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Feto-Maternal Outcome of Moderate Anaemia in Term Pregnancy at DMCH

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Abstract **Original Research Article**

Background: Anaemia is a major public health problem throughout the world especially in developing countries and it is the most common nutritional deficiency disorder in the world. High prevalence of anaemia among pregnant women persists despite the availability of effective and low-cost interventions for prevention and treatment. ***Objective:*** The aim of this study was to evaluate the adverse maternal and fetal outcome in women diagnosed with moderate anaemia at term pregnancy. ***Methods:*** This Descriptive type of observational cross-sectional study was conducted in the department of Obstetrics & Gynaecology, Dhaka Medical College Hospital; from 16th September 2021 to 15th March 2022. Samples were collected by purposive sampling. Sample size was 96. Detailed demographic data were collected from the hospital case records in structured data collection form. History, clinical examination, and investigations were done meticulously. Then all information were collected in data collection sheet. Data processing work consist of registration schedules, editing computerization, preparation of dummy table, analyzing and matching of data by number of SPSS version 24. ***Results:*** This study was attempted to observe the feto-maternal outcome of moderate anaemia. Among 96 study patients, majority (37.5%) were between 21-25 years age group. There was rural predominance with 66.56%. Socio-demographic data showed that 45.8% came from lower class and 40.6% from lower middle class. Majority patients (59.28%) were housewives. According to level of education, 42.64% had only school education followed by 37.44% had no education. Among the patients, 89.6% were Muslims and 9.4% were Hindus. Among the 53 multiparous women, 21 patients (39.62%) had no history of fetal loss, 16 patients (30.18%) had history of previous abortion & 5 (9.43%) had previous ectopic pregnancies. According to the type of anaemia 81.12% had normocytic normochromic anaemia, 79.04% had Iron deficiency, 8.32 & had folic acid deficiency, 5.2% had Vitamin B 12 deficiency and 2.08% had Beta thalassemia. There was no maternal mortality in our study and perinatal mortalities were present in 2.08%. ***Conclusion:*** This study showed the adverse effect of moderate anemia on pregnancy outcome, which includes maternal mortality, morbidity and hazardous effect on infant health and development. There is substantial evidence that microcytic hypochromic anaemia is the commonest type of anaemia in pregnancy and it increases subsequent low birth weight babies and its consequences in majority cases and accounting information suggests an association between maternal iron status in pregnancy and the status of infants in postpartum.

Keywords: Anaemia, Nutritional deficiency, Postpartum.

INTRODUCTION

Pregnancy is a vital part of a woman's life but it is period of greater risks of different complications for mother and fetus. One of the most prevalent complications is anaemia, which is being faced throughout the world. This challenge is more commonly faced in developing countries due to poor nutritional status [1].

Anaemia in pregnancy is a worldwide phenomenon but particularly more prevalent in the developing countries. In South-east Asia, there is high prevalence of anaemia among non-pregnant population, and they start pregnancy in anaemic state which is further aggravated by increased requirements of pregnancy and blood loss at delivery [2]. Infections in the antenatal and postnatal periods and early advent of

next pregnancy perpetuate it. Maternal anaemia has been found to be associated with higher maternal mortality and morbidity and adverse perinatal outcome.

According to the estimates of World Health Organization (WHO), anaemia has a prevalence of 23% in developed countries with almost double in developing countries. The average prevalence rate is 56% in developing countries with a great variation with respect to different regions of the world ranging from 35% to 100% [3]. Prevalence of anaemia is highest in South Asian countries among the world.

According to WHO (World Health Organization) definition, the women having haemoglobin level of less than 11 g/dL and hematocrit less than 30% is considered as anaemic during pregnancy. The WHO's anaemia classification and categorization were adopted for functional definition of haemoglobin conditions; anaemic (serum Hb% 5-11g/dL), and non-anaemic (serum Hb>11g/dL) the anaemic group was further divided into mild, moderate and severe anaemia [4].

There are many risk factors which contribute to anaemia in pregnancy; including iron deficiency which is considered main cause. Other contributing factors are deficiency of B12 or hemolytic anaemia, particularly beta thalassemia trait, which are not rare [5].

Over 30 percent of world's population are anaemic, mainly due to iron deficiency. In tropical countries, deficiency of both iron and folic acid is seen which is directly associated with poor health status, poverty, poor socioeconomic status, multiparity and less birth spacing. In resource poor areas, these are frequently exacerbated by infectious diseases, hookworm infestation, schistosomiasis, and other infections such as tuberculosis. These factors are particularly important contributing to high prevalence of anaemia in some areas.

