BIRTH OUTCOMES OF PREGNANT WOMEN WITH ANEMIA IN TERTIARY HOSPITAL OF RUPANDEHI

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ABSTRACT

INTRODUCTION

Anemia in pregnancy is the commonest medical disorder of pregnancy and a major cause of morbidity and mortality in developing countries like Nepal. It is commonly associated with adverse pregnancy outcomes. Therefore, it is crucial to identify Anemia in pregnancy and its outcomes to improve maternal and fetal care.

MATERIAL AND METHODS

Cross-sectional study was conducted to find out birth outcomes of pregnant women with Anemia in tertiary hospital of Rupandehi. Two hundred and seventy seven pregnant women without preexisting illnesses before pregnancy admitted in labor ward of Universal College of Medical Sciences- Teaching Hospital (UCMS-TH), Rupandehi were selected by using purposive sampling technique. Data was collected using structured interview schedule and patient's ANC and inpatient record. Descriptive statistics and inferential statistics were used for analysis with Statistical Package for Social Science (SPSS) software version 16.

RESULTS

The findings of this study also showed that 32.5% had mild anemia, 6.5% had moderate anemia and 1.8% had severe anemia, 31.9% of respondents with anemia had low birth weight, There was significant association of prevalence of anemia with pregnancy induced hypertension (p=0.004), low birth weight (p<0.001) and meconium stained liquor (p=0.003). There was significant association of prevalence of Anemia with education status (p=0.045), occupation (p<0.001), intake of iron folic acid (p<0.001) and child spacing interval (p=0.019).

CONCLUSION

The study findings concluded almost half of pregnant women had anemia. Adequate education, counseling and reassurance of the pregnant women for regular birth interval and intake of iron folic acid might increase maternal and perinatal outcomes.

KEYWORDS

Anemia, Birth outcomes, Hospital, Pregnant woman

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INTRODUCTION

Pregnancy is a significant stage in a woman's life that requires substantial physiological adaptation. During this period, both the mother and the developing fetus are exposed to an increased risk of health-related complications. Anemia is one of them. According to World Health Organization (WHO), women having hemoglobin level of 11 gm/dl or less is considered as anemic during pregnancy.[1] The prevalence of anemia is very high especially in third trimester.[2] Anemia in pregnancy have poor maternal and perinatal outcomes.[3]

At a global level, anemia continues to affect half a billion women 15 to 49 years of age. The prevalence of anemia among pregnant women in developed countries is about 14%, whereas 51% in the developing countries. In 2019, 32 million of pregnant women worldwide aged 15–49 years were affected by Anemia. The Africa and South-East Asia are most affected with 106 million and 244 million women respectively.[1] According to Nepal demographic and health survey Nepal 2022, the prevalence of anemia among women aged 15 to 49 is 34% with higher rates in the Terai region (45%) compared to the hills (20%) and mountain areas (23%).[4]

The development of anemia in pregnancy is influenced by multiple interrelated factors. Nutritional deficiencies, particularly inadequate intake or absorption of essential micronutrients, are primary contributors. Additional factors such as early marriage, closely spaced pregnancies, chronic illnesses, parasitic infections, poor sanitation, and suboptimal hygiene practices further increase vulnerability.[5] Lifestyle behaviors like smoking, alcohol, decreased physical activity, sleep duration and variations in health-seeking practices across different population groups may also play a role.[6]

Anemia is a major concern among pregnant women because it can lead to increased maternal mortality and poor birth outcomes.[4] A study conducted in Birgunj, Nepal showed the maternal complications of Anemia as preterm deliveries (14.08%), postpartum hemorrhage (11.26%), abruptio placenta (3.16%), placenta previa (5.9%), cardiac failure (1.05%), maternal mortality (0.35%), post operative complications like fever and wound infections (2.11%). Among fetal complications, preterm babies were more common in anemic patients, babies with APGAR less than 7 were 57.39% and low birth weight babies were 14.08%, growth retardation babies were 7.04%, perinatal deaths were 2.81%, intrauterine fetal deaths were 1.40% and birth asphyxia were 0.70%.[3]

The burden of anemia in pregnant population is still high in Nepal. Severe anemia in pregnancy carries significant risk to mother and fetus. Although, the Ministry of health and population, Nepal has been providing 60 mg elemental iron and 400 microgram folic acid to pregnant for 180 days from their second trimester and post-partum women for 45 days since 1998 to reduce maternal Anemia but according to Nepal Demographic Health Survey, 2022, only 60% had compliance with 180 tablets during pregnancy and 52.6% had compliance with 45 tablets post-partum, 8 ANC visit is 61% and in Lumbini province it is 54.9%.[7]

Comprehensive data on iron status are essential to design targeted interventions that can effectively reduce iron deficiency and anemia and improve pregnancy outcomes.[7] Thus, iron deficiency anemia in pregnancy and its birth outcomes requires further research.

