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Analysis of various etiological factors and types of Anaemia which requires blood transfusion in third trimester pregnancy in Kilpauk medical College, Chennai

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Abstract
Anaemia is the most common haematological disorder in pregnancy. It is a major public health problem in developing countries. According to WHO, 2 billion people are anaemic all over the world. Among them, 50% are due to iron deficiency. Iron deficiency can occur at any stage of life. Iron-deficiency anemia affects the motor and cognitive development, causes fatigue and low productivity in young adults. If there are reduced iron stores in childhood can cause impaired immunity and delayed monarchy. Anaemia in adolescent girls may lead to increased maternal mortality in later life.
Aim and Objectives: To determine the prevalence and associated factors of anaemia among pregnant women attending antenatal clinic at Kilpauk Medical College To do an early intervention in the first and second trimester by evaluating risk factors. To reduce the incidence of blood transfusion in the third trimester by evaluating the risk factors.
Material and Methods
Study Design: Cross-sectional study
Study Period: February 2018 to January 2019
Sample Size: 150 anaemic women
Study Area: Government Kilpauk Medical College
Study Population: Antenatal mothers with gestational age more than 28 weeks undergoing blood transfusion in Government Kilpauk Medical College, Chennai.
Results and Conclusion: From this study, we have found that there is a correlation between the number of antenatal visits and anaemia. If the antenatal visits are more than the ideal visits, severity of anaemia is reduced as they are constantly encouraged and monitored for supplemental iron tablet, parenteral iron therapy, and deworming.
Another factor is that acute blood loss leads to anaemia and they should be managed by obstetric haemorrhage protocol. Anaemiais one of the associated factors of chronic diseases like renal insufficiency and such patients should be managed by proper iron supplementation and dietary iron.
Hence by reducing these risk factors we can prevent anaemia thus reducing maternal mortality and morbidity.

Keywords: etiological factors, types of anaemia& blood transfusion

Introduction
Anaemia is the most common haematological disorder in pregnancy. It is a major public health problem in developing countries. According to WHO, 2 billion people are anaemic all over the world. Among them, 50% are due to iron deficiency. Iron deficiency can occur at any stage of life. Some critical stages of life include antenatal period, first five years of life and adolescence. The majority of anaemia in pregnancy is due to iron, folate and vitamin B12 deficiency. Less comm. only it could be a consequence of hemoglobinopathies such as thalassemia and sickle cell anaemia. It could also be due to autoimmune hemolytic anaemia or aplitic anaemia. Sometimes anaemia can be associated with systemic diseases such as chronic infections, rheumatoid arthritis, human immunodeficiency virus (HIV), and renalfailure.
Another haematological disorder encountered in pregnancy is thrombocytopenia. It can be gestational thrombocytopenia, immune thrombocytopenia or as a result of complications of pregnancy. Anaemia is one of the most prevalent problems involving nutritional deficiency in pregnancy. Maternal anaemia results in significant perinatal mortality and morbidity.

Anaemia affects nearly 50% of pregnant women globally. According to Global prevalence of anaemia report 2011 prevalence of anaemia is 29% globally. The prevalence in America is 16.5%, European regions are 22.5%, South East Asian regions are 41.5% and in the Eastern Mediterranean region is 37.7%. The situation is even more serious in developing countries like India. The prevalence of anaemia in Indian mothers is between 80% and 90%.The prevalence of anaemia among teenage girls is 45%.The recent NHFS III (National Health Family Survey) by the International Institute of Population Sciences, India says that adolescence in girls goes in parallel with anaemia in India. The percentage of children with anaemia has increased from 74.3% in NHFS II to 78.9% in NHFS III. In India, early marriage of girls and becoming pregnant earlier adds to the damage. In India every second woman is anaemic and one in every 5 maternal death is directly due to anaemia.

Though the National Nutritional Anemia Prophylaxis Programme (NNAPP) had been started in1993 had been started in 1973, during the fourth five-year plan to reduce the prevalence of anaemia to 25%, the latest statistics show a rising trend of anaemia which is a great concern. Iron deficiency anaemia has been ranked as the third leading cause of disability-adjusted life years (DALYs) for females 15 to 44 years of age according to WHO. In developing countries like India, 18% of maternal death was due to anaemia. By considering all these facts the UNDP (United Nations Development Programme has adopted decreasing the maternal mortality as one of the three health-related goals. Reducing the maternal mortality has been placed as Goal No5 in the Millennium Development Goals by end of 2015 prevalence of Anemia is an important health indicator as it affects the most vulnerable group of people, the children and pregnant women. The two most common causes of anaemia in pregnancy are nutritional factors and blood loss in delivery. Nowadays attention has been focused on postpartum anaemia. Postpartum anaemia has little recognition from health care settings. Recent Studies from CMC & H has enlightened this issue.

