Original Research Article

A study of prevalence of anemia in the school going adolescents' girls in the field practice area UHTC of tertiary health care centers

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Abstract

Background: Adolescence has been defined by the World Health Organization as the period of life spanning the ages between 10 to 19 years. **Aims and Objectives:** To study the prevalence of Anemia in the school going adolescents girls in the field practice area UHTC of tertiary health care centers. **Methodology:** This was a cross-sectional study carried out in the school going adolescent girls (10-19 Yrs.) by taking the consent of parents and school head master all the girls in all schools nearer to field practice area were surveyed in the one year period i.e. May 2017 to May 2018 . In the one year period there were 641 girls enrolled into the study. The information of participants like age, results of CBC and peripheral smear were entered in the excel sheets and statistical analysis done by SPSS 19 version software. **Result** In our study The overall prevalence of anemia in adolescent girls was 23.71%, The majority of the patients were in the age group of 10-13 Yrs. were 33.58% followed by 13-16 Yrs. were 28.00%, in 16-19 were 18.21%. This observed difference is statistically significant ($\chi 2$ =14.72, df= 2, $p<0.005$). The majority of the patients were Normal (>12) i.e. 76.29%, followed by Mild anaemia (11-11.9).In 13.10%, Moderate anaemia (8-10.9) in 9.83%, Severe (<8) in 1.56%. On peripheral smear Normocytic Normochromic anemia present in 53.50% followed by Microcytic hypochromic anemia in 36.31%, Dichromic in 10.19%. **Conclusion:** It can be concluded from our study that the overall prevalence of anemia was 23.71% The majority of the patients were in the age group of 10-13 Yrs, the most commonly anemia was moderate severity and Normocytic Normochromic, Microcytic hypochromic

Key Word: Anemia in adolescents girls, Severity of Anemia, Adolescent and Health

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INTRODUCTION

Adolescence has been defined by the World Health Organization as the period of life spanning the ages between 10 to 19 years. This is the formative period of life when the maximum amount of physical, psychological, and behavioral changes take place. This is a vulnerable period in the human life cycle for the development of nutritional anemia, which has been constantly neglected by public health programs. Girls are more likely to be a victim due to various reasons. In a family with limited resources, the female child is more likely to be neglected. She is deprived of good food and education, and is utilized as an extra working hand to carry out the household chores. The added burden of menstrual blood loss, normal or abnormal, precipitates the crises too often[1]. Anaemia is the most common nutritional disorder worldwide. According to WHO adolescent age group is defined as life span between 10-19 years 2. In

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India the prevalence of anaemia among adolescent girls were 56% and this amounts to an average 64 million girls at any point in time3. Studies conducted in different regions of India shown that the prevalence of anaemia was 52.5% in Madhya Pradesh, 37% in Gujarat, 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 Tamilnadu and in Kerala (19.13% among college students and 96.5% in tribal area)[4,12]. The major risk factors identified from the above studies were socio-economic status, blood loss during menstruation, nutritional status, hand hygiene and worm infestation. So as this phase of life in Girl is most sensitive so we have studied the prevalence of anemia

METHODOLOGY

This was a cross-sectional study carried out in the school going adolescent girls (10-19 Yrs.) by taking the consent of parents and school head master all the girls in all schools nearer to field practice area were surveyed in the one year period i.e. May 2017 to May 2018 . In the one year period there were 641 girls enrolled into the study. All of them undergone routine investigation like CBC, by cell counter and peripheral blood smear The information of participants like age, results of CBC and peripheral smear were entered in the excel sheets and statistical analysis done by SPSS 19 version software.

RESULT

Table 1: Distribution of the adolescent girls with respect Age and Anemia

Age	Anemic	Normal	Total
10-13	45(33.58)	89 (66.42)	134(100)
13-16	42 (28.00)	108(72.00)	150(100)
16-19	65(18.21)	292(81.79)	357(100)
Total	152(23.71)	489(76.29)	641(100)

(χ^2 =14.72, df=2, p<0.005)

The overall prevalence of anemia in adolescent girls was 23.71%, the majority of the patients were in the age group of 10-13 Yrs. were 33.58% followed by 13-16 Yrs. were 28.00%, in 16-19 were 18.21%. This observed difference is statistically significant (χ^2 =14.72, df=2, p<0.005)

Table 2: Distribution of the patients as per the Grading of Anemia

Grading of anemia (hb in gm/dl)	Number of girls	Percentage
Normal (>12)	489	76.29
Mild anaemia (11-11.9)	84	13.10
Moderate anaemia (8-10.9)	63	9.83
Severe	10	1.56
Total	641	100.00

