

ORIGINAL PAPER

Impact of antenatal care on postnatal outcomes among postnatal women in a selected district hospital, Assam

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ABSTRACT

Introduction: Maternal mortality rate in developing countries has almost defied the advance made by health care facilities. Such unfortunate deaths can be barred radically by providing state of the art antenatal, natal and postnatal care. This study is designed to recognize the impact of antenatal care on the outcome of the postnatal women in relation with a number of key parameters. Furthermore, it also aims to understand the association between antenatal cares with a set of selected demographic variables. **Methods:** This study was undertaken by adopting System Model as the conceptual framework. Simple random sampling technique was used to select 100 postnatal women in a selected hospital in Assam. Semi structured interview schedule, record analysis and physical assessment proforma were used to collect information. **Results:** Most of the postnatal women had at least three antenatal visits for complete physical and obstetrical examination. However, hemoglobin and other routine blood investigations, urine testing and USG were found only for few. Iron and folic acid supplementation was not received by some postnatal women. Adverse postnatal outcomes present among the postnatal women were maternal hypertension (4%); PPH (6%), maternal distress (14%), and fetal distress (28%), still birth (8%), neonatal death (1%) and low birth weight (22%). **Conclusion:** Significant association was found between occupation and total family income of the postnatal women with the number of antenatal checkup. Numbers of antenatal visit and live birth were found to have a direct association with complete obstetrical examination and birth weight, Hb estimation and PPH, occupation and birth weight.

Keyword: Antenatal check-up, nursing practices, maternal morbidity

INTRODUCTION

Maternal mortality is a critical index of woman's health and good indicator of the performance of health care system. The risk of dying a woman during her pregnancy in a developing country

is a whopping 200 times higher than developed countries.¹ The five direct causes, accounting for 75% of total of maternal deaths in developing countries are: haemorrhage, sepsis, PIH, obstructed labour, and complication of unsafe abortion.² About 20% of the women are encountered for at least one obstetrical complication or death during delivery and post-partum period.³ Recent study confirms that 80% of the pregnancy related complication and the maternal deaths can be prevented by providing access to good quality antenatal, natal and postnatal care.² The global antenatal care coverage between 1996 and 2004 was 71%, as contrast to 60% in India. Also, while the deliveries conducted by skilled personnel in the global scenario are around 63%, it reduces to 43% in India. According to UNICEF during 2007-2012, antenatal care coverage was at least one visit for 74% women, at least four for 37% and the skilled attendant during birth was 52%. Recent studies indicate that women with lower education and lower income groups are more likely to have less than three antenatal checkup.^{4, 5, 6}

A significant association is observed in the reduction in proportion of women obtaining antenatal care services with increasing age, parity, number of living children. Institutional delivery is practiced among maximum number of women who avail antenatal care (51.7%) in contrast to those without antenatal services (21.6%).⁷ It has been reported that there is no significant association between skilled delivery attendances with reduction in maternal mortality or stillbirth rates until coverage rates of about 40% are achieved. Furthermore, four or more antenatal visit is not correlated with reductions in maternal death, if

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coverage is less than 60%.³

The present study aims to identify the nature of antenatal care received, and to recognize the outcome of the postnatal women in terms of nature of delivery, maternal and baby condition up to 24 hours following birth. It endeavours to see the association between utilization of antenatal care with selected demographic variables of the postnatal women, and secondly, between utilization of antenatal care with the postnatal outcome.

METHODS

Study design and area: The study was conducted in the district hospital of Golaghat district of Assam, which accounts for 37.6% of total institutional deliveries of the district. The present study adopts survey approach and retrospective descriptive method (Figure 1), to accomplish the objectives of the study.

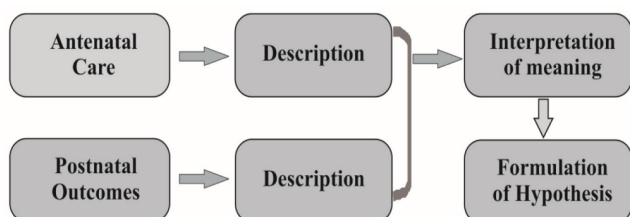


Figure 1 Schematic representation of research design for the present study.

Study population and sampling: Postnatal women who had delivered in the Golaghat District Civil hospital during the study period were considered as population sample. The sample size is calculated by using the formula: $n = 4pq / l^2$; where $p=54.6$ (institutional delivery rate), $q=(100-p)=45.4$, $l=20\%$ of $p=10.92$.⁸ The n value was calculated as 83.⁹ Our study is descriptive, and thus to overcome the possibility of non-responses, 20% more sample was added. Total 100 postnatal mothers who had delivered and were in the postnatal ward following 24 hours of delivery were selected.

Data collection tools and techniques: We developed three tools: i) semi-structured interview schedule, for background information of the postnatal information and care received during antenatal period, ii) structured record analysis proforma, for information about antenatal care, and iii) physical assessment proforma, for physical condition of the postnatal women and their new-born within 24 hours of delivery.