Anemia remains the most prevalent nutritional condition affecting pregnant women worldwide and continues to pose a significant public health challenge. The burden is particularly pronounced in South Asian regions. Maternal anemia is associated with unfavorable pregnancy outcomes for both the mother and the newborn, while maintaining adequate hemoglobin levels contributes to improved maternal and fetal health.[8]

A study in China revealed maternal anemia was significantly associated with maternal age, family income, rural residence and pre-pregnancy BMI <18.5 kg/m2. Adverse pregnancy outcomes, including gestational diabetes mellitus, polyhydramnios, preterm birth, low birth weight (less than 2500 grams), neonatal complications and Neonatal intensive care unit admission, increased significantly ($p < 0.001$) in those with anemia.[9]

A study in Kolar, India showed that 35.6% of the women had maternal or fetal morbidity. Maternal complications include difficult labor (3%), postpartum hemorrhage and preeclampsia 1.6% each and abortions and stillbirths (3.5%). The fetal complications include low birth weight (25.5%) followed by premature delivery (0.2%) and birth asphyxia (0.5%).[10] A high prevalence in developing countries is an indicator to manage problems at all levels. Therefore, the researchers want to do research on the topic to find out the prevalence and maternal and perinatal outcomes of Anemia in pregnancy.

MATERIAL AND METHODS

A hospital-based analytical cross-sectional study was carried out to find out the birth outcomes of anemia during pregnancy in a tertiary hospital of Rupandehi district. A total of 277 pregnant women admitted for delivery were selected using purposive sampling. Pregnant women who had pre-existing medical illnesses were not included in the study. The study was conducted in the labor ward of Universal College of Medical Sciences–Teaching Hospital (UCMS-TH), Rupandehi, Lumbini Province, Nepal.

Information related to maternal characteristics such as age, education, occupation, family type, age at marriage, gravida, antenatal checkup, intake of iron folic acid, mode of delivery, diet, child spacing interval and gestation was collected using a structured and pre-tested interview schedule. Anemia was defined according to the World Health Organization (WHO) criteria as a hemoglobin level less than 11.0 g/dL. Based on hemoglobin level, anemia was further

classified as mild (10.0–10.9 g/dL), moderate (7.0–9.9 g/dL), and severe (<7.0 g/dL). Information on maternal and perinatal birth outcomes was collected from inpatient records.

The researchers visited the labor ward and explained the purpose of the study to the respondents. Written informed consent was taken from each eligible participant before including them in the study. Data were collected over a period of six months from July 17, 2023, to January 16, 2024. Administrative and ethical approval was obtained from the concerned authorities before data collection (UCMS/IRC/015/23).

The collected data were entered and analyzed using Statistical Package for Social Sciences (SPSS) software version 16. Descriptive statistics such as frequency, percentage, mean, median, range, and standard deviation were used. Chi-square test was applied to find out the association between anemia in pregnancy and birth outcomes.

RESULTS

Table 1. Personal information of the respondents

n=277

Characteristics	Number	Percent
Age		
Below 18	5	1.8
18 and above	272	98.2
Mean±SD =24.85±1.07		
Education		
No education	28	10.1
Basic (1-8)	79	28.5
Secondary (9-12)	124	44.8
Above secondary (above 12)	46	16.6
Occupation		
Dependent	69	24.9
Business	76	27.4
Service	69	24.9
Farmer	63	22.7
Family Type		
Single	102	36.8
Joint	121	43.7
Extended	54	19.5
Age at Marriage		
Below 18	74	26.7
18 and above	203	73.3
Gravida		
Primigravida	116	41.9
Multigravida	161	58.1
Antenatal Checkup		
Up to 20 weeks	13	1.7%
Second	43	5.7%
Third	66	8.8%
Forth	69	9.2%
Fifth	101	13.4%
Sixth	153	20.4%
Seventh	151	20.1%
Eight	155	20.6%
Intake of Iron Folic Acid		
No	14	5.1
Regular	112	40.4
Irregular	151	54.5
Mode of Delivery		
Vaginal	166	59.9
Cesarean section	111	40.1
Diet		
Vegetarian	120	43.3
Non-vegetarian	157	56.7
Child Spacing Interval		
Short (less than 2 years)	96	34.7
Average (2 to 5 years)	130	46.9
Long (more than 5 years)	51	18.4
Gestation		
Preterm	84	30.3
Term	191	69.0
Post term	2	0.7