The majority of the patients were Normal (>12) i.e. 76.29%, followed by Mild anaemia (11-11.9) In 13.10%, Moderate anaemia (8-10.9) in 9.83%, Severe (<8) in 1.56%

Table 3: Distribution of the Anemia patients as per the Peripheral smear

Peripheral smear	No.	Percentage (%)
Normocytic Normochromic	84	53.50
Microcytic hypochromic	57	36.31
Dichromic	16	10.19
Total	157	100.00

On peripheral smear Normocytic Normochromic anemia present in 53.50% followed by Microcytic hypochromic anemia in 36.31%, Dichromic in 10.19%.

DISCUSSION

Anemia is a condition characterized by reduction in the number of red blood cells and/or hemoglobin (Hb) concentration.[13] Anemia is a global public health problem affecting both developing and developed countries and has major consequences for human health as well as social and economic development. It affects 24.8% of the world population.[14] The burden of anemia varies with a person's age, sex, altitude, and pregnancy.[13] The worldwide prevalence of anemia among adolescents is 15% (27% in developing countries and 6% in developed countries).[15] In Ethiopia, the prevalence of anemia among the age group of 15–19-year-old males and females ranged from 2.8% to 15% and 9.3% to 34.8%, respectively.[16] Causes of anemia in developing countries are multi-factorial, which include nutritional (iron, folate, and vitamin B_{12}) deficiencies, infections (such as malaria and intestinal parasitic infection [IPI]), and chronic illness.[17] Iron deficiency anemia is a condition in which anemia occurs due to lack of available iron to support normal red cell production.[18] The prevalence of iron deficiency and subsequent anemia increases at the start of adolescence. In girls, this is caused by increased requirements of nutrition for growth, exacerbated a few years later by the onset of menstruation, but subsides for boys.[19] The physical and physiological changes that occur in adolescents place a great demand on their nutritional requirements and make them more vulnerable to nutritional deficiencies. Adolescents are at high risk of iron deficiency and anemia. This is due to rapid pubertal growth with sharp increase in lean body mass, blood volume, and red cell mass, which increases iron requirements for myoglobin in muscles and Hb in the blood. Iron requirement increases two- to three folds from a preadolescent level of ~0.7–0.9 mg iron/day to as much as 1.37–1.88 mg iron/day in adolescent boys and 1.40–3.27 mg iron/day in adolescent girls.[19,20] Anemia in adolescence has serious implications for a wide range of outcomes, and nearly all of the functional consequences of iron deficiency are strongly related to the severity of anemia. It causes reduced resistance to infection, impaired physical growth and mental development, and

reduced physical fitness, work capacity, and school performance.[19 ,21,23].In our study The overall prevalence of anemia in adolescent girls was 23.71%,The majority of the patients were in the age group of 10-13 Yrs. were 33.58% followed by 13-16 Yrs. were 28.00%, in 16-19 were 18.21%. This observed difference is statistically significant (χ^2 =14.72, df=2, p<0.005), this can explained by the fact that this 10-13 early start of menarche and less nutritional intake with respect to physiological demand. The majority of the patients were Normal (>12) i.e. 76.29%, followed by Mild anaemia (11-11.9) In 13.10%, Moderate anaemia (8-10.9) in 9.83%, Severe (<8) in 1.56%. On peripheral smear Normocytic Normochromic anemia present in 53.50% followed by Microcytic hypochromic anemia in 36.31%, Dichromic in 10.19%. These findings are similar to P.M. Siva *et al* [24] they found that The prevalence of anaemia was 21%. Risk factors associated with anaemia in the univariate analysis were presence of ova or cyst in stool (p = 0.003, OR = 2.94) and number of pads per day during menstruation (p=0.004). Protective factors were hand washing after toileting (p = 0.021, OR = 0.311), hand washing before food intake (p = 0.026, OR = 0.5), foot wear usage (p = 0.022, OR = 0.25) and jaggery consumption (0.042). The factors which were significant in logistic regression were worm infestation, number of pads per day, washing hands before food intake and foot wear usage

CONCLUSION

It can be concluded from our study that the overall prevalence of anemia was 23.71% The majority of the patients were in the age group of 10-13 Yrs, the most commonly anemia was moderate severity and Normocytic Normochromic, Microcytic hypochromic

