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Dietary Behavior and Anemia in Rural Adolescent Girls in Kansal Village of Punjab

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Abstract:

Introduction : The concept of a transition between children and adulthood is known as adolescence. During this period, individuals move towards physical and psychological maturity and economic development and acquire their identity. India also displays very glaring gender disparities. While 30 percent of boys between the ages of 15 and 19 years are anemic, 56 percent girls in the same age group suffer from this condition.

Objectives : The main objectives of the paper were to study the dietary behavior of rural adolescent girls; look into prevalence of anemia among them and to make recommendations regarding the improvement in health and overall development in the adolescent girls.

Study Area and Methodology: The study was conducted in Kansal village of district Mohali, Punjab. A representative sample of 150 school going adolescent girls in the age group of 10-19 years were randomly selected from three schools of Kansal. From each school 50 subjects were chosen totalling to 150 in all. Data was collected through a questionnaire which was pre-tested.

Conclusions and Suggestions: All the girls were enquired about their routine dietary behavior. In order to understand their eating habits all of them were enquired about having fruits, milk, green vegetables and breakfast on daily basis. In totality, the study population had very poor dietary behaviors as 11.3 percent of the adolescent girls reported having fruits daily, 16 percent had their breakfast, 18.7 percent consumed green vegetables daily and 54 percent had milk daily. However, still less than half of the girls were not having milk in their daily life. Adolescents account for one-fifth of the world's population and in India they account for 22 percent of the total population. They come to school hungry and get tired very easily and are not able to concentrate efficiently on their tasks. There is a lot which needs to be done in this regard.

Suggestions: There are two main interventions/techniques to promote healthy life style and there by inculcate good dietary habits and reduce the problem of anemia in adolescent girls. They are 1. Education based approach 2. Community based approach. Taking various steps in this direction can instil both these approaches.

1. Adolescence and Anemia

The concept of a transition between children and adulthood is known as adolescence. During this period, individuals move towards physical and psychological maturity and economic development and acquire their identity. According to the World Health Organization (WHO), adolescents are individuals aged between 10-19 years. The period of adolescence is most closely associated with the teenage years.

In adolescence an individual's height and weight grow rapidly. These years are a period of intense growth, not only physically, but also mentally and socially. During this time, 20% of final adult height and 50% of adult weight are attained (DiMeglio, 2000). As a result of this rapid growth, adolescents are, especially vulnerable to anemia (Anemia is a condition in which a person's blood has a lower than normal number of red blood cells. Anemia can also occur if red blood cells don't have enough hemoglobin. So in case of anemia body doesn't get enough oxygen-rich blood).

Various symptoms of Anemia are: -

- Tiredness
- Weakness
- Pale skin
- Rapid heartbeat
- Shortness of breath
- Irritability
- Decreased appetite

- Dizziness
- Headache

Proper nutrition, including adequate iron intake, plays an important part of your teenager's growth and development. During adolescence, teenagers will acquire the knowledge and skills that will help them to become independent, successful young adults. Anemia can affect this learning and development. Severe or long-lasting anemia can damage heart, brain, and other organs in your body. Very severe anemia may even cause death.

Adolescence is the time when good food habits need to be inculcated among adolescents. It will ensure a good health in future. We know that adolescence is a period of rapid growth and personal development. The important thing is that the growth and development of adolescents depends largely on their nutritional level.

2. Who is at Risk for Anemia?

Today, 1.2 billion adolescents stand at the crossroads between childhood and the adult world. Around 243 million of them live in India. As they stand at these crossroads, so do societies at large – the crossroads between losing out on the potential of a generation or nurturing them to transform society (UNICEF). In India, adolescents account for a quarter of the country's population.

In India, poor nutrition, early childbearing and reproductive health complications compound the difficulties of adolescent girls in acquiring their physical and psychological maturity.

According to a report of UNICEF, more than half of the adolescent girls in India are anemic. Further malnourishment among India's adolescents is higher than even some of the least developed countries in Sub-Saharan Africa. The future of adolescent girls in India seems dismal with a vicious cycle of underweight adolescence, child marriage and maternal mortality. More than half of them (56%) are anemic and 43 percent are married off before the age of 18 years. India has the world's largest adolescent girl population (20%).

