



# HAEMOGLOBIN CONCENTRATION AMONG ADOLESCENT AGE GROUP IN TRIBLE REGION OF KARANJALI VILLAGE

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## Abstract

In India's tribal areas, Hb levels in the 10 -19 age group are low. There is relatively limited work in various parts of India. Anemia is a chief health problem that affects both sexes, and it has become a big issue in pregnancy for adolescent girls who marry early. The infant also suffering from the same health issue as the parent have. Chronic anaemia is a disorder that can take a dangerous form and cause a person to die if correct steps are not followed in the right way. Due to unemployment and scarcity of money in the tribal areas, people are paying less attention to their health ultimately having low nutritional diet intake which causes anaemia. In our study prevalence of anaemia among the adolescent group was 78.67 %. In our observation we found that many adolescents are not aware of their blood group and hemoglobin status, a maximum adolescent is found < 12.00 gms /lit HB. There are some factors which caused for anaemia that is low socioeconomic status, vegetarian diet.

**Key words:** adolescent, anaemia, Sahli's haemometer, tribal area

**Aim:** To determine the prevalence of anaemia in adolescent girls and the factors that contribute to it from Karanjali Village.

## INTRODUCTION

The word adolescence is derived from the Latin word, "adolescere", meaning "to grow, to mature", anaemia is the most common nutritional disorder worldwide [1]. According to WHO adolescent age group is defined as a life span between 10-19 years [2]. In India the prevalence of anaemia among adolescent girls was 56% and this amounts to an average of 64 million girls at any point in time [3]. studies conducted in different regions of India shown that the prevalence of anaemia was 52.5% in Madhya Pradesh, 37% in Gujrat,41.1% in Karnataka, 85.4% in Maharashtra, 21.5% in Shimla, 56.3% in Uttar Pradesh, 77.33% in Andhra Pradesh, 58.4% in Tamil Nadu and Kerala (19.13%)among college students and 96.5% in tribal area)[4-13].

In this study the factors that affect the hemoglobin i.e. social and economic status of student. In adolescent period nutrition is needed for girls and boys for their good health. Anaemia also show effect on physical development attentiveness, memory and school performance, it also cause for immunity, weakness, hypoxemia. There is several types of disease which effected on hemoglobin, like helminthic infestation is very common in tropical country in India. If adolescent girls suffering from excess of bleeding during menstrual cycle it also be a major cause of anaemia, if the adolescent girl become pregnant the fetal become affected (morbidity and mortality) due to anaemia. Iron deficiency anaemia (IDA) is a common nutritional disorder observed in Indian adolescent girls. [14]. If adolescent girls are also tested for anaemia before marriage, it may be helps in prevention of weakness in early stage. Especially in a country like India where marriage at a young age is followed by early pregnancies (18.2% girls get married by the age of 15 years, and

47.4% get married by the age of 18)[15]. In India, according to National Health and Family Survey (NHFS-3), the prevalence of anaemia among adolescent girls, 15-19 years, is 55.8% including 39.1% with mild anaemia [16]. It seems that adolescent girls are also at increased risk of anaemia due to period of rapid growth and developmental process of adolescence which cause higher requirement on both micro and macronutrients especially in girls who attend menar-che. [20-21]. There are several economic factors which influences on Iron Deficiency Anaemia (IDA) among different rural area in India. Our study focused on regarding haemoglobin percentage at the level of college age group boys and girls which suffering from different sources such as economic status, malnutrition as well as helminthic (worm) infection.

### **Material and Method**

This is cross-section study was conducted on 558 students from B.A., B.COM, AND B.Sc.at M.J. M. ACS. College. Karanjali. Tal. Peth. Dist. Nashik. Hemoglobin is estimated by either Sahli's haemometer method, Colorimetric method, Autoa-nalyzer, Hemoglobin and Hematocrit (HCT) Test Meter Kit. Or color scale kit. All students were categorized according to their Hb concentration. We also check their family background, social and economic status (monthly income), parents and their education, size of family nuclear and joint, diet and nutritional value, excessive bleeding in the menstrual cycle, inquire about their previous history for parasitic infection, food quality and quantity. In our study area maximum strength of the student form tribal region which is socially and economically poor.

In this study we are going to use Sahli's haemometer method for estimation of haemoglobin which is easily available and cheap, this method is more popular in rural areas as it is more accurate and cheaper than any other method like cell counter or auto-analyzer which are more expensive and risky to handle and transportation for work. After cleaning the fingertip with a sprit swab, by using sterile disposable lancets and pierce the skin. Wipe away the first few drops of blood and then suck a little blood into capillary pipette until reached up to 20 $\mu$ l marking, avoid air bubble. Blow blood out of capillary pipette into 5% N/10 HCL sucks blood back into pipette several times and blow out again and transferred it into square or round glass tube, waited for 3 -4 minutes and dilute with pure distilled water until colors are the same, after match the color stop dilution and take the reading. The entire process was done in natural light for the best result. Table shows WHO classification of severity of anaemia in adult females [17].