The prevalence of anaemia is very high especially in third trimester and have a very significant adverse impact on maternal health during pregnancy and fetal outcome. Adverse consequences are related with anaemia in pregnancy for mother and fetus.

METHODOLOGY

This is an observational cross-sectional study. This study was carried out on 96 pregnant patients the find out about the population in the department of Obstetrics and Gynaecology, in Observational cross-sectional study, Dhaka Bangladesh. The duration of the period from Six months (September 2021 to March 2022). After collection, the data were checked and cleaned, followed by editing, compiling, coding and categorizing according to the objectives and variable to detect errors and to maintain consistency, relevancy and quality control. The choice of treatment was made by the patient after a full discussion with the multidisciplinary team consisting of Transfusionists. The data for this study about had been accumulated from patients' medical information. Statistical evaluation of the results used to be got via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-24).

RESULTS

Table-1: Distribution of study cases according to age, (n=96)

Age (in years)	Number of patients	Percentage (%)	Mean + SD
16-20	16	16.7	23.45+10.41
21-25	36	37.5	
26-30	22	22.9	
31-35	14	14.6	
36-40	8	8.3	
Total	96	100.0	

Table 1 shows that 36 (maximum) study patients (37.5%) were between 21-25 years age group, next 22 (22.9%) were between 26-30 years, 16(16.7%) were between 16-20 years and 14 patients (14.6%) were between 31-35 years. The Mean +SD was 23.45+10.41 years.

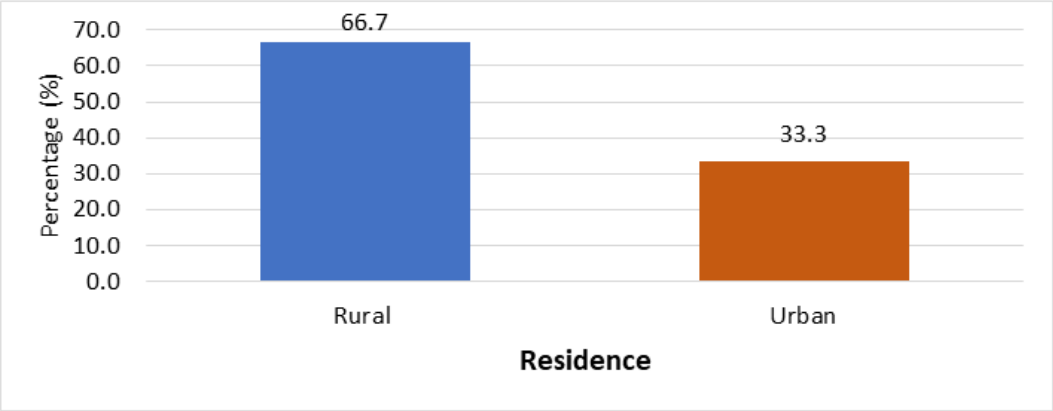

Figure- 1: Distribution of study cases according to residence, (n=96)

Figure 1 shows that the study patients 64 study patients (66.7%) came from rural area and 32 patients (33.3%) from urban area with rural predominance.

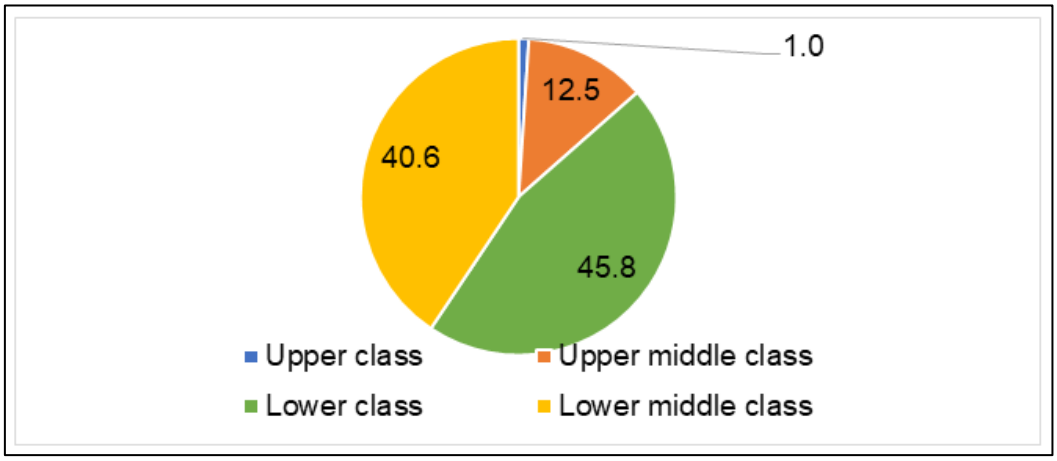

Figure-2: Distribution of study cases according to socioeconomic status, (n=96)

