



Poor Maternal Health Care in Rural Districts: An Attempt to Identify High Priority Districts of Bihar, India

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ABSTRACT

Background: As per NFHS-4, the percentage of mothers who had full antenatal care was lowest, 03 % in rural Bihar compared to all other states. So, the present study was the analysis of districts for the differences among factors related to the maternal health care with the objective to identify high priority districts among total 38 districts in Bihar.

Materials and Methods: The study was carried out from the data of 38 districts of Bihar available from NFHS-4. High priority districts were included if the districts had full ANC below 03 % and had three or more than three favorable/unfavorable attributes below/above the findings for rural Bihar respectively.

Results: Out of 38 districts 14 high priority districts were identified. 5 districts in Tirhut, all districts in Purnia and 2 districts in Munger Division were with high women's illiteracy and high percentage of child marriages in women and higher adolescent pregnancy.

Conclusions: Rural Bihar had poor maternal health care with 14 high priority districts which needs corrective measures to improve. Sarva Shiksha Abhiyan (SSA) needs to be properly implemented to improve educational status of women. There is need for stern application of Prohibition of Child Marriage Act, 2006.

Keywords: Maternal health care, Bihar, High priority Districts, Antenatal care, Adolescent pregnancy

INTRODUCTION

Maternal health care refers to the health care of women during pregnancy, childbirth and the postpartum period.¹

As per WHO, globally, 64% of pregnant women acknowledged the suggested minimum of four antenatal care visits or more during the time period of 2007-2014.² Health problems during pregnancy can be prevented, noticed and taken care of during recommended minimum of four antenatal visits, including interferences such as tetanus toxoid vaccination, screening and treatment for infections, and identification of warning signs during pregnancy with skilled health workers.²

Antenatal visits and trained attendance at birth are essential for healthy pregnancies, safe deliveries

and neonatal endurance. Antenatal visits with trained health providers (doctors, nurses or midwives) can make certain a pregnancy gets off to a superior start.³ Antenatal visits must offer quality services to be effective which includes 8 interventions like tetanus toxoid (TT) injection, measurement of blood pressure, iron folic acid tablets distribution, taking blood and urine sample, prevention from malaria by insecticide-treated bed-nets (in malaria endemic areas) and counseling on pregnancy complications and HIV.³

As per the results from the first phase of the National Family Health Survey (NFHS-4), 2015-16 released in January 2016 for 18 states, the percentage of mothers who had full antenatal care [at least four antenatal visits, at least one tetanus toxoid (TT) injection and iron folic acid tablets or syrup

taken for 100 or more days] was lowest, 03 % in rural Bihar as compared to all other states ^{4,5,6}.

So, the present study was the analysis of districts for the differences among factors related to the maternal health care with the objective to identify high priority districts among total 38 districts in Bihar.

MATERIALS AND METHODS

The study was carried out from the secondary data of 18 States available from National Family Health Surveys-4 (2015-2016). ^{5,6}

NFHS-4 fieldwork for Bihar was carried out with information from 36,772 households, 45,812 women, and 5,431 men and survey schedules, collection of information were available in factsheets of concerned state and district. ^{5,6}

Operational procedure to identify high priority districts: The districts with full antenatal coverage below 03 % and who had three or more than three favorable/unfavorable attributes below/above the findings for rural Bihar respectively were included in high priority districts.

The favorable attributes for maternal health care were women’s education, institutional delivery,

skilled birth attendance (SBA) and postnatal care of mother within two days of delivery. The unfavorable attributes were child marriages among women and anemia in pregnancy.

As per Census 2011, Bihar was the second most populated state with population of 104.1 million. ^[7] 88.7 % of population of Bihar resided in rural area. ⁷ So, the present study was conducted by comparing indicators of maternal health care for districts of Bihar as compared to rural Bihar as from data available from National Family Health Surveys-4 (2015-2016) to identify high priority districts. ^{5,6}

The study had used publicly-available database available on the website of the following organization: the National Family Health Survey -4 and Census 2011 data ^{4, 5, 6, 7}. Because publicly-available database was used in this analysis, no ethical approval was sought.

Permission was obtained from International Institute for Population Sciences, Mumbai to use their data for study purpose.

