

## To Study The Prevalence of Anemia Among The Adolescent Girls In Urban Training Health Center Tripuri- A Field Practice Area of Community Medicine Department, Government Medical College, Patiala, Punjab.

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### Abstract

**Background :** Nutritional Anemia is one of the major public health problems in the developing countries having not only an adverse impact on the overall efficiency of individuals, but also imposing an enhanced risk of morbidity due to infectious diseases. Adolescents are at a higher risk because of the gaps between the enhanced requirement of nutrients for their overall development and the actual intake. In the female adolescents, this is further aggravated due to regular loss of blood during menstruation. It affects adversely their adulthood and child bearing.

**Aims and Objectives :** To find out the prevalence of anemia among the adolescent girls and to study their dietary pattern and the gaps in the nutrition.

**Material and methods :** A cross sectional community based study was conducted on 250 adolescent girls residing in Tripuri area falling under Urban Training Health Center (UTHC), Department of Community Medicine, GMC Patiala. The subjects were selected by systematic randomized sampling technique from the line list of all the 4 areas under UTHC, prepared by the UTHC staff in December 2016 and the information was collected on the pre structured, pre tested proforma from the selected study subjects regarding socio demographic factors, dietary factors and menstrual factors by face to face interview technique. Hemoglobin was estimated by Sahli's method and the report was shared on the spot with the family. Data, thus collected was compiled and analyzed by using Microsoft Xcel and results were obtained.

**Results :** Prevalence of anemia among adolescent girls was found out to be 79.6 % with 63.6 % mild and 16 % moderate anemia. No subject suffering from severe anemia was detected. Age wise, 83.17 % adolescent girls below 14 years of age were found to be anemic, while 77.02 % were between 14 & 16 Years of age and 76.81 % were older than 16 years. Similarly, 87.65 % adolescent girls had not yet attained menarche, were found to be anemic while in those where menarche had already set in 75.73 % anemic. Anemic adolescent girls had a strong attraction towards junk food and many used to have it even every day.

**Conclusions :** A high prevalence of anemia has been detected among the adolescent girls in urban field practice area of GMC Patiala. Hence, nutritional status of the girls is required to be improved by providing counseling and nutrition supplementation and through regular supply of Iron Folic Acid Tablets.

**Keywords :** Adolescent girls, Anemia, Junk food, Line List, Menarche.

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### I. Introduction

Adolescence, according to World Health Organization, can be defined as a transitional phase between the childhood to adulthood and it is 10-19 years of age (1). The adolescents represent approximately 22 % of total population. This period is considered as a very crucial period as there is an enhanced requirement of nutrients besides extra emotional and psychological changes. Female adolescents need extra attention because deficiencies in them will be a contributory factor for low birth weight of the babies produced by them and maternal deaths in future. Moreover, they represent a major part of the population as a whole and about one fifth of female population in the world (2).

Nutritional Anemia is one of the major public health problems in the developing countries having not only an adverse impact on the overall efficiency of individuals, but also imposing an enhanced risk of morbidity due to infectious diseases. Although all age groups are at risk of suffering from Nutritional Anemia, yet adolescents face relatively a higher risk of it simply because of the gaps between the enhanced requirement of nutrients for their overall development and the actual intake. In the female adolescents, this is further aggravated

due to regular loss of blood during menstruation. According to WHO anyone with hemoglobin level less than 12 gm / dL of blood is anemic and the hemoglobin level less than 7gm/dL is severe anemia, 7 to less than 10 gm / dL is moderate while 10 to less than 12 gm / dL is mild anemia (3). Morbidity and risk of mortality increases with moderate to severe anemia especially the girls face an enhanced risk of giving birth to low birth weight babies and small for gestational age babies (4). Early detection and prompt correction of anemia in adolescent girls, thus, becomes the top most priority of any organization as the timely intervention will have a significant impact on reduction of morbidity and mortality during ante natal, natal and post natal period. It will also improve the child well being by contributing towards better birth weight and prevention of early childhood infections.

## II. Aims And Objectives

- i) To study the prevalence of anemia among the adolescent girls
- ii) To study the dietary pattern and the gaps in nutrition among adolescent girls.

