4 ANC visits has not been utilized by the women ages 15to 49 who had a last

live birth during 5 years preceding the survey. The utilization of TT immunization was almost universal in all over India. In terms of iron and folic acid consumption less level of utilization was found in all EAG states and Assam. In Southern states, women are more frequent to use all prenatal care as compared to women of northern states. Among northern state EAG state and Assam addressed to highly focused state in case of maternal morbidity and mortality. In these states women although visit for prenatal care but they do not receive services in their first trimester of pregnancy. As nearly 80 percent women visit for the ANC visit but only 50 percent women visit in first trimester. Similarly insignificant proportion has been found in case of iron and folic acid consumption as less than half of women receive all recommended type of iron and folic acid tablets or syrup. Bihar and Uttar Pradesh accounted for high anemia prevalence region in India. In respect of socioeconomic and demographic indicators these states are at bottom levels. These states share 40 % of population of India and the majority of the population is illiterate as well as rural. The likelihood of utilization of prenatal care facilities is very low in these states. Early marriage and adolescent pregnancy are also cause of concern in these states. It is noteworthy that social discriminating plays a vital role utilization of ante natal care services. Among EAG states the same results were found where lower strata of the society are less likely to utilize these ante natal care services Thus it was found in the study that levels of ante natal care services is very low in EAG states and Assam. These should be some region specific plans to improve the health care services. Education is the most important factor which affect utilization of maternal health care services especially antenatal care services among women, thus there is an urgent need to focus on the education of the women among these states.

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