

HAEMOGLOBIN STATUS OF PREGNANT WOMEN AN ANALYSIS OF 1804 CASES

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Abstract

Introduction: Anaemia is a very common finding in Bangladeshi women. This is more common in pregnant women. Timely meet up of nutritional need successfully prevents the development of anaemia during pregnancy.

Method: A cross-sectional and multi-centre study was carried out among 1804 pregnant cases at Child Welfare Centre (CWC) of Combined Military Hospitals (CMH) of Comilla, Savar and Bogra cantonments over a period of 19 months. Irrespective of ages all pregnant women who attended CWCs for routine ante-natal check up and whose blood haemoglobin level was known at the time of first visit were included in this study. Pregnant women with diabetes mellitus, hypertension and any congenital haemoglobin disorders were excluded from this study.

Objectives: The aim of the study was to find out the haemoglobin levels in pregnant women in defence community from different parts of Bangladesh.

Result: Total 1804 women were included as per inclusion criteria. Their mean (\pm SD) age was 28.1 \pm 13 years and the range was 19-41 years. Haemoglobin level during pregnancy was estimated and 229 (12.7%) of the pregnant women were observed anaemic. Most of the women had reported in the third trimester (40.8%) followed by second trimester (33.4%) and then first trimester (25.8%). Iron supplement was given to both normal and anaemic pregnant women.

Conclusion: The study showed that prevalence and severity of anaemia in pregnant subjects attended CWCs for antenatal check up were exceptionally low. This indicates that consciousness regarding taking care of pregnant women of the community studied was satisfactory.

Keyword: Anaemia, pregnancy, defence community

Introduction

Anaemia is present when the haemoglobin (Hb) level in the blood is below the lower extreme of the normal range for the age and sex of the individual. Lower limit of normality is reduced during pregnancy¹. Arbitrary grading of pathological anaemia is made according to the level of haemoglobin and labeled as mild when the level

is between 8 and 10 gm/dl, moderate if that is between 7 gm/dl and 8 gm/dl and severe if less than 7 gm/dl.²

In the majority of pregnant women, the anaemia is due to decreased intake or supply of nutrients needed for haemoglobin synthesis. Numerous studies from the developing countries have shown that anaemia especially the iron deficiency anaemia was highly prevalent in the pregnant women³. In Bangladesh it was observed in a study that about 40% of the pregnant women were anaemic⁴. Maternal anaemia during pregnancy is one of the underlying causes of maternal mortality⁵ and perinatal mortality as well as complications to the fetus including increased risk of premature delivery and low birth weight⁶. There is evidence that iron deficiency during pregnancy reduces fetal iron stores, which may lead to iron deficiency and may adversely affect infant development⁷.

The aim of this study was to find out the haemoglobin levels in pregnant women in defence community from different parts of Bangladesh.

Materials and Methods

This cross-sectional multi-centre study was carried out in Child Welfare Centre (CWCs) of Comilla, Savar and Bogra CMHs. Data were collected from antenatal clinics during the period from November, 2009 to June, 2011. Collected data included age of the patients, period of pregnancy and haemoglobin level of the patients.

Irrespective of age all pregnant women who attended CWCs for routine ante-natal check up and whose Hb level was known at the time of first visit were included in this study. Age of the patient, period of pregnancy and Hb level were collected from antenatal card which were provided during their visit. Full term pregnant patients who presented first time with labour pain were also included in this study and haemoglobin level was measured from pre-delivery samples. Pregnant women with diabetes mellitus, hypertension and any congenital haemoglobin disorders were excluded from this study.

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All the collected raw data were organized into tabulated form. All the continuous data were expressed as mean±SD and categorical data in percentage (%) and frequency (f).