Women of reproductive age group are more vulnerable to be anaemic due to menstruation, increased demand in pregnancy, and repeated conceptions with other social and cultural factors add to the disease. Anaemia, hypertension and sepsis from a deadly triad leading to maternal mortality In India even in tertiary care centres. Anaemia causes 20% direct maternal mortality and 20% indirect maternal mortality. India occupies only 16% of world surface area but contributes to 20% of maternal mortality. Anaemia can occur due to various reasons, out of which the major cause is iron deficiency. The relative proportion of causes differs between various papulation and geographical regions according to the prevalence conditions there. Adolescent girls need extra iron requirement for compensating the iron loss due to menstruation in addition to physical growth. As adolescent girls are the future mothers we have to provide extra irons supplement to them.

Iron-deficiency Anaemia affects the motor and cognitive development, causes fatigue and low productivity in young adults. If there arereduced iron stores in childhood can cause impaired immunity and delayed monarchy. Anaemia in adolescent girls may lead to increased maternal mortality in later life. Also if may lead to low birth weight babies increased perinatal mortality and morbidity. It can harm babies ‘ironstatus.

In developing countries, 3 million death are due to maternal and neonatal mortality that contribute to global mortality. Iron-deficiency Anemia alone is responsible for 9000 death among both male and female.

Economic Burden

Anaemia causes one million death each year out of which three-fourth occur in Africa and Southeast Asia region. In India Anemia causes 50% maternal death. Iron-deficiency Anemia leads to 25 million causes of Disability Adjusted Life Years (DALY). It accounts for 2.4% of the total DALYs worldwide. Iron-deficiency Anemia is the third leading cause for DALYs according to WHO and World Bank. Impaired physical growth and cognitive losses caused by iron deficiency Anemia comprise up to 4.5% loss in GDP each year.

Aims and Objectives

- To determine the prevalence and associated factors of anaemia among pregnant women attending antenatal clinic at Kilpauk Medical College.
- To do an early intervention in the first and second trimester by evaluating risk factors.
- To reduce the incidence of blood transfusion in the third trimester by evaluating the risk factors.

Material and Methods

Study design: Cross-sectional study
Study period: February 2018 to January 2019
Study area: Government Kilpauk Medical College

Study Population

Antenatal mothers with gestational age more than 28 weeks undergoing blood transfusion in Government Kilpauk Medical College, Chennai.

Inclusion Criteria

Antenatal mothers with gestational age more than 28 weeks presenting with anaemia

Exclusion Criteria

Antenatal mothers less than 28 weeks gestation
Antenatal mothers with mild and moderate anaemia more than 28 weeks gestation

Results and Discussion

Table 1: Age Group vs Anaemia

Age Group	Anaemia		
	5-6.9	<5	Total
<=20	8	0	8
21-25	71	0	71
26-30	41	30	71
Total	120	30	150
Chi square = 41.725, p= 0.000			

In this study, we compared the age group and anaemia, and it is more than 50% are in the age group till 25. Statistically significant

Table 2: BMI Group vs Anaemia

BMI Group	Anaemia		
	5-6.9	<5	Total
<25	32	0	32
25-30	80	30	110
>30	8	0	8
Total	120	30	150
Chi square= 13.636, p= 0.001			

The above table shows that there exists statistical significance between different Anemic patients and different BMI Group.

Table 3: Ironsucrose Administration in Previous Trimesters Vs Anaemia

Iron Sucrose	Anaemia		
	5-6.9	<5	Total
No	104	25	129
Yes	16	5	21
Total	120	30	150
Chi square= 0.221, p=0.638			

The above table shows that there exists no statistical significance between different Anemic patients with iron sucrose given or not.

Table 4: Postnatal Iron Tablet Intake vs Anaemia

PN-Iron Taken	Anaemia		
	5-6.9	<5	Total
No	87	20	107
Yes	33	10	43
Total	120	30	150
Chi square= 0.399, p= 0.002			

The above table shows that there exists statistical significance between different Anemic patients with iron tablets given postnataly or not.

Table 5: Birth Spacing less than 2 Years Vs Anaemia (Gravida 2 & Above N=136)

Birth Spacing	Anaemia		
	5-6.9	<5	Total
Spacing 1 year	20	13	33
Spacing 2 year	67	10	77
Spacing 3 year	19	7	26
Total	106	30	136
Chi square = 9.811, p = 0.007			

The above table shows that there exists statistical significance between different Anemic patients and different BMI Group.