REFERENCES

1. World Health Organization. Programming for adolescent health and development. WHO Tech Rep Ser No. 1996:2.
2. World Health Organization. Strategic directions for improving adolescent health in South-East Asia Region. 2011 [cited 2016 Jun 10]; Available from: http://apps. who.int/iris/handle/10665/205917.
3. Aguayo VM, Paintal K, Singh G. The adolescent girls' anaemia control programme: a decade of programming experience to break the inter-generational cycle of malnutrition in India. Public Health Nutr. 2013; 16(9):1667–76
4. Raj A, Chopra AK. A study showing correlation between anaemia and common parasitological diseases among adolescent girls in villages of PHC Belkhera, Madhya Pradesh, India. Int J Community Med Public Health. 2016; 3(1):373–79.
5. Aishwarya MV, ParitaGajjar DP, Raykundaliya RS, Patel VH, Neeta D. Prevalence of anemia and epidemiological correlates among school going adolescent boys of Vallabh Vidyanagar (Gujarat). Indian J Community Med. 2015; 2014–5.
6. Biradar SS, Biradar SP, Alatagi AC, Wantamutte AS, Malur PR. Prevalence of anaemia among adolescent girls: a one year cross-sectional study. J Clin Diagn Res. 2012; 6: 372-77.
7. Patil SV, Durgawale PM, Kakade SV, Dighe S. An assessment of interventional strategies for control of anemia among adolescent girls in an urban slum of Karad, Dist. Satara, Maharashtra. 2014 [cited 2016Jun9]; Available from: http://trafficlight.bitdefender.com/info?url=http%3A//ajms.alameenmedical. org/ArticlePDFs/5%2520AJMS%2520V7.N3.2014%2520p%2520195-200. pdf*and*language=en_US
8. Gupta A, Parashar A, Sharma D, Thakur A. Anemia among adolescent girls in Shimla hills of north India: Does BMI and onset of menarche have a role? Indian J Med Sci. 2012; 66(5):126.
9. Sachan B, Idris MZ, Singh A. Effect of socio-demographic characteristics on the prevalence of anemia among school going adolescent girls in Lucknow district, India. South East Asia J Public Health. 2013; 2(1):8–12.
10. Koushik NK, Bollu M, Ramarao NV, Nirojini PS, Nadendla RR. Prevalence of anaemia among the adolescent girls: a three months cross-sectional study. Women. 2014; 14(16):12.
11. Devi R, Jaysree TM, Felix AJW, Ethirajan N. Prevalence of anemia among children age 10 to 15 years in urban, Chidambaram. J Drug DiscovTher. 2014; 2(22):67–70.
12. Manjula VD, Parameshwari P, Pothen L, Sobha A. Prevalence of anaemia among female undergraduate students of government medical college Kottayam, Kerala. Int Med Health Sci. 2014; 3(2):133-38.
13. De LM, Pena-Rosas RJP, Cusick S, *et al*. Hemoglobin Concentrations for the Diagnosis of Anemia and Assessment of Severity; Vitamin and Mineral Nutrition Information System. Vol11. Geneva: World Health Organization; 2011:1.
14. Benoist BD, McLean E, Egli I, *et al*. Worldwide Prevalence of Anemia 1993–2005. Geneva: World Health Organization; 2008.
15. Balcı YI, Karabulut A, Gürse D, *et al*. Prevalence and risk factors of anemia among adolescents in Denizli, Turkey. Iran J Pediatr. 2012; 22(1): 77–81.
16. Ethiopia Central Statistical Agency. Ethiopia Demographic and Health Survey 2011; Preliminary Report. Calverton, MD: Addis Ababa Ethiopia: Central Statistics Agency; 2011.
17. Cheesbrough M. District Laboratory Practice in Tropical Countries. 2nd ed. Cambridge: Cambridge University Press; 2005.
18. Ciesla B. Hematology in Practice. 2nd ed. Philadelphia, PA: FA Davis Company; 2011.
19. Usha R. Nutritional Anemia. Boca Raton, FL: CRC press; 2001: 8–12.
20. World Health Organization. Prevention of Iron Deficiency Anemia in Adolescents: A Role of Weekly Iron and Folic Acid Supplementation. Geneva: World Health Organization; 2011.

21. Beard JL. Iron biology in immune function, muscle metabolism and neuronal functioning. J Nutr. 2001; 131: 568S–580S.
22. Halterman JS, Kaczorowski JM, Aligne CA, *et al.* Iron deficiency and cognitive achievement among school-aged children and adolescents in the United States. Pediatrics. 2001; 107: 1381–1386.
23. Jain M, Chandra S. Correlation between hematological and cognitive profile of anemic and non anemic school age girls. Curr Pediatr Res. 2012; 16(2):145–149.

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