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Research Article



Assessment of Nutritional Status and Prevalence of Anaemia among Adolescent girls (17-18 years)

Sajneetha Sukapriya.M¹ and Krishnaprabha .V^{2*}

Dr. N.G.P. Arts and Science College, Coimbatore, Tamilnadu, India

*Corresponding author

Abstract

Anaemia is the most prevalent nutritional problem worldwide and it is mainly caused due to iron deficiency. Its prevalence is highest among young children and women of child bearing age particularly in pregnant women. This study was conducted to assess the prevalence rate of adolescent girls of age group of 17-18 years. Hemoglobin level was analysed to assess the iron status of girls and identify who are in anaemic conditions. Nutritional status was assessed using Anthropometry, Biochemical, Clinical and dietary assessment. The Dietary assessment of girls was poor when compared with Recommended Dietary Allowance and this can be achieved by changing their dietary habits and including iron rich foods in regular diet. By the results of haemoglobin level it was known that about 28 percent of girls were anaemic, 3 per cent of them were severely anaemic and 56 per cent of them were normal. To reduce the Prevalence rate nutrition education has been given to the adolescent girls.

Keywords: Adolescent girls, Anaemia, Prevalence rate, Anthropometry, Nutritional Status.

Introduction

Adolescent is a transition from dependent childhood to independent and responsible adulthood. The World Health Organization (WHO) defined adolescent as the population of 10-19 years of age (WHO, 1986). Adolescent is a vulnerable period in human life cycle when nutritional requirements increase due to the adolescent growth spurt. It is becoming increasingly evident that control of anaemia in pregnant women may be more easily achieved if satisfactory iron status of the adolescent females can be ensured, prior to marriage (Jondhale *et al.*, 1999). India has the world's highest prevalence of iron deficiency anaemia among women, with 60 to 70 per cent of the adolescent girls being anaemic. It was found that 90% prevalence of anaemia is among adolescent girls from 16 districts of India, with 7.1% having severe anaemia (Toteja GS *et al.*, 2006). Adolescence is considered as a nutritionally critical period of life (Shilpa S. Biradar *et al.*, 2012). The pre-pregnancy nutritional status of young girls is important as it impacts on the course and the outcome

of their pregnancy. Hence, the health of adolescent girls demands special attention.

Anaemia is global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development. Anaemia affects mainly the women in child bearing age group, young children and adolescent girls (Dreyfuss ML *et al.*, 2000). It covers large group of population, Iron reserve subsequently helps adolescent girls for better reproductive outcome and deficiency of iron cause difference in performance as well as education achievement of both sexes (Atukorala TMS *et al.*, 1994). Iron deficiency is usually caused by malnutrition that is inadequate iron intake, either from lack of food or from high consumption of the wrong foods. Iron deficiency arises because of an iron-poor diet but it can also be due to a defect intestinal absorption of iron. In developing countries parasitic infection in digestive tract, cause anaemia (Ramesh Verma *et al.*, 2014).

Materials and Methods

Sample Size

The Present study was undertaken to assess the iron status of adolescent girls studying at Dr. N.G.P. Arts and Science College, Coimbatore belonging to the age group of 17-18 years. The Sample size was 100 girls selected from students pursuing their first year graduation in biosciences departments. Background information, Anthropometric measurements, clinical status and menstrual history were elicited through a formulated questionnaire. Dietary pattern method was used to collect the details about dietary intake of the respondents which is useful to identify their food habits.

Anthropometric Measurements

Anthropometry is the universally acceptable inexpensive and most sensitive parameter for assessing the nutritional status. An anthropometric measurement such as Height, Weight and BMI was assessed. Body weight is the most widely used and simplest reproducible anthropometric measurement for the evaluation of nutritional status of the population where as height is the principle measure of skeletal body tissue (Thirumani devi *et al.*, 2005).

Biochemical Assessment

The haemoglobin levels were estimated through cyanmethaemoglobin method. Ethical clearance was obtained from the KMCH Ethics Committee Ref :

(EC/AP/335/01/2015).The blood(1 Millilitre) was drawn from Adolescent girls and haemoglobin level was estimated.

