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Anemia Prevalence among Women of Reproductive Age in Rural Areas of Tamil Nadu

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ABSTRACT: The global importance of anemia as a serious public health problem is widely acknowledged. According to the WHO, the prevalence of anemia among pregnant women in underdeveloped countries averages 56%, ranging from 35 to 100% across the globe. Various studies from various regions of the country (India) have revealed anemia prevalence ranging from 33 to 100%. This cross-sectional study conducted at the Sree Mookambikla Institute of Medical Sciences, Kulasekharam, showed an overall prevalence of anemia of 34.83%. The prevalence was found to be higher in the age group of 36–40. The mean hemoglobin value was also lower in women under the age group of 36–40 years.

KEY WORDS: Reproductive age group, Women, Anemia, Hemoglobin, Sahli's method

1. INTRODUCTION

Anemia is a condition characterized by a reduction in the number of functional red blood cells, or hemoglobin (Hb), the protein responsible for oxygen transportation. [1] Anemia is a multifactorial disease that can operate as both a risk factor and a symptom of another disease. Anemia is influenced by a variety of modifiable and non modifiable factors that work together or independently. These can include ethnicity, gender, age, socio demographic status, dietary habits, physical and mental health, gynecological and obstetric history, malignancies, and anticancer medications, as well as genetic makeup.

Iron deficiency is the most frequent nutritional illness in the world; it primarily affects women of reproductive age and preschool children in tropical and subtropical zones, and it is a serious public health concern in many developing nations. [2] A hemoglobin concentration measurement is part of a routine checkup to assess for anemia, especially in countries with a high prevalence. [3] Anemia is a specific public health issue for women aged 15 to 49 in low- and middle-income nations. [4] Anemic pregnant women are more likely to experience negative pregnancy outcomes such as low birth weight, premature birth, and perinatal and neonatal mortality. Anemia is especially prevalent in South Asia. In India, for example, up to 88% of pregnant women and 74% of non-pregnant women are affected.

II. MATERIALS AND METHODS

A cross-sectional study was undertaken in the research lab of the Department of Physiology, Sree Mookambika Institute of Medical Sciences, Kulasekharam, among women of reproductive age (15–45 years). Pregnant and lactating women were excluded from the study. The study was conducted between February 2023 and July 2023. Hemoglobin estimation was done using Sahli's method. Male Hb values often range from 13 to 18 g/100 ml, whereas female values typically range from 12 to 16 g/100 ml. The anemia status of the study population was evaluated using WHO cut-off points for anemia diagnosis.

Estimation of hemoglobin using Sahli's method

The basis of Sahli's Method, also known as the Acid Hematin Method, is that when blood is added to N/10 hydrochloric acid (HCl), the hemoglobin found in RBCs is changed to acid hematin, a dark brown molecule. The color of the formed acid hematin complex corresponds to the concentration of hemoglobin in the blood and is matched with the standard, which is a reference brown glass provided in the Sahli's apparatus, by diluting with N/10 hydrochloric acid or distilled water until the color of the acid hematin complex matches the color of the standard.

The blood lancet was used to puncture the tip of the middle finger. The first drop of blood was wiped out, and blood was drawn from the second drop into the Hb pipette until it reached the 20 µl threshold. Capillary action filled the Hb pipette. The blood was drained and mixed with a stirrer in N/10 hydrochloric acid in the hemoglobin tube. The tube was left at room temperature for 10

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minutes to allow hemoglobin to completely convert to acid hematin. Following the completion of the reaction, the Hb tube was placed in the column in Sahli's comparator box, and the dark brown-colored compound (acid hematin) formed in the Hb tube was diluted using distilled water by adding drop by drop into the solution and mixing with the aid of a stirrer after each addition. This procedure is repeated until the endpoint matches the color of the standard with the color of the test. After matching the color with the usual brown glass, the stirrer was pushed up, and the reading in Sahli's Hb tube was taken into account by taking the lower meniscus into account. The data was entered in Microsoft Excel, and descriptive data analysis was done.

III. RESULTS

155 women took part in this study. All the study subjects were in the reproductive age group (25–45 years). In the study population, women in the age group of 31–35 constituted 27%, while those in the age group of 26–30 constituted 20% (table 1). The mean age of the subjects was 29±3.08.

