

# A Secondary Data Analysis For Anaemia Among Patients Of A Tertiary Care Hospital In Madhuranthagam

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## Abstract

According to World Health Organization (WHO, 1972), Anaemia is defined as, “a condition in which the haemoglobin concentration in the blood is below a defined level, resulting in a reduced oxygen carrying capacity of red blood cells”. **MATERIALS AND METHODS:** The haemoglobin values were taken from the complete hemogram done in Semi Autoanalyser. The hemogram of patients with normal and less than normal haemoglobin concentration were grouped and analysed for anaemia, with the reference haemoglobin values as per the WHO guidelines. **Result and Discussion:** The overall anaemia prevalence was found to be 52.8% (206) with 23% (90) Male and 29.8% (116) female (Figure 2). Also the prevalence of anaemia among male population was 43.1% and among female population was 64.1%. This shows almost fifty percent of the population of the same sex are anaemic, which shows a slight increase in male population compared to the surveys conducted previously. The mean haemoglobin concentration was found to be 11.75 g/dl. Also it was found that there is a statistically significant difference between men and women anaemic status with Chi-square value of 7.46 and  $p = 0.01$ . **Conclusion:** Since anaemia has its adverse effects advanced before it is clinically apparent, early screening and implementation of measures like medicinal iron, food fortification with iron and nutritional education are necessary to control it.

## INTRODUCTION

According to World Health Organization (WHO, 1972), Anaemia is defined as, “a condition in which the haemoglobin concentration in the blood is below a defined level, resulting in a reduced oxygen carrying capacity of red blood cells”<sup>1</sup>. Also can be defined as qualitative and quantitative reduction of the red blood cells, where the red blood cells or the haemoglobin concentration is less than the normal. Iron deficiency is thought to be the most common cause of anaemia globally, although deficiency of vitamins like Vitamin B12, Vitamin A and Folate, chronic inflammation and parasitic infections can also cause anaemia<sup>2</sup>. According to the World Health Organization (WHO), there are two billion people with anemia in the world and half of the anemia is due to iron deficiency<sup>3</sup>.

By systematic analysis of global anemia burden from 1990 to 2010, the actual prevalence was 40.2% by 1990, and 32.9% by 2010. The prevalence rate of anemia decreased 7.3 % from 40.2 % to 32.9% from 1990 to 2010<sup>4</sup>. Globally, the prevalence of anemia fell by 12% between 1995 and 2011 – from 33% to 29% in non-pregnant women and from 43% to 38% in pregnant women<sup>5</sup>. For the year 2011, it is estimated that roughly 43% of children, 38% of pregnant women, and 29% of non-pregnant women and 29% of all women of reproductive age have anaemia globally<sup>5</sup>. With the prevalence of anaemia in Asia, it was 42% in Children aged 6-59 months, 31.6% in Non-pregnant women aged 15-49 years, 39.3% in pregnant women aged 15-49 years<sup>6</sup>.

Anaemia is particularly prominent in south Asia. In India, for example, up to 88% of pregnant and 74% of non-pregnant women are affected<sup>7</sup>. During the last decade, India was the largest contributor to child anaemia among developing countries<sup>8</sup>. According to the National Family Health Survey (NFHS), the trend of anemia in India barely changed from 2005 to 2015, 12% decrease in 6-59 months children, as 70% in 2005-2006 and 58% in 2015-2016 and not much difference in males and females (In men was 24% in 2005-2006 and 23% in 2015-2016 and in women 55.8% in 2005-2006 and 53% in 2015-2016) (Table 1)<sup>9</sup>.

**Table 1: Trends in Anemia status: NFHS-3 and NFHS-4**

Age	NFHS-3 (2005-2006)	NFHS-4 (2015-2016)
6-59 Months	70%	58%
15-49 years (Male)	24%	23%
15-49 years (Female)	55.8%	53%

Source: National Family Health Survey (NFHS-4): 2015-16, December 2017

**Table 2: Haemoglobin levels to diagnose Anemia at sea level<sup>2</sup> (g/L)**

Population, Age	No Anemia	Anemia		
		Mild	Moderate	Severe
Children, 6-59 months	≥110	100–109	70–99	<70
Children, 5-11 years	≥115	110–114	80–109	<80
Children, 12-14 years	≥120	110–119	80–109	<80
Non-pregnant women, 15 years and above	≥120	110–119	80–109	<80
Pregnant women	≥110	100–109	70–99	<70
Men, 15 years and above	≥130	110–129	80–109	<80

Source: Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Geneva: World Health Organization; 2011

## OBJECTIVE:

- To determine the status of anaemia among patients attended out-patient department of our hospital, in a way to reflect anaemia distribution in Madhuranthagam district.

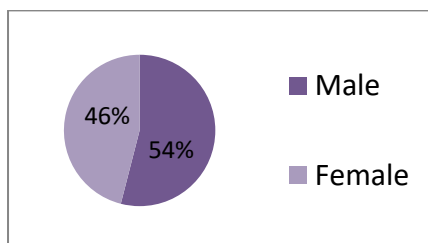
## MATERIALS AND METHODS:

Data collection: Epidemiological data (age and sex) and laboratory data for haemoglobin concentration of patients who attended outpatient department for the month of April 2019 was collected from our hospital database. A Secondary data analysis was done for screening of anemia. The hemoglobin values were taken from the complete hemogram done in Semi Autoanalyser (HORIBA). The hemogram of patients with normal and less than normal haemoglobin concentration were grouped and analysed for anemia, with the reference hemoglobin values as per the WHO guidelines.

