International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2019): 7.583

Study of Prevalence of Anemia among Pregnant Women Attending Antenatal Clinic in a Tertiary Hospital, Salem, Tamilnadu, India

Manimegalai Rasappan[1], Suganthi Rangasamy[2], Shanmugavadivu Lakshmana Kumarasamy[3]

[1]Associate Professor, Department of Obstetrics and Gynaecology, Government Mohankumaramangalam Medical College Hospital, Salem, Tamilnadu, India
[*]Correspondence Email: *rsuganthi2004[at]yahoo.co.in*

[2]Assistant Professor, Department of Obstetrics and Gynaecology, Government Mohankumaramangalam Medical College Hospital, Salem, Tamilnadu, India

[3]Associate Professor, Department of Obstetrics and Gynaecology, Government Mohankumaramangalam Medical College Hospital, Salem, Tamilnadu, India

Abstract: ***Background: Anaemia is one of the most frequent complication in pregnancy. It requires treatment early because it is associated with low birth weight, premature birth and maternal mortality in developing countries like India. The objective of this study was to evaluate the prevalence of anemia among women attending antenatal clinic in tertiary hospital Salem, India. Method: It is a hospital based cross sectional study conducted at the outpatient department of Obstetrics and Gynaecology at Government Mohan Kumaramangalam Medical College Hospital, Salem, Tamilnadu, India for a period of 1year from April 2019 to March2020. A total of 21,473 cases were studied and screened. Prevalence of anemia was calculated. Anemia was classified morphologically based on peripheral smear findings and classified as microcytic hypochromic, macrocytic, dimorphic anemia, normocytic normochromic anemia. Based on haemoglobin values anemia was classified as mild, moderate and severe anemia. Results: Prevalence of anemia in pregnancy in Tamilnadu was 70% . Age wise, majority of the patients were between 21 to25years. Gravida more than 2 were more when compared to lower parity. Morphologically microcytic hypochromic type i.e. iron deficiency anemia was the most common. Conclusion: Anemia in pregnancy in Tamilnadu is quite high and was found to be 70% in routine antenatal outpatient cases. Multiple pregnancies and low level of education indirectly contribute to anemia of pregnancy. Education and awareness about anemia in pregnancy can lead to better fetal and maternal outcomes.***

Keywords: anemia in pregnancy, education, haemoglobin

1. Introduction

Anemia has major health problem in developing countries[1,2], where WHO estimated the prevalence of anemia in pregnancy as 14% in developed countries, as 51% in developing countries, 65-75% in India[3]. The NFHS-4 data showed the prevalence of anemia among pregnant women in age group of 15-49yrs is quite high as 60.2%[4]. Anemia in pregancy has adverse effects in the form of abortion, premature birth, fetal growth restriction, high infant mortality rate, low birth weight all of which leads to inevitable poor growth in infancy, childhood also in adolescence leading to low adult weight. Maternal morbidity was found to be higher in women with haemoglobin below 8g/dl[5]. Anemia as it directly contributes to 20% maternal mortality in India and indirectly accounts for another 20% maternal mortality[6].

India becomes the first developing country in the world to implement NNAPP (National Nutritional Anemia Prophylaxsis Programmme) in 1970 to reduce prevalence of anemia. It was initiated in the fourth five year plan. However, the prevalence continues to persist despite of this effective low cost intervention being treatment of mild anemia too. Since 1992, the daily dosage of elemental iron for prophylaxis and therapy has been increased to 100mg and 200mg under CSSM (Child Survival and Safe Motherhood)[7]. Many additional programmes like ICDS, Mid daymeal program, WIFS (Weekly Iron and Folic Supplementation) which have operated have shown some impact on our problem. So anemia in pregnacy is high concern and needs prioritisation also special attention. Hence the study was conducted in Government Mohan Kumara Mangalam Mediical College Hospital, Salem, Tamilnadu, India with objective to asses the prevalence of anemia among antenatal mothers which will help us to improve the maternal and fetal health.