India also displays very glaring gender disparities. While 30 percent of boys between the ages of 15 and 19 years are anemic, 56 percent girls in the same age group suffer from this condition (NFHS, 2005-06). Most of the girls suffer from mild to severe deficiency of iron. Anemia is a problem that rarely features out in a regular check list. These girls are not aware about their anemic condition. They don't have any major complaints otherwise.

Iron needs are higher in adolescent girls after the onset of menstruation because of the monthly blood loss. The nutritional anemia in adolescent girls attributes to high maternal mortality rate (MMR), high incidence of low birth weight babies, high prenatal mortality and fetal wastage consequent high fertility rates. This phase of life is also important due to the ever increasing evidence that control of anemia in pregnant women may be more easily achieved if satisfactory iron status can be ensued during adolescence.

Nutritional deprivation, increased iron demand for adolescent growth, excessive menstrual losses of iron and early/frequent pregnancies aggravate and exacerbate preexisting anemia and its effects. 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 that are underweight and of short stature.

From the beginning of their lives, girls are socialized to accept male domination and ignore their own needs. Discrimination against the girl child in health, nutrition and education is heightened in adolescence. This condition is more vulnerable in rural adolescent girls. Girls inherit their mother's domestic chores and adopt stereotypical gender roles. Low self esteem and self worth are common. After marriage, her husband and in-laws control the bride's life. Consequently, the girls enter the 'culture of silence'.

3. Objectives of Paper

The main objectives of the paper were to study the dietary behavior of rural adolescent girls; look into prevalence of anemia among them and to make recommendations regarding the improvement in health and overall development in the adolescent girls.

4. Study Area and Methodology

The study was conducted in Kansal village of district Mohali, Punjab. This village is situated in the periphery of Chandigarh. It has one Sub Centre. One Auxiliary Nurse Midwife (ANM) is posted in this Health Sub Centre. Under National Rural Health Mission (NRHM), nine Accredited Social Health Activists (ASHAs) are working in this village. There are four Anganwadi Centres, which are run by one Anganwadi worker and an Anganwadi helper. Village Kansal has five schools for children. Among them one is Government School and other four are private schools.

A representative sample of 150 school going girls was chosen for the study. Initially three schools were selected at random. Then adolescent girls in the age group of 10-19 years who belonged to Kansal village were chosen from these schools. The girls studying in class 6th to 12th were selected. From each school 50 subjects were chosen. It gave a sample of 150.

5. Sample Selected

A pre-tested, semi-open ended and self-administered interview schedule was used in the study. The schedule was translated into Hindi and Punjabi besides English before being pre tested. The schedule was also modified for use in rural adolescent girl's population. The schedule was then provided as per the medium of instruction of the respondents.

All the adolescent girls present on the day of survey, allowing for anonymity and voluntary participation were taken as respondents. The sample excluded girls in the age group of less than 10 years or more than 19 years.

	Government School	Bagga School (private)	Dashmesh School (private)	Total
Number	50	50	50	150
Percentage	33.3	33.3	33.3	100.0

Table 1: School Wise Distribution of Study Population

Source: Field survey.

Out of three schools selected for the study, one was a government school and other two were private schools. From selected classes, girls in the age group of 10-19 years were selected for study purpose. The questionnaire was provided in the medium of instruction (English, Hindi and Punjabi).

Age in years	10-12		13-15		16-19		Total
Adolescent girls	N	%	N	%	N	%	150
	40	26.7	35	23.3	75	50.0	

Table 2: Age of the Study Population

Source: Field survey.

Among the study subjects, one-half belonged to 16-19 years age group followed by 26.7 percent in 10-12 years age group and 23.3 percent in 13-15 years category. The opinions of the respondents were elicited and their queries were answered as far as possible. The girls were also told about the concept of anemia and healthy food intake in detail; they were made aware about their health needs and were also informed to get health services from the local centers i.e. Health Sub Centre and Anganwadi Centers.

6. Dietary Behavior of the Adolescent Girls

During adolescence adequate nutrition plays an important role in supporting the growing body and for preventing future health problems. Adolescents need additional calories, protein, calcium and iron during these growing years. There is a significant increase in dietary necessities from childhood requirements.