Table 1. Age-wise distribution of the study population (n = 155)

Age groups (years)	Number	Percentage (%)
15-20	30	19.3
21-25	20	12.9
26-30	31	20
31-35	42	27
36-40	22	14.1
41-45	10	6.4

Out of the 155 participants, 54 women had a Hb value below 12 g/100 ml. 20.3% of women in the age group of 31–35 years and 22.2% of women in the age group of 36–40 years had anemia. Hence, anemia in women older than 30 years (table 2).

Table 2. Age groups and anemia (n=54)

Age groups	Anemia status	Percentage(%)
15-20	9	16.6
21-25	5	9.2
26-30	10	18.5
31-35	11	20.3
36-40	12	22.2
41-45	7	12.9

The mean hemoglobin of women aged 36–40 years was found to be lower, followed by 31–35 years and 26–30 years. Table 3 and figure 1 shows the mean hemoglobin values of the study groups.

Table 3. Hemoglobin values of the study groups (n=54)

Age groups	n	Mean Hb
15-20	9	11
21-25	5	11.6
26-30	10	10.9

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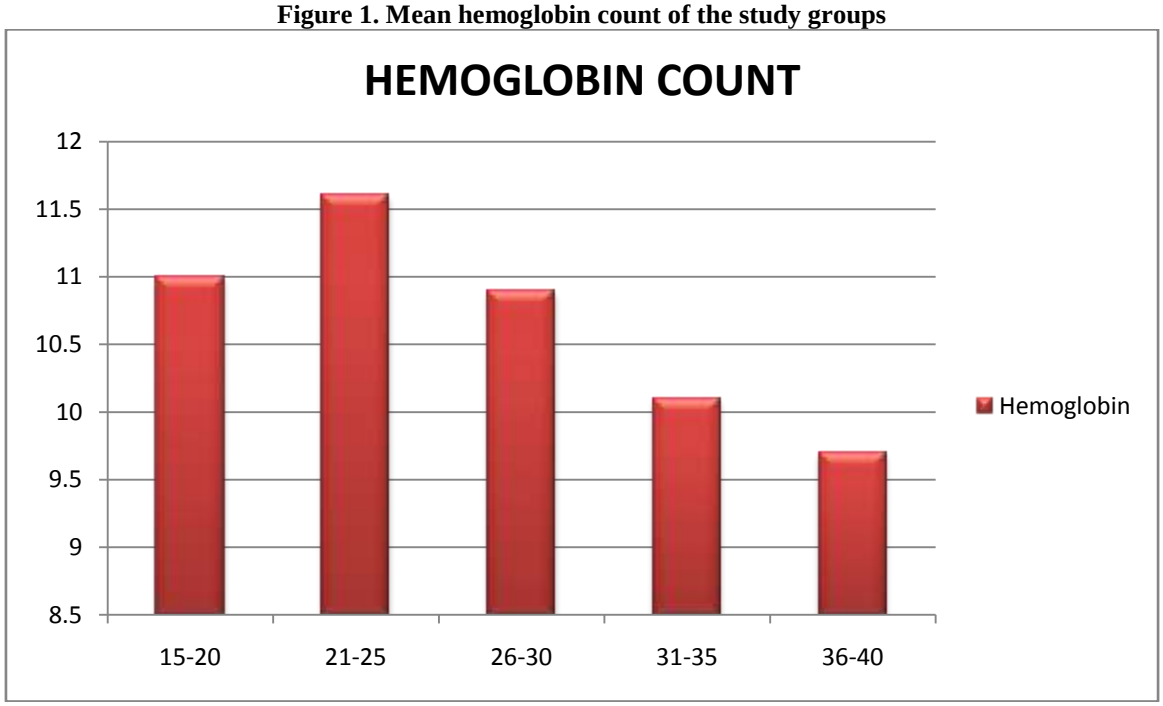
31-35	11	10.1
36-40	12	9.7
41-45	7	11.8

Figure 1. Mean hemoglobin count of the study groups



IV. DISCUSSION

The present study included 155 women in the age group of 15–45 years. 54 women have lower hemoglobin values. The mean hemoglobin values of the women in the age group of 36–40 years were lower when compared to the other groups. The best way to determine the prevalence of anemia in a population is to use a reliable method of measuring hemoglobin concentration. [5] Screening for anemia during reproductive age is beneficial for a number of reasons. It may be useful to collect baseline data on prevalence and severity in a given community and to evaluate the impact of iron supplementation, antimalarial prophylactics, and oral antihelminthic medication. Estimating Hb at the primary care level can help determine whether further investigation and treatment are required.

