

BURDEN OF ANEMIA AMONG PREGNANT WOMEN IN CORRELATION WITH BIRTH INTERVAL

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ABSTRACT

Background: Anemia reported during pregnancy is a burdensome public health problem all around the world, problem is vast among developing countries. Women during pregnancy are more prone for developing anemia not only because of increased iron demand and its poor bioavailability along with hemodilution physiological increase in plasma volume (physiological increase in plasma volume) which acts synergistically. **Material & Methods:** In the present prospective observational study 400 Pregnant women were enrolled from outdoor, antenatal clinic and from ward by simple random sampling. Clearance from Institutional Ethics Committee was taken before start of study. Written informed consent was taken from each study participant. **Results:** In the present study out of total primigravida 118 (54.6%) had no anemia, 72 (33.3%) females had mild anemia, 26 (12%) females had moderate anemia and there were no cases of severe anemia in this group. Among the group of birth interval of less than two years, there were no cases of no anemia, 42 (45.6%) of pregnant women had mild anemia, 38 (41.4%) of pregnant women had moderate anemia and 12 (13%) of pregnant women had severe anemia. Among the group of birth interval of more than two years, there were no cases of no anemia, 32 (34.8%) of pregnant women had mild anemia, 58 (63.1%) of pregnant women had moderate anemia and 2 (2.2%) of pregnant women had severe anemia. These differences in burden of anemia was statistically highly significant (p value < 0.001). **Conclusions:** The magnitude and burden of anemia is very high and the population living among rural areas were at high risk of developing anemia. We found statistically significant correlation of anemia with birth interval and reported that the burden of severe anemia was higher among pregnant women who had birth interval of less than two years.

Key words: Anemia, Pregnancy, Birth interval.

INTRODUCTION

The word “Anemia” is a Greek word which means an- ‘not’, haima- ‘blood’, refers to ‘no blood’. Anemia itself is not a disease but a precursor and predictive sign of the presence of disease. Anemia reported during pregnancy is a burdensome public health problem all around the world, problem is vast among developing countries. Women during pregnancy are more prone for

developing anemia not only because of increased iron demand and its poor bioavailability along with hemodilution physiological increase in plasma volume (physiological increase in plasma volume) which acts synergistically (1).

Anemia is among the strongest associated factor which decide the fate and outcome of pregnancy. Since anemia is act as silent epidemic, it is as harmful and compelling as infectious diseases epidemics. It was reported that anemia contributes for more than 20% of maternal deaths worldwide (2). Among these maternal deaths more than 50% of the maternal deaths occur among South Asian countries. India contributes for 80% of maternal death occurred among South Asian countries (3). There are several risk factors associated with morbidity and mortality among pregnant women such as postpartum hemorrhage, abortion, , low birth weight baby, still birth, high perinatal mortality, undercurrent infection, infant mortality and maternal mortality.(4)

Regarding this context of combating anaemia during pregnancy, with far reaching benefits in terms of safe motherhood and healthier future generations, an attempt has been made to know the magnitude of anaemia among urban and rural pregnant women along with to study the relationship between anaemia and contributory factor of birth interval to meet the challenge of protecting maternal and neonatal health.

Material & Methods

The present prospective study was conducted at department of obstetrics and gynaecology of Geetanjali Medical college and hospital, Udaipur. The study duration was of one year from June 2015 to July 2016. A sample size of 400 was calculated at 95% confidence interval at 10% acceptable margin of error by epi info software version 7.2. Pregnant women were enrolled from outdoor, antenatal clinic and from ward by simple random sampling. Clearance from Institutional Ethics Committee was taken before start of study. Written informed consent was taken from each study participant.

The data were collected by predesigned, multiple response type of questionnaire from each pregnant

woman (above 18 years of age and beyond 12 weeks of amenorrhea) after taking the written consent. The questionnaire was address on the topics of anaemia and our study variables birth intervals and geographical living areas. Data analysis was carried out using SPSS v22. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05.