In India, especially in rural households, within the households, girls receive less health care, education and nutrition than boys. For young girls in India, poor nutrition, early childbearing and reproductive health complications compound the difficulties of adolescence physical development.

Various studies have shown that often adolescents don't get overall nutrition and specific nutrition intakes. They miss their meals or they avoid consuming some items, which are necessary ingredients of a balanced diet.

Behavior	Number	Percentage
Have fruits daily	17	11.3
Have milk daily	81	54.0
Have green vegetables daily	28	18.7
Have breakfast daily	24	16.0
Total	150	

Table 3: Dietary Behavior of the Study Population

Source: Field survey.

All the girls were enquired about their routine dietary behavior. In order to understand their eating habits all of them were enquired about having fruits, milk, green vegetables and breakfast on daily basis. All these things are necessary for healthy development of a human being.

Fruits are very good sources of fiber, complex carbohydrate and numerous vitamins and minerals. Then also very less number of adolescents consumes fruits in their daily life. The reason may be non-availability, influence of peer group, their own perceptions, poor parental guidance, etc. Among respondents only 11.3 percent responded affirmative about having fruits daily.

We know that breakfast is the most important meal of the day. After six to eight hours of sleep, our body requires energy to perform various daily activities. In the hurry of coming to school in time or due to other constraints, only 16 percent of them were having breakfast daily. It meant breakfast, which is very important for healthy life, was skipped by most of the adolescent girls. They come to school hungry and get tired very easily and are not able to concentrate efficiently on their tasks.

Iron requirements increase manifold times during adolescence. According to WHO, 27 percent of adolescents in developing countries are anemic and a major share is of Indian adolescents. Anemia results in various problems in their life like impaired cognitive functioning lower school achievement and lower physical growth capacity. Proper nutrition plays an important role in an adolescent's life.

In order to fulfill requirement of iron and calcium in our body and stay healthy it is very important to consume green vegetables in our life. Vegetables are important for everyone. They improve health in a powerful way, but only 19 percent of the adolescent girls were having green vegetables on daily basis.

Milk is a very good source of calcium. What is taken in adolescent years makes a big difference in health of bones in later years. Milk is a cost efficient source of proteins, minerals and vitamins. The milk was consumed by 54 percent of the girls. This was a positive

sign compared to other dietary behaviors. However, still a less than half of the girls were not having milk in their daily life. Milk has amazing benefits and should be consumed by everyone. In totality, the study population had very poor dietary behaviors as 11.3 percent of the adolescent girls reported having fruits daily, 16 percent had their breakfast, 18.7 percent consumed green vegetables daily and 54 percent had milk daily.

Healthy diet will give adolescents required energy for school, sports and other activities. An adolescent's body is in continuous evolution and undergoing major changes caused by growth and hormonal fluctuation. During that period it is important to encourage them to consume nutrient-rich foods like fruits, vegetables and milk products, especially that they often under consume these food groups.

7. Anemia Status

Anemia is a decrease in the number of red blood cells (RBC's) or hemoglobin, resulting in a lower ability for the blood to carry oxygen to blood tissues. Anemia is a very common nutritional disorder especially in the developing world. Anemia among adolescents is a very major problem faced worldwide. Adolescence is the formative years when the maximum amount of physical and psychological growth takes place. During this time, 20 percent of final adult height and 50 percent of adult weight are attained. As a consequence of this rapid growth, adolescents are vulnerable to nutritional deficiencies, especially iron deficiency anemia (World Bank, 2003). A sensible way to help prevent your teenager from becoming iron deficient or anemic is to provide a diet naturally rich in iron.

In India, the prevalence of anemia is disproportionately high in rural areas due to poverty, inadequate diet, certain diseases, pregnancy/location and poor access to health services. In these areas people visit the doctor when they had an illness. Anemia is not an illness according to them. There is lack of awareness about the problem of anemia. Among adolescents, girls constitute a vulnerable group in rural areas where they are traditionally married at an early age and exposed to a greater risk of reproductive morbidity and mortality. Adolescence represents a real opportunity to make a difference in the life long patterns.

