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RESEARCH ARTICLE

A STUDY ON PREVALENCE OF ANEMIA AND ITS ASSOCIATED RISK FACTORS AMONG SELECTED ADOLESCENT GIRLS IN PANNAIKADU (KODAIKANAL REGION)

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ABSTRACT

Aim: Adolescence is a period of tremendous physical and cognitive changes. It is considered a nutritionally vulnerable period because of the increased needs for all nutrients and changes in lifestyle and food habits that affect nutrient intake. The study aimed to assess the prevalence rate of anemia and its associated risk factors among adolescents.
Methods: The research design adopted for this study was ex-post facto in nature. Sample of hundred adolescent girls were selected random sampling technique. Survey method was followed and data was collected by using interview schedule with constructed questionnaire.
Results: The prevalence of anemia was measured by estimating the blood hemoglobin level of the respondents by chynomethomoglobin method. Among the 100 adolescent girls everyone was suffered from anemia. It shows that 100 percent prevalence rate among the study group.
Conclusion: Among the study population 59 percent of respondents were in mild anemic condition, the 41 percent were in moderate level. Anemic girls were found higher physiological problems.

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INTRODUCTION

Adolescence is a period of transition from dependent childhood to independent and responsible adulthood. Adolescence has defined by the World Health Organization (WHO) 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 change take place (WHO, 1986). Adolescent age group is comparatively perhaps the healthiest group in the population, having the lowest mortality and morbidity as compared with other population age groups. However, the period of adolescence, beginning with the onset of puberty, is a crucial phase of transition into adulthood. Most adolescents go through adolescence with little or no knowledge of the body's independent physical and physiological changes (Soekarjo *et al.*). During the period of adolescence blood volume and muscle mass increase and this in turn is found to increase the need for heamoglobin formation. If the diet does not contain sufficient absorbable iron and the adolescent cannot consume adequate amount of food they become anemic (Parimallavalli and Sangeetha, 2011). It is evident from several reports that anemia among adolescents is a matter of great concern as these girls enter reproductive life soon after the attainment of their menarche. They are considered to be a nutritionally vulnerable segment of the population (Provan, 1999).

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A rapid growth rate combined with a marginal nutrient intake. Due to enhanced growth during adolescence, increased iron requirements during periods of rapid growth and loss of iron during menstruation. A nutrient intake increases the risk of nutritional deficiencies in this population. Micronutrients such as iron and zinc are essential trace elements involved in the high growth rates of adolescents (Kaur *et al.,* 2006).

Adolescent girls have been under privileged group in Indian society. It is the formative period of life when the maximum amount of physical, psychological, and behavioral changes takes place (Manjula Hettiarachchi *et al.,* 2006). This is a vulnerable period in the human life cycle for the development of nutritional anemia due to increased nutrient requirements for rapid growth and loss of iron during menstruation. The onset of the menstrual cycle and growth spurt of adolescent increase the demand for nutrients on one side and also lead to a loss of essential micronutrients like iron and others. Sufficient care and attention is not given to adolescent girls who were residing in tribal areas. Since the tribal areas are lack of basic facilities such as schools and health centers. The lack of facilities and poor educational status of the parents adversely affects the health status of tribal group especially adolescents. The deficiency of various nutrients in the adolescent girl could lead to impaired immune competence, reduced cognitive function, scholastic performance, and achievement, increased morbidity and other reproductive problems.

If proper nutrition provided to them, there is a potential for catch up growth. Thus, the adolescent girl is at the cross roads where if she gets the healthy reproductive life, which in turn will affect the health and life of her off-spring at a later date. It is crystal clear that malnutrition in general and anemia in particular strongly limits the physical endurance and causes menstrual related consequences among the adolescents. Keeping this aspect in mind the present study was designed to assess the prevalence of anemia among adolescent girls and its associated risk factors, in pannaikadu, Kodaikanal region.

The findings of the present study would supply us good information about the prevalence rate of anemia in tribal region and its associated risk factors, so that proper strategies could be made to eliminate this nutritional problem amongst them with better and guide them to attain full potential growth and healthy life. The studies reviewed above reveal that there are studies on the prevalence of anemia among adolescents in tribal area are found to be very limited. Moreover the studies conducted on the prevalence rate of anemia than the risk factors. There are only limited literatures available on the link between the menstrual problems and anemia. The present study is one such attempt in this direction.

MATERIALS AND METHODS

The aim of the present study is to assess the prevalence anemia and its associated risk factors among selected adolescent girls in pannaikadu (Kodaikanal region). The main objectives of the study is

1. To know the general profile of the selected respondents.
2. To find out the prevalence of anemia among the selected samples through biochemical assessment.
3. To assess the anthropometrical details of the respondents.
4. To study the Body Mass Index (BMI) of the selected respondents.
5. To assess the clinical profile of the selected respondents.
6. To collect the information regarding their directory pattern of the respondents.
7. To elicit the menstrual profile of the selected respondents.
8. To evaluate the risk factors of anemia among the respondents.

