A Study on Anemia Related Knowledge Among Adolescent Girls

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Abstract: To determine the nutritional knowledge among adolescent girls the study was undertaken on 100 adolescent junior college students of Hyderabad. A questionnaire has been developed to collect the demographic profile of the subjects, food habits of the subjects and food-frequency questionnaire (FFQ) was used. Most of the subjects were within the age range of 15-17yrs, living in nuclear family, having non vegetarian food habits and belong to middle income group. The mean height and weight of the subjects was 156.4±5.98cm and 46.2±8.28 kg. 63% of the subjects were normal and 33% subjects were underweight. Most of the subjects were having faulty food habits; 60% of subjects eat out once a week followed by 23% subjects eat out twice a week and most of them preferred to eat fast foods and carbonated beverages. Only 25% of the subjects were having good knowledge about anemia. The results show that the nutrition education intervention is required for the adolescent girls to create awareness and to disseminate the knowledge related to the prevention and control of anemia.

Keywords: Anemia, Food Frequency, Food Habits, Nutritional Knowledge

1. Introduction

Anemia is a condition in which the number of red blood cells and consequently their oxygen-carrying capacity is insufficient to meet all the body’s physiologic needs which are vary with a person’s age, gender, altitude, smoking and different stages of pregnancy. Iron deficiency is thought to be the most common cause of anemia globally, but some other nutritional deficiencies (including folate, vitamin B₁₂ and vitamin A), acute and chronic inflammation, parasitic infections, and inherited or acquired disorders can cause anemia (4). Anemia is estimated to contribute to more than 115,000 maternal deaths and 591,000 perinatal deaths globally per year (6). Anemia is very high (ranging between 80-90%) in preschool children, adolescent girls pregnant and lactating women (11,12). There are about 1.2 billion adolescents in the world, which is equal to 1/5th of the world’s population and their numbers are increasing. Out of these, 5 million adolescents are living in developing countries (International Letters of Natural Sciences 2 (2015) 24-32 -25-. Out of 1 billion total Indian populations, 21% are adolescents (10). The world’s adolescent population is facing a series of serious nutritional challenges which are not only affecting their growth and development but also their livelihood as adults. Yet, adolescents remain a largely neglected, difficult-to-measure and hard-to-reach population, in which the needs of adolescent girls in particular, are often ignored (5). The commonest causes of anemia in developing countries, particularly among the most vulnerable groups (pregnant women and preschool age children), are nutritional disorders and infections (7). Although various programmes have been initiated by sovereign government where the supplements are provided to meet the protein and calorie requirements of the vulnerable population. However, Recommended Dietary Allowances (RDA) for micronutrients is not met through diet or supplements. It is mandatory that proper and sustained dietary and behavioral changes should be made to alleviate micronutrient malnutrition. For the development of intervention programme there is a need to assess the existing knowledge level of subjects therefore, the present study has been conducted to assess the nutritional status and anemia related knowledge of the adolescent girls.

2. Methodology

Hundred college going girls from junior college
Hyderabad was selected randomly to assess their nutritional status and anemia related knowledge and awareness. A structured questionnaire developed to assess their demographic profile, food habits of the subjects Food frequency questionnaire (FFQ) was used to collect the food intake related information. Anemia related knowledge and awareness was assessed by using a pretested questionnaire. Height and weight of the subjects was measured by the standardized methods. The data has been analyzed by suitable statistical methods.

3. Results

In the study subjects more than fifty per cent of the subjects were in the age range of 14-16 years, 87% were living in nuclear family, most of them were non vegetarian and belongs to middle income group (table 1). The table 2 shows that the average height of the subjects was 156.4±5.98 average weight was 46.2±8.28 and average BMI 19.5 kg/m². The nutritional status of the subject has been assessed by the help of WHO cut offs on percentile basis. It was found that 63% of the subjects were normal, 33% underweight, 3% subjects were overweight and 1% subject was obese.

The table 3 shows that 56% of subjects take 3 meals per day and 39% subjects take 2 meals per day. More than 50% of the subjects having habit of eating out once a week and 23% subjects eat out twice a week followed by 7% eating thrice a week.