Aim of the Study

To study the prevalence of anemia among antenatal mothers attending Out patient department & to improve maternal and fetal health.

2. Materials and Methods

This is hospital based cross sectional study conducted at the department of Obstetrics and Gynaecology, Government Mohan Kumara Mangalam Medical college Hospital, Salem, India. This hospital background constitutes both urban and rural background. The study population predominantly includes rural community mostly referred from primary health centre. There are both government and non-government hospitals in the district. Our's is the only government college in the district under the control of DME (Directortae of Medical Education) and it serves large

number of patients from adjoinig districts like Dharmapuri, Krishnagiri, Nammakkal, Erode, Karur and Villupuram. All women admitted in the labour ward being diagnosed as anemia complicating preganacy was also included in the study.

A total of 21,473 cases was attended and 15,031 cases were anemic. They were screened and studied. Informed consent was taken from all pregnant women who are included in the study. No ethical issues were involved in the study. Thorough clinical history was taken with a semi-structured pre-questionnaire which included age, gravida, parity, number of abortions, occupation, personal and dietary history, socio economic status, type of family, previous obstetric history like inter-pregnancy interval between pregnancies, outcome and complication of each pregnancy were collected.

A complete thorough clinical examination was done with emphasis on nutritional status, signs of anemia. The tests were done on first antenatal visit irrespective of the trimester. Venous blood sample was collected in EDTA tube and sent to department of pathology for routine investigation which included Haemoglobin estimation, complete haemogram, peripheral smear study, recticulocyte count.

Peripheral smear study was done for all the samples by Leishman's stain and Morphology of RBC, WBC and Platelet studied. Automated analyser used. PCV, MCV, MCHC, MCH and RDW were studies.

Normal value was taken as PCV- 35 to 45%, MCV - 77 to 95%, MCHC -31 to 37gm/dl , MCV - 25 to 33pg and RDW as 14.5 to 16.5. Anemia was classified according to WHO & ICMR[8] criteria as mild, moderate, severe and very severe according to their Haemoglobin levels. Normal>11gm/dl, mild- 10--10.9gm/dl, moderate - 7 to 9.9gm/dl, severe - <7gm/dl and very severe - <4gm/dl respectively.

Inclusion Criteria

- All women attending antenatal clinic
- Age group from 18 to 39 years

Exclusion Criteria

- Age group more than 40years.
- Antenatal mothers with chronic medical diseases.
- Antenatal mothers who are known case of haemolytic anemia.
- Antenatal mothers with bleeding disorder.
- Antenatal mothers presented as antepartum haemorrhage.

3. Results

Total number of pregnant women attended antenatal clinic was 21,473. Total number of women with anemia was 15,031.
Hence , prevalence will be calculated as
Total number of women with anemia x 100 / Total number of pregnant women.
15,031 x 100 / 21,473 = 70%.

Therefore the prevalence of anemia in tertiary teaching hospital in Salem, Tamilnadu, India is 70%.

Table 1: Age Distribution of Cases

Age group (in years)	No. of cases	Percent (%)
18-19	1302	8.66
20-25	8748	58.20
26-30	3031	20.16
31-35	1878	12.50
35 -39	72	0.48
Total	15,031	100

Table 1 shows age distribution, majority were in the age group of 20-35year (58.20%) , followed by 20.16% in the age group of 26-30yrs and we had 0.48% of patients in above 35-39year age group.

Booking status: About 97.2% patients were booked either in our hospital or in primary health centre or private hospital.

93.7% of patients were referral cases and 6.3% have come self.

Table 2: Gravida- Wise Distribution.

Parity	No. of Cases	Percent (%)
Primigravida	2978	19.81
Gravida 2	4033	26.83
More than Gravida 2	8020	53.36
Total	15,031	100

Table 2 shows gravidity wise distribution, majority were in the group of more than second gravida (53.36%), followed by 26.83% in the group of second gravida and we had 19,81% patients as primi gravida.

