Original Research Article

Anaemia Among Pregnant Women: Does The Gestational Age Matter?

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Abstract

Background: Anaemia affects 1.62 billion people globally with about estimated 56 million pregnant women to be anaemic. In India anaemia is widely prevalent in all age groups especially among the most vulnerable groups, the pregnant women. It is a major factor responsible for maternal mortality.

Aims: To estimate the prevalence of anaemia among pregnant women and its association with the gestational age in the urban areas of Uttar Pradesh.

Methods and Material: In this Cross-sectional study, 207 pregnant women were selected through simple random sampling method, interviewed and tested for haemoglobin status. Collected data were analysed by a software statistical package for social sciences (SPSS Version 21.0) & Microsoft Excel 2007.

Results: A high prevalence of anaemia 78.7% was observed. Status of anaemia increases with advancing gestational age.

Conclusion: Anaemia continues to be a major public health problem and the increasing trends indicating the failure of existing approaches to alleviate this burden. Therefore, further improvements are likely to need in the ongoing programmes that address the nutritional determinants of low haemoglobin especially during pregnancy.

Key words: Anaemia, Gestational age, pregnant women.

Introduction

The importance of anaemia as a major public health problem throughout the world is widely recognised. According to World Health Organization (WHO), hemoglobin level below 11 g/dl is labeled as anemia during pregnancy and classified as mild (10.0-10.99 g/dl), moderate (7.0-9.9 g/dl), and severe (less than 7.0 g/dl) anemia. The same criteria are used for diagnosing anaemia in pregnancy [1]. According to WHOM, in developing countries the prevalence of anaemia among the pregnant women averages 56% [2]. whereas in developed regions, it has been reported to be only 18% [3]. Worldwide it is estimated that about 20 percent of maternal deaths are caused by anaemia; in addition Anaemia contributes partly to 50 percent of all maternal deaths [4].

The National Family Health Survey-3 (NFHS-3) data suggests that anaemia is widely prevalent in all age groups and particularly high among the most vulnerable groups, among pregnant women estimated to be around 58 percent [5]. A study carried out among 7 states by Nutrition Foundation of India (2006) had observed the overall prevalence of anemia among pregnant women found to be 84% [6].

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Low haemoglobin concentrations during pregnancy can be associated with an increased risk of maternal and perinatal mortality and low size or weight at birth. [7]. It adversely affects cognitive and motor development and cause fatigue and low productivity [8].

Subsequent to maternal anaemia, babies suffering from anaemia may experience numerous deleterious effects like delay psychomotor development, impaired performance and coordination of language and motor skills as well. These all reduced level of milestones is equivalent to 5-10 points deficit in intelligence quotient[9].Since the mortality ratios associated with maternal and neonatal health are invariably very high in Empowered Action Group (EAG) states including Uttar Pradesh, it has been paid a special attention in our primary health care system. We need to focus the problems in relation to its determinants as well as to improve the general health status of pregnant women in our community. We need to improve general health status of women not only at ante-natal, intra-natal and post-natal period but also the general health status of pre-conceptional stage and even more preferably to pre-marital stage. There should be an appropriate implementation and creating awareness regarding ongoing strategies like National Nutritional Anaemia Prophylaxis Programme (NNAPP) and recently developed Community Obstetrics which combines the obstetrical concerns with the concept of primary health care[10].

Material and methodology

The present cross sectional study was conducted among pregnant women belonging to urban field practice areas,

department of Community Medicine, Rama Medical College and Research Centre, Kanpur from April 2013 to March 2014. After the pilot study in the urban field practice areas, 17 pregnant women were found to be anaemic among 20, and thus 85% prevalence was estimated. The sample size was calculated using the following formula: **(4pq) /L2, where**, p represents the prevalence i.e., 85%, q = 100 – p = 100-85= 15, L is the allowable error (considered as 6% of the prevalence).

(4x85x15)/(85x6/100) 2 = 200. This 200 is considered as mimimum sample size in the study population. In the actual study, 207 pregnant women were selected. The pregnant women were interviewed using pre structured, pretested interview schedule after taking their consent. A detailed demographic profile, obstetric and medical histories were collected. After thorough clinical examination, hemoglobin estimation was done by Sahli's acid haematin method on the spot.

Anemia was classified as per WHO criteria. Hemoglobin below 11 g/dl is labeled as anemia during Pregnancy. Severely anemic pregnant women were referred to Rama Medical College Hospital, Mandhana, Kanpur for further management. The collected data was compiled and tabulated using Microsoft Excel 2007 and then analyzed using SPSS Version 21.0. Group comparisons were done by Chi-square test. P-value less than 0.05 were considered significant. Ethical approval for the study was obtained from the ethical committee at Rama Medical College, Kanpur.