Full antenatal care was defined as at least four antenatal visits, at least one tetanus toxoid (TT) injection and iron folic acid tablets or syrup taken for 100 or more days. ⁵

Table 1: Distribution of districts in Bihar to identify high priority districts for maternal health care among districts with full ANC less than 03 %

State/Districts	Full ANC (%)	Women's Literacy (%)	Child Marriage in women (%)	Skilled birth attendant (SBA) (%)	Institutional Delivery (%)	PNC within 2 days (%)	Anemia in Pregnancy (%)
Bihar [Rural %] (88.7)	3.0	46.3	40.9	69.0	62.7	41.1	58.0
Madhepura (95.9)*	0.7	29.7¶	58.5¶	63.1¶	59.8¶	36.3¶	58.2¶
Sheohar (95.7)*	0.9	40.4¶	48.2¶	60.1¶	52.9¶	35.2¶	45.3
Champaran[E] (92.1)*	1.0	44.0¶	39.7	59.0¶	47.0¶	21.2¶	49.4
Begusarai(80.8)	1.1	47.3	55.0¶	79.8	77.1	56.5	46.7
Nalanda(84.1)	1.2	44.8¶	49.4¶	83.4	78.8	57.1	52.5
Kaimur(96.0)	1.2	58.0	31.7	82.8	79.7	55.7	63.2¶
Muzaffarpur(90.1)*	1.3	51.7	35.0	65.2¶	61.7¶	23.9¶	54.6
Purnia(89.5)*	1.6	35.6¶	36.9	59.6¶	59.2¶	44.8	72.9¶
Samastipur(96.5)	1.6	49.3	50.4¶	74.9	72.9	33.6¶	56.4
Rohtas(85.6)	1.8	62.6	30.3	84.1	82.1	59.0	67.0¶
Araria(94.0)*	1.9	36.6¶	45.7¶	61.5¶	51.2¶	43.4	60.4¶
Katihar(91.1)*	2.0	36.4¶	39.7	54.7¶	49.1¶	37.8¶	58.6¶
Khagaria(94.8)	2.0	41.8¶	47.4¶	76.8	70.9	55.6	55.9
Nawada(90.3)*	2.1	43.2¶	44.5¶	68.7¶	65.0	50.5	51.8
Champaran [W] (90.0)*	2.2	39.5¶	38.2	70.7	63.9	26.2¶	62.5¶
Arwal(92.6)	2.2	54.2	38.9	70.5	69.8	50.4	57.9
Darbhanga(90.3)*	2.3	40.9¶	43.5¶	59.8¶	46.9¶	24.1¶	61.0¶
Lakhisarai(85.7)*	2.3	50.7	43.4¶	66.6¶	63.9	42.9	58.3¶
Jamui(91.7)*	2.5	42.8¶	51.9¶	64.2¶	58.0¶	39.5¶	46.5
Kishanganj(90.5)*	2.6	32.2¶	24.3	58.4¶	41.7¶	40.1	60.5¶
Sitamarhi(94.4)*	2.7	36.2¶	50.5¶	48.0¶	37.9¶	39.4¶	68.9¶

*High priority districts= Full ANC < 3 % and who had three or more than three favorable/unfavorable attributes below/above the findings for rural Bihar respectively.

Favorable attribute below the findings for rural Bihar and unfavorable attribute above the findings for rural Bihar.

RESULTS

Among 38 districts of Bihar 21 districts had full ANC coverage below 03 %.The districts were compared for women’s literacy, skilled birth attendant (SBA) at the time of delivery, percentage of institutional delivery and postnatal care (PNC) to mother within two days of delivery as favorable indicator. Child marriages in women and anemia during pregnancy were taken as unfavorable indicator. The district indicators for favorable /unfavorable attribute were compared with that of rural Bihar to identify high priority districts.14 high priority districts were identified for maternal health care as shown in Table 1. Madhepura district had lowest women’s literacy, 29.7 and a highest child marriage, 58.5 %.SBA and institutional delivery was lowest, 48 % and 37.9 % in Sitamarhi district. Post-natal care (PNC) to mother within two days of delivery was lowest, 21.2 % in Champaran(East) district as compared to rural Bihar, 41.1 %.Purnia district had the highest percentage of anemia in pregnancy,72.9 %.

Adolescent pregnancy was highest in district Champaran (West), 23.4 % followed by Madhepura district, 20.2 % .The average percentage of adolescent pregnancy in rural Bihar was 12.8 % and 11 districts were having higher percentage of adolescent pregnancy as compared to rural Bihar as summarized in Figure 1.