RESULT

In the present study, we enrolled 400 pregnant women who were classified in two major groups according to the residential area. Women who had been pregnant first time and were enrolled for the study designated in a group of birth interval zero. We classified other two groups as birth interval less than two years and birth interval of more than two years between two consecutive pregnancies. There were 216 females in the group of birth interval zero, 92 females in the birth interval of less than two years and 92 females in the group of birth interval of more than two years. Among primigravida 118 (54.6%) had no anaemia, 72 (33.3%) females had mild anemia, 26 (12%) females had moderate anemia and there were no cases of severe anemia in this group. Among the group of birth interval of less than two years, there were no cases of no anemia, 42 (45.6%) of pregnant women had mild anemia, 38 (41.4%) of pregnant women had moderate anemia and 12 (13%) of pregnant women had severe anemia. Among the group of birth interval of more than two years, there were no cases of no anemia, 32 (34.8%) of pregnant women had mild anemia, 58 (63.1%) of pregnant women had moderate anemia and 2 (2.2%) of pregnant women had severe anemia. These differences in burden of anemia were statistically highly significant (p value < 0.001). [Table 1]

Table 1: Relationship between birth interval and severity of anaemia

Birth interval (years)	Severity				Total
	No anaemia	Mild anaemia	Moderate anaemia	Severe anaemia	
None	118 (54.6%)	72 (33.3%)	26 (12%)	0 (0%)	216 (100%)
Less than 2	0 (0%)	42 (45.6%)	38 (41.4%)	12 (13%)	92 (100%)
More than 2	0 (0%)	32 (34.8%)	58 (63.1%)	2 (2.2%)	92 (100%)
Total	118 (29.5%)	146 (36.5%)	122 (30.5%)	14 (3.5%)	400 (100%)
	$\chi^2 = 97.434$	df= 6	P< 0.001		

In the present study, among primigravida 118 (54.6%) who had no anaemia 74 were from urban area and 44 from rural area. Among 72 (33.3%) primigravida who had mild anemia 38 were from urban area and 34 from rural area and 26 (12%) primigravida who had moderate anemia 12 were from urban area and 14 from rural area. In the group of birth interval of less than two years, out of 42 (45.6%) of pregnant women who had mild anemia 22 were from urban area and 20 from rural area. Out of 38 (41.4%) of pregnant women who had moderate anemia 10 were from urban area and 28 from rural area.

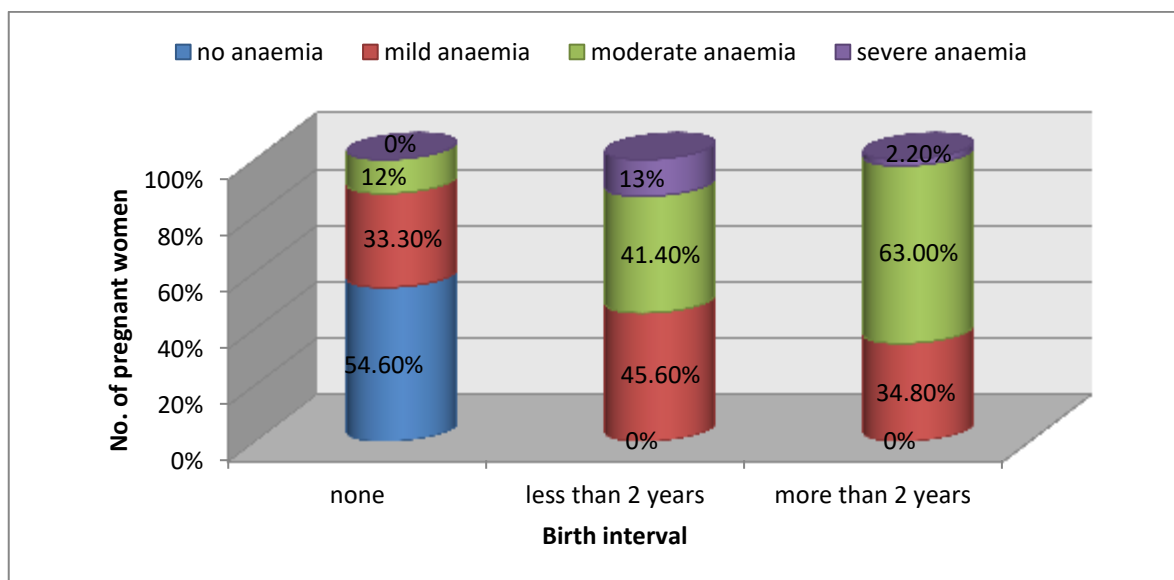
Out of 12 (13%) of pregnant women who had severe anemia were from rural areas. In the group of birth interval of more than two years, out of 32 (34.8%) of pregnant women had mild anemia 10 were from urban area and 22 from rural area. Out of 58 (63.1%) of pregnant women had moderate anemia 32 were from urban area and 26 from rural area. Out of 2 (2.2%) of pregnant women who had severe anemia both were from urban areas. This difference in burden of anemia was statistically highly significant (p value < 0.001). [Table2]