In a study on adolescent girls by S. Kaur, P.R. Deshmukh, and B.S. Garg, the prevalence of anemia was found to be 59.8%. [6] Virender P. Gautam, Yogesh Bansal, D.K. Taneja, and RenukaSaha, in their study on pregnant women, found that the prevalence of severe anemia was significantly higher in those with an age >25 years, education till high school or less, a nuclear family, no history of abortions, and a birth interval > 36 months. [7] The present study also correlates with this study.

A study on iron deficiency anemia done by Mir Abdul Qadir et al. among women of reproductive age revealed that women in the age group of 15–19 were affected. [8] This is contrary to our present study. Another study done by Bezerra et al. also showed that anemia was more common among women under the age of 19. [9]
Another study done by Jayaprakash et al. showed that 40.42% had <12 g/dl hemoglobin levels. [10]
A study done by Ganapathi and Kumar in rural areas of Tamil Nadu showed that 53.3% of women of reproductive age had anemia. [11]

V. CONCLUSION

A higher prevalence of anemia in women older than 30 years may be due to successive pregnancies, lactational requirements, and a lack of proper diet. This study was done only on a small population of women, so there may be some limitations. Anemia in the elderly can be prevented by proper intervals in pregnancy, an iron-rich diet, supplementation of iron and deworming frequently.

REFERENCES

[1]. World Health Organization Report.World Prevalence ofAnemia 1993-2005. WHO global data base on anemia2013.Available from:http://whqlibdoc.who.int/publications/2008/9789241596657.

[2]. Monárrez-Espino J, Martínez H, Greiner T. Iron deficiency anemia in Tarahumara women of reproductive-age in Northern Mexico. SaludPublica Mex. 2001Oct;43(5):392-401. doi: 10.1590/s0036-36342001000500002, PMID 11763687.

[3]. Freire WB. Hemoglobin as a predictor of response to iron therapy and its use in screening and prevalence estimates. AmJ ClinNutr. 1989Dec1;50(6):1442-9. doi: 10.1093/ajcn/50.6.1442, PMID 2596434.

[4]. Sosa-Moreno A, Reinoso-González S, Mendez MA. Anemia in women of reproductive age in Ecuador: data from a national survey. PLOS ONE. 2020Sep24;15(9):e0239585. doi: 10.1371/journal.pone.0239585, PMID 32970743.

[5]. Kaur S, Deshmukh PR, Garg BS. Epidemiological correlates of nutritionalanemia in adolescentgirls of ruralWardha. Indian J Community Med. 2006;31:4 (2006-10-2006-12).

[6]. GautamVP, BansalY, Taneja DK, SahaR. Prevalence of anemiaamongstpregnantwomen and its socio-demographicassociates in a ruralarea of Delhi. Indian J Community Med. 2002;27:4-12.

[7]. Qadir MA, Rashid N, Mengal MA, Hasni MS, Kakar Sud din, Khan GM, et al. Iron-deficiencyanemia in women of reproductiveage in urbanareas of Quetta District, Pakistan. BioMedResInt. 2022Feb9;2022:1-5.

[8]. Bezerra AGN, Leal VS, Lira PIC de, Oliveira JS, Costa EC, Menezes RCE de, et al. Anemia e fatoresassociadosemmulheres de idadereprodutiva de um município do Nordestebrasileiro. RevistaBrasileira de Epidemiologia. 2018 May 28;21(0).

[9]. K JS, S NK, KS, Rao C. A study on anemia among the reproductive age group women using a rapid diagnostic test (RDT) kit. Biomedicine. 2023May26;43(02):791-3.

[10]. GanapathiKC,KumarKS. Across sectionalstudyof anemiaamongwomenofreproductiveagegroup(15-49 years)inaruralpopulationofTamilNadu.IntJ MedSci Public Health.2017;6(3):524-9.