Result

The mean (±SD) age of the patients was 28±13 years and the range was between 19 to 41 years. Data of a total of 1993 pregnant women during ante-natal period was taken from CWC of CMH Comilla, Savar and Bogra, out of which 1804 women were included as per inclusion criteria. Most of the women (73%) were from the age group of 20 to 31 years. Haemoglobin level during pregnancy was estimated and 229 (12.7%) of the pregnant women were observed anaemic. Anaemic pregnant women were divided into three groups such as mild, moderate and severe. Most of the women under study had normal Hb level. Table I shows the pattern of Hb level in three CMHs. Most of the women had reported in the third trimester (40.8%) followed by second trimester (33.4%) and first trimester (25.8%). Frequency of anaemic women was more (46.7%) in first trimester (Table II). Table III shows the degree of anaemia in different trimester Iron supplement was given both normal and anaemic pregnant women. Table IV shows the distribution of iron supplements.

Table-I: Haemoglobin levels in pregnant women at different CWC (n=1804)

Haemoglobin level (gm/dl)	CMH Comilla f (%)	CMH Savar f (%)	CMH Bogra f (%)	Total f (%)
< 7	04 (0.60)	05 (0.95)	05 (0.84)	14 (0.78)
7.0 to 8.9	22 (3.20)	19 (3.60)	30 (5.04)	71 (3.90)
9.0 to 10.0	43 (6.26)	38 (7.26)	63 (10.6)	144 (8.00)
> 10.0	617 (89.9)	461 (88.10)	497 (83.5)	1575 (87.30)
Total	686 (38.03)	523 (28.99)	595 (32.98)	1804 (100)

Table-II: Distribution of pregnant women as per trimester (n=1804)

Centre	First Trimester f (%)	Second Trimester f (%)	Third Trimester f (%)	Total f (%)
CMH Comilla	55 (22.5)	228 (33.2)	303 (44.1)	686 (38.0)
CMH Savar	147 (28.1)	167 (31.9)	209 (39.96)	523 (29.0)
CMH Bogra	164 (27.6)	207 (34.8)	224 (37.6)	595 (33.0)
Total	466 (25.8)	602 (33.4)	736 (40.8)	1804 (100)

Table-III: Distribution of haemoglobin level in pregnant anaemic women at different trimester (n=229)

Haemoglobin level (gm/dl)	First Trimester f (%)	Second Trimester f (%)	Third Trimester f (%)	Total f (%)
<7	03 (02.8)	05 (07.8)	06 (10.3)	14 (06.1)
7.0-8.9	11 (10.3)	23 (35.9)	37 (63.8)	71 (31.0)
9.0-10	93 (86.9)	36 (56.2)	15 (25.8)	144 (62.8)
Total	107 (46.7)	64 (27.9)	58 (25.3)	229 (100)

Table-IV: Iron supplement prescribed to pregnant women

Supplements Given	Hb <10gm/dl f (%)	Hb >10gm/dl f (%)	Total f (%)
No	28 (12.2)	54 (3.4)	82 (4.55)
Yes	201 (87.8)	1512 (96.6)	1722 (95.45)
Total	229 (100)	1575 (100)	1804 (100)

Discussion

Anaemia during pregnancy, particularly iron deficiency anaemia, continues to be a world-wide concern. It is recognized as the world's most prevalent nutritional disorder, affecting more than 2 billion people in both developed and developing countries. Pregnant women are particularly at risk of developing Iron Deficiency Anaemia (IDA) with a highest prevalence in South-East Asia⁸. United Nation (UN) has reported that 56% of pregnant women in low income countries were suffering from anaemia, in contrast to 18% in high-income countries⁹. Researchers from various developing countries have shown a prevalence of anaemia in pregnancy of 19 to 50%¹⁰. Compared to these reports, the haemoglobin levels in this study is far better. This finding may be because of regular antenatal check-up, intake of balanced diet and overall improvement of health care in the studied community.

The present study showed that, less than 13% (229 patients) of women had anaemia. Among 229 anaemic patients only 14 (6.1%) patients had severe anaemia. Most of them reported late from remote areas and they were not under proper antenatal check up. Moreover, they were under nourished and didn't take haematenics during pregnancy. It should be emphasized that cut-off values for anaemia during pregnancy for Western population may not be true for Asian population¹¹. In accordance with the definition of World Health Organization (WHO) anaemia was labeled when the pregnant women had a haemoglobin level of <11 gm/dl¹². In this study cut-off value of Hb for pregnant women was taken as 10 gm/dl².