Table 6: Obstetric Haemorrhage vs Anemia

Obst. Haemorrhage	Anaemia		
	5-6.9	<5	Total
No	103	24	127
Yes	17	6	23
Total	120	30	150
Chi square= 0.629, p= 0.428			

The above table shows that there exists statistical significance between different Anemic patients with Obstetric Haemorrhage is or not.

Discussion

In this study, we compared the age group and anaemia, and it is more common in teenage. We also compared the socio-economic classes and anaemia and there exists a statistical significance between haemoglobin< 5 gm and haemoglobin 5 to 6.9 gm with anaemia. All anaemia with Hb less than 5 gram were in socio-economic class5.We also compared the BMI group and anaemia and was found to have statistical significance between haemoglobin <5 gm and haemoglobin 5 to 6.9 gm concerning different BMI distribution. All anaemic patients with Hbless than 5 gm were in BMI group 25 to30. Then we compared the gravida and anaemia, there exists a non-significant statistics between Hb% <5 and Hb% 5-6.9 concerning different Gravida. 60% anaemia <5 were third Gravida. When we compared iron sucrose administration in previous trimesters with anaemia there exists a non-significant statistics between Hb% <5 and Hb% 5-6.9 concerning iron sucrose administration. When we compared postnatal iron tablets intake with anaemia there exists a statistical significance between Hb% <5 and Hb% 5-6.9 concerningpost-nataliron intake.

When we compared birth spacing with anaemia there exists a statistical significance between Hb% <5 and Hb% 5-6.9 concerning birth spacing. When we compared GHT patients with anaemia there exists a non-significant statistics between Hb% <5 and Hb% 5-6.9 concerning different GHTN patients distribution. When we compared GDM patients with anaemia there exists a non-significant statistics between Hb% <5 and Hb% 5-6.9 concerning different GDM patients distribution. There exists an equal percentage of patients of anaemia with and without GDM.

We compared obstetric haemorrhage with anaemic patients there exists a non-significant statistics between Hb% <5 and Hb% 5-6.9 concerning different obstetric haemorrhage patients distribution. We compared the total number of antenatal visits with anaemia there exists a statistical significance between Hb% <5 and Hb% 5-6.9 concerningthe total number of antenatal visits. 50% of patients with haemoglobin less than 5 gm had only one antenatal visit. While comparing deworming with anaemia there exists a non-significant statistics between Hb% <5 and Hb% 5-6.9 for deworming.

We compared iron tablet intake with anaemia there exists a statistical significance between Hb% <5 and Hb% 5-6.9 for tablet intake. 96.7% anaemia with Hb< 5 gm had no intake of tablets. We compared acute blood loss with anaemia there exists a statistical significance between Hb% <5 and Hb% 5-6.9 concerning acute blood loss. 93.3% of patients with haemoglobin less than 5 gm are without acute bloodloss. We compared infections like Malaria and HIV with anaemia there exists a statistical significance between Hb% <5 and Hb% 5-6.9 concerning infections. 73.3% of patients with haemoglobin less than 5 gm do not have coexisting infections. We compared chronic diseases like renal insufficiency with anaemia there exists a statistical significance between Hb% <5 and Hb% 5-6.9 concerning chronic diseases.

Conclusion

In this study, it evaluated the risk factors of anaemia by a proper history and who have gone for severe anaemia and needed a blood transfusion. According to my study, have found that anaemia is more common in the adolescent age group. Sexual education regarding the prevention of adolescent pregnancy and improvement of the nutritional status should be given by the school and adolescent health programmes like risk (Rashtriya Bal swasthyakaryakram) and risk (Rashtriya Kishore swasthyakaryakram). Teenage pregnancies are more common in India and the prevalence of anaemia in that age group is high. So these mothers have to be encouraged to postpone their first pregnancy by temporary contraceptive measures. Teenage mothers are encouraged to have institutional delivery and they must be referred to tertiary centres in their first visit. Though the government encourages postnatal iron therapy for atleast six months, every mother should be followed properly by village health nurses. Every postnatal mother before discharge from the hospital have to be given any of the contraceptive measures like PPIUCD, chaya, Antaraby increasing the birth spacing between

pregnancies enables the mother to replenish her iron stores. From the study, have found that there is a correlation between the number of antenatal visits and anaemia. If the antenatal visits are more than the ideal visits, the severity of referredis reduced as they are constantly encouraged and monitored for supplemental iron tablet, parenteral iron therapy, and deworming. Another factor is that acute blood loss leads to anaemia and they should be managed by obstetric haemorrhage protocol. Anaemiais one of the associated factors of chronic diseases like renal insufficiency and such patients should be managed by proper iron supplementation and dietaryiron. Hence by reducing these risk factors we can prevent anaemia thus reducing maternal mortality and morbidity.

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