Nutrition Education

Nutrition education was given to all the respondents. Power point presentation was presented, which includes Etiology, symptoms, inhibitory factors, foods to be avoided and included in the diet and the importance of iron rich foods which is to be consumed in their daily diet.

Results

Background Information

The mean age of the 100 selected subjects from 17-18 years. All the selected subjects were between 17-18 years of age. Three fourth (77%) of the adolescent group lived in families consisting of about 4-5 members, 19% consist of 6-9 members and 4% above 9 members. The per-capita income of the adolescent families ranged from 39 percent families were in the income level of (Rs.10,000 and above), 41 percent of families were in the income level of (Rs.5,000 - 10,000), 18 percent families were in income level of (Rs.2,000 – 4,000) and 2 percent of families were in the income level of (Rs.1,000 – 2,000).

Anthropometric Measurements

The mean height of the girls was found to be found to be 156.46 ± 6.63 cm, while mean weight was 51.45 ± 8.93 kg, and from the above values BMI was 22.48 ± 6.80 .

Table I Mean height, Weight and BMI of the selected subjects (N=100)

Anthropometric measurements	Mean value
Height(cm)	156.24 ± 6.64
Weight(kg)	51.45 ± 8.93
BMI	22.48 ± 6.80

Blood Haemoglobin

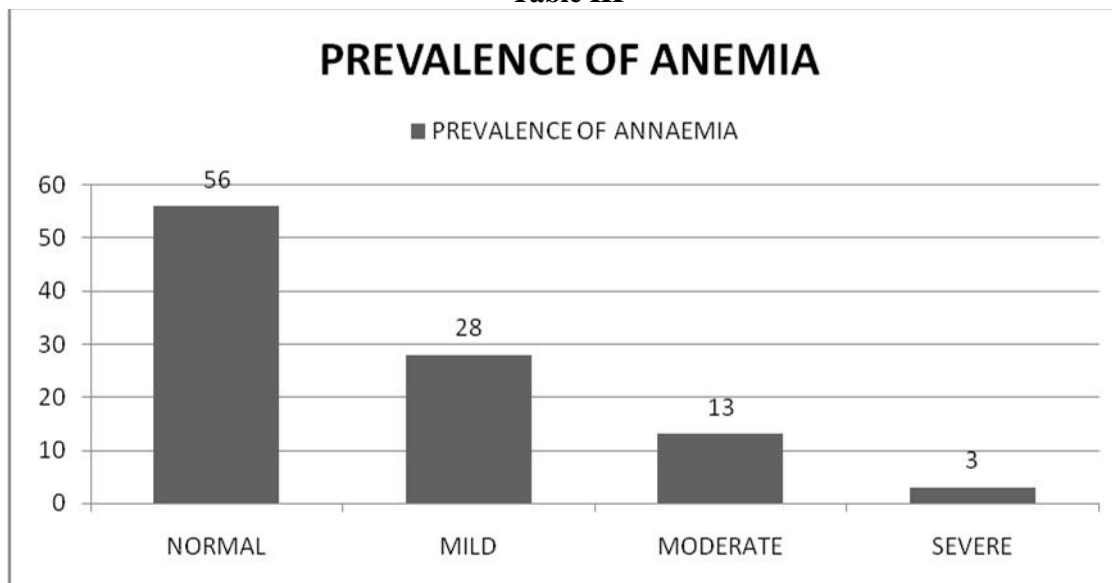
The adolescent girls based on their haemoglobin levels were categorized into non-anaemic and anaemic, the cut off for which was 12g/dl (WHO/ UNICEF/ UNO). Anaemia was further grouped as mild (Hb 10-12g/dl)

moderate (Hb 7-10 g/dl) or severe (Hb below 7g/dl). From the result it shows that 56 % were found to be normal 28 girls were found to be mildly anaemic, 13 % were found to be moderately anaemic, 3 % were severely anaemic.

Table II Haemoglobin Level of Adolescent girls

Haemoglobin level	Number	%
Normal (above 12g/dl and above)	56	56
Mild (10-11.99g/dl)	28	28
Moderate (7-9.99g/dl)	13	13
Severe (below 7g/dl)	3	3

Table III



Clinical Status

It was seen that approximately 90 percent of girls had general weakness and 20 percent of girls had pale and dry skin and other symptoms such as pale pink eye lid, angular chelosis, glossitis and palpitation were not found among the girls.