Figure 2 shows that among all the cases, 44 study patients (45.8%) (Majority) came from lower classes, followed by lower middle class 39 (40.56%), 12(12.48%) from upper middle class and only 1 patient (1.0%) from upper class.

Table-2: Distribution of study cases according to occupation, (n=96)

Occupation	Number of patients	Percentage (%)
Housewife	57	59.28
Unskilled worker	19	19.76
Semiskilled worker	13	13.52
Skilled worker	4	4.16
Professional (Desk Job)	3	3.12

Table 2 shows that 57 study patients (59.28%) (Majority) were housewives, 19 patients (19.76%) were unskilled worker and small numbers of patients were professional worker- 3.12%.

Table-3: Distribution of study cases according to education level, (n=96)

Education	Number of patients	Percentage (%)
No education	36	37.44
School education	41	42.64
College	12	12.48
University	4	4.16
Professional	3	3.12

Table 3 shows, that (maximum) (42.64%) 41 study patients had completed only school education, followed by 36 (37.44%) had no education, and only 3.12% had completed professional degree.

Table-4: Distribution of study cases according to number of ANC visits, (n=96)

Number of ANC visit	Number of patients	Percentage (%)
8 visits (Ideal)	4	4.16
< 8 to >4 visits	11	11.44
4 visits (minimal)	20	20.8
<4 visits	61	63.44

Table 4 shows that (majority) 61 patients (63.44%) had <4 ANC visit, 20 patients (20.8%) had 4 visits and only 4 patients (4.16%) had 8 visits (ideal).

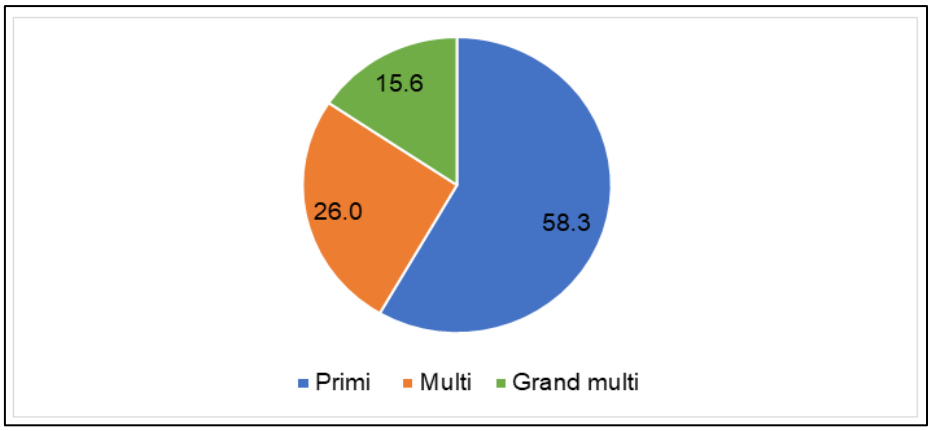

Figure-3: Distribution of the study cases according to parity, (n=96)

Figure 3 shows that 56 study patients (58.3%) were primi followed by 25 patients (26.0%) were multipara and 15(15.6%) were grand multipara (had more than 3 living issues).

Table-5: Distribution of the study cases according to gestational age, (n=96)

Gestational age	Number of patients	Percentage (%)
37 to <38 weeks	43	44.8
38 to <39 weeks	39	40.6
39 to <40 weeks	10	10.4
40 to <42 weeks	4	4.2

Table 5 shows that according to gestational age, 43 patients (44.8%) were within 37 to <38 weeks of gestation, 39 (40.6%) were within 38 to <39 weeks, 10 (10.4%) were within 39 to <40 weeks and 4 patients (4.2%) had post-dated pregnancy (>40weeks).