**Table 1.** Hemoglobin levels to diagnose anaemia at sea level [17]

	Non Anaemia (g/dl)	Anaemia (g/dl)		
		Mild	Moderate	severe
Non pregnant women(age >19 years or above)	>=12 or higher	11-11.9	8-10.9	< 8
Pregnant women	>=11 or higher	10-10.9	7-9.9	<7

**Table 2.**Normal hemoglobin range according to age. [18]

Age group	Hb (Range in gm/dl)
New born(< 1 week old)	14 -22
6 Month old	11- 14
Children(1-15)	11-15
Adults	
Men	14 -16
Women	12 -16

**Table3.** Classification of the anaemia according to its severity [19]

Anaemia	Hb ranges in gm/dl
Mild	10.00-11.09
Moderate	7.00-9.9
Sever	<7

**Table 4.** Haemoglobin status according to their age group for Normal Haemoglobin.[17] N=558

Classification of Anaemia status According to its severity			
Normal Haemoglobin.[17]			
Age Group	Boys	Girls	p-value
15-16	18(3.22%)	8(1.43%)	
16-17	11(1.97%)	16(2.86%)	
17-18	27(4.83%)	14(2.50%)	0.403224757
18-19	22(3.94%)	6(1.07%)	
Total	<b>78(13.97%)</b>	<b>44(7.88)</b>	

**DATA COMPILATION AND ANALYSIS:-**

After completion of data collection, it was entered into Microsoft Excel and categorical variables were tested with Chi-square test. The test was considered significant only if the p-value comes to be less than of <0.05

**Result:-**

A cross section study was conducted to find out the prevalence of anaemia and its associated factors among adolescent girls in M.J.M.ACS. College Karanjali village. In this study a total number of 558 adolescents from the age group of 15 – 19 years of both sexes were include.

**Table 5.** Haemoglobin status according to their age group for Mild anaemia status. N=558

Classification of Anaemia status According to its severity			
Mild			
Age Group	Boys	Girls	p-value
15-16	17(3.04%)	40(7.16%)	
16-17	21(3.76%)	44(7.88%)	
17-18	14(2.50%)	28(5.01%)	0.53233562
18-19	26(4.65%)	52(9.31%)	
Total	<b>78(13.26%)</b>	<b>164(29.39%)</b>	

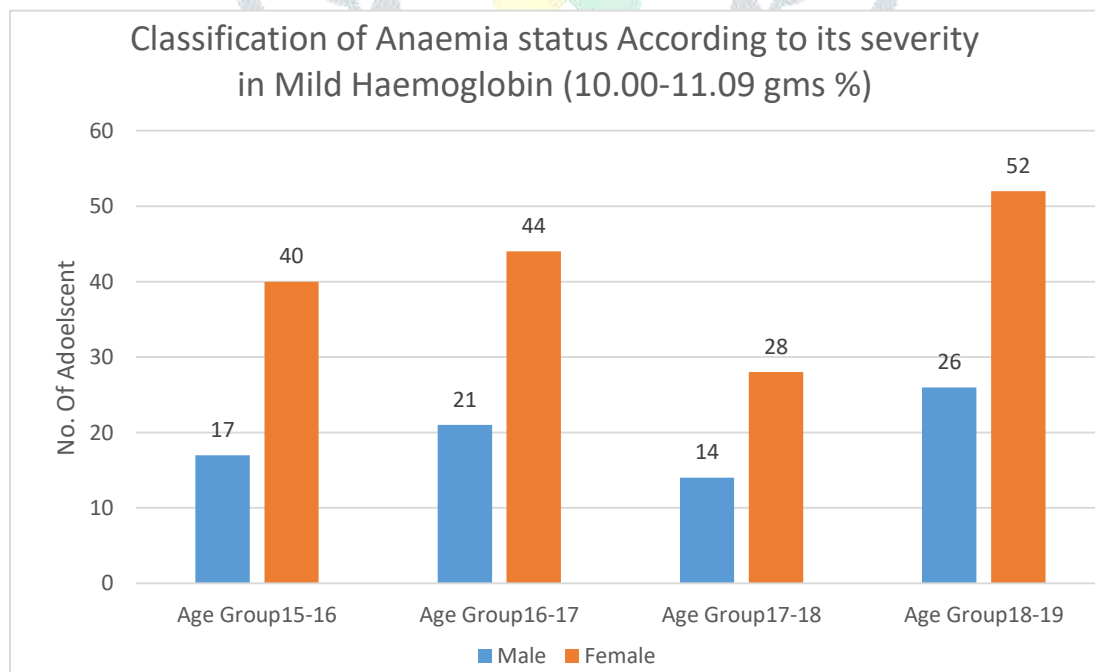


Table 5. Graph 1. Classification of Anaemia status According to its severity in Mild Haemoglobin