Table 3: Trimester wise distribution of anemia

Trimester	Total no. of cases	Percent (%)
First	3539	23.55
Second	6778	45.09
Third	4714	31.36
Total	15,031	100

Table 3 shows trimester wise distribution, majority were in the second trimester (45.09%) , followed by 31.36% in the group of third trimester and we had 31.36% presented in first trimester. The increased presentation in second trimester might be due to physiological anemia or more number of patients referred for anomaly USG.

Table 4: Educational Status of Patient

Educational status	No. of Cases	Percent (%)
Illiterate	412	2.74
Primary school	2724	18.12
High/ higher secondary school	6188	41.17
Under graduate	3563	23.70
Post graduate	2131	14.18
Professional	13	0.09
Total	15,031	100

Table 4 shows educational status of the patients, majority of the patients have studied upto high school or secondary school(41.17%), followed by 23.70% of patients with undergraduate studies. Even then they lacked the knowledge of iron and folic acid intake.

Table 5: Occupational Status of Patient

Occupation	No. of Cases	Percent (%)
House wife	3946	26.25%
Agriculture	1614	10.74%
Daily wages	8536	56.79%
Working employee	935	6.22%
Total	15,031	100%

Table 5 shows clearly shows the occupational status of the patient where the prevalence of anemia is highest among the patients being as daily wages(56.79%), followed secondly by patients being as house wife(26.25%). The high among the daily wages might attribute to their economic status.

Table 6: Residence of Population

Residence	No. of Cases	Percent (%)
Rural	10,914	72.61%
Urban	4.117	27.39%
Total	15,031	100%

Table 6 clearly shows the residence of the studied population, majority of patients reside in rural areas(72.61%) and 27.39% reside in urban areas.The economic status and educational level of the patients is also directly proportional to anemia.

Table 7: Morphological Type of Anemia

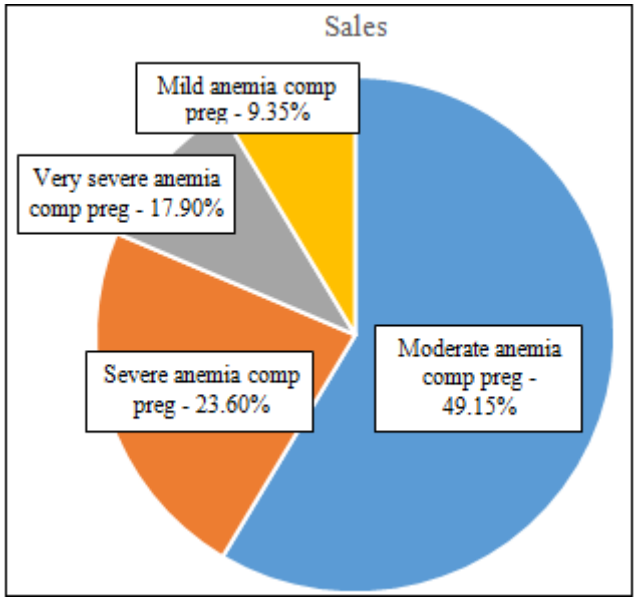
Types of anemia	No.of Cases	Percent (%)
Microcytic hypochromic anemia	7,914	52.65%
Normocytic normochromic anemia	3,577	23.80%
Dimorphic anemia	2,816	18.73%
Macrocytic anemia	724	4.82%
Total	15,031	100%

Table 7 shows the morphological type of anemia as Microcytic hypochromic anemia (52.65%) was most common anemia followed by normocytic normochromic anemia(23.80%).

Table 8: Severity of anemia in pregnant females.

Grades of anemia (by ICMR classification)	No. Of cases	Percent (%)
Mild (Hb 10--10.9gm/dl)	1405	9.35
Moderate (Hb 7 - 9.9gm/dl)	7388	49.15
Severe (Hb 4 - 6.9gm/dl)	3547	23.60
Very severe Hb<4gm/dl)	2691	17.90
Total	15,031	100

The following pie chart clearly shows the severity of anemia in our study population.



Moderate anemia complicating pregnancy was more in our study (49.15%).