## III. Materials And Methods

The present study, a cross sectional study was conducted on female adolescents residing in Tripuri area of Patiala city which, for health services, is being catered by Urban Training Health Center, Tripuri - a field practice area of Community Medicine Department, Government Medical College, Patiala. As per the survey conducted in December 2016 by the field staff of Urban Training Health Centre of the department, this area has a total population of 10109 persons which is dwelling at 4 localities namely Gurbhawan (1235), Gurunanak Nagar (3538), MCH Tripuri (3099) and Kashmiri Gurdwara (2237). The adolescent population in this area is 1606 which constitutes about 16 % of the total population and the area and sex wise distribution of adolescents is Gurbhawan (149 i.e.83 males and 66 females), Gurunanak Nagar (597 i.e.325 males and 272 females), MCH Tripuri (493 i.e.254 males and 239 females) and Kashmiri Gurdwara (367 i.e. 193 males and 174 females). Thus female adolescents in proposed study area is 751 i.e. 7.48 %.

Considering  $p=0.05$  and allowable error as 10% of the prevalence, sample size came out to be 215 (5). But for better coverage, a sample of 250 subjects was taken which covered about 33 % of female adolescents. The selection of the subjects was also made in the same proportion and it had been as: 22 out of 66 subjects from Gurbhawan, 91 out of 272 from Gurunanak Nagar, 79 out of 239 from MCH Tripuri and 58 out of 174 from Kashmiri Gurdwara. The subjects were selected according to the systematic randomized sampling technique from the line list available with the MCH center Tripuri and the houses of the selected adolescents were visited for data collection and hemoglobin estimation. The purpose of the study was explained to the subjects and information was collected on the pre tested Proforma (Annexure-I). Blood samples for hemoglobin estimation by Sahli's method were taken and estimation was made on the after written consent from the subject or guardian in case the subject was below 18 years of age on consent form (Annexure-II). The exclusion criteria for the subjects were fixed as – (i) pregnant female adolescent if any, (ii) unwilling subjects or (iii) unavailable subjects on second visit on subsequent day. Under such conditions, next female adolescent from the line list was selected for the study and the study was completed by interviewing all the required 250 subjects in the presence of other family members. The information regarding the level of estimated hemoglobin was immediately shared with the subjects/ family members and adequate nutrition advice was imparted.

The data, thus collected was compiled, analyzed, statistically tested and suitable recommendations were made as mentioned in the subsequent sections.

## IV. Observations And Results

Table 1 Distribution Of Anemia According To Severity

Level of Hemoglobin ( gm/dl)			
Severity	Hemoglobin Level	No.	%age
Severe	Below 7	NIL	NIL
Moderate	7-Below 10	40	16
Mild	10-Below 12	159	63.6
Normal	Above 12	51	20.4
<b>Total</b>		<b>250</b>	<b>100</b>

Table1 reveals that199 subjects out of 250 studied, (79.6 %) were anemic out of which majority 159 (63.6 %) were mildly anemic while 40, (16 %) were moderately anemic.

**Table 2** Distribution Of Anemia According To The Status Of Menarche

Menarche & Anemia				Statistical values
Status of menarche	Total	Anemic	%age	Chi square =4.787 P=0.02 significant
Not Attained	81	71	87.65	
Attained	169	128	75.73	
<b>Total</b>	<b>250</b>	<b>199</b>	<b>79.6</b>	

Table 2 shows that 169 adolescent girls out of 250 had attained menarche of which 128 (75.73 %) were found to be anemic while 81, who had not yet attained menarche, 71 (87.65 %) were anemic.

**Table 3** Distribution Of Anemia According To Age Of Adolescent Girls

Age wise Distribution of Anemia				Statistical values
Age in years	Total	Anemic	%age	Chi square =1.475 P=0.478 n.s.
10-14	107	89	83.17	
14-16	74	57	77.02	
More than 16	69	53	76.81	
<b>Total</b>	<b>250</b>	<b>199</b>	<b>79.6</b>	

According to Table 3, out of 107 adolescent girls who were below the age of 14 years, 89 (83.17 %), out of 74 between 14-16 years 57 (77.02 %) while out of 69 who were older than 16 years, 53 (76.81 %) were found to be anemic. Thus anemia decreases gradually as the age advances probably due to better understanding of quality of food.