A total number of girls 348 (62.36%) for 558 student were anemic. Table 5 In which 40(7.16%) girls, 17(3.04%) boys, 44(7.88%) girls, 21(3.76%) boys, 28(5.01%) girls, 14(2.50%) boys, 52(9.31%)girls and 26(4.65%)boys respective their age group i.e. 15 – 16, 16 - 17, 17 - 18, and 18 – 19. were anaemic in mild ratio. WHO cut off values for assessing anaemia in adolescent girls normal >12gm/dl [17].

**Table 6.** Haemoglobin status according to their age group for Moderate and Sever anemic status. N=558

Age Group	Classification of Anaemia status According to its severity				p-value
	Moderate		Sever		
	Boys	Girls	Boys	Girls	
15-16	23(4.12%)	39(6.98%)	00	03(0.53%)	0.46915
16-17	12(2.15%)	46(8.24%)	00	01(0.17%)	
17-18	06(1.07%)	16(2.86%)	00	02(0.35%)	
18-19	13(2.32%)	32(5.73%)	00	01(0.17%)	
Total	<b>54(9.67%)</b>	<b>133(23.83%)</b>	<b>00</b>	<b>07(1.25%)</b>	

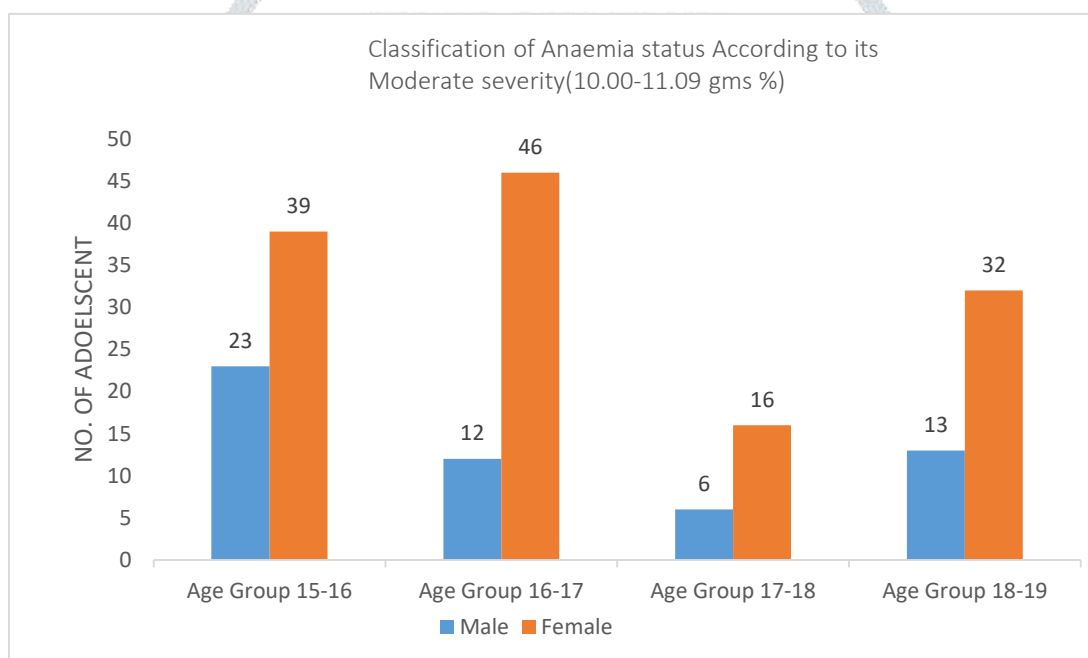
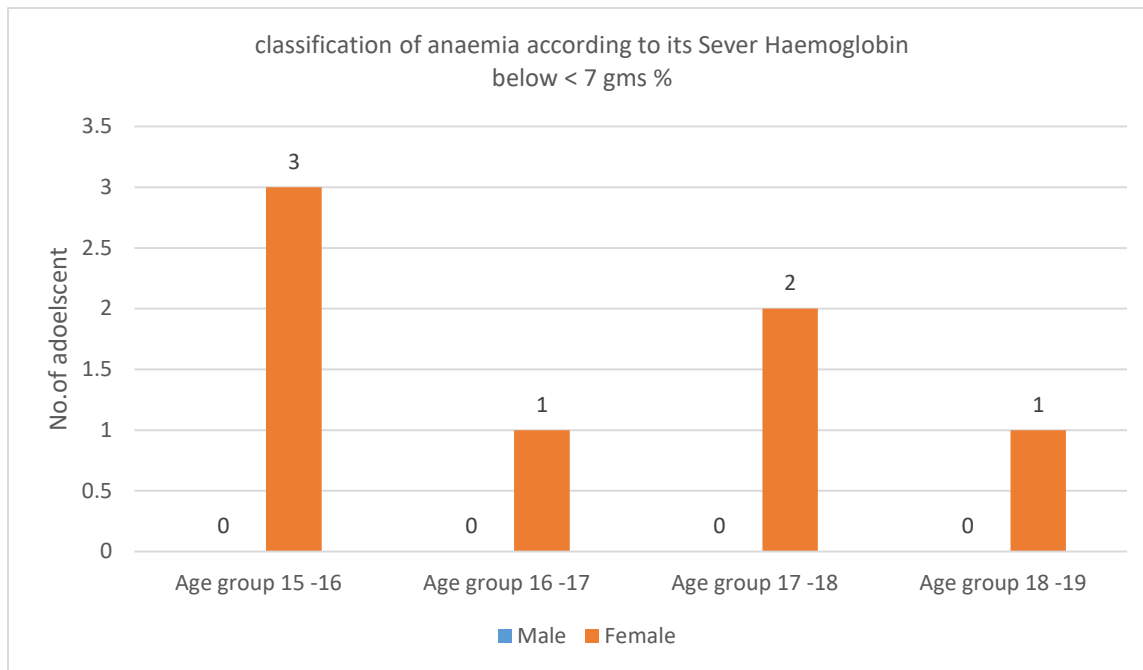