The FFQ of the subjects shows that 100% of subjects were consuming rice daily and 25% were consuming other cereals daily. Only 29% of the subjects were consuming pulses daily.18% of the subjects were consuming green leafy vegetables daily. Very few subjects (5%) were consuming fruits daily rest of them were consuming once or twice in a week or even once or twice in month. Almost 40% of the subjects were consuming non vegetarian items once or twice in month, though they are non-vegetarian. Milk consumption was very less among the adolescents only 13 % were consuming milk daily. All the subjects were consuming fats and sugars daily. Other food items like ice-cream, chocolates, carbonated beverages, soft drinks, fruit juices, potato chips, samosa, burger and cake were consumed daily by 40 subjects, 20% were consumed2-3 times a week followed by26% subjects were consumed weekly once. (table 3,4 )

In anemia related knowledge assessment, only one forth (25%) subjects were having good knowledge about anemia and 36% were having fair knowledge and rest of them were having poor knowledge about anemia. More than 50% of the girls having knowledge about the definition of anemia, haemoglobin, common symptoms of anemia and they know about the causes of anemia. Only 30% of girls know about the sources of anemia. Very few girls know about the normal haemoglobin levels and the consequences of anemia. They don’t know about the serious consequences of untreated anemia. Only 17% girls know about the anemia prophylaxis programme which is running in India. The electronic media and press media were the major source of information among the adolescent girls.

### Table 1. Demographic profile of the subjects.

| S.no. | Variable       | Frequency n=100) |
|-------|----------------|------------------|
| 1.    | Age            | Percentage       |
| 14-16 | 85             |
| 16-18 | 15             |
| 2.    | Family income  |                  |
| 10,000| 44             |
| 15,000| 14             |
| 20,000| 15             |
| >25,000| 27          |
| 3.    | No. of Family members |                |
| 2     | 3              |
| 4     | 35             |
| 5     | 40             |
| >10   | 22             |
| 4.    | Family type    |                  |
| Joint | 13             |
| Nuclear| 87           |

### Table 2. Anthropometric measurements of the subjects.

| S.no. | Variables        | Mean ±SD        |
|-------|------------------|-----------------|
| 1.    | Measurements     |                 |
| Height| 156.4±5.98       |
| Weight| 46.2±8.28        |
| BMI   | 19.5±2.7         |
| 2.    | Nutritional status | Frequency percentage |
| Underweight | 33               |
| Normal | 63               |
| Overweight | 3                |
| Obese | 1                |

### Table 3. Food habits of the subject.

| S.no. | Variable            | Frequency Percentage |
|-------|---------------------|----------------------|
| 1.    | Meal pattern        |                      |
| 1     | 2                   |
| 2     | 39                  |
| 3     | 56                  |
| More than 3 | 3                |
| 2.    | Eating out          |                      |
| Yes   | 91                  |
| No    | 9                   |
| 3.    | Frequency of eating out |                  |
| Once a week | 60               |
| Twice a week | 23              |
| Thrice a week | 7               |
| More than thrice | 6           |
| 4.    | Types of snacks     |                      |
| Burgers,Pizzas,Creams | 14               |
| Chips, Fried items     | 48                  |
| Sweets, Ice cream      | 19                  |
| Any other              | 14                  |
| Tea, coffee            | 40                  |
| Soft/energy drinks     | 17                  |
| Fruit juices, squashes | 42                  |
| Carbonated drinks      | 40                  |
| Milk shakes            | 42                  |
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Table 4. Food Frequency of the subjects

| Food item            | Daily | 2-3 Times in a week | Weekly once | Monthly once | Rarely | Not at all |
|----------------------|-------|---------------------|-------------|--------------|--------|------------|
| Cereal               | 100   | 0                   | 0           | 0            | 0      | 0          |
| Rice                 | 28    | 13                  | 15          | 17           | 10     | 17         |
| Other cereals        | 5     | 15                  | 22          | 22           | 13     | 23         |
| Pulses               | 29    | 23                  | 22          | 14           | 6      | 6          |
| Green leafy vegetables | 18   | 22                  | 22          | 18           | 10     | 10         |
| Roots and tubers     | 24    | 19                  | 13          | 20           | 9      | 15         |
| Other vegetables     | 6     | 16                  | 22          | 30           | 13     | 13         |
| Fruits               | 5     | 19                  | 29          | 16           | 12     | 19         |
| Meat, poultry & fish| 13    | 20                  | 20          | 15           | 14     | 18         |
| Milk and milk products | 13    | 16                  | 16          | 18           | 14     | 23         |
| Fats and oils        | 95    | 3                   | 2           | 0            | 0      | 0          |
| Sugars               | 10    | 19                  | 26          | 18           | 10     | 17         |