A test is conducted to know whether a person is anemic or not. No special preparation is to be done. A simple blood test gives the results. For it Hemoglobin or Hb level is measured. Hemoglobin is a protein in red blood cells that carries oxygen. A blood test can tell how much hemoglobin a person has in his/her blood. Hemoglobin is a blood test that measures the number of red blood cells in the body. It is measured in grams of hemoglobin per litre of blood.

Low hemoglobin means that a person's hemoglobin level when measured is below the lowest limits of normal for their age and sex. Another term frequently used in place of low hemoglobin is anemia, or the person is described as being anemic. The normal ranges for hemoglobin depend on the age and, sex of the person, and other factors like the start of adolescence.

Normal results vary, but in general are:

- Male: 13.8 to 17.2 gm/dL
- Female: 12.1 to 15.1 gm/dL

Note: gm/dL = grams per deciliter

The examples above are common measurements for results of these tests. Normal value ranges may vary slightly among different laboratories. Some labs use different measurements or test different samples. So it depends upon the test specific results whether a person is anemic or not. If hemoglobin becomes seriously low (around 7.0 to 8.0 gm/dL) then sometimes blood transfusion is also recommended.

Iron is one of the ingredients the body needs to make hemoglobin. We get iron from the food we eat. We need to take in a small amount of iron everyday. In order to know the status of anemia among the covered respondents, their Hb testing was done with the help of an organization working in Kansal village. This group organizes a monthly camp for adolescent girls of the village. In that camp they are advised about good diet and the health worker tests their Hb. So sample was collected and tested with the help of health worker of that organization and data was analyzed.

Hb level	Number	Percentage
≥11 gm	31	20.7
< 11 gm	119	79.3

Table 4: Anemia Status of Study Population

Source: Field survey.

Table revealed that, 20.7 percent of the respondents were not anemic. In other words, approximately one out of every five school going adolescent girls covered was not anemic and other four were anemic. This reveals the gravity of the situation. Despite anemia being a preventable disease, it was highly prevalent among the adolescent girls who resided in rural areas. Further respondents were probed about various symptoms of anemia. Among them, about 62 percent reported having tiredness and dizziness while nobody reported having other problems like difficulty in breathing, fainting and inability to concentrate.

The respondent rural adolescent girls had poor nutritional status along with poor dietary habits. The concept of bringing Tiffin's to school was not widely practiced by them.

8. Suggestions/Recommendations

Adolescent is a state or process of growing up from puberty to maturity. Adolescents account for one-fifth of the world's population and in India they account for 22 percent of the total population. Adolescent girls who are potential mothers and future homemakers

constitute an important part of our society. Adolescence is an important period of human growth and maturation, unique changes occur and many adult patterns are established. Following the childhood, during the adolescence growth spurt and the risk of iron deficiency anemia appears more often especially in girls due to various reasons like poor dietary intake, discrimination with girls and menstruation blood loss etc.

There are two main interventions/technique to promote healthy life style and there by inculcate good dietary habits and reduce the problem of anemia in adolescent girls.

- i. Education based approach
- ii. Community based approach

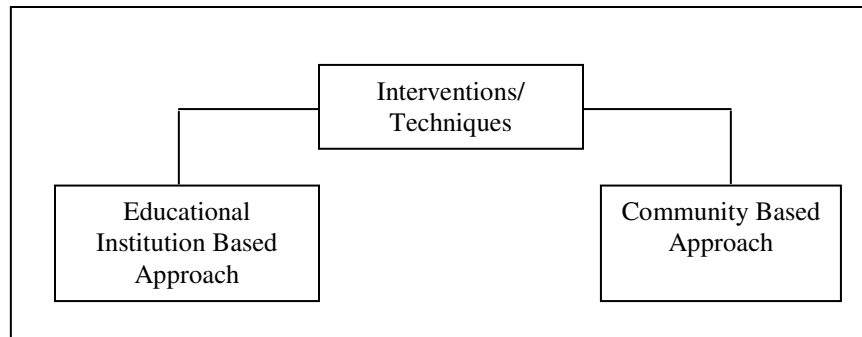


Figure 1: Taking various steