

PREVALANCE AND AETIOLOGY OF ANEMIA IN TERTIARY CARE HOSPITAL IN KANYAKUMARI DISTRICT - OBSERVATIONAL STUDY

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Abstract

Background: Anaemia is a major public health problem in India. According to WHO, there are two billion people with anaemia in the world and half of the anaemia is due to iron deficiency. The objective is to study the prevalence of anaemia and its aetiology in patients attending Sree Mookambika Institute of Medical Sciences and to study the proportion of patients with nutritional anaemia. **Materials and Methods:** A cross sectional study was done in a tertiary health care hospital in kanyakumari district Sree mookambika institute of medical sciences. A total of 160 patients who came to medicine department of the same who fulfilled our inclusion criteria were included in the study. The study took place for a period of 18 months. Statistical analysis was done using percentage, standard error of proportion and chi-square test. **Result:** The mean age of study participants were 37.88 years (95% CI is 34.998, 40.242) with a SD of 16.63 years. Majority of the study participants were 15-24 and 25-34 years of age group (28.8%), followed by 55-64 years of age group (20.6%). The study revealed there was no statistically significant association between prevalence of anaemia and gender. There was a statistically significant association between prevalence of anaemia and excessive bleeding. **Conclusion:** A major shift in the programme to mandatory regular supply of iron and folic acid and better coverage of the programmes in the rural setup covering people of all age and socio-economic groups can bring down the current prevalence of anemia.

INTRODUCTION

Anemia is a serious global public health problem affecting both developing and developed countries having an impact on human health as well as social and economic development. It occurs at all stages of the life, but is more common in pregnant women and young children. Globally, over 3.5 billion people, more than half the world's population, are affected by iron deficiency in the year 2014 as compared to 1.62 billion people in the year 2008. Prevalence of iron deficiency in developing countries are staggering (44% of women, 42% of preschoolers, 53% of school-aged children and 33% of men), with Asia and Africa having the highest prevalence.^[1]

In 2014, prevalence of nutritional anemia among adolescent girls was found to be high (47.6% to 90%) in different parts of in North India and the prevalence found to be (78.7%) in the state of TamilNadu.^[2] In 1992, World Health Organization global estimates of anemia prevalence averaged 56%, with a range of

35–75% depending on geographic location World Health Organisation 1992.^[3]

The third National Family Health Survey (NFHS) 2005–2006 revealed that at least 80% of Indian children aged 12 to 23 months were anemic.^[4] Anemia was especially prevalent among rural children, and the majority of India's population (72.2%) is rural. However, despite recent economic development and the existence of a national anemia-control program, the prevalence of anemia in India between 2000 and 2005 increased from 75.3% to 80.9% in children aged 6 to 36 months.^[5-8]

Infants and young children having high risk to develop iron deficiency due to higher requirements of iron for their rapid growth⁹. Iron deficiency is the primary cause for anemia in children.

Among adolescents, girls constitute a vulnerable group, particularly in developing countries where they are traditionally married at an early age and exposed to a greater risk of reproductive morbidity and mortality. The nutritional anemia in this group attributes to high MMR, high incidence of low-birth

weight babies, high perinatal mortality and fetal wastage and consequent high fertility rates. Also can be attributed to lack of education, and sanitation.

MATERIALS AND METHODS

It was a Cross-sectional study conducted in Patients attending medicine department in Sree Mookambika Institute of Medical Sciences, Kulasekharam from 18 months (January 2016-june 2017). All the new patients attending in Medicine Department (outpatient and inpatient) in Sree Mookambika Intitute of medical Sciences with haematological problems, age group 15-85 years are considered as inclusion criteria while elderly age(>85years), any contraindication for invasive evaluation are excluded.

Sample Size Calculation

Sample size is calculated by using the formula

$$N = \frac{4pq}{(d^2)}$$

p- Prevalance of anemia=55%^[9]

q-100-p=45

d-15% of p=15% of 55=8

N-Sample Size

By convenient sampling, the patients who came to medicine department who fulfilled our inclusion criteria. Clearance from the instutional ethical committee was obtained. Permission to conduct the study was obtained from the Head of the institute of Sree Mookambika Institute of medical sciences. Informed consent was obtained from the patients who were included in the study.