Table 2: Relationship between birth interval and severity of anaemia among urban and rural pregnant women

Birth interval (years)	Severity								Total
	No anaemia		Mild anaemia		Moderate anaemia		Severe anaemia		
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	
None	74	44	38	34	12	14	0	0	216
<2	0	0	22	20	10	28	0	12	92
>2	0	0	10	22	32	26	2	0	92
Total	74	44	70	76	54	68	2	12	400

Urban ($\chi^2 = 41.750, p < 0.001$); Rural ($\chi^2 = 49.458, p < 0.001$)

Fig 1: Relationship between birth interval and severity of anemia



DISCUSSION

The present prospective study was conducted at the field practicing areas under department of obstetrics and gynaecology of our tertiary care hospital. The aim of present study was assessing the magnitude and burden of anaemia along in the correlation to birth intervals among two consecutive pregnancies. In the present study we enrolled 400 pregnant women from different urban and rural areas and further subdivided them into four subgroups of no anemia, mild anemia, moderate anemia and severe anemia.

In the present study the age of enrolled pregnant women was ranged from 19 to 38 years. The mean age of the enrolled pregnant women was 23.88 ± 3.66 years. There were no pregnant women in the present study who aged less than 19 years of age. In the present study the overall burden of anaemia was found to be 69.5% which was comparatively more among rural areas (76%) in comparison to the urban areas (63%) and difference in the burden of anaemia was statically significant ($p < 0.05$). The odds of anaemia were 1.4 times higher among rural areas than urban pregnant mothers. The results of present study were comparable and nearly similar to the results of surveys of India conducted by National Family Health Survey (NFHS-3) and another survey conducted by District Level Household Survey (DLHS-3). (5)(6) The results of present study were comparable and nearly similar to the study conducted by Toral M. Goswami et al among pregnant women in 2014 on anaemia status during pregnancy and effects of anemia on perinatal outcome.(7)

In the present study, there were 216 females in the group of birth interval zero, 92 females in the birth interval of less than two years and 92 females in the group of birth interval of more than two years. Among primigravida 118 (54.6%) had no anaemia, 72 (33.3%) females had mild anemia, 26 (12%) females had moderate anemia and there were no cases of severe anemia in this group. Among the group of birth interval of less than two years, there were no cases of no anemia, 42 (45.6%) of pregnant women had mild anemia, 38 (41.4%) of pregnant women had moderate anemia and 12 (13%) of pregnant women had severe anemia. Among the group of birth interval of more than two years, there were no cases of no anemia, 32

(34.8%) of pregnant women had mild anemia, 58 (63.1%) of pregnant women had moderate anemia and 2 (2.2%) of pregnant women had severe anemia. This difference in burden of anemia was statistically highly significant (p value < 0.001). A study by Abbasi RM et al showed found similar results with anemia and birth interval. (8)

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CONCLUSION

We concluded from the present study that the magnitude and burden of anemia is very high and the population living among rural areas were at high risk of developing anemia. We found statistically significant correlation of anemia with birth interval and reported that the burden of severe anemia was higher among pregnant women who had birth interval of less than two years.

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