Table 1 shows almost all (98.2%) belonged to age 18 and above, less than half (44.8%) had completed secondary level of education, 27.45 were involved in business, 43.7% had joint family, majority (73.3%) married at age 18 and above, more than half (58.1%) were multigravida, 20.6% did 8th ANC visit, 54.5% took iron irregularly, 59.9% delivered vaginally, 56.7% were non vegetarian, 46.9% had average birth spacing interval and 69% delivered term baby.

Table 2. Prevalence of anemia among pregnant women

Prevalence	Number	Percent
No Anemia	164	59.2
Mild Anemia (10.0–10.9 g/dL)	90	32.5
Moderate Anemia (7.0–9.9 g/dL)	18	6.5
Severe Anemia (<7.0 g/dL)	5	1.8

Mean±SD =10.87±1.01

Table 2 shows more than half (59.2%) did not have anemia followed by mild anemia (32.5%), moderate anemia (6.5%) and few (1.8%) had severe anemia, classified according to WHO criteria.

Table 3. Birth outcomes of pregnant women

n=277

Birth Outcomes	Anemia (n=113)		No Anemia (n=164)		Chi-square	*p*-value
	N	Percent	N	Percent		
Maternal (n=39)						
Pregnancy Induced Hypertension (PIH)	8	7.1	1	0.6	8.909	0.004*
Pre eclampsia	3	2.7	1	0.6	1.966	0.187
Post Partum Hemorrhage (PPH)	3	2.7	5	3.0	0.037	0.576
Placenta previa	2	1.8	8	4.9	1.857	0.150
Oligohydraminous	13	11.5	8	4.9	4.193	0.036*
Prolonged labor	3	2.7	1	0.6	1.966	0.187
PROM	7	6.2	5	3.0	1.598	0.167
Perinatal (n=67)						
Low birth weight	36	31.9	14	12.4	24.600	<0.001*
Low APGAR score	12	10.6	6	3.7	7.061	0.133
Meconium-stained liquor	15	13.3	6	3.7	8.829	0.003*
Antepartum stillbirth	3	2.7	1	0.6	1.966	0.187
Intrapartum still birth	2	1.8	-	-	2.924	0.166
Congenital defect	3	2.7	1	0.6	1.966	0.187
Preterm birth	13	11.5	12	7.3	1.429	0.163
IUGR	6	5.3	2	1.2	3.991	0.052

Mean±SD =107.95±10.845

Table 3 shows 11.5% of anemic pregnant mother had oligohydraminous and 31.9% had low birth weight, whereas, 4.9% of non-anemic pregnant mother had placenta previa and oligohydraminous and 12.4% had low birth weight. There was significant association of prevalence of anemia with PIH (p=0.004), low birth weight (p<0.001) and meconium-stained liquor (p=0.003).

Table 4. Association of Personal information with prevalence of anemia

n=277

Variables	Prevalence of Anemia				Chi-square	p- value
	No		Yes			
	Number	Percent	Number	Percent		
Age						
Below 18	3	1.1	2	0.7	0.001	0.670
18 and above	161	58.1	111	40.1		
Education						
No education	40	14.4	39	14.1	3.363	0.045*
Education	124	44.8	74	26.7		
Occupation						
Dependent	54	19.5	15	5.4	13.814	<0.001*
Other than dependent	110	39.7	98	35.4		
Family type						
Single	56	20.2	46	16.6	1.238	0.162
Other than Single	108	39.0	67	24.3		
Age at Marriage						
Below 18	44	15.9	30	10.8	0.003	0.536
18 and above	120	43.3	83	30.0		
Gravida						
Primigravida	65	23.5	51	18.4	0.831	0.215
Multigravida	99	35.7	62	22.4		
Antenatal checkup						
Regular	3	1.1	2	0.7	0.001	0.670
Irregular	161	58.1	111	40.1		
Intake of Iron Folic Acid						
No	2	0.7	5	1.8	43.802	<0.001*
Regular	118	42.6	36	13.0		
Irregular	44	15.9	72	26.0		
Mode of Delivery						
Vaginal	94	34.0	72	26.0	1.141	0.173
Cesarean section	70	25.3	41	14.8		
Diet						
Vegetarian	70	25.3	50	18.1	0.067	0.446
Non-vegeterian	94	34.0	63	22.7		
Child spacing interval						
Average	68	24.5	62	22.4	4.826	0.019*
Other than average	96	34.7	51	18.4		
Gestation						
Term	116	41.9	75	27.1	0.594	0.261
Other than Term	48	17.3	38	13.7		