Table 6 Graph 2. Classification of Anaemia status According to its Moderate severity

Table 6 Haemoglobin status according to their age group for Moderate and Sever anemic shows that out of 558 adolescent boys and girls are different in moderate haemoglobine range, in age group 15-16, 23(4.12%) boys and girls are 39(6.98%), in age group 16-17,boys 12 (2.15%), girls 46(8.24%), in 17 - 18,boys 06(1.07%), girls 16(2.86%), in 18-19 age group boys were 13(2.32%), girls are 32(5.73%) in 18 -19 age group.



Graph 3.Graphically representation of anaemia according to its Sever Haemoglobin

Table 6 the sever haemoglobin rang shows from 15- 19 age group for boys are not in this group, boys were 00 %, but the risk factor arise in girls from the age group 15 – 19 03(0.53%),16-17 01(0.17%), 17-18 02(0.35%), 18-19 01(0.17%).Girls were 55.01 % from 558 adolescents and total boys were 23.65%.

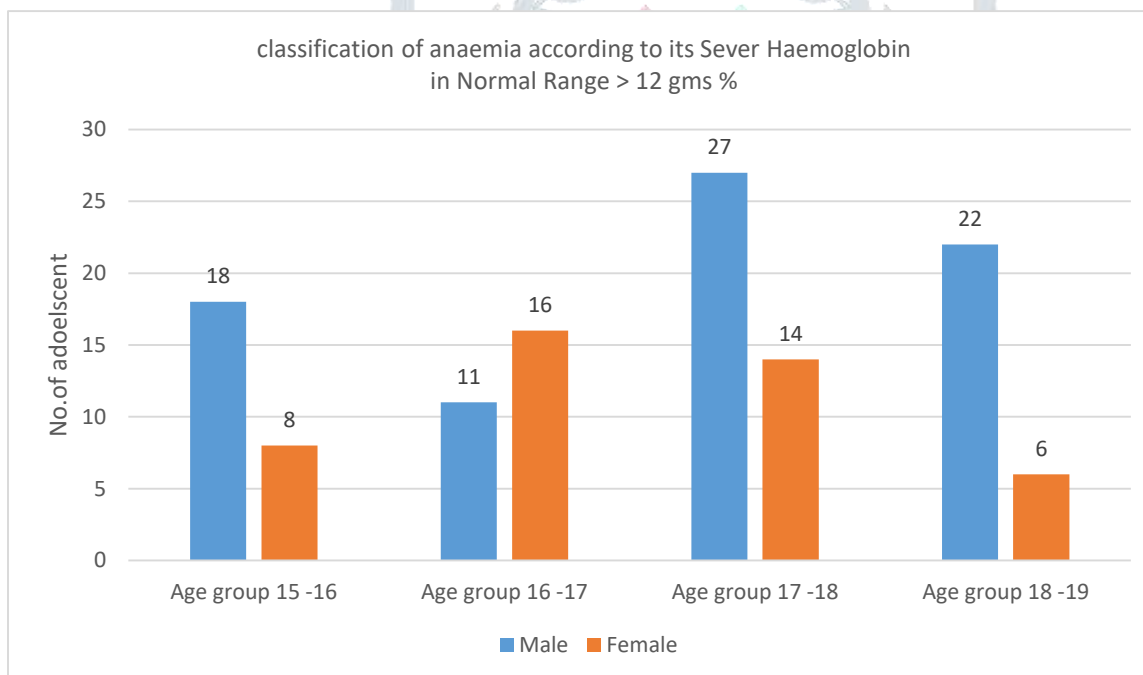


Table 01 shows Normal boys are 13.96 % for 558 adolescents and normal girls were 7.86 for 558 adolescents. At the time of study 588 adolescents were examined out of them 439 were anemic. Thus the prevalence of anaemia was (78.67%) and 21.33% were non anemic, out of them girls were 55.01% and boys were 23.65% are anemic. In table 4 out of 558 adolescent girls are 44 (7.88%) non anemic and 78(13.97%) boys are non-anemic for 558 adolescent.

**Discussion:-**

In our study the prevalence of anaemia among rural girls is high, it is a major health issue from the rural area across India. In today’s life due to malnutrition anaemia is very common among the adolescent age group. In our study 558 form, the age group 15 to 19 adolescent were observed from rural area karanjali village, the overall prevalence of anaemia was 78.67%, normal, mild, moderate and severe were observed, mild, moderate and severe adolescent needs iron and folic acid-rich supplements, adolescent also needs

the consumption of high iron food for increases hemoglobin and bring down the prevalence of anaemia among them by maintaining their health. The major issue of iron deficiency anaemia was found among adolescents. It seems that higher percentage of mild and moderate anaemia as compared to severe anaemia. Its demands iron and folic acid treatment which helps them to increases the hemoglobin. Arrange health educational programs related to nutritional valuable food which maybe also help to bring down the prevalence of anaemia among the adolescent age group. Our study help in containing maternal mortality. Especially in a country like India where marriage at a young age is followed by early pregnancies (18.2% of girls get married by the age of 15 years, and 47.4% get married by the age of 18)[15].The adolescent was aware of their health needs. Out of 558, 07(1.25%) girls were found < 7 gms/lit are suggested to refer to Primary Health Center (PHC) for further diagnosis and treatment.

