# PREVALENCE OF ANAEMIA IN A SEMI-URBAN POPULATION OF PREGNANT WOMEN

*Suganthi Ramalingam Natarajan[1]*

[1]*Assistant Professor, Department of Obstetrics and Gynaecology, Karpagam Faculty of Medical Sciences, Coimbatore.*

## ABSTRACT

### INTRODUCTION
Anaemia is a serious and prominent problem in the developing countries. This study evaluates the prevalence of anaemia in pregnant women attending the outpatient clinic in a semi-urban hospital for a period of six months.

### MATERIALS AND METHODS
Data from a sample of 500 pregnant women was collected and the patients were screened for anaemia on their booking visit in KFMS&R for a period of six months from March-August 2015. Haemoglobin was estimated by cyanmethaemoglobin method using Systronic photocolorimeter on their first antenatal visit. The degree of anaemia was categorised according to ICMR data-mild (10-10.99 g/dL), moderate (7-9.99 g/dL), severe (<7 g/dL).

### RESULTS
It was observed that the prevalence of anaemia was 51.8% in the population under study. The prevalence of mild anaemia was 18.53%, that of moderate anaemia was 63.70% and that of severe anaemia was 17.76%. It was also noticed that the prevalence of anaemia was higher in young pregnant women between 17-21 years of age (63.26%).

### CONCLUSION
Anaemia continues to be a major health problem in India and prevention and early diagnosis will significantly reduce maternal and perinatal morbidity and mortality.

### KEYWORDS
Anaemia, Pregnancy, Prevalence, Maternal Mortality, Perinatal Morbidity and Mortality.

**INTRODUCTION:** Anaemia, especially, iron deficiency, is the most common nutritional disorder in the world. According to WHO, it is estimated that the prevalence of anaemia in pregnant women in developed and developing countries is about 14% and 57% respectively and in India the prevalence is about 65-75%.[1] It is also stated that about one-third of women globally are anaemic (> 2 billion).[2] In pregnancy, complications due to anaemia can compromise pregnancy causing ill-health and also death if left untreated.[3] The term anaemia is used to describe the reduction of haemoglobin concentration in the blood of less than 11 g/dL in pregnant women.[4] The Centre for Disease Control and Prevention (1990) defines anaemia as haemoglobin concentration <11 g/dL in first and third trimesters and <10.5 g/dL in second trimester.[4,5] Serum Ferritin level of 15 mcg/L produces iron deficiency anaemia.[5] Among the developing countries, India has the highest prevalence of anaemia in all age groups. South-Asian countries show the highest prevalence of anaemia in the world. In India, the prevalence of anaemia in pregnant women is about 88%.[6]

The incidence of anaemia among the various states is about 40-90% and the incidence of direct maternal deaths due to anaemia is 10-15% in India.[7] According to National Family Health Survey (NFHS)–2 of 1998-1999, about 54% of rural women and 46% of urban women are anaemic.[5] The ICMR data in India states that the relative prevalence of mild anaemia is 13%, moderate anaemia is 57% and severe anaemia is 12%.[5]

**MATERIALS AND METHODS:** The present study was done in a random sample of 500 pregnant women attending the outpatient department in my hospital for a period of six months from March-August 2015. Blood sample was taken and tested by cyanmethaemoglobin method using Systronic photocolorimeter by trained personnel and the patients were given a proforma.

**RESULTS AND DISCUSSION:** Data were analysed using SPSS1 version and tabulated as follows.

| Characteristics | N=500 women | Percentage |
|---|---|---|
| **Age in years** | | |
| 17-21 | 98 | 19.6% |
| 22-25 | 132 | 26.4% |
| 26-30 | 207 | 41.4% |
| >30 | 63 | 12.6% |