Maternal health care in high priority 14 districts was summarized in Table 2. Champaran (West)

had the lowest percentage of ANC check-up in first trimester of pregnancy, 18.9 % followed by Champaran (East), 22.3 %. Four ANC visit was lowest, 7.7 % in Purnia district followed by Dharbhanga and Madhepura district. Coverage of TT immunization during pregnancy was lowest in Champaran (East), 80.4 % and consumption of IFA tablets for 100 days during pregnancy was lowest in Madhepura district, 1.5 % as summarized in Table 2.

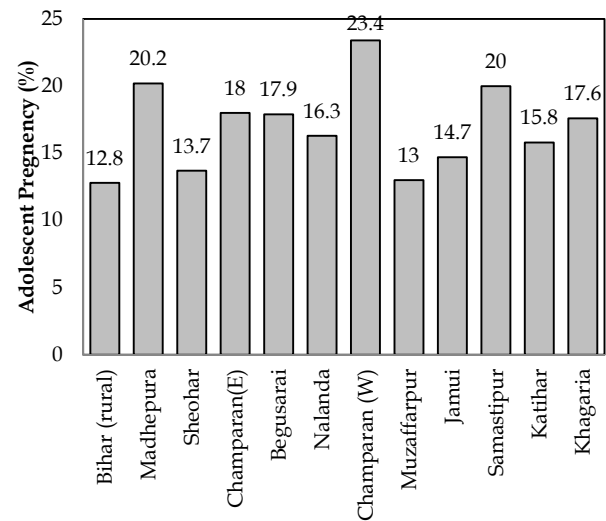


Figure 1: Distribution of districts of Bihar according to higher percentage of adolescent pregnancy as compared to rural Bihar

Table 2: Distribution of maternal health care in high priority districts as compared to rural Bihar

State/Districts	ANC check-up in I trimester (%)	Four ANC visits (%)	T.T. injection (%)	IFA consumption-100 days (%)
Bihar (Rural)	32.7	13.0	89.2	9.4
Madhepura	34.6	8.9	87.0	1.5
Sheohar	27.3	13.4	88.2	2.5
Champaran(E)	22.3	12.2	80.4	3.4
Muzaffarpur	23.8	10.1	89.7	4.0
Purnia	34.2	7.7	90.9	7.2
Araria	37.7	15.7	88.2	8.1
Katihar	31.5	8.6	92.2	6.8
Nawada	42.3	12.9	94.1	8.2
Champaran (W)	18.9	12.3	80.7	12.7
Darbhanga	24.0	8.4	83.6	6.6
Lakhisarai	37.1	17.1	94.3	3.6
Jamui	35.2	10.1	88.5	13.5
Kishanganj	37.8	14.6	83.3	16.6
Sitamarhi	32.7	16.8	90.6	5.1

DISCUSSION

Maternal health care refers to the health care of women during pregnancy, childbirth and the postpartum period. ¹ The present study was an attempt to identify high priority districts in Bihar in relation to maternal health care. The author had

identified 14 districts out of total 38 districts as high priority districts which were performing poor as compared to rural Bihar.

Bihar had 88.7 % of population residing in rural area.⁷ As per NFHS-4, full antenatal coverage (ANC) was only 03 % as compared to Sikkim state

which had 74 % of population residing in rural area with full ANC coverage in rural area of 40.2%.^{7,5}

Women's literacy was 46.3 % for rural Bihar, some districts having less than 35 % women who were literate. There were studies in which women's literacy was found to be significantly associated with utilization of ANC services.⁸⁻¹⁴ The reason for poor education in rural Bihar may be several parents do not permit their female children to go to schools and due to child marriage of girls.¹⁵ Also most people are below the poverty line and aren't conscious that children should get free education according to the law.¹⁵ Illiterate women lack the indispensable knowledge that might help them utilize health care services related to better maternal health. Sarva Shiksha Abhiyan (SSA) needs to be properly implemented in rural Bihar to improve educational status of women.