Table 5. Anemia related knowledge among subjects.

| S.no. | Questions                                                                 | Frequency percentage of correct answers |
|-------|---------------------------------------------------------------------------|-----------------------------------------|
| 1     | What is anemia?                                                           | 60                                      |
| 2     | What is hemoglobin?                                                       | 75                                      |
| 3     | Which of the blood cell when decreased causes anemia?                     | 69                                      |
| 4     | Which mineral deficiency in the body causes anemia?                       | 63                                      |
| 5     | In anemic female, the hemoglobin is?                                      | 11                                      |
| 6     | What is laboratory test to diagnose anemia?                               | 10                                      |
| 7     | Heavy blood loss due to menstruation can cause anemia                     | 72                                      |
| 8     | Do anemic adolescent girls have weakness,                                 | 69                                      |
| 9     | Do anemic girls become breathless easily?                                 | 73                                      |
| 10    | Are anemic girls more prone to repeated infections?                       | 45                                      |
| 11    | Will anemic girls suffer from lack of concentration?                      | 69                                      |
| 12    | Do anemic girls have pale eyes, pale tongue and pale nails?               | 73                                      |
| 13    | Can Anemia be prevented?                                                  | 60                                      |
| 14    | Can regular exercise prevent anemia?                                      | 48                                      |
| 15    | Can anemia be treated by iron tablets?                                    | 69                                      |
| 16    | What are the sources of Iron                                              | 30                                      |
| 17    | Avoiding consumption of tea, coffee after food can improve absorption of iron. Is this true | 45                                      |
| 18    | Inclusion of Vitamin C helps in iron absorption?                          | 59                                      |
| 19    | Is severe anemia life threatening?                                        | 34                                      |
| 20    | If severe anemia not treated on time, needs blood transfusion?            | 57                                      |
| 21    | Do you have any knowledge about Anemia prophylaxis Programme?             | 17                                      |

Table 6. Source of Information.

| S.no. | Source of Information | Frequency |
|-------|-----------------------|-----------|
| 1     | Electronic media      | 35%       |
| 2     | Press media           | 20%       |
| 3     | Teacher or school     | 12%       |
| 4     | Family                | 10%       |
| 5     | Hospital and clinic   | 8%        |

4. Discussion

The evaluation of the respondent’s knowledge level was done using a questionnaire comprised of total 40 questions, 8 questions based on Socio-demographic data, 21 on anemia knowledge and 11 on food habits. Among the source of information on anemia reported by respondents were electronic media (35%), Press media (20%), teacher or school (12%), family (10%) and hospital or clinic (8%). A similar type of study on adolescents in 8 secondary schools in Malaysia, source of information on anemia reported by respondents were electronic media (51%), Press media (20%), teacher or school (12%), family (10%) and hospital or clinic (8%). A similar type of study on adolescents in 8 secondary schools in Malaysia, source of information on anemia reported by respondents were electronic media (51%), Press media (20%), teacher or school (12%), family (10%) and hospital or clinic (11%) (8). Poor nutrition, early childbearing & reproductive health complications compound the difficulties of physical development in young girls in India. Most girls are not adequately aware of their increased nutritional needs for growth (especially increasing their food intake to meet calorie demands of pubertal growth); resulting in girls being underweight & of short stature. Their current nutritional status will decide the wellbeing of the present as well as the future generations. The general meal pattern showed that majority of subjects consumed 3 major meals, breakfast, lunch and dinner. Poor health habit is also one of the reasons of nutritional anemia. Only 56% of the subjects were seen to consume 3 meals a day, and out of which 39% subjects were not taking their breakfast. Similar study done by (2, 19,14) also revealed inadequate intake of these food groups in adolescents. The requirement for iron increases during the adolescence for girls due to rapid growth and menstrual losses. Green leafy vegetables are good sources of iron and calcium. Iron content is high in spinach. It is easily available and inexpensive source of many other nutrients other than iron. Consumption of tea is observed to be high among all the age group of girls in our study. Majority of them consumed tea in the evening and 40%
of girls took tea with breakfast higher intake of tea and its consumption along with the meals hinder iron absorption in the body and could be the reason for low haemoglobin levels in the subjects. This thus, necessitates the need to organize awareness programs offering counselling to adolescent girls. Moreover, educating girls in schools and colleges, about the importance of regular and healthy meals and the seriousness of good health, could help in lowering the prevalence of anemia in less developed cities.