In this study it was observed that mild anaemia was more prevalent in first trimester and greater number of pregnant women was found to have moderate anemia in second and third trimester. This is probably due to increasing requirement of the iron as the pregnancy progresses coupled with the exhaustion of iron stores in most women in the second and third trimester¹³. It was observed that among the anaemic patients those who could not receive iron supplements, were mostly irregular or reported late to CWCs. Routine iron prophylaxis is commonly recommended for pregnant women. Initiation of supplementation before conception is needed to reduce anaemia during early pregnancy¹⁴. But it should be considered that routine iron

supplementation to non-anaemic pregnant women is associated with adverse maternal and fetal outcomes¹⁵. It was noted that pregnant women were prescribed iron habitually as a matter of routine practice but not on the basis of deficiency of iron.

Conclusion

Prevalence and severity of anaemia in pregnant subjects attending CWC for antenatal check up are exceptionally low in the studied community. Current findings highlight that due to availability of antenatal services, careful check up, better education background of pregnant women, sufficient intake of iron, folate supplements and adequate nutrition anaemic status of the pregnant woman was significantly low in this study.

References

1. Firkin F, Chesterman C, Penington D, Rush B. de Gruchy's Clinical Haematology in Medical Practice. 5th ed. Oxford : Blackwell Publishers; 1991.p.24.
2. Dutta DC. Textbook of Obstetric. 6th ed. Calcutta : Hiralal Konar; 2006.p.262.
3. Toteja GS, Singh P, Dhillon BS, et al. Prevalence of anemia among pregnant women and adolescent girls in 16 districts of India. Food Nutr Bull 2006; 27:311-315.
4. Ahmed F, Mahmuda I, Sattar A, Akhtaruzzaman M. Anaemia and vitamin A deficiency in poor urban pregnant women of Bangladesh. Asia Pacific Journal of Clinical Nutrition 2003; 12:460-466.
5. Brabin BJ, Hakimi M, Pelletier D. An analysis of anaemia and pregnancy related maternal mortality. J Nutr 2001; 131: 604S-615S.
6. Chang SC, O'Brien KO, Nathanson MS, Mancini J, Witter FR. Hemoglobin concentrations influence birth outcomes in pregnant African-American adolescents. J Nutr 2003; 133:2348-2355.
7. Allen LH. Anaemia and iron deficiency: effects on pregnancy outcome. Am J Clin Nutr 2000; 71(suppl): 1280S-1284S.
8. World Health Organization. Nutrition for health and development. A Global agenda for combating malnutrition. WHO/NHD/2000.6, Geneva: WHO. 2000.
9. United Nations Administrative Committee on Coordination, Subcommittee on Nutrition (ACC/SCN). Fourth Report on the World Nutrition Situation: Nutrition throughout the Life Cycle. Geneva: ACC/SCN in collaboration with International Food Policy Research Institute; 2000.
10. Hyder SMZ, Persson LA, Chowdhury M, Lo'nnerdal B, Ekstro EC. Anaemia and iron deficiency during pregnancy in rural Bangladesh. Public Health Nutrition 2004; 7:1065-1070.
11. Micozzi M. On definition of anemia in pregnancy. American Journal of Public Health 1978; 68:907-908.
12. Beutler E, Waalen J. The definition of anemia: what is the lower limit of normal of the blood hemoglobin concentration? Blood 2006; 107:1747-1750.
13. Barrett JF, Whittaker PG, Williams JG, Lind T. Absorption of non-haem iron from food during normal pregnancy. Br Med J 1994; 309:79-82.
14. Khamalia AZ, O'Connor DL, Macarthur C, Dupuis A, Zlotkin SH. Periconceptional iron supplementation does not reduce anemia or improve iron status among pregnant women in rural Bangladesh. Department of Nutritional Sciences, University of Toronto, Toronto, Canada. Am J Clin Nutr 2009 Nov; 90(5):1295-302.
15. Ziaei S, Norrozi M, Faghihzadeh S, Jafarbegloo E. A randomized placebo-controlled trial to determine the effect of iron supplementation on pregnancy outcome in pregnant women with haemoglobin > or = 13.2 g/dl. British Journal of Obstetrics and Gynaecology 2007; 114:684-688.