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PREVALENCE OF ANEMIA AMONG THE ADOLESCENT FEMALES

Dr. Talat Nahid Ramzan Ali[1], Prof. S. T. A. Bilgrami[2], D. Md Razi Ahmad[3], Dr. Md Najibur Rahman[4] and Dr. Md Tanwir Alam[5]*

[1]PG Scholar-Dept. of Tahaffuzi- wa- Samaji Tib, Z.V.M. Unani Medical College and Hospital, Azam Campus, Pune, Maharashtra.,
[2]Professor-Dept. of Tahaffuzi- wa- Samaji Tib, Z.V.M. Unani Medical College and Hospital, Azam Campus, Pune, Maharashtra.
[3]Assistant Professor- Dept. of Moalajat, GTCH, Patna,
[4]Assistant Professor- Dept. of Moalajat, GTCH, Patna and
[5]Assistant Professor- Dept. of Tahaffuzi- wa- Samaji Tib, GTCH, Patna.

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***Corresponding author: Dr. Md Tanwir Alam**

Assistant Professor- Dept. of Tahaffuzi- wa- Samaji Tib, GTCH, Patna.

ABSTRACT

Introduction: *Su-ul-qinya* (anaemia) is a condition of decrease in quantity as well as quality of blood. The quantitative decrement is a condition which resembles anaemia in modern medicine, whereas Unani medicine describes its qualitative approaches too. As far its description, *Su-ul-qinya* is described in great details in classical Unani literature. The ancient scholars including *Ali Ibn-e-Abbas Majoosi* (Haly Abbas 930-994 AD), *Zakariya Razi* (Rhazes 850-925 AD) *Ibn Sina* (950-1037 AD'), *Rabban Tabri* (777-850 AD) etc. have mentioned *Su-ul-qinya* in their different documentation with emphasis on aetiological factors. Various aetiological factors have been described, some of them are related to demography and other are related to sex, age, diet and temperament, some experts have emphasised on its congenital and hereditary etiological spectrum.[1,2] **Aims and Objectives:** To estimate the prevalence of anaemia among adolescent females, to study pattern symptoms according to Unani parameter and to study the socio demographic factors associated with anaemia. **Methodology:** The present study (sample size of 50) is a cross sectional, field survey entitled as "Prevalence of *Su-ul-Qinya* among the adolescent females." The survey was carried out among students from the primary secondary, higher secondary and junior college and U.G classes. The study was designed on two parameters the first one was questionnaire-based scale (subjective parameter) and second was evaluation of haemoglobin percentage through Sahli's method as an objective scale.[3] **Investigation & Results:** Haemoglobin level was assessed by Sahli's method and prevalence of anemia was found to be 91.8%. **Observations:** The prevalence of anemia was 91.8% and normal students were 8.2%. The two groups did not differ significantly with respect to personal history, menstrual history, type of diet, symptoms according to Unani parameters and awareness about the various facts concerning anemia. Chi square test done in each category (P > 0.05%).

KEYWORDS: *Su-ul-qinya; Anaemia; kurriyat-e-hamra*; *Sahli's method; faqruddam; Unani Medicine.*

INTRODUCTION

In modern system of medicine *Su-ul-qinya* is defined as a deficiency in the numbers of red blood cells or in their haemoglobin contain, resulting in pallor, shortness of breath and lack of energy.[4] A reduction in below normal in the number of erythrocytes per cubic mm. In the quantity of haemoglobin or in the volume of packed red cells per 100 ml. of blood occurs when the equilibrium between blood loss (through bleeding or destruction) and blood production is disturbed. Anaemia is defined as reduction in the number of circulating erythrocytes.[5,6]

Su-ul-qinya is the condition in which there is decrease in the amount of blood and alteration in its constituents. Also, there is decrease in the numbers of *kurriyat-e-hamra* (RBC).[7,8,9]