5. Conclusion

There is need to include iron rich food in the diet of adolescents. Grams, maize, Mustard leaf, powder milk and red meat has high iron component so at least once in a week girls should eat iron rich food to get recommended iron per day to gain normal body mass index. Students are taking food twice a day, they can increase food intake thrice a day so from this at least adolescents will be able to get 18 mg/day iron. Iron pot use for cooking, will also increase iron in the diet. Social marketing is one of the ways to create awareness of anemia and demand for supply of the health services from the government side. Counseling can be done to empower adolescents to make understand the importance of precaution measures to avoid anemia in adulthood. Training program should be organized to make people aware about fortification of food as well as importance of iron for adolescents. To start health education sessions with more focus on specific issues and information on anemia, general information, such as the adverse effects of drinking tea with meals in reducing the absorption of iron and about the side effects of misuse or overuse of iron pills especially those women who don’t follow a doctor’s prescription and health instructions. To plan for these types of awareness program, information about basic health parameter about iron deficiency anemia in women and children is needed, and how they have changed over time.

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Contribution

PP took the lead for planning and design, provided guidance on data collection and analysis of the data, and wrote the manuscript. AH collected the data, contributed to the study planning and writing of the manuscript.

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Anemia is the most common nutrient deficiency caused due to deficiency of iron, commonly found in adolescent girls and women. A study on knowledge level regarding anemia among adolescent girls in Dharwad, Karnataka through assessment of the knowledge, attitude and practice among the reproductive age group was undertaken. A questionnaire was prepared, consisting general information, knowledge level, practices followed and frequency of consumption of foods rich in iron. The government school in the village of Narendra, near Dharwad District of Karnataka State was selected for the study. Th Priyanka Pareek, Asfia Hafiz. A Study on Anemia Related Knowledge Among Adolescent Girls. International Journal of Nutrition and Food Sciences. Vol. 4, No. 3, 2015, pp. 273-276. doi: 10.11648/j.ij nfs.20150403.14. Abstract: To determine the nutritional knowledge among adolescent girls the study was undertaken on 100 adolescent junior college students of Hyderabad. The results show that the nutrition education intervention is required for the adolescent girls to create awareness and to disseminate the knowledge related to the prevention and control of anemia. Keywords: Anemia, Food Frequency, Food Habits, Nutritional Knowledge. 1. Introduction. To determine the nutritional knowledge among adolescent girls the study was undertaken on 100 adolescent junior college students of Hyderabad. A questionnaire has been developed to collect the demographic profile of the subjects, food habits of the subjects and food-frequency questionnaire (FFQ) was used. Priyanka Pareek, Asfia Hafiz, A Study on Anemia Related Knowledge Among Adolescent Girls., International Journal of Nutrition and Food Sciences. Vol. 4, No. 3, 2015, pp. 273-276. doi: 10.11648/j.ij nfs.20150403.14. Reference. [1]. Adolescent Girls in India Choose a Better Future: An Impact Assessment The Centre for Development and Population Activities (CEDPA) September; 2001. [2]. A Study was conducted by Asfia Hafiz et al in the year 2015 on Anemia Related Knowledge among Adolescent Girls the study was undertaken on 100 adolescent junior college students of Hyderabad. A questionnaire has been developed to collect the demographic profile of the student, food habits of the student and food-frequency questionnaire (FFQ) was used. Dietary pattern, nutritional status, anaemia and anaemia-related knowledge in urban adolescent college girls of Bangladesh. J Pak Med Assoc. 2010 Aug;60(8):633-8. Objectives: To examine dietary pattern and nutritional status of adolescent college girls of Dhaka, Bangladesh with a particular focus on the prevalence of anaemia and appropriate knowledge about it among them. Methods: A cross sectional study was conducted. Sixty-five adolescent girls aged 15-19 years were selected randomly from Home Economics college of Dhaka. A 7-day food frequency questionnaire was used to investigate the dietary pattern. Nutrient intake of the participants was assessed by 24h recall method.