The present study is on an ex-post facto research which is descriptive in nature. Ex-post facto research is systematic, empirical inquiry in which the scientist does not direct control of the independent variables because their manifestations have already occurred or because they are inherently manipulated. The study was conducted in Pannaikadu Government Higher Secondary School (Kodaikanal region). Since, the tribal area has not fully developed in health status. The sample used for the study consisted of hundred adolescents belonging to the age group of 16-18 years residing in the tribal area of pannaikadu (Kodaikanal region). The sample was chosen for the study since they are at a high risk for anemia owing to declining the hemoglobin status due to menstrual loss, or poor dietary iron intake. A pre-designed interview schedule was used as a tool for present study. The interview schedule appended in appendix. The interview schedule consisted of the following sections. The general information included details on age of the respondents, religion, type of house, common facilities, educational status, parents educational and occupational status, monthly income, type of family and size of family. The second part of the interview schedule intended to collect the anthropometrical data of the respondents such as height, weight and Body Mass Index (BMI). The third part of the interview schedule was to assess the hemoglobin status of the respondents by cyanmethemoglobin method. The fourth part of the interview schedule was to study clinical assessment of the respondents.

The fifth pert of the interview schedule demanded data on the dietary pattern of the respondents such as type of diet, skipping of meals, reasons for meal skipping, number of meals taken by the respondents, nutrient intake by three day recall method, iron rich food intake and food frequency. The sixth part of the interview schedule was collecting the data on health history of the respondents such as symptoms of anemia and complications of anemia. The seventh part of the interview schedule consist information regarding the obstetrics profile such as age at menarche, cycle of length, menstrual disorders, psychological problems and preventive measures of the respondents.

Main study

Main study was conducted with hundred adolescent girls. A routine school visits were made. Respondents were selected for the study and the purpose of the study was explained the doubts were clarified and medical terms were explained on the spot. An interview schedule was prepared and data was collected from the respondents.

Processing and analyzing of data

The data collected was processed and analyzed in accordance with the outline laid down for the purpose at the time at developing the research plan. The collected data were classified, tabulated and analyzed in order to facilitate comparison to pin point the significant features of the data.The data was analyzed using various statistical methods.

Results and Discussion

The research design adopted for this study was ex-post facto in nature. Sample of hundred adolescent girls were selected random sampling technique. Survey method was followed and data was collected by using interview schedule with constructed questionnaire. The obtained results are summarized below.

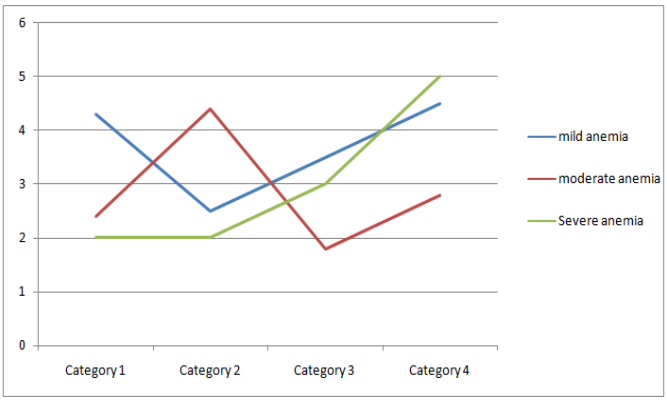
Prevalence of anemia

Variables	Percent (N=100)
Anemic	100
Non-anemic	0

Severity of anemia

Out of 100 adolescents girls 54 percent belonged to the age group of 16years, 41 percent belonged to 17years of age group.

The 59 percent were doing 11 th standard and rest of them doing 12 th standard. The 47 percent were from Nuclear families, 41 percent were from extended nuclear families and 12 percent were from Joint families. The 51 percent were from medium sized families comprising of 5-7 members, 43 percent were from small families comprising of 2-4 members. The majority (91 percent) of adolescents girls were from families having an income of below Rs.5000, 7 percent were from families earning an income ranges between Rs.5, 000-Rs.10, 000.



The data reveals that, 51 percent were residing in asbestos houses, 30 percent were residing in concrete houses. The data's regarding housing facilities shows that majority 100 percent having electricity in their house, 35 percent of the respondents were using LPG for cooking. The 39 percent of fathers had an education up to primary level, 27 percent of fathers are illiterates and 5 percent of the respondents fathers who were graduates. The majority (43%) percent of the mothers were had an education up to primary level, 24 percent of the mothers were illiterates and 2 percent of the respondents mothers were graduates.