Abul Hassan Ali Bin Abbas Al Majoosi has stated that this change in *mizaj* of liver cools down or diminishes *hararat-e-ghariziya*, which can be viewed as beginning of the disease *Su-ul-qinya* or istusqua.[10] *Su- ul- qiniya* is the condition in which there is decrease in the quality of blood and also alteration in its constituents, resulting in *zoaf-e-jigar* (debility) of liver. The *mizaj* of liver changes

to *barid* (cold), which in turn reduces the capacity of distribution and production of blood by the liver.[11] Some Unani physicians have stated that it is a condition caused by zoaf-e-jigar (debility of liver) or *su-e-mizaj* (intemperament) of liver, which is presented by pale and puffiness of face.[12] *Su-ul-qinya* also means term of *faqruddam*, which is attributed fasad-e-mizaj. *Su-ul-qinya* means destruction of the assets of blood. The assets of liver are taken in this context as resembling to the assets of blood. Destruction of blood has been described as cause of *Su-ul-qinya* hence terms as *faqrud-dam*.[13]

MODERN CONCEPT OF ANAEMIA

Oxford dictionary defined anaemia "as a deficiency in the number of red blood cells or in their haemoglobin contain, resulting in pallor, shortness of breath, and lack of energy.[14] Iron deficiency anaemia is a common type of anaemia and is known as Sider the WHO defined anaemia as haemoglobin below 13g/dl in men over 15years, below 12g/dl in non-pregnant female over 15 years, and below 11g/dl in pregnant female. Iron deficiency anaemia is one of the most common nutritional disorder worldwide, especially in India other developing countries. Young children and female in the reproductive age group are the most vulnerable to Iron deficiency anaemic.[15]

Anaemia is defined as reduction in total circulating red blood cells leads to decrease in total oxygen carrying capacity of blood. Since the oxygen carrying capacity of RBC's cannot be measured, therefore anaemia has been defined as a decrease in haemoglobin concentration in the blood below the normal lower range with respect to age and sex. Lower level of haemoglobin (Hb%) concentration 13.0gm/dl for male and 11.5gm/dl for female. while new born infants have higher haemoglobin level and therefore lower level in infants is 15gm/dl whereas at 3 months these level goes down to 9.5gm/dl because of destruction of RBC's at early age of life. Even though Hb% plays an important role in majoring anaemia red cell count, haematocrit (PCV) and absolute values (MCV, MCH and MCHC) also provide alternate means of assessing anaemia.[16]

Epidemiology

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. It occurs at all stages of the life cycle, but is more prevalent in pregnant women and young children in 2002, iron deficiency anaemia (IDA) was considered to be among the most important contributing factors to the global burden of disease.[17] Nutrition anaemia due to iron deficiency is a global problem and it affects more than a billion people in the entire world. In the developing world alone, 370 million women suffer from anaemia.[18] Anaemia is major public health problem in female about 25-50% girls become anaemic by the time they reach the age of menarche. During adolescence period need for iron is increased and also there is further increase due to regular menstrual loss. In developing countries, the high iron demands are not met, mainly because of the poor diet of low iron bioavailability & frequent parasitic infection, thus leading to higher incidence of anaemia in women & girls. Thus, an adolescent who conceives soon after menarche is likely to start pregnancy with depleted iron store.[19]

MATERIALS AND METHODS

The present study is one-time observational, cross sectional, Survey based study undertaken to know the "prevalence of *Su-ul-qinya* among adolescent female group.

Nature of study: A cross sectional study on *Su-ul-qinya* among adolescent age in female group with diet survey and awareness was carried out to determine and evaluate the following:

- The prevalence of *su-ul-qinya* by using sahli's method.
- The prevalence of general and gynaecological or health related problems and spread awareness about the health hazards.

Place of study: The place of study selected is a campus which accommodates schools and different colleges. The survey was conducted on students from the primary, secondary, high secondary and junior and senior colleges situated in the study area.

Duration of study: The present study was completed in 6 months.

Sample size: A total of 500 adolescent female were selected from various classes of the targeted schools/ colleges using simple random sampling (SRS) method.

Materials required for the Study

1. Annexure **I, II, III**- Local language was being use during the interview to make it convenient and easily understood.
2. Weighing machine-platform type.
3. Measuring tape.
4. Sphygmomanometer.
5. Stethoscope.
6. Haemoglobin meter.
7. N/10 hydrochloric acid.
8. Distilled water.
9. Spirit.
10. Lancets.
11. Charts regarding good dietary habits, modification of life style etc

Inclusive criteria: Healthy population among adolescent female.

Exclusive criteria:

- Congenital form of anaemia or any chronic disease.

- Other forms of anaemia.