| Age at marriage | | |
|---|---|---|
| 13-21 | 120 | 24% |
| 22-25 | 261 | 52.2% |
| 26-30 | 62 | 12.4% |
| >30 | 57 | 11.4% |
| Age at first childbirth | | |
| 15-21 | 98 | 19.6% |
| 22-25 | 247 | 49.4% |
| 26-30 | 122 | 24.4% |
| >30 | 33 | 6.6% |
| Education | | |
| <10 standard | 122 | 24.4% |
| >10 standard | 273 | 54.6% |
| Graduate | 105 | 21% |
| Socio-economic status | | |
| High | 21 | 4.2% |
| Medium | 101 | 20.2% |
| Low | 378 | 75.6% |
| Type of family | | |
| Nuclear | 108 | 21.6% |
| Joint | 392 | 78.4% |
| *Table 1: Demographic Characteristics* | | |

The study population consists of 500 women on booking in the antenatal clinic of Karpagam Faculty of Medical Sciences & Research Hospital which consists of semi-urban population at the outskirts of the city. The sample characteristics are enlisted in the table above.

Table 1 shows that 41.4% of antenatal women studied belong to the age group between 26-30 years. 52.2% of women were married at age group of 22-25 years and the same group showed a prevalence of 49.4% for first childbirth. Majority of the women (54.6%) were educated more than 10th standard. 75.6% of women belonged to the lower socioeconomic status and most of them (78.4%) were from a joint family.

The prevalence of anaemia & its severity was then studied using certain selected demographic and biological variables. Among the study population of 500 pregnant women, it was noticed that about 259 women (51.8%) were anaemic. Of them, about 48 women (18.53%) had mild anaemia (Hb 10-10.99 g/dL), 165 women (63.70%) had moderate anaemia (Hb 7-9.9 g/dL) and 46 women (17.76%) had severe anaemia (Hb<7 g/dL).
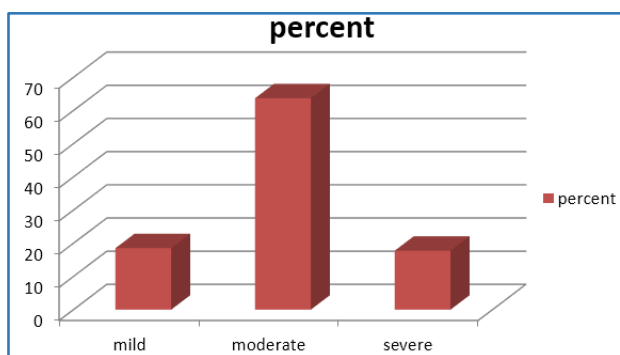


*Chart 1: Comparison between*
*Prevalence and Degree of Anaemia*

The chart shows that the prevalence of moderate anaemia is the highest in this study, followed by mild anaemia and severe anaemia.

Table 2 shows that majority of anaemic women (63.26%) were between 17-21 years of age followed by women (55.55%) who were more than 30 years of age and 47.78% of women were between 22-29 years of age. The prevalence of anaemia was higher among antenatal women less than 18 years of age (56.84%). This shows that teenage pregnancy with its reduced iron stores is a major risk factor for the predisposition of anaemia. Higher prevalence of anaemia was seen among women educated below 10th standard (65.57%) than those who studied more than 10th standard (50.91%). It was noticed that even among women graduates the prevalence of anaemia was 38.09%. The prevalence of anaemia was higher (56.34%) among women who belonged to the lower socioeconomic strata. Similarly, those women who were from a joint family system showed a prevalence of 71.42% compared to those from a nuclear family (57.93%).