4. Discussion

Anemia in pregnancy is the most common medical disorder encountered in a women's life time. Most women are already anemic at the beginning of pregnancy.

Age distribution
In this present study the total number of participants were 15,031 and age distribution ranged from 18 - 39yrs. The majority of patient's i.e. 58.20% belonged to 20-25yrs. In a study by Mangla et al the mean age of participants is 26.17yrs[9].

Gravida wise distribution:
In our study gravida more than 2 have higher incidence of anemia 53.36%, which is similar to study by shridevi et al[10] which showed 66.6% of study their population belonged to gravida more than 2.
Period of gestation:

Most of our study population were in second trimester 45.09% followed by patients in third trimester.

Educational status
41.17% of study population belonged to those who completed high school or secondary school. Even the importance of antenatal iron and folic acid was lacking among them. This is contradictory to the study by Rajamouli et al in which majority of patients suffering anemia belonged to illterates (46 .44%)[11].

Occupational status
56.79% belong to daily wages where in the study by Rajamouli et al high prevalence (96.8%) was seen among housewives and agricultural labours[11].

Morphological type of anemia:
In the present study, most common type of anemia was Microcytic hypochromic anemia52.65%, which is similar to study by Sifakis where almost 75% anemias in pregnant

women are iron deficienytype followed by folate and dimorphic anemias as reported by other authors[12].

Most of the patients reside in rural area and belong to low socio economic group.

5. Conclusion

Anemia in pregnancy is a significant health problem in developing countries. Anemia prevalence is quite high in our OPD. Multiple pregnancies, low level of awareness on antenatal iron and folic acid contributes anemia in pregnancy. Health education about anemia in pregnancy and its consequence on pregnancy can result in better fetal and maternal outcome. It should treated by early approach so that it will not progress to severe level. Its well started in our country with periodical national deworming program, WIFS, NNAPP, proper antenatal care, early detection of anemia, good nutrition and iron supplementation throughout the pregnancy which leads to the goal of healthy mother and healthy baby.

References

[1] World Health Organisation (2008) World - wide prevalence of anemia 1993-2005. WHO,Geneva.
[2] World Health Organisation (1992). The prevalence of anemia in women: a tabulation of available information.Geneva.
[3] De Mayor EM. Tegman A. Prevalence of Anemia in the world. World Health Organisation 1998;38:302-316.
[4] NFHS-4 2015-16 AP fact sheet www.mohfw.org
[5] Prema K. NeelaKumariS.Ramalakshmi BA. Anemia and adverse obstetric outcome. Nutr Rep Int.1981;23:637-43.
[6] Maternal Mortality in India 1997-2003. Register General of India. Available from http:www.censusindia.net/, accesses on December 15,2008.
[7] Ahmad N.Kalakoti P. BanoR.SyedMMA.The prevalence of anemia and associated factors in pregnant women in rural Indian Community. Australasian Medical Journal AMJ 2010.3.5.276-2280.
[8] WHO. Micronutrients indicators haemoglobin concerntrations for the diagnosis of anemia and assesment of severity, vitamin and mineral nutrition information system, 2011.
[9] Mangla M. Singla D. Prevalence of anemia among pregnant women in rural India: a longitudinal observational study. In J ReprodContraceptObstet Gynecol. 2016:5(10):3500-5.
[10] Shridevi. Study of prevalence of anemia among pregnant women attending antenatal checkup in a rural teaching hospital in Telangana, India. Int J ReprodContraceptObstet Gynecol.2018; 7: 2612-6.
[11] Rajamouli J. Ravinder A. Reddy SCK, Pambi S. Study on prevalence of Anemia among Pregnant Women attending Antenatal Clinic at Rural Health Training centre(RHTC) and ChalmedaAnand Rao Institute of Medical Sciences Teaching Hospital. Karimnagar, Telangana. Int J Contemp Med Res.2016:3(8); 2388-91.
[12] Sifakis S. Phamakides G. Anemia in pregnancy. Ann New York Academy Sci. 2000 900(1):125-36.