*p value significant at 0.05 level of significance

Table 4 shows a significant association of prevalence of Anemia with education status (p=0.045), occupation (p<0.001), intake of iron folic acid (p<0.001) and child spacing interval (p=0.019).

DISCUSSION

The findings of this study showed that almost all (98.2%) belonged to age 18 and above, less than half (44.8%) had completed secondary level of education, 27.45 were involved in business, 43.7% had joint family, majority (73.3%) married at age 18 and above, more than half (58.1%) were multigravida, 20.6% did 8th ANC visit, 54.5% took iron irregularly, 59.9% delivered vaginally, 56.7% were non vegetarian, 46.9% had average birth spacing interval and 69% delivered term baby.

The findings of this study also showed that more than half (59.2%) did not have anemia in pregnancy whereas, 32.5% had mild anemia, 6.5% had moderate anemia and 1.8% had severe anemia. The findings of this study showed consistent result with the study conducted in Muzaffarabad, India which showed that 6.5% women had severe anemia.[2] A study conducted in Pokhara, Nepal showed consistent result where 30.55 had mild anemia.[11] Another study conducted in Manipur, India showed inconsistent result where the prevalence of mild, moderate and severe anemia were 48.8%, 39.4%, 10.6% respectively.[8]

Further, this study showed that 11.5% of anemic pregnant mother had oligohydraminous and 31.9% had low birth weight, whereas, 4.9% of non-anemic pregnant mother had Placenta previa and oligohydraminous and 12.4% had low birth weight. The findings of this study showed consistent result with the study conducted in China showed that 2.6% pregnant women with anemia had oligohydraminous whereas same study showed contrast result which showed 4.9% had low birth weight.[9] The findings of this study also showed that 7.1% of anemic pregnant mother had pregnancy induced hypertension, PPH (2.7%), low birth weight (31.9%) and APGAR score less than 7 (10.6%). The findings of this study showed consistent result with the study conducted in Muzaffarabad, India which showed that 37.14% of anemic pregnant mother had pregnancy induced hypertension, PPH (17.14%), low birth weight (62.68%) and APGAR score less than 7 (60%).[2]

The findings of this study showed that there was significant association of prevalence of anemia with pregnancy induced hypertension and low birth weight. The study conducted in India showed consistent result which showed there was significant association of prevalence of anemia with pregnancy induced hypertension and low birth weight. The findings of this study showed that there was significant association of prevalence of anemia with oligohy draminous and low birth weight.[2] The findings of this study showed consistent result with the study conducted in China showed that there was significant association of prevalence of anemia with oligohydraminou and low birth weight.[9] The findings of this study showed that there was no significant association of prevalence of anemia with PPH and low APGAR score which is consistent with the study conducted in India which showed no significant association of prevalence of anemia with PPH and low APGAR score <7.

The findings of the study showed that there was significant association of prevalence of Anemia with education status, occupation, intake of iron folic acid and child spacing interval which is consistent with the study conducted in Beijing, China which showed significant association of prevalence of anemia with education status.[9] The findings of the study showed that there was no significant association of prevalence of Anemia with age, family type, age at marriage, mode of delivery diet and gestation. The findings of this study conducted in China showed that there was no significant association of prevalence of anemia with age.[9] Another study conducted in Pokhara Nepal showed consistent result where there was no significant association of prevalence of Anemia with gravida and mode of delivery.[11]

CONCLUSION

This study concludes that almost half of the pregnant women had anemia. Education status, occupation, intake of iron folic acid and child spacing interval tends to influence their prevalence of Anemia. So, it is recommended for concerned authorities to conduct awareness programmes for adequate counseling on regular child spacing interval and reassurance of the pregnant women for regular intake of iron folic acid which might improve maternal and perinatal outcomes.

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CONFLICT OF INTEREST

None

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