Assessment criteria: Anaemia was diagnosed according to WHO criteria according to which haemoglobin is below 11gm/dl in females. **Anaemia** is graded as follows:
1. Mild anaemia: 10.0-11.9gm%.
2. Moderate anaemia: 7.0-9.9gm%.
3. Severe anaemia: < 7.0gm%.

Method of collection of Data: The survey was conducted among the students who have reached the age of adolescent when calculated based on the academic status primary, secondary, high secondary and junior college. Approval of college Ethical Committee and approved by MUHS was obtained before starting the study. The necessary requirements of principals' permissions from the schools and colleges were obtained since the study and the questionnaire were based on the evaluation of the students. The students were first asked to participate in the study voluntarily, further they were assured for the confidentiality of the records. Then the written consents were obtained from the participants. All the technical and medical terminologies were explained to the participants and they were asked to fill the evaluation proforma. Data was collected by well-designed proforma which based on book of haematology by Safdar SM.[20,21] All the filled proforma were then put on master chart.

Data Analysis: Data thus collected was analyzed using suitable statistical package for
Social Sciences (SPSS) with the help of Microsoft Excel Windows Version 11.5. The statistical analysis of the data collected was done by using Chi-square (x^2) as per the guidelines of Bio-Statistics at the significance level of 95% ($p<0.05$).

RESULTS AND OBSERVATIONS

Results

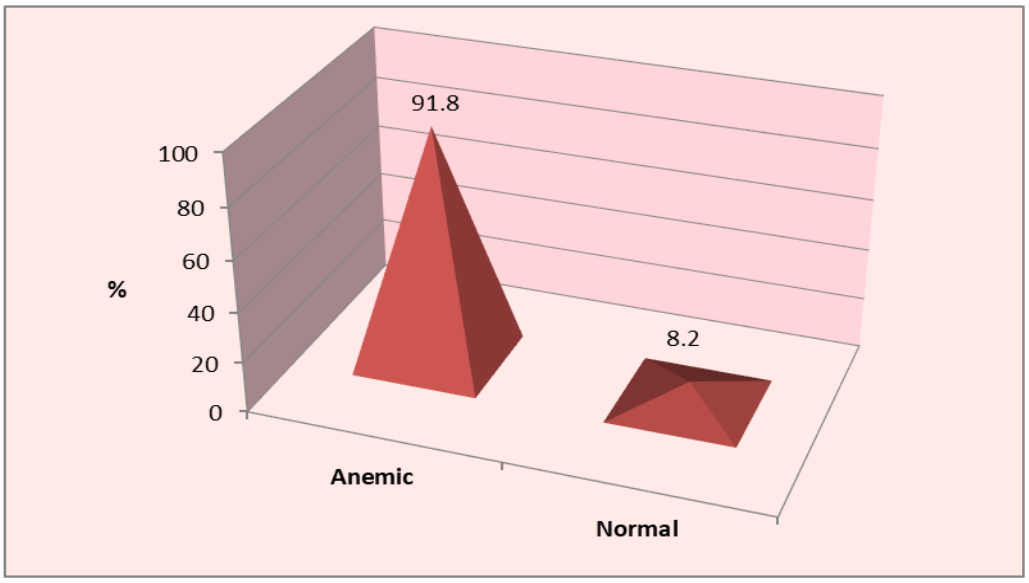

Figure 1: Prevalence of anemia in the study sample of Adolescent females.