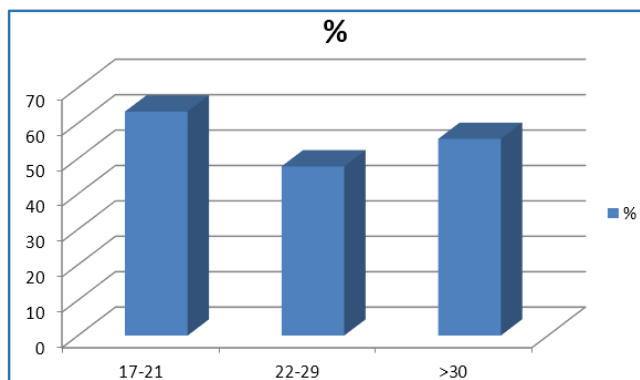| Variables | Antenatal Women N=500 | | | | |
|---|---|---|---|---|---|
| | Non-anaemic N=241 | | Anaemic N=259 | | |
| | F | % | f | % | Total |
| Age in years | | | | | |
| 17-21 | 36 | 36.73% | 62 | 63.26% | 98 |
| 22-29 | 177 | 52.21% | 162 | 47.78% | 339 |
| >30 | 28 | 44.44% | 35 | 55.55% | 63 |
| Age at marriage | | | | | |
| <18 | 41 | 43.15% | 54 | 56.84% | 95 |
| 19-21 | 58 | 46.03% | 68 | 53.96% | 126 |
| 22-29 | 123 | 51.46% | 116 | 48.53% | 239 |
| >30 | 19 | 47.5% | 21 | 52.5% | 40 |
| Age at first Childbirth | | | | | |
| <21 | 38 | 38.77% | 60 | 61.22% | 98 |
| 21-29 | 177 | 50.71% | 172 | 49.28% | 349 |
| >30 | 26 | 49.05% | 27 | 50.94% | 53 |
| Education | | | | | |
| <10 std. | 42 | 34.42% | 80 | 65.57%. | 122 |
| >10 std. | 137 | 50.18% | 139 | 50.91% | 273 |
| Graduate | 65 | 61.90% | 40 | 38.09% | 105 |
| SE status | | | | | |
| High | 12 | 57.14% | 9 | 42.85% | 21 |
| Medium | 64 | 63.36% | 37 | 36.63% | 101 |
| Low | 165 | 43.65% | 213 | 56.34% | 378 |
| Type of family | | | | | |
| Nuclear | 61 | 42.06% | 84 | 57.93% | 145 |
| Joint | 180 | 73.46% | 175 | 71.42% | 245 |
| *Table 2: Prevalence of Anaemia according to Selected Demographic Variables* | | | | | |

**Chart 2: Co-relation between Age & Prevalence of Anaemia**

The chart shows that the prevalence of anaemia is highest among women between 17-21 years of age.

| Variables | Antenatal Women N=500 | | | | |
|---|---|---|---|---|---|
| | Non-anaemic N=241 | | Anaemic N=259 | | Total |
| | F | % | f | % | |
| Parity | | | | | |
| 1-2(low) | 182 | 52.90% | 162 | 47.09% | 344 |
| ≥3(high) | 69 | 41.56% | 97 | 58.43% | 166 |
| Gestational age in weeks | | | | | |
| <20 weeks | 66 | 46.15% | 77 | 53.84% | 143 |
| 20-28 | 53 | 45.29% | 64 | 54.70% | 117 |
| 29-40 | 122 | 50.83% | 118 | 49.16% | 240 |
| Spacing of children between 1st and 2nd pregnancies | | | | | |
| <1 year | 56 | 50.45% | 55 | 49.54% | 111 |
| 1-2 years | 75 | 46.58% | 86 | 53.41% | 161 |
| >2 years | 110 | 48.24% | 118 | 51.75% | 228 |
| Body Mass Index | | | | | |
| <19 | 44 | 44.89% | 54 | 55.10% | 98 |
| 19-26 | 164 | 48.37% | 175 | 51.62% | 339 |
| >26 | 33 | 52.38% | 30 | 47.61% | 63 |
| Table 3: Prevalence of Anaemia According to Biological Variables | | | | | |

Prevalence of anaemia was then studied among the same group based on certain biological variables. It was seen that women with parity of three and more children showed a higher prevalence of anaemia (58.43%) than those with parity of one to two children (47.09%). When gestational age was studied among the study group, those women who belonged to second trimester (20-28 weeks) showed a higher prevalence of anaemia (54.70%) compared to those below 20 weeks (53.84%) and those after 28 weeks (49.16%) of gestation. The prevalence of anaemia when spacing between first and second pregnancies was one to two years was 53.41% thereby highlighting the importance of increased spacing between pregnancies. The influence of BMI upon anaemia was not very significant with the study showing the prevalence as 55.10% among thin individuals (BMI <19) and 51.62% among women with BMI 19-26.