**Table 4** Distribution Of Anemia According To Socio Economic Status Of The Family

S/E Status of Family & Anemia				Statistical Values
Class	Total	Anemic	%age	Chi square =3.17 P=0.520 n.s.
I	2	2	100	
II	64	48	75	
III	94	73	77.65	
IV	88	74	84.09	
V	2	2	100	
<b>Total</b>	<b>250</b>	<b>199</b>	<b>79.6</b>	

Table 4 reveals that anemia among adolescent girls belonging to Socio economic class II, III and IV was 75 %, 77.65 % and 84.09 % respectively which indicates that poorer the families, more the anemia while it was 100 % in both class I and class V due to non availability of good quality food in lower class and preference for junk food in upper class.

**Table 5** Dietary Habits Of The Adolescent Girls

Parameter	Number	%age
<b>Dietary Pattern</b>		
Non Veg	94	37.6
Veg	156	62.4
Eggs only	28	11.2
Jaggery	128	51.2
<b>Preference for Junk Food</b>		
Daily	26	10.4
Twice a week	45	18
Once a week	43	17.2
Once in fortnight or month	136	54.4

Miscellaneous Factors		
Worms	7	2.8
De worming	81	32.4
Pica	31	12.4
Fatigue	61	24.4

According to Table 5, 156 ( 62.4 %) adolescent girls were vegetarians while 94 ( 37.6 %) were non vegetarians. 114 (45.6 %) adolescent girls had a strong preference for junk food and take it daily or at least once or twice a week. Only 7 (2.8 %) had positive history of passage of worms in stools while 81 (32.4 %) were de wormed by the government during the last one year. 31 (12.4 %) adolescent girls gave positive history of pica while 61 ( 24.4 %) felt early fatigue during routine work. 128 (51.2 %) adolescent girls are in the habit of eating small quantity (app. 20 gms) jaggery after meals at least once a day

**Table 6** Distribution of anemia according to preference for junk food

Preference for *Junk Food & Anemia				Statistical values
Frequency	Total	Anemic	% age	Chi square = 1.852 P = 0. 6036 n.s.
Daily	26	21	80.76	
Twice a week	45	39	86.66	
Once a week	43	33	76.74	
Once in fortnight or month	136	106	77.94	
<b>Total</b>	<b>250</b>	<b>199</b>	<b>79.6</b>	

\*Junk food items(pizza, burger, noodles, softdrinks)

Table 6 reveals that anemia is slightly more amongst adolescent girls who consume junk food daily or twice a week (80.76 % and 86.66 % respectively) in comparison with those who take weekly or less frequently, however statistically, this difference has come out to be not significant.

## V. Discussion

Anemia has been a major public health problem throughout, especially in developing countries. In present study, prevalence of anemia in adolescent girls has come out to be 79.6 % which is higher than studies conducted by Mishra et al (6) which reported 73.7 %. Another study conducted in Lucknow by Singh J et al. (7) reported a prevalence as 56%.. Contrasting results, however, were revealed by Toteja GS et al (8), in which the prevalence of anemia was reported as 90.1 %,

Regarding the severity of anemia, present study has shown 63.6 % as mild, 16 % as moderate but no severe anemia. Higher rates were reported by a study done by Mishra P et al (9) in Ambala district of Haryana which showed mild, moderate and severe anemia as 75.3 %, 16.9 % and severe 7.8 % respectively. However, another study conducted in rural Wardha by Kaur S et al (10), reported 38.4 %, 20.8 % and 0.6 % as mild, moderate and severe anemia respectively. In current study, a reverse relationship of anemia with socio economic status was observed. From class II – class IV it has shown an upward trend i.e. lower the class, more is the anemia while in classes V and I, all the adolescent girls (2 in each class) were found to be anemic probably due to non availability of good quality food in class V and preference for junk food in class I. Study done by Singh R et al (11), in Meerut also has reported similar reverse relationship between socio economic scale and Anemia form class II to V. In our study, younger and non menstruating adolescent girls have higher prevalence of anemia, whereas study done in Maharashtra by Meenal V et al (12) has reported higher anemia among menstruating adolescent girls. Another study done by Goyal N et al in Haldawani in Uttarakhand (13), has shown concordance with our study, where younger girls have higher anemia.