Adolescent pregnancy was another area of concern which was higher than the global average of 11 %, with 7 districts having more than 15 % of adolescent pregnancy as compared to rural Bihar, 12.8 %. Adolescent pregnancy remains a chief contributor to maternal and child mortality and mostly observed in uneducated and rural communities.¹⁶ One of the objectives to prevent adolescent pregnancy was to reduce marriage before the age of 18.¹⁶ However, child marriages among women were widely prevalent in rural Bihar, 40.9 %. Some districts were having more than 50 % of child marriages among women. There is need for stern application of Prohibition of Child Marriage Act, 2006 to prevent child marriages and adolescent pregnancies. Pandya Y P *et al* had found child marriage to be extensively linked with women's illiteracy and was considerably associated with delay in antenatal care and incidence of spontaneous abortion, preterm delivery and low birth weight babies.¹⁷ Saxena M D *et al* had observed prevalence of child marriage of 37.9% and had found association between rural residence, child marriage and women's illiteracy with less utilization of antenatal and contraceptive use.¹⁸

District Purnia had only 7.7 % of mothers who had 4 ANC visits. Percentage of mothers who had antenatal check-up in the first trimester was 18.9 % in west Champaran compared to Buxer district, 43.4 %. Singh P K *et al.*, had found 14 % of rural adolescent women had full ANC among educated women as compared to 7 % among uneducated.¹⁹ Districts Madhepura had lowest, 29.7 % of educated women and lowest percentage of full ANC, 0.7 %. Sahu D *et al.*, had found association between full ANC and infant mortality, infant mortality was lower in women who had full ANC as compared to those women who did not receive ANC.²⁰ Wendt A *et al.*, had observed that at least 4 ANC check-

ups done during pregnancy were associated with consumption Iron folic acid (IFA) tablets for more than 90 days.²¹ District Madhepura had 8.9 % women with 4 ANC visit and the IFA consumption was only among 1.5 %.

Benova L *et al.*, had revealed that 58.5% of poor women in rural Egypt were using any ANC and among them 67% were in receipt of at least four ANC visits.²² Wilunda C *et al.*, had noted the prevalence of four ANC visits of 45.5 % in Ethiopia.²³ Khanal V *et al.*, had noted 4 ANC visits in 55 % of women, but quality of ANC visits was only 7.8 % and had found association between rural area and illiteracy among women with poor utilization of ANC services.²⁴

Consumption of iron folic acid during pregnancy for 100 days was lowest in Madhepura, 1.5 % followed by east Champaran, 3.4 %. Wendt A *et al.*, had observed that child marriage and illiteracy among women were associated with poor consumption Iron folic acid tablets, 37 % during pregnancy.²¹ In district Madhepura women's illiteracy was 70.3 % and prevalence of child marriage was 58.5%.

Mothers who had received postnatal care (PNC) from health personnel within 2 days of delivery were lower in district east Champaran, 21.2 %, Dharbhanga, 24.1 % and Muzaffarpur, 23.9 %. However, higher percentage, 100 % coverage was observed in women of tribal area by Jose JA *et al.*, who were visited at least twice at their home after delivery for post-natal care by Junior Public Health Nurse (JPHN), the designation for ANM in Kerala and credited it to the additional uphill struggle put up by ANMs.⁹

Skilled birth attendant (SBA) at the time of delivery was only 48 % in Sitamarhi district followed by Katihar, 54.7 %. Titaley C R *et al.*, had observed progressive reduction in neonatal mortality as the SBA at delivery increases and found 66 % of deliveries were attended by SBA.²⁵

72.9 % and 68.9 % of pregnant women were anemic in Purnia and Sitamarhi district respectively. Acharya AS *et al.*, had found in her study that only 32.6% women knew about consumption of iron folic acid (IFA) tablets during pregnancy.¹¹ Niswade *et al.*, had found that neonatal mortality was strongly associated with non-supplementation of Iron and Folic Acid (IFA) to mother.²⁶

Limitation: As the datasets for the NFHS-4 were not available at International Institute for Population Sciences, Mumbai and Demographic and Health Survey (DHS), so detailed analysis for the association of factors related to maternal health care was not done.

CONCLUSIONS

Rural Bihar had poor maternal health care with 14 high priority districts [5 in Tirhut Division except Vaishali district, all districts in Purnia Division and 2 districts in Munger Division] which needs corrective measures to improve maternal health care. Women's education needs to be improved. Sarva Shiksha Abhiyan (SSA) needs to be properly implemented in rural Bihar to improve educational status of women. There is need for stern application of Prohibition of Child Marriage Act, 2006 to prevent child marriages & adolescent pregnancies.

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