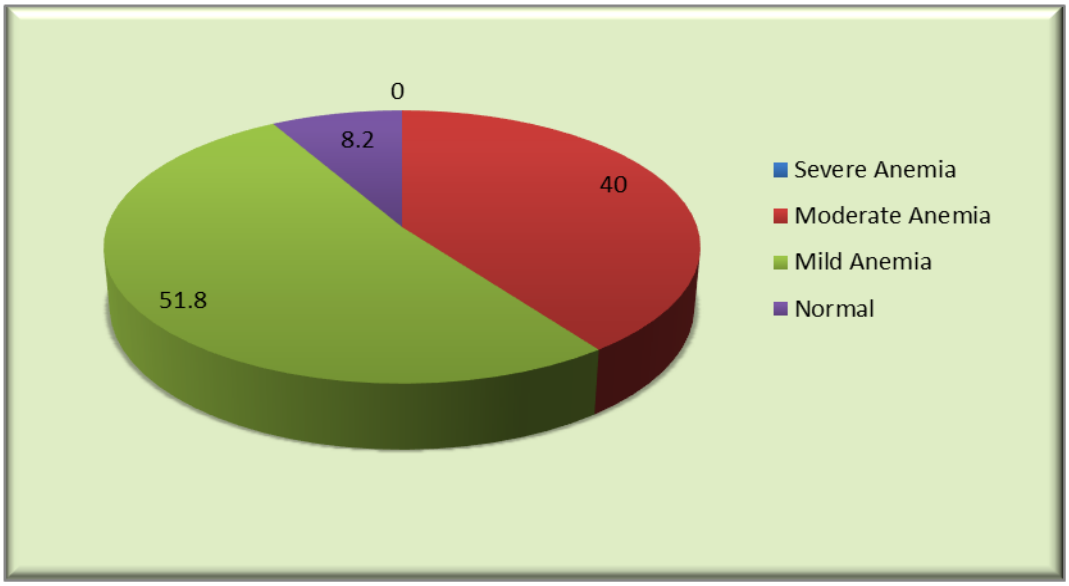

Figure 2: The prevalence of type of anemia in the study sample.

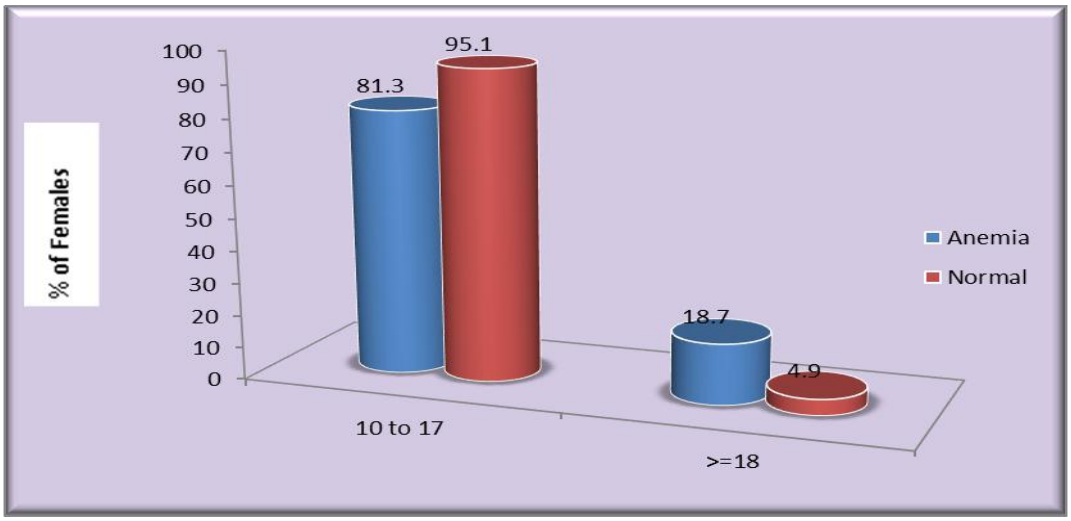

Figure 3: Prevalence of anemia according to age group.

Chi-square test = 0.421, d.f = 2, p = 0.979 (not significant)
P value <0.05 is considered to be statistically significant.

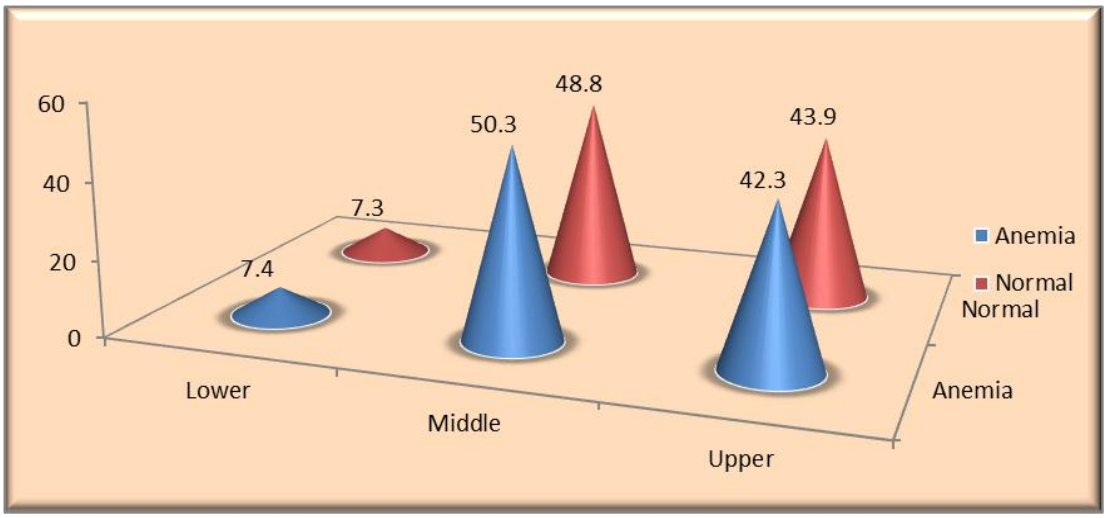

Figure 4: Prevalence of anemia according to socio-economic Status.

Chi-square test = 0.421, d.f = 2, p = 0.979 (not significant)
P value <0.05 is considered to be statistically significant.

OBSERVATIONS

The prevalence of anemia was 91.8% and normal students were 8.2%. The two groups did not differ significantly with respect to personal history, menstrual history, type of diet, symptoms according to Unani parameters and awareness about the various facts concerning anemia. Chi square test done in each category (P > 0.05%)

DISCUSSION

Anemia is a global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development.[22] It occurs at all stages of the life cycle, but is more prevalent in pregnant women and young children. The classical literature of Unani Medicine suggests that "*Su-ul-Qiniya*" is the result of a wide variety of causes that can be isolated, but more often coexist, including "*Su-e-Mizaj-e-jigar* "(Hepatic dystemperament)", *Su-e-Mizaj Dam*" (Blood dystemperament) *Fasaad-e-Ghiza* and *Fasaad-e-Taghziya* (Dietary Insufficiencies).

In 2002, iron deficiency anemia (IDA) was considered to be among the most important contributing factors to the global burden of disease.[22] Globally, the most significant contributor to the onset of anemia is iron deficiency so that IDA and anemia are often used synonymously, and the prevalence of anemia has often been used as a proxy for IDA. It is generally assumed that 50% of the cases of anemia are due to iron deficiency.[23] Anemia is an indicator of both poor nutrition and poor health.

The most dramatic health effects of anemia, i.e., increased risk of maternal and child mortality is due to severe anemia, have been well documented.[24,25] In addition, the negative consequences of IDA on cognitive and physical development of children and on physical performance particularly work productivity in adults are of major concern.[23] In the last three decades, there have been various attempts to produce estimates of the prevalence of anemia at different levels including at the global level, but until the present time, there has never been a systematic review of all of the data collected and published with the objective of deriving regional and global estimates.

As far as India is concern the study of anemia prevalence has been done at various levels and among different population, which suggest that prevalence of anemia in India is among the highest in the World. The most vulnerable population group is pregnant women and pre-school children. Even among higher income educated segments of population about 50% of children, adolescent girls and pregnant women are Anaemic. Inadequate dietary iron, foliate intake due to low vegetable consumption, perhaps low vitamin B-12 intake and poor bioavailability of dietary iron from the fibre, and rich Indian diets are the major factors responsible for high prevalence of anemia. Increased requirement of iron during growth and pregnancy and chronic blood loss contribute to higher prevalence in specific groups. In India, anemia is directly or indirectly responsible for 40 %of maternal deaths.[26]

Considering the above facts, the said study has been decided to study the prevalence of anemia among the adolescent girls, as evident in various studies that adolescence is a vulnerable age group for anemia in the Indian population.[27] The entire mandatory and ethical requirement was fulfilled as per the protocol. The study was based on survey among the adolescent girls. The questionnaire was filled during the survey and depicted in to tables and self-explanatory graphs for the result. The findings were as following.

Figure number 01 are suggesting that overall prevalence of anemia among the study sample were observed 459(91.8%) as anemic and 41(8.2%) as Normal. These findings coincide with the findings with various earlier studies which reveals that there are almost no countries where anemia is not at least a mild public health problem in all population groups, whereas India and other developing SEAR countries having prevalence rate more than 50%.[26,27]

Figure number 02 are suggesting the prevalence of type of anemia in the study sample. The Moderate Anaemic class were 200(40.0%) in the study sample whereas Mild Anaemic were 259(51.8%) in the study sample. The severe anemia were not been observed among the study population. These finding suggest that most maximum numbers of anemia subjects were having mild type followed by moderate type. This observation is in accordance to the study of Kavr.S.et al which reveals that the prevalence of mild type of anemia was more in comparison to moderate type.