A brief history was obtained. The history included socio-demographic factors, dietary habits, history of previous diagnosis of anemia and utilisation of health services for the same (blood transfusion), menstrual history, history of any bleeding manifestations, history suggestive of any chronic illness, history of alcohol intake and any drug history. Data collected by laboratory investigations was to be entered on the same data collection tool. All the laboratory investigations were done in central lab,sree mookambika institute of medical sciences. Blood samples were collected for laboratory evaluation of CBC by a trained laboratory technician. The left dorsum of hand was cleaned with cotton soaked in

spirit and allowed to dry. With the help of a 3mL syringe blood is withdrawn and collected in 2 containers one for hematology the other for serology.

Statistical Analysis

The data obtained was coded and entered into Microsoft Excel spreadsheet. Categorical data was expressed as rates, ratios and percentages and the comparison was done by chi-square test. Continuous data was expressed as mean ± standard deviation (SD) and the comparison was done using ANOVA test. A 'p' value of less than 0.05 was considered as statistically significant.

RESULTS

As per [Table 1] the distribution of age in the study participants ranges from 18 to 71 years. The mean age of study participants were 37.88 years (95% CI is 34.998, 40.242) with a SD of 16.63 years. Majority of the study participants were 15-24 and 25-34 years of age group (28.8%), followed by 55-64 years of age group (20.6%). Majority of the study participants were females (58.1%).

As per [Table 2] most of the participants has no reason for blood transfusion (90.6%) while 5% of severe anaemia had blood transfusion, while 4.4% of haemorrhage had blood transfusion.

As per [Table 3] 13.1% (21) suffered from excessive bleeding due to upper GI bleed and only 1.9% (3) suffered from excessive bleeding due to menorrhagia. As per [Table 4] the distribution of haemoglobin in the study participants ranges from 2.5 to 17. The mean age of study participants were 9.8 years (95% CI is 9.242, 10.358) with a SD of 3.6. 58.1% (93) of the study participants were anaemic. Among them 28.1% (45) had moderate, 18.1% (29) had mild and 11.9% (19) severe anaemia.

The study revealed there was no statistically significant association between prevalence of anaemia and gender. In our study there was a statistically significant association between prevalence of anaemia and age. [Table 5]

There was a statistically significant association between prevalence of anaemia and reason for blood transfusion. [Table 6]

There was a statistically significant association between prevalence of anaemia and excessive bleeding. [Table 7]

Table 1: Distribution according to age of participants

Age characteristics	Value
Minimum	18
Maximum	71
Mean	37.88
Standard deviation	16.63

Table 2: Distribution of reason for blood transfusion

Reason for Blood Transfusion	Frequency	Percent
Haemorrhage	7	4.4
Severe anaemia	8	5.0
None	145	90.6

Total	160	100
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Table 3: Distribution of excessive bleeding

Excessive Bleeding	Frequency	Percent
Menorrhagia	3	1.9
Upper GI bleed	21	13.1
No bleed	136	85.0
Total	160	100

Table 4: Prevalence of anaemia in the study population

	Frequency	Percent
Normal	67	41.9
Mild	29	18.1
Moderate	45	28.1
Severe	19	11.9
Total	160	100

Table 5: Distribution of anaemia by age

Age	Anaemia		Total
	Anaemic N (%)	Non anaemic N (%)	
15-24	15 (32.6)	31 (67.4)	46
25-34	24 (52.2)	22 (47.8)	46
35-44	4 (30.8)	9 (69.2)	13
45-54	6 (60)	4 (40)	10
55-64	32 (97)	1 (3)	33
65-74	12 (100)	0	12
Total	93 (58.1)	67 (41.9)	160

Chi-square = 52.358 p-value = 0.001*

*p <0.05 is statistically significant

Table 6: Distribution of anaemia by reason for blood transfusion

Reason for blood transfusion	Anaemia		Total
	Anaemic N (%)	Non anaemic N (%)	
Haemorrhage	7 (100)	0	7
Severe anaemia	8 (100)	0	8
None	78 (53.8)	67 (46.2)	145
Total	93 (58.1)	67 (41.9)	160

Chi-square = 12.532 p-value = 0.001*

*p <0.05 is statistically significant

Table 7: Distribution of anaemia by excessive bleeding

Excessive bleeding	Anaemia		Total
	Anaemic N (%)	Non anaemic N (%)	
Menorrhagia	3 (100)	0	3
Upper GI bleed	21 (100)	0	21
No bleed	69 (50.7)	67 (49.3)	136
Total	93 (58.1)	67 (41.9)	160

Chi-square = 24.091 p-value = 0.000*

*p <0.05 is statistically significant

DISCUSSION

The overall prevalence of anemia in our present study was found to be 58.1% of which 28.1% has moderate 18.1% has mild and 11.9% has severe anemia. A lower prevalence of anemia (35.1%) was noted.^[10] The study done by the same, had none who was suffering from severe anemia. A higher prevalence of anemia was noted in Tamil Nadu.^[11] A study found 90% prevalence of anemia among adolescent girls in 16 districts of India with 7.1% having severe anemia.^[12]

The highest prevalence of anemia was seen in the age group of 55-64 years in our study ie,34.4% of the total anemic patients, while a study done found that the most commonly affected age group with anemia is in

those less than 10 years, especially in those less than 5 years followed by women and older adults.¹³ Another study done found a high number 42% of anemia cases in the age group of 11-25 years.^[14] In our study there was no statistical significant association of anemia with gender. In our study it was found that out of the total patients with anemia majority were females 55.9%. Likewise in a study done among the cases of anemia 82% was females and 18% affected was males.^[14] In another study done it was noted that mild anemia was more common in males-52.21% and moderate and severe anemia was more common among females- 50.98% and 51.67% respectively.^[15]

The majority of subjects with anaemia in the present study has microcytic hypochromic picture in

peripheral smear; suggestive of iron deficiency anemia while 20.4% of the anaemic people have dimorphic picture. A study also found majority of subjects with anaemia (25.4%) had microcytic hypochromic picture while 4.7% had dimorphic picture in peripheral smear.^[10] Whereas in a study we found peak incidence of megaloblastic anemia in the age group of 10-30 years old(48%).^[16] The high prevalence of anemia in child bearing age group is of important public health indication. It is found that anemia accounts for 12.8% of Maternal mortality in Asia.^[17] Iron requirements are more in pregnancy and iron deficiency is associated with low birth weight, pre-term delivery and maternal death.^[18]

There was significant association between anemia and chronic illnesses. In our study all the 15 patients who were suffering from a chronic illness was found to have anemia, ie a 16% of the total anemic patients. The basic pathology behind it being decreased availability of iron, decrease in life span of RBC from 120 days to 70-80 days and erythropoietin deficiency.^[19] Out of the 15 patients,12 were CKD patients. The study done showed that 88% of those with advanced stages of CKD who required renal replacement therapy had a PCV less than 30mg/dl.20 Anemia is not common in earlier stages of CKD, the prevalence of anemia was 5.2% in patients with stage III, increasing to 44.1% in stage IV disease. In our present study too, the majority of CKD patients who had anemia were in the advanced stage (IV-V).

CONCLUSION

The high prevalence of anemia (58.1%) indicates that anemia continues to be a major public health problem in India. Age, socio economic status, literacy are the major determinants that contribute to the problem of anemia. High prevalence despite the easy availability and access to medical care indicates the level of ignorance and indifferences to health needs. A major shift in the programme to mandatory regular supply of iron and folic acid and better coverage of the programmes in the rural setup covering people of all age and socio-economic groups can bring down the current prevalence of anemia.

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