RESULTS

Demographic profile and antenatal care received by the postnatal women: The postnatal women (100) surveyed were in the age group of 19 to 35 year. Majority (70%) of them were Hindu and 50% received education till primary level. 86% were housewives and 71% had income group of Rs. 1,000.00-3,000.00 per month. About 94% had either three or more antenatal visit, but only 29% received their first antenatal check-up before 12 weeks of gestation. We found that 92% had taken two doses of injection Tetanus Toxoid and prophylaxis iron and folic acid were received by 93%. We identified the following minor health problems faced during antenatal period: insomnia, headache, pain in the epigastric region, scanty urination (1%), insomnia, headache,

pain in the epigastric region (2%), headache, scanty urination, pain in epigastric region (1%), only scanty urination (1%), only pain in the epigastric region (1%), and hyperemesis gravidarum (2%). Total 9% postnatal women had bad obstetrical history; for example, 2% had history of still birth, 1% had abortion, 6% reported caesarean section. Complete physical examination (i.e., blood pressure, weight, and oedema) was done by 51% of postnatal women, and 23% did complete blood investigation (sugar, grouping, serology). Urine testing and USG was done for 24% and 23%, respectively. Also, among the 24% who did urine testing, 4% had trace amounts of protein, but action was received only for 1%. **Figure 2** shows the data for antenatal advices received by the postnatal women. Haemoglobin estimation was not done for any of the postnatal women during first trimester of pregnancy. However, during second trimester haemoglobin was estimated for 8% of women, and haemoglobin level was between 8 to 10 gm% (mild anaemia). At third trimester haemoglobin estimation was done for 44% postnatal women, and 27% reported haemoglobin level between 8 to 10 gm% (mild anaemia), 10% had either 7 gm% or less than 8 gm% (moderate anaemia), 2% had less than 7 gm% (severe anemia), whereas only 5% were detected without anaemia (> 10 gm%).

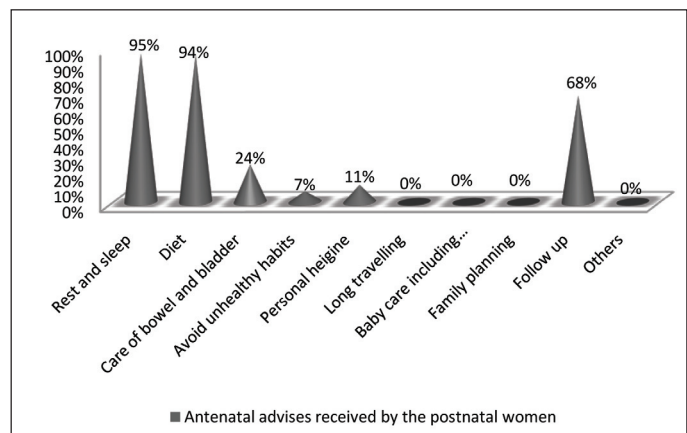


Figure 2 Advice received by the postnatal women during antenatal period (N = 100)

Evaluation of intranatal and postnatal outcomes: 73% of the postnatal women had spontaneous vaginal delivery, where 56% were full term, 15% were post-dated and 2% were preterm. The total duration of labour was 6-12 hours for 57%, and 13-16 hours for 16%. We found 4% and 6% had hypertension during intranatal and postpartum period, respectively, and while 14% had maternal distress and 28% recorded foetal distress. Also, out of 100, 8 babies were still births, 23 had asphyxiated at birth and the rest (69) were normal. 75% of the new-borns weight between 2.5 to 3.5 kg, 22% had less than 2.5 kg. Also, 22% were small for gestational age, whereas only 3% had more than 3.5 kg birth weight. Further more, two newborns died within 24 hours of delivery, one of them had birth asphyxia and was small for gestational age while other had weighed more than 3.5 kg with severe congenital anomaly (anencephaly). Remaining 90% postnatal women who had live new-born, only 49% were successful in breast feeding and 63% were able to take care of

their baby. Data regarding maternal conditions within 24 hours of delivery are presented in **Table 1**.

Table 1 Frequency distribution of maternal condition within 24 hours (N=100)

Sample characteristics	Frequency
Dehydration	49
Pallor	92
Blood pressure	
Hypo tension	18
Norm tension	80
Hypertension	2
Condition of the nipple	
Normal	68
Inverted	17
Cracked	0
Inverted and cracked	6

Evaluation of impact of antenatal care on postnatal outcome: Our analysis reflects a significant association between number of antenatal checkup with occupation of the postnatal women and total family income (**Table 2**).

