

ASSESSMENT OF MAGNITUDE OF ANEMIA AMONG PREGNANT WOMEN VISITING ANC CLINIC AT UHTC AND RHTC OF RUHS MEDICAL COLLEGE, JAIPUR, RAJASTHAN

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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: The present study was conducted at the Department of Community Medicine of our medical college over a duration of six months, from June 2020 to December 2020. A sample size of 400 pregnant women was determined using the Epi Info software version 7.2, with a 95% confidence interval and a 10% acceptable margin of error.

Results: The findings of the present study reveal notable differences in the burden of anemia among pregnant women, categorized based on their primigravida status and birth intervals. Among primigravida, the majority (54.6%) exhibited no anemia, followed by mild (33.3%) and moderate (12%) cases, with no instances of severe anemia observed. Conversely, among women with birth intervals of less than two years, there were no cases of no anemia, with the prevalence of mild, moderate, and severe anemia standing at 45.6%, 41.4%, and 13%, respectively. Similarly, among those with birth intervals of more than two years, no instances of no anemia were reported, with 34.8%, 63.1%, and 2.2% experiencing mild, moderate, and severe anemia, respectively. These variations in the burden of anemia across different groups were found to be statistically highly significant (p value < 0.001).

Conclusions: The study underscores the significant prevalence and impact of anemia, particularly highlighting the elevated risk among rural populations. Moreover, it reveals a noteworthy association between anemia and birth interval, with a higher burden of severe anemia observed among pregnant women with birth intervals of less than two years.

Keywords: Anemia, Pregnancy, ANC.

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Introduction

The prevalence of anemia during pregnancy is a significant global public health concern, particularly in developing countries. This issue is exacerbated by factors such as increased iron demand, poor iron bioavailability, and physiological changes in plasma volume during pregnancy [1]. Anemia is not only a precursor to disease but also a strong determinant of pregnancy outcomes. It is associated with a considerable proportion of maternal deaths worldwide, with a particularly high burden in South Asian countries, including India [2]. Anemia during pregnancy is linked to various adverse outcomes, including postpartum hemorrhage, low birth weight, stillbirth, and maternal mortality [3]. To address this challenge and promote safe motherhood and healthier future generations, it is essential to understand the prevalence of anemia among pregnant women, especially in urban and rural settings. Additionally, studying the relationship between anemia and birth interval can provide insights into protective measures for maternal and neonatal health [4].

In this context, efforts have been made to assess the magnitude of anemia among pregnant women attending antenatal care checkups at urban health training centers (UHTC) and rural health training centers (RHTC) affiliated with our medical college. This research aims to inform strategies for combating anemia during pregnancy and safeguarding the well-being of mothers and newborns.

Material & Methods

The present study was conducted at the Department of Community Medicine of our medical college over a duration of six months, from June 2020 to December 2020. A sample size of 400 pregnant women was determined using the Epi Info software version 7.2, with a 95% confidence interval and a 10% acceptable margin of error.

Pregnant women were enrolled through simple random sampling from outdoor areas, antenatal clinics, and wards. Clearance from the Institutional Ethics Committee was obtained prior to the commencement of the study, and written informed consent was obtained from each participant.

Data were collected using a predesigned questionnaire with multiple response types, administered to pregnant women aged above 18 years and beyond 12 weeks of amenorrhea. The questionnaire addressed topics related to anemia, birth intervals, and geographical living areas.

Data analysis was performed using SPSS v22, with all tests conducted at an alpha level of significance of 5%. A significant association was considered present if the p-value was less than 0.05. This comprehensive approach aimed to gather valuable insights into the prevalence and factors associated with anemia among pregnant women in our study population.

Result

In the present study, we enrolled 400 pregnant women who were classified into two major groups based on their residential area. Women who were pregnant for the first time and enrolled in the study were designated in a group with a birth interval of zero. The other two groups were classified based on the birth interval between consecutive pregnancies: less than two years and more than two years.

Among the primigravida group (birth interval zero), 118 (54.6%) women had no anemia, 72 (33.3%) had mild anemia, and 26 (12%) had moderate anemia. There were no cases of severe anemia in this group. In the group with a birth interval of less than two years, there were no cases of no anemia. Among these pregnant women, 42 (45.6%) had mild anemia, 38 (41.4%) had moderate anemia, and 12 (13%) had severe anemia. In the group with a birth interval of

more than two years, there were no cases of no anemia. Among these pregnant women, 32 (34.8%) had mild anemia, 58 (63.1%)

had moderate anemia, and 2 (2.2%) had severe anemia. [Table 1]