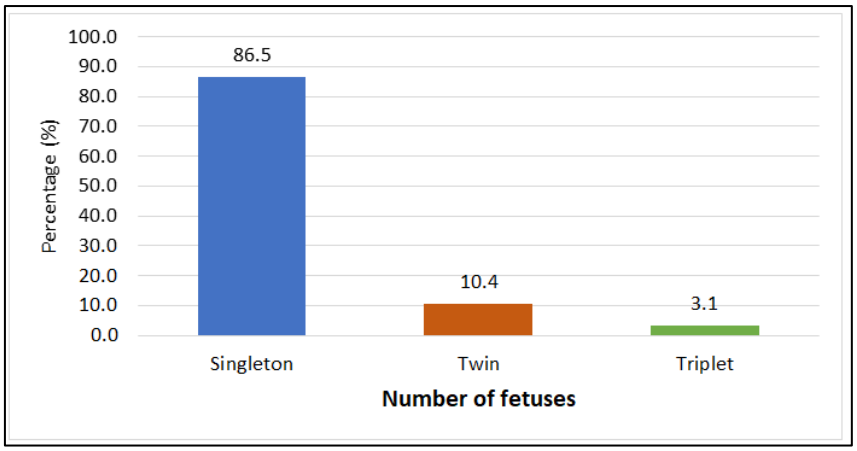

Figure-4: Distribution of the study cases according to number of fetuses, (n=96)

Figure 4 shows that 83 patients (86.5%) had singleton pregnancy and 13 (13.5%) had multiple pregnancies. Among them 10(10.4%) twin pregnancy and 3(3.1%) had triplet.

Table-6: Distribution of the study cases according to symptoms and physical signs (n=variable)

Symptoms & signs	Number of patients	Percentage (%)
Weakness	87	90.48
Anorexia	57	59.28
Palpitations	13	13.58
Glossitis & stomatitis	9	9.4
Raised BP	26	27.04
Leg edema	23	23.92
Systolic murmur on pre-cordial examination	4	4.16
No significant symptoms & signs	3	3.12

Table 6 shows that among 96 patients, 87 (90.48%) had weakness, 57 (59.28%) had anoxia, 26 (27.04%) had raised BP, 23 (23.92%) had leg edema, 13 (13.58%) had palpitations, 9(9.4%) patients had glossitis and stomatitis, 4 (4.16%) had systolic murmur. In majority of the patients more than one signs & symptoms were present.

Table-7: Distribution of the study cases according to complications in current pregnancy (n=variable)

Complications	Number of patients	Percentage (%)
No antenatal complication	46	47.84
Pre-eclampsia	26	27.04
Antenatal infection (UTI)	17	17.68
Heart failure	4	4.16
Other complications	3	3.12

Table 7 shows that 46 patients (47.84%) had no antenatal complication, 26 patients (27.04%) were diagnosed with pre-eclampsia, 17 patients (17.68%) had UTI and 4 (4.16%) had heart failure. Heart failure patients managed by joint consultation with cardiology department of DMCH.

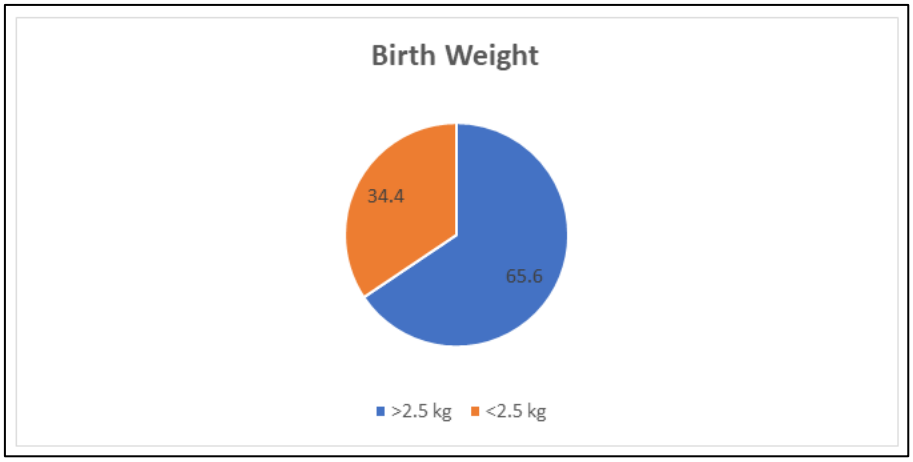

Figure- 5: Distribution of the study cases according to birth weight, (n=96)

Figure 5 shows that 33 babies (34.32%) had low birth weight (<2.5kg).