Table 2 Chi-square value for the association between the demographic profiles and number of antenatal checkup (N = 100)

Selected demographic profile of the postnatal women	No. of antenatal visit		Total	Chi-square value (χ^2)
	< 3	• 3		
Level of education				.50
No formal education	2	13	15	
Primary and above primary level	4	81	85	
Occupation of the postnatal women				19.73*
Labourer	5	9	14	
Housewives	1	85	86	
Family income per month				12.07*
-< 1000	5	15	20	
-• 1000	1	79	80	

$c^2 df(1) = 3.841 P^* < 0.05$

Our study suggest no significant association between the number of antenatal checkups and PPH among the postnatal women, and between the physical parameters checked during antenatal visit and PPH (**Table 3**). However, there is a significant association between HB% detection at the third trimester and PPH.

Table 3 Chi square value showing association between number of antenatal visit and PPH (N = 100)

Nature of availing antenatal care	PPH		Total	Chi-square value χ^2
	Present	Absent		
No. of antenatal visit				1.287
<3	1	5	6	
≥3	5	89	94	
Parameter of physical examination completed (BP,Weight, edema)				0.7971
<3	4	45	49	
≥3	2	49	51	
Hb estimation at third trimester				5.43*
Done	0	46	46	
Not done	6	48	54	

$\chi^2 df(1) = 3.841 P^* < 0.05$

This study establishes a significant association between the obstetrical examination during antenatal period and birth weight of the newborn (**Table 4**).

Table 4 Association between the obstetrical examination during antenatal checkup and birth weight (N = 92).

Parameter of obstetrical examination (Fundal height, abdominal palpation and girth, fetal heart sound auscultation)	Birth weight		Total	Chi-square value (χ^2)
	<2.5 kg	• 2.5 kg		
<3	9	11	20	8.834
3	11	61	72	

$c^2 df(1) = 6.635 P < 0.01$

We found a significant association between the occupation of postnatal women and live birth. Also, total number of antenatal visit by the postnatal women during antenatal period was found to be significantly associated with the live births (**Table 5**).

Table 5 Chi-square value between antenatal examination and live birth (N = 100).

Characteristics of antenatal examination	Condition at Birth		Total	Chi-square value (χ^2)
	Still birth	Live birth		
Occupation of the postnatal women				39.95**
Laborer	7	7	14	
House wife	1	85	86	
No. of antenatal visit availed				49.21**
<3	5	1	6	
≥3	3	91	94	
Physical examination (Blood pressure, weight, edema)				.183
<3 parameters	5	44	49	
3 parameters	3	48	51	

$c^2 df(1) = 6.635 P^{**} < 0.01$

DISCUSSION

Usually for normal pregnancies WHO has recommended four antenatal visits. We observed that the use of antenatal care was 94%, which is comparable to the utilization pattern in Rural Lucknow, where 85.5% of the beneficiaries received at least three antenatal care services.⁸ In rural North India also three or more visits to health centre were made by 34.9% of the women.¹⁰ Conversely, in Nigeria only 58% attend antenatal clinic regularly.⁹ We found that 92% postnatal women had taken injection tetanus toxoid, which is higher than 77.1% in Sudanese women.¹¹ Complete physical examination was done for 51% postnatal women during their antenatal check-up, which is quite similar to the rural Karnataka (50%).¹⁰ Also, our result (93%) is in agreement with the result (96.4%) of Matthews et al¹⁰ for intake of iron and folic acid tablet.

Common health problems faced by the women during antenatal period identified in our study are: insomnia, headache, pain in the epigastric region, scanty urination and hyperemesis gravidarum. The earlier studies suggest that majority of women (57.5%) did not report problem during pregnancy, while some (10.9%) reported pain in abdomen, 6.8% suffered from bleeding. It recognized weakness (8.5%), backache (6%), dragging sensation (2%), leakage (1%) and injury (1%) as common health issues.¹²

We found no significant association between the educational level of postnatal women and number of antenatal checkup. However, Singh et al¹³ found that women with middle and higher education were two to nearly three times more likely to utilize full antenatal care. This discrimination may be due to active participation of the ASHA (Accredited Social Health Activists) and other health workers, health information socialized through

various media, like, government hoardings, newspaper, radio, and television. Our study suggest a significant association between the number of antenatal visit and live birth, and between antenatal examination and delivery of low birth weight baby, similar to findings of Petrou¹⁴ on association between antenatal visit and adverse perinatal outcomes. Ramy et al¹⁵ reported a highly significant association between the materno-foetal outcome and the adequacy of antenatal care.

CONCLUSION

We found that despite large number of postnatal women receiving complete physical and obstetrical examination during antenatal visits, and most of them did not received routine blood investigations, urine testing, USG investigation, iron and folic acid supplementation. Our comprehensive analysis identifies some common adverse postnatal outcomes observed among the surveyed women. The analysis reveals significant association between occupation and family income against number of antenatal checkup. Also, frequency of antenatal visit and live birth bears a straight association with complete obstetrical examination and birth weight, Hb estimation and PPH, occupation and birth weight. Interestingly we found no such association of educational level of the postnatal women with the number of antenatal checkup.

Conflict of interest: None.

Ethical clearance: Taken from Institutional Ethical Committee.

Authors contribution: We declare that authors named in this article contributed in this study and any liabilities pertaining to the content of this article will be borne by the authors.

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