In our study majority of adolescent girls were vegetarian and all girls have predisposition for junk food though there frequency of intake of junk food varies, with majority taking junk food once in 15-30 days. However, statistically no significance was found. In the present study, only 32.4 % adolescent girls were found to be de wormed during the period of last one year despite of the efforts by the state government.

## VI. Recommendations

Counseling of adolescent girls and families on quality of food, techniques of preparation of food and steps for prevention of anemia during adolescence and early adulthood should be done regularly in the schools and detailed chapter on nutrition may be added in the curriculum.

Regular supply of IFA tablets under WIFS program to all the adolescent girls especially those who have attained menarche should be provided. De worming of the adolescent girls at regular intervals should be ensured.

## **VII. Conclusions**

A high prevalence of anemia has been detected among the adolescent girls in urban field practice area of GMC Patiala. Faulty dietary pattern is responsible for the situation. Regular de worming WIFS scheme is not very effective in the area. Hence, nutritional status of the girls is required to be improved by providing counseling and nutrition supplementation and through regular supply of Iron Folic Acid Tablets.

## **Acknowledgements**

Authors are thankful to the UTHC staff especially Ms. Kulwant Kaur, MPHS(F), Ms. Aruna,MPHW (F), Mr. Jasbir Singh, DMLT and the Interns posted in the Community Medicine department during the period of data collection for their whole hearted co operation.

## **References**

- [1]. World Health Organization, Programming for adolescent health and development, WHO Tech Rep Ser No. 1996:2.
- [2]. Meenal Vinay Kulkarni, P M Durge, and N B Kasturwar. Prevalence of Anemia Among Adolescent Girls In An Urban Slum. National
- [3]. Journal of Community Medicine Vol 3 Issue Jan-March 2012; 108-110.
- [4]. Control of Nutritional Anemia with special reference to Iron Deficiency: WHO Tech. Rep. Ser. No. 580;1975.
- [5]. YiSW, Han YJ, and Ohrr H. Anemia before pregnancy and risk of pre term birth, low birth weight and small for gestational age birth in
- [6]. Korean women, Eur J Clin Nutr.2013; 67: 337-342
- [7]. Lwanga SK, and Lemeshaw S. Sample size determination in health, a practical manual: WHO ; 1991.
- [8]. Mishra et al; Study of physical growth, anemia and reproductive health status of adolescent girls in urban poor ( Delhi) 1995 published by
- [9]. MAMTA Health Institute for and Child.
- [10]. Singh J, Singh JV, Srivastva AK, Suryakant. Health status of adolescent girls in the slums of Lucknow. Indian J Community Med, 2006; 31 (2): 102-03.
- [11]. Toteja GS, Singh P, Dhillon BS et al. Prevalence of anemia amongst pregnant women and adolescent girls in 16 districts of India. Food Nutr. Bull. 2006, 27: 311-316
- [12]. Mishra P, Ahluwalia SK, Garg PK, Kar R, Panda GK (2012). The prevalence of anemia among reproductive age group (15-45) women in a PHC at rural field practice area of MM Medical College, Ambala, India. J Women's Health Care 1 : 113, doi : 10.4172/2167-0420.1000113.
- [13]. Kaur S, Deshmukh PR, and Garg BS. Epidemiological correlates of nutritional anemia in adolescent girls of rural Wardha. Indian J Community Med, 2006; 31 : 255-58.
- [14]. Singh R, Bhatnagar M, Singh JV, Garg SK, Chopra H, Bajpai SK. Prevalence of anemia in adolescent girls in an urban area of Meerut, Indian J of Community Health, 2008; 21: 41-43.
- [15]. Kulkarni Meenal Vinay, Durge PM, and Kasturwar NB. Prevalence of anemia among adolescent girls in an urban slum, National J of Community Med, 2012; 3 (1): 108-111.
- [16]. Goyal, Neha, Rawat CMS, and Jha SK. Prevalence of anemia among school adolescent girls. Indian J Comm Health, 2015; 27, 3 : 398 -401.

\*Dr. Virender Verma. "To Study The Prevalence of Anemia Among The Adolescent Girls In Urban Training Health Center Tripuri- A Field Practice Area of Community Medicine Department, Government Medical College, Patiala, Punjab." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.7 (2017): 107-11.