## RESULTS:

The data of 390 patients with 209 (54%) male and 181 females (46%) was analysed for the presence of anemia (Figure 1).

**Figure 1:** Distribution of data based on gender



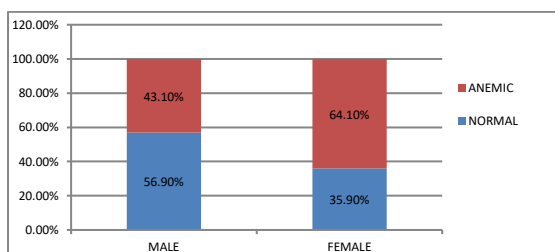
Both male and female patients were grouped by age as 6-59 months, 5-11 years, 12-14 years, 15-49 years and >50 years<sup>2</sup>. The age-wise distribution of data is given in the Table 3.

**Table 3: Distribution of data based on age and sex**

Age	Male (n)	%	Female (n)	%
6-59 months	5	2.39%	6	3.31%
5-11 years	5	2.39%	4	2.20%
12-14 years	2	0.96%	2	1.10%
15 – 49 years	118	56.45%	124	68.50%
> 50 years	79	37.79%	45	24.86%
TOTAL	209	53.6 %	181	46.4 %

The overall anaemia prevalence was found to be 52.8% (206) with 23% (90) Male and 29.8% (116) female (Figure 2). Also the prevalence of anaemia among male population was 43.1% and among female population was 64.1%. This shows almost fifty percent of the population of the same sex are anaemic, which shows a slight increase in male population compared to the surveys conducted previously. The mean haemoglobin concentration was found to be 11.75 g/dl. Also it was found that there is a statistically significant difference between men and women anaemic status with Chi-square value of 7.46 and  $p = 0.01$ .

**Figure 2: Distribution of anaemia in gender**



**Table 4: Distribution of anaemia in gender**

Age	Male (n)			Female (n)		
	Total	Anaemic (n)	%	Total	Anaemic (n)	%
6-59 months	5	3	1.4	6	3	1.7
5-11 years	5	2	1	4	1	0.6
12-14 years	2	0	0	2	2	1.1
15-49 years	118	29	13.9	124	78	43.1
>50 years	79	56	26.8	45	32	17.7
Total	209	90	43.1	181	116	64.1
Overall anaemic		23.07%			29.74%	

## DISCUSSION:

In our study, more than 50% of the patients were identified as anaemic. Our study shows an increase in anaemic percentage in females as compared to males after pubertal age, which coincides with the report of Gerardo et al., where “Females and Males had similar haemoglobin concentrations until the onset of puberty (around age 13 years) but later after puberty, females had median concentrations of haemoglobin around 11.5 g/dl, whereas males had a rapid increase in haemoglobin concentrations reaching a plateau of about 14 g/dl at age 20 years and experienced a progressive decline after age 40 years”<sup>10</sup>. Also our study coincides with the anaemia prevalence in reproductive age group women of 15 – 49 years was almost 50% as with the study reported from the rural population of Tamil Nadu showing the prevalence of 53.3% among reproductive women<sup>11</sup>. Also it was found that the prevalence of anaemia was high among the late adolescent girls (52.24%) compared to early adolescent girls (47.34%)<sup>12</sup>, which hints us to take care of the late adolescent girls accordingly for their welfare. High prevalence of anaemia (Haemoglobin <12 gm %) among

adolescent girls in India, causes 1.8% loss of GDP<sup>13</sup>. To overcome this, in 12<sup>th</sup> five year plan, Indian government has set a goal to reduce the load of anaemia in girls and women by 50%<sup>13</sup>.

For the year 2011, it is estimated that roughly 43% of children, 38% of pregnant women, and 29% of non-pregnant women and 29% of all women of reproductive age have anaemia globally, corresponding to 273 million children, 496 million non-pregnant women and 32 million pregnant women<sup>6</sup>. Reducing anaemia is recognized as an important component of the health of women and children, and the second global nutrition target for 2025 calls for a 50% reduction of anaemia in women of reproductive age<sup>6</sup>.

Hope this study will help us to know the hidden status of anaemia, to reduce the health impairments due to anaemia and act as a key for improving the better living of the reproductive age women, by further screening and appropriate measures.

## LIMITATIONS:

The study can be better concluded with gender-wise and age-wise anaemia stratification, if the data was from a larger population, and also by extending the data collection period from more than three months. The study can be further extended with blood indices to rule out any nutritional deficiency anaemia.

## CONCLUSION:

Since anaemia has its adverse effects advanced before it is clinically apparent, early screening and implementation of measures like medicinal iron, food fortification with iron and nutritional education are necessary to control it. Sighting to the adverse outcomes of anaemia, like cognitive and motor impairment, susceptibility to infections, risk of maternal and neonatal illness, it is mandatory to screen anaemia for its control and welfare of the population.

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