Table-8: Distribution of the study cases according to mode of delivery, (n=96)

Mode of delivery	Number of patients	Percentage (%)
Normal vaginal	66	68.75
Operative vaginal	1	1.04
LSCS	29	30.16

Table 8 shows that 66 patients (68.75%) had vaginal deliveries, 1.04% operative vaginal deliveries & 29 patients (30.16%) had undergone LSCS.

Table-9: Distribution of the study cases according to maternal outcome (n=96)

Maternal outcome	Number of patients	Percentage (%)
Insignificant	68	70.83
PPH	16	16.64
Retained placenta	6	6.25
Wound infection & dehiscence	5	5.21
Hematoma (vulval)	1	1.04
Puerperal pyrexia	8	8.33
Puerperal sepsis	2	2.08
Maternal mortality	0	0
Prolong labour	10	10.4
Need induction	12	12.5
Induction failure	5	5.2

Table 9 shows that among 96 patients, 68(70.83%) had no significant maternal morbidity, 16 (16.64%) had PPH, 8 (8.33%) had puerperal pyrexia, 6 (6.25%) had retained placenta, 5 (5.21%) had wound infection, 2 (2.08%) had puerperal sepsis and 1 (1.04%) had hematoma. In some of the patients more than one morbidity were present. Prolong labour in 10(12.5%) cases, induction needed in 12(12.5%) cases and induction failure 5.2%.

DISCUSSION

This study was conducted in a lower middle-income country, reporting on the use of a prospective individual patient database to analyze their feto-maternal outcome. The availability of highly accurate data was relatively limited due to chance of misclassification of some of the moderately anaemic patients into some other category. During categorization of our study design, several important methodological issues were raised; including- patient selection, study model and the prospective identification & comparison of different diagnostic modalities, all of which may exert a powerful influence on the results. These issues may be relevant to obscure a real difference in rates. So, our result would be discussed with other previously done national and international studies to address these issues in turn.

In this study, 36 (37.5%) were between 21-25 years age group, which was the highest age group. Next 22 (22.9%) were between 26-30 years, and 16 patients (16.7%) were between 16-20years. The Mean±SD was 23.45±10.41 years. Findings were consistent with the result of Malhotra P and Kumari S. [6] which showed that maximum number of the patients were between 20-30 years age group.

We had found in this study that patients came from both rural areas- 64 patients (66.56%) and urban areas- 32 patients (33.28%) with urban predominance. Authors emphasize that in rural areas, due to their lack of awareness regarding nutritional deficiency, ignorance during the whole pregnancy period and sometimes their superstitions are the reasons behind this. The ignorance of the family members towards the mother is also an important fact in this regard. This data corresponds with the result of a similar study done by Balarjan Y and Ramakrishnan U [7].

According to socio-economic status our study showed that among all the cases, the major percentages 45.8% (44 of the study patients) came from lower classes, followed by 39 (40.56%) from lower middle class and only 1 (1%) were from upper class. Here our study is consistent with the study done by Nwizu EN and Iliyasu Z [8] which showed that 47.45% were from lower class and 32.26% were from lower middle class.

Regarding occupation, authors had stated that among low-income countries, there is always a tendency of nutritional deficiency, and anaemia in housewives is a reflection of that scenario; as there is always a chance of them being neglected behind the four walls of their houses. In our study, there is not much difference from the statement. Our study showed that majority of the study patients (57 patients) (59.28%) were housewives, followed by 19 (19.76%) were unskilled workers and small number of patients (3.12%) were professional worker. The result was close to the research work done by Melku M [9] where majority of the patients were house-wives (53.5%) and unskilled workers (22.8%).

We had found out in our study that maximum number of cases (41 patients) (42.64%) had only school education and 36 patients (37.44%) had no education. As the study had done at a tertiary level hospital in the capital city; the level of education may not reflect the actual scenario. Result of our study slightly varies from a study by Biswas M, Baruah R [10] which showed that majority patients (47.2%) had no education.

In our study according to ANC visit majority (63.44%) had irregular and <4 ANC visits. Our study showed similarity with the study done by Khan MS, Srivastav A [11] Which also showed that among the anaemic patients' majority (68.2%) had <4 ANC visits.