The majority (97 %) of the respondents fathers were daily wages, only 3 percent of the respondents fathers were government employees. The majorities (59 %) of respondent's mothers were daily wages, 40 percent of the respondents mothers were house wives. Among the 100 adolescent girls everyone was suffered from anemia. It shows that 100 percent prevalence rate among the study group. The majority (59%) percent of respondents were in mild anemic condition, the 41 percent were in moderate level. The respondents mean height is 160.3 cm and the mean weight is 45.43 kg. The majority (77%) of the respondents were underweight, 13 percent were overweight. Paleness in the face was noted among 66 percent of the selected respondents. Dryness in the lips was found among 80 percent of samples. Mottled enamel were found among 87 percent of the sample respectively.

Bleeding gums were seen among 6 percent and 85 percent of the samples respectively. The majority (81 %) of the respondents had a hair fall problem. 83 percent had brittle nails. 76 percent and 10 percent had pale skin and dryness. The majority (89 %) of the respondent's lower eye lid is pink in colour. The majorities (85 %) of the respondents were Non-vegetarians and 11 percent were Vegetarians. The 55 percent of the respondents were taking 2 meals /day, 43 percent of the respondents were taking 3 meals/day. Nearly 55 percent of the respondents were skipping of meals. Among the 55 respondents majority (75 %) were skip their breakfast. Majority (60 %) percent of the respondents were skipped their meals due to dislike towards food. The intake of protein was found to be much less than RDA. Similarly calcium, iron, vitamin C, folic acid and vitamin B12 were also less. But intake of energy and carbohydrate were found to be much greater than Recommended Dietary Allowances (RDA). The statist analysis show that there is significant difference between the calculated nutrient intake of the respondents and Recommended Dietary Allowances (RDA) at 1 % level of significance.

The respondents were consumed rice as their staple food in regularly, 60 percent have not included maize in their diet. The majority (60 %) of the respondents consumed Bengal gram as twice per week. The 51 percent and 61 percent of the respondents were weekly consumed beetroot, and carrot. The 34 percent and 28 percent were occasionally included manathakali leaves and drumstick leaves in their diet. Majority (75%) percent were consumed beans in weekly once. 57 percent and 61 percent of the girls weekly once consumed ladies finger, and cauliflower. The 69 percent were take milk regularly, and 30 percent were not included butter and curd in their diet. The majority 60 percent and 62 percent were weekly once included chicken and egg in their menu. Majority 50 percent weekly once consumed banana, 53 percent were regularly consumed orange. The 41 percent and 43 percent of the respondents were not included ghee and groundnut oil in their diet, 62 percent of the samples used gingelly oil regularly for cooking. Majority (79% and 94 %) of them were not included bajra and samai in their diet, and majority(71%) percent were not taken liver sheep in their menu.

Majority (82 %) were had symptom of head ache, 9 percent had symptom of pica, and lesser number of people had a symptom of breathlessness, tinnitus and body pain. The 56 percent of the respondents suffered from fever, 10 percent had ulcer problem and lesser number of girls suffered from hemorrhoids and malaria. The 77 percent of the respondent's monarchical age was 11-15 years, irregularity in their menstruation. The majorities (88 percent) of the respondents were found to have heavy flow and therefore used 3-5 pads per day. A cycle length ranging less than 20 days was mentioned by 10 percent of the subjects. Among the selected sample, dysmenorrhea was experienced by the majority of 70 percent. Premenstrual syndrome and polycystic ovary syndrome were prevalent in 2 percent and 1 percent of the samples respectively. The poor concentration was reported by 27 percent of the respondents. Anxiety was reported by 9 percent of the selected respondents. The statistical analysis showed the significant association between the age and severity of anemia at 5 % level. The earlier age group people were highly affected from anemia. The statistical analysis results showed the significant association between income and severity of anemia at 1 % level of significance. The lower income groups were highly suffered from anemia. The result of the analysis showed the significant association between mother's educational status and severity of anemia at 1 % level of significance. The educational status of mothers was poor in higher number of anemic girls. The results of the analysis showed the significant association between

mother's occupational status and severity of anemia at 1 % level of significance. The better occupation reduces the severity of anemia. The results of the analysis showed the significant association between type of family and severity of anemia at 1 % level of significance. Nuclear family respondents were highly suffered from anemia than other groups. The results of the analysis showed the significant association between Body Mass Index (BMI) and severity of anemia at 1 % level of significance. Underweight girls were highly suffered from anemia than other groups. The results of the analysis showed the significant association between meal skipping and severity of anemia at 1 % level of significance. Anemia was highly found in people those who were skip meals highly than other people. The results of the analysis showed the significant association between menstrual problems and severity of anemia at 1 % level of significance. That anemia was found higher in respondents suffered from menstrual problems than others. The menstrual problems positively correlated with the severity of anemia. It showed the relationship between the menstrual problem and anemia.

Conclusion

Based on the above results the present study concludes that the major risk factor associated with anemia is socio economic factors such as type of family, mother's education and occupational condition, and nuclear family condition. The other factors such as underweight, meal skipping practices and menstrual problems also increases the risk of anemia in adolescent condition.

The study concluded that the adolescent girls in tribal area require better living condition and they need dietary intervention on food and nutrient intake.

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