Table 1: Relationship between birth interval and severity of anaemia

Birth interval (years)	Severity				
	No anaemia	Mild anaemia	Moderate anaemia	Severe anaemia	Total
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%) had no anemia, with 74 from urban areas and 44 from rural areas. Among those with mild anemia (72 or 33.3%), 38 were from urban areas and 34 from rural areas. For moderate anemia (26 or 12%), 12 were from urban areas and 14 from rural areas. In the group with a birth interval of less than two years, out of 42 (45.6%) pregnant women with mild anemia, 22 were from urban areas and 20 from rural areas. For moderate anemia (38 or 41.4%), 10 were from urban areas and 28 from rural areas. Among the 12 (13%) pregnant women with severe anemia, all were from

rural areas. In the group with a birth interval of more than two years, out of 32 (34.8%) pregnant women with mild anemia, 10 were from urban areas and 22 from rural areas. For moderate anemia (58 or 63.1%), 32 were from urban areas and 26 from rural areas. Among the 2 (2.2%) pregnant women with severe anemia, both were from urban areas. These differences in the burden of anemia were statistically highly significant (p-value < 0.001), indicating the importance of considering both birth interval and urban/rural residence in assessing anemia among pregnant women. [Table 2]

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

Birth interval (years)	Severity								
	No anaemia		Mild anaemia		Moderate anaemia		Severe anaemia		Total
	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

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

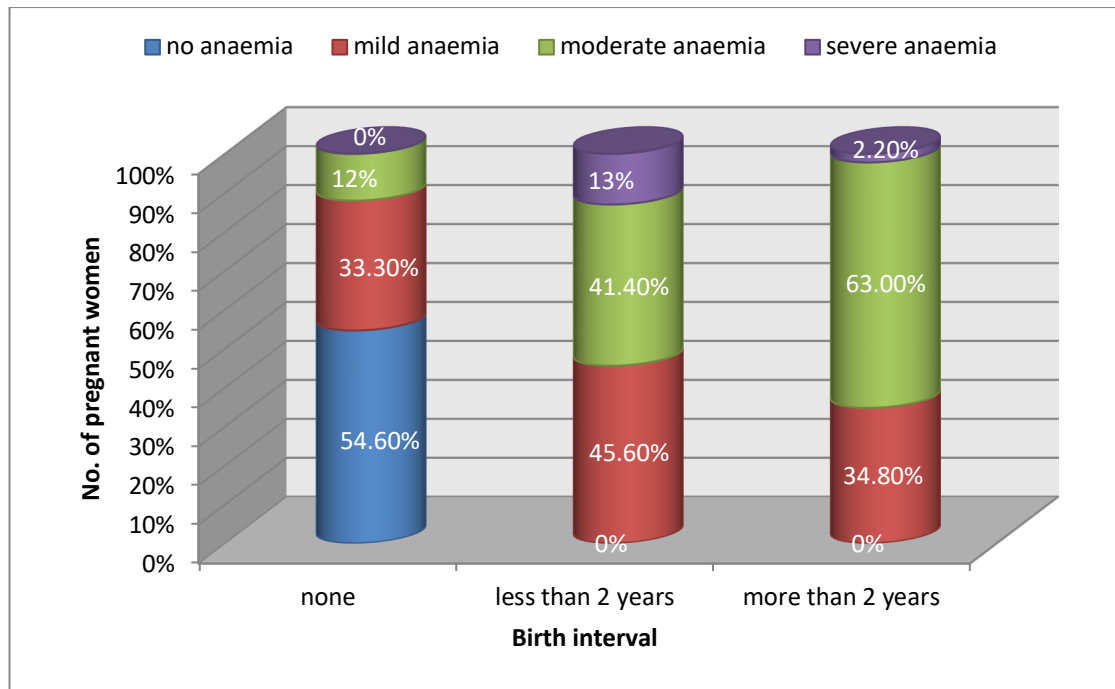


Figure 1: Relationship between birth interval and severity of anemia

Discussion

The present prospective study was conducted at the field practicing areas under department of community medicine of our medical college. 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. These differences 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]

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. These differences in burden of anemia was statistically highly significant (p value < 0.001). Similar results were reported in a study by Vijay Kumar et al on s anaemia in pregnant women and found significant association of anaemia ($p < 0.05$) was found with birth interval. [9]

Conclusion

The conclusion drawn from the present study underscores the significant prevalence and burden of anemia, particularly highlighting the heightened

risk among populations residing in rural areas. Moreover, the study identified a statistically significant correlation between anemia and birth interval, revealing a greater burden of severe anemia among pregnant women with birth intervals of less than two years. These findings emphasize the importance of targeted interventions and healthcare strategies aimed at addressing anemia, especially among vulnerable populations in rural areas, and advocating for appropriate birth spacing to mitigate the risk of severe anemia during pregnancy.

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