Table 1: Distribution of anaemic pregnant women

Anaemia	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**	**Prevalence**
Yes	163	78.7	78.7	78.7	787 / 1000
No	44	21.3	21.3	100.0	
Total	207	100.0	100.0		

Table 2: Distribution of anaemic pregnant women according to gestational age of the current pregnancy (weeks)
P- value: 0.000; Chi-Square: 75.2; 95% CI: 1.73 ± 0.062

Gestational age of the current pregnancy (wks)	**Presence of anaemia**		**Total**	**Prevalence**
	Yes	**No**		
Up to 12	12	21	33	6 %
	36.4%	63.6%	100.0%	
13 to less than 28	29	7	36	14 %
	80.6%	19.4%	100.0%	
28 to less than 37	70	8	78	34%
	89.7%	10.3%	100.0%	
37 to less than 42	50	8	58	24 %
	86.2%	13.8%	100.0%	
42 or more	2	0	2	0.9 %
	100.0%	0.0%	100.0%	
Total	163	44	207	
	78.7%	21.3%	100.0%	

Results

Among 207 selected subjects, 163 pregnant women were found to be anaemic. The overall prevalence of anaemia among the study subjects were 787 per thousand (Table: 1). from the total 207 selected

Pregnant mothers, 58 (28%), 90(43.4%), 15 (7.2%) were with mild, moderate and severe anaemia, respectively (Table: 2).

About 30% pregnant women having gestational age upto 12 weeks are found to be anaemic which all are mildly anaemic. Those who belong to 13 to 28 weeks of pregnancy, around 80% of them have been found to be anaemic which are only mildly anaemic. Around 90% respondents having the gestational age of 37 to 42 weeks have shown their anaemic status in which moderately anaemic cases are more than mild one.

Discussion

Anaemia is one of the most common outcome of multifactorial aetiologies like nutritional deficiency, chronic infections, inflammations etc. This study revealed the overall prevalence of anaemia among pregnant women as 78.7%.(Table: 1) This result is

found to be less than that of prevalence of anaemia during pregnancy in India, as per data of DLHS-3, (District Level Household Survey-3), 2005, which had been estimated as 87% [11]. This high prevalence of anaemia is observed as similar to the earlier studies by Khan et- al at rural communities attached with RHTC, Rama Medical College, Ghaziabad (January 2014) (80%) [12,13] by Piyush et-al (Jan – Mar 2014) at Index Medical College, Hospital (62.7%) [14], by Singh et al (2009) at Deharadun (65.5%)[15]. "Indian Council of Medical Research (ICMR) Task Force Multicenter Study" revealed that the overall prevalence of anaemia among pregnant women from 16 districts was 84.9% [16]. Majority of the antenatal women were moderately anaemic (44%) , similar to earlier studies [12,13].

Regarding gestational age of the current pregnancy, about 30% pregnant mothers having first trimester gestational age are found to be anaemic which all are mildly anaemic. Those who belong to 13 to 28 weeks of pregnancy, around 80% of them have been found to be anaemic which are only mildly anaemic. Around 90% respondents having the gestational age of 37 to 42 weeks have shown their anaemic status in which moderately anaemic cases are more than mild one. Thus it has been concluded by this study that with the advancement of gestational age, the prevalence of anaemia increases. P- value: 0.000; Chi-Square: 75.2; 95% CI: 1.73 ± 0.062.

Consistent with other studies, anemia was more prevalent and more severe late in pregnancy [17]. reflecting a deterioration of the anemia as pregnancy advances, and in the absence of treatment. In addition, in developing countries, anemia is common even among non-pregnant women, and anemia develops rapidly because in most cases iron stores are depleted even before the pregnancy starts [18].

Conclusion

Reduction of anemia is an important component of women's health. Gestational age is the selected determinant that significantly contributing to the burden of anemia according to this study. Anemia continues to be an endemic problem of large magnitude and the increasing trends in several developing countries point to the failures of existing approaches to alleviate this burden. Therefore, further improvements are likely to need a combination of programmes that address the nutritional determinants of low haemoglobine especially during pregnancy. Addressing the challenge of anaemia will necessitate a holistic response to the determinants of anaemia, together with consideration of the intergenerational aspects. Identification of the local determinants of anaemia and improvement of the implementation of contextually appropriate strategies will be crucial for progress in this important global health issue. Finally, our study focused on national-level patterns of haemoglobin and anaemia; it would be likely to be more helpful to have information about nutritional indicators.

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Conflicts of interest

There are no conflicts of interest.

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