Anaemia continues to be a major health problem despite the government's efforts to bring down the incidence in the country. In this study the prevalence of anaemia was 51.8% which is similar to the study by NFHS-2 of 1998-1999. The highest prevalence of anaemia (63.26%) was seen in young pregnant girls of 17-21 years of age, who were married early (56.84%) and conceived early. We should, therefore, concentrate on the nutrition of the girl child in her pre-pregnant period whose iron reserve is insufficient to sustain a pregnancy. Very little is being done to improve the nutrition of a young girl, the growing adolescent, the married woman before her first pregnancy and between pregnancies and after her pregnancy.[8]

Various strategies have been proposed to diminish the magnitude of the problem.

1. Improving the nutrition and haemoglobin level of the girl child–Twelve by twelve initiative i.e. Hb of 12 g/dL by 12 years of age.[5] Fortification of common food items e.g. salt with iron in order to improve the dietary intake of iron and haemoglobin status.
2. Improving dietary habits by increasing the bio-availability of iron-rich foods (animal foods like meat, poultry, fish and vegetarian foods like cereals, roots, tubers, sprouted pulses, milk, jaggery, green leafy vegetables with increased amounts of ascorbic acid) and reducing phytate content in foods (calcium, tannins, tea, coffee, herbal drinks, etc.) play a promising role in women of childbearing age.
3. Prophylactic iron for non-pregnant women and iron supplementation during pregnancy-The Government of India initiative of 100 mg of elemental iron and 0.5 ug of folic acid for at least 100 days in the second half of pregnancy. Two doses of intramuscular iron dextran injections (250 mg each) given 4 weeks apart along with tetanus toxoid injections have also been recommended.[5]
4. Treatment of worm infestation like hookworm, giardiasis, amoebiasis, infections like malaria and excessive blood loss from the gut helps to improve iron absorption.
5. It is mandatory to improve health care delivery systems and provide health education to the community for proper utilisation of available care.[7]

**Maternal and Foetal Consequences of Anaemia:** Maternal consequences of anaemia include decrease work capacity, chronic fatigue, increased incidence of abortions, preterm labour, pregnancy-induced hypertension, antepartum and postpartum haemorrhage. There is an increased susceptibility for infections and even recovery from infections is prolonged. Severe anaemia in pregnancy (hb<5 g/dL) can cause decompensation of heart and heart failure if left untreated. Data shows that maternal morbidity rates increase when hb level is <8 g/dL and maternal mortality rates steeply increase with hb level <5 g/dL[5]. Anaemia is directly responsible for 20% of maternal deaths and indirectly responsible for another 20% of maternal deaths.

Foetal consequences of anaemia include low birth-weight babies due to prematurity and intrauterine growth retardation with an increase in perinatal mortality when hb levels are <8 g/dL.[5] There is a significant rise in perinatal mortality with hb level <11 g/dL. Studies show that there is a 2-3 fold increase in perinatal mortality with hb level <8 g/dL and an 8-10 fold increase with hb level <5 g/dL.[5]

**CONCLUSION:** Anaemia in pregnancy is a serious health problem and is associated with adverse consequences in mother and foetus. In order to eradicate this scourge, various steps need to be taken at the individual and community level like education of women emphasising on the dietary intake of food stuffs with increased bioavailability of iron and protein, iron supplementation during pregnancy, ensuring maximum compliance, deworming and treatment of chronic infections thereby providing universal antenatal care to all pregnant women. Government policies to improve the nutrition of the girl child in order to enhance her iron reserve will go a long way in combating anaemia in pregnancy.

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