It is also important to study male status of anaemia because it impact on physical growth, psychological impact on body an as well as other promotive health reason.

### Conclusion:-

In our study prevalence of anaemia among the adolescent group was 78.67 %. In our observation we found that many adolescents are not aware of their blood group and hemoglobin status, a maximum adolescent is found < 12.00 gms /lit HB. There are some factors which caused for anaemia that is low socioeconomic status, vegetarian diet, We also observed that the adolescent which having severe anaemia they also having fast for worshipping of God and having fast for 9 to 10 days in Navratri festival which is common in the rural area, illiteracy about hygiene, irregular menstrual cycle, excess bleeding in menstrual cycle, underweight girl's, low consumption of iron and folic acid tablets and infection like helminthic. Anaemia was more common in adolescents, with the majority of females suffering from mild hemoglobin. Based on these findings we recommend that adolescent girls be dewormed every six months, that iron and folic acid tablets be supplemented, and that nutritional education is provided to these adolescent girls through various programs.

### CAUSES OF LOW Hb

1. Malnutrition
2. Parasitic infection like helminthes
3. Fast
4. Excess bleeding in menstrual cycle.
5. Deficiency of vitamins

### SUGGESTIONS:-

Such type of activities is implemented like hygiene and promotion of proper utilization of iron and folic acid tablets, taking follow-up after 2-3 month for Hb, arrange hemoglobin camp by Primary Health Care (PHC) center, keep the history of deworming, advise for taking proper meals with vitamin C rich food, soy, nagli, meat, egg, milk, and its products, cereals, fruits and green vegetable, beet is also a natural source for increasing hemoglobin all these things are kept in regular diet. NGO, Colleges, schools, and government bodies must organized camping about anaemia and highlight its side effect. For improving iron status Nutrition Education and supplementation should be a part of the education system. Every six months each school and college are made mandatory for deworming the adolescent to prevent anaemia among them. For good health, PRANAYAMA should be done regularly.

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