Our study showed that 56 study patients (58.3%) were primi followed by 25 (26%) where multi and only 15(15.6%) were grand multipara. Our study slightly differs from the study done by Baig-Ansari N [12] which showed moderate EMEA is highest among grand multi para (54%) followed by multipara (32%).

According to gestational age in our study, 43 patients (44.8%) had gestational age 37 to <38 weeks, 39(40.6%) were within 38 to <39 weeks, 10 (10.4%) were within 39 to <40 weeks and 4 patients (4.2%) had postdated pregnancy (>40weeks). According to Khan NA's study [13] 56.28% had gestational age 37 to <38 weeks which is similar to our study.

In our study 83 (maximum) patients (86.5%) had singleton pregnancy. Study done by Melku M [14] also showed that majority of the moderately anaemic patients had single pregnancy. Though he stated that in multiple pregnancy there is more chance of nutritional deficiency, but the studies may not reflect the actual result as multiple pregnancy is not as common as single pregnancy.

In our study among 96 patients 87 (90.48%) had weakness, 57 (59.28%) had anoxia, 26 (27.04%) had raised BP, 23 (23.92%) had leg edema, 13 (13.58%) had palpitations, 4 (4.16%) had systolic murmur. Study done by Devi UA, Sushma HP [15] also showed similarity with our study. In that study the commonest symptom was also fatigability present in 62.4%, palpitations among 16.6%, and cardiac abnormality in 5.12%.

According to complications in current pregnancy, in our study 46 patients (47.84%) had no antenatal complications, 26 patients (27.04%) had pre-eclampsia, 17 (17.68%) had UTI and 4 (4.16%) had heart failure. According to mode of delivery, our study had showed that 68.75% had normal vaginal deliveries, 1.04% had operative vaginal deliveries and 30.16% had LUCS. Study done by Devi UA, Sushma HP [16] was also consistent with our study showing 23.2% had pre-eclampsia 13.8% had UTI and 3.48% had heart failure. The study also showed that 61.4% had normal vaginal deliveries 7.2% hand operated vaginal deliveries and 31.3% had a LUCS.

In our study, among 96 patients, 68 (70.83%) had no significant maternal morbidity, 16 (16.64%) had PPH, 8 (8.33%) had puerperal pyrexia, 6 (6.25%) had retained placenta, 5 (5.21%) had wound infection, 2 (2.08%) had puerperal sepsis and 1 (1.04%) had hematoma. A study done by Khatana A, Yadav K [17] had showed that 17.38% of the patients with moderate anaemia had PPH and retained placenta, 13.48% had wound infection, 3.26% had sepsis, 2.18% had hematoma. The outcome is almost consistent with our study. But there was 1.17% maternal mortality in that study whereas in our study there was no maternal mortality.

In our study, correlations were made between the results gained from history, clinical examinations, relevant investigations, with the results gained from several national and international studies to establish the validity of our study more accurately.

LIMITATIONS OF THE STUDY

The present study had the following limitations. These should be kept in mind while deciding on the implications of the study.

1. Study period was short, so long term result like late recurrence rate beyond 6 months could not be assessed.
2. Study results could not be correlated with similar studies due to lack of previous **research studies.**

CONCLUSION

The study clearly revealed that the commonest cause of moderate anaemia is iron deficiency anaemia and is more common among pregnant women who had poor antenatal care with irregular intake of Iron and Folic acid during pregnancy. Low socio-economic status, illiteracy, multiparity, women with history of abortion, women with suboptimal antenatal care and poor compliance to Iron & Folic Acid tablets intake were more susceptible for anaemia during pregnancy. The common perinatal complication was birth asphyxia and septicemia. Common maternal complication was PPH, puerperal pyrexia, retained placenta wound infection etc.

RECOMMENDATION

Anaemia in pregnancy has found as a significant contributing factor for maternal and perinatal morbidities but data related to moderate anemia and its feto-maternal outcome is insufficient. Study regarding feto-maternal outcome can be topic of interest for the policy makers to develop awareness among the citizens of our country that feto-maternal outcome of moderate anaemia is hazardous but not insurmountable and with proper education and standard strategies anaemia can be prevented. It can be inferred that better access to health care facilities, adequate antenatal care, regular IFA intake, lower birth order and use of family planning methods can significantly reduce the risk of anaemia in pregnancy.

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