Menstrual History

The mean age for menarche was 13 years. The 45 and 55% of girls had regular and irregular menstrual cycle respectively. About 45 % of girls had menstrual cycle at 28 days interval whereas 43% had in 30 days, 8 % had in 35 days and 4% had more than 35 days.

Table IV Classification of girls according to Menstrual History

Variables	N	Percentage
Regular Menstruation	45	45
Irregular Menstruation	55	55
Menstrual Cycle		
28 days	45	45
30 days	43	43
35 days	8	8
>35 days	4	4

Dietary pattern of the subjects

The Dietary intake of nutrients of adolescent girls was assessed by dietary pattern method. The daily intake of foods consumed daily, weekly once, weekly twice, monthly, occasionally and never included in their diet were included in the dietary assessment.

Cereal and Pulses

Cereals was consumed daily by all subjects, rice is stable food in India so rice is consumed daily, other cereals such as wheat, ragi was included weekly in their diet. Pulses such as Red gram dhal were consumed regularly and other pulses like Bengal gram, black gram, green gram, soya bean were consumed weekly once in their diet.

Vegetables and Fruits

Green leafy vegetables were not included daily in their diet. Drum stick leaves were consumed weekly once, 20% of the subjects never include green leaves in their diet. Other Vegetables such as beans, ash gourd, brinjal, drum stick were included weekly once and 30 % of subjects never included Bitter gourd in their diet. Roots and tubers like Carrot, Potato and Beet root were included weekly once and 50% of subjects never included radish in their diet.

Fruits were consumed by all subjects regularly; banana was included daily by 70% of the subjects. Guava, Apple, Dates and Musambi were consumed weekly once by all subjects.

Milk and Milk products

Milk and its products were consumed daily. About 90% of the subjects consumed and 10% never

included in their diet. Curd, Ghee and butter were included weekly once in their diet by all subjects.

Animal Foods and Fast Foods

Animal foods like Mutton, chicken, beef, egg and fish were consumed weekly once. About 10% of the subjects never included in their diet. 25% of the subjects included fast foods occasionally in their diet.

Discussion

Anaemia is a major public health concern in pre-school children and pregnant women in the developing world. While many studies have examined these two at-risk groups, there is a paucity of data on anaemia among adolescents who were living in developing countries, in the complex ecologic context of poverty and malnutrition (Kara. B *et al.*, 2006).

In females, the higher prevalence of anaemia observed reflect the adverse effect of lower dietary iron intake with menstrual blood loss, which imposes extra demand for iron. In the recent study conducted in semi urban Nepal, the prevalence of anaemia in adolescent girls aged 11-18 years was found to be about 68.8% (Shah B.K *et al.*, 2002).

A study conducted to assess the anaemia among adolescent girls in rural areas of Hassan District, Karnataka, South India. In this present study it was seen that among the 45.2% of anaemic adolescent girls 40.1% had mild anaemia, 54.92% had moderate anaemia and 4.92% had severe anaemia. A high prevalence of anaemia among adolescent girls was found, which was higher in low economic strata. It

was seen that anaemia affects overall nutritional status of adolescent girls (Siddharam S M et al., 2010).

The present study was carried out of 100 subjects, 56 girls were found to be normal 28 girls were found to be mildly anaemic, 13 girls were found to be moderately anaemic, 3 girls were severely anaemic. Anaemia can be reduced by creating awareness among adolescent girls

Conclusion

The present study was undertaken to assess the nutritional status and prevalence rate of anaemia among Adolescent girls of age group (17-18) years. Haemoglobin results shows that 56 percent of girls were found to be non anaemic, 3 per cent of girls were severely anaemic and 28 per cent of them were mildly anaemic 13 per cent of the girls were moderately anaemic conditions. Dietary intake was low when compared to Recommended Dietary allowances. About 50% of the girls never included green leafy vegetables in their diet. Cereals and pulses were consumed daily. Fruits were consumed weekly once by all girls. Milk and milk products were included daily by all girls. Nutrition education has been given to all girls to reduce the prevalence rate of anaemia among adolescent girls and on various health and health issues. Prevalence rate can be reduced by including iron rich foods and changing their dietary habits.

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