Figure number 03 are suggesting the prevalence of anemia according to the age group. In the age group of 10 -13 years the observed Anaemic subjects were 373 (81%) and normal subjects were 39(95.1%) followed by 86 (18.7%) as Anaemic and 24(4.9%) as normal in the age group of >18 years. These finding suggest that the difference in distribution of anemia between the two-age group in normal students and cases is statistically significant.

Figure number 04 is suggesting prevalence of anemia according to socio-economic status. In the low socioeconomic group, the Anaemic subjects were 34(7.4%) and 03(7.3%) were normal whereas in middle socioeconomic group the Anaemic observation were 231(50.3%) and 20(48.8%) were normal followed by

upper socioeconomic group anaemic observation were 194(42.3%) and 18(43.9%) were normal. These findings reveal that the prevalence of anemia is not significantly different across different groups of socio-economic status. As stated in many studies that the poverty, socio-custom and socio-cultural factors are not only the cause behind the anemia but there are lot of influencing and predisposing factors which contribute anemia, including dietary habits, menstrual irregularities, and mal absorption syndrome.

CONCLUSIONS AND SUMMARY

Su-ul-Qinya is one of the major public health problems that affect populations globally in both rich and poor countries. Although the primary cause is iron deficiency, it may be present as an isolated case. But frequently it coexists with a number of other causes, such as malaria, parasitic infestation, nutritional deficiencies, and haemoglobinopathies. Anemia may affect not only the neonate and infant but also increase the risk of non-communicable diseases when the child grows into an adult and the risk of low birth weight in the next generation. In developing countries like India, other than pregnant women the preschool age children, school age children and adolescence girls are the most vulnerable group for anemia. The study reveals that poor bioavailability of dietary iron coupled with low intake-of haemiron is a major etiological factor for anemia. A number of strategies are available for dietary modification based either on promoting the intake of iron absorption inhibitors to double the bioavailability of iron. Worm infestation may also influence this condition.

The present study is designed with the aim to evaluate the prevalence of anemia among adolescent female, as suggested in many studies that adolescence is a vulnerable age group for anemia in the Indian scenario. The study was based on a preformed questionnaire evaluation as subjective and haemoglobin assessment through Sahli's method as objective parameters. The inclusion of Unani parameters and awareness status in the questionnaire were the salient features of the study. The study was survey based among defined population of the study area.

All the mandatory of criteria of ethical clearance, consent and permission of the school, college principals for survey were done as per the requirement of the study. The subjects selected for the study were as per the inclusion criteria. They were informed about the nature of study and assured about the confidentially of the record. After collecting all the data the result were analyzed as per the suitable statistical test for significance.

As mentioned in the result that total prevalence of *Su-ul-qinya* was 91.8% in the studied population. The education status, socio economic status, personal history and menstrual history were not observed significantly related with anemia, but age has been observed significantly related with anemia. The highest prevalence of mild anemia has been observed followed by moderate type, whereas the subjects having history of mixed diet were observed more anaemic in comparisons to vegetarian peoples.

The presenting symptoms of anaemic subject were mainly fatigue, followed by weakness, *sailan-ur-reham* and palpitation. These symptoms are in accordance to the classical literature of Unani medicine. Regarding the awareness findings in the study is a matter of concern. The maximum subjects were unaware about the detections and consequences of the anemia. Referring to all the above facts of the study following conclusion could be inferred. Anemia is still a great problem among the adolescence. Higher prevalence of anemia in female when they had attained menarche. High menstrual blood loss is associated with increased risk of anemia.

RECOMMENDATIONS

Following recommendations can be suggest in this study

1. The study provides an indication to initiate the anemia prophylaxis measures for adolescent females including nutrition and awareness education programme in schools.
2. Technology for detection of anemia and its effective treatment at affordable cost at every PHC should be made available by the authorities.
3. Effective implementation of the 10th plan strategies for combating anemia can go a long way in reducing the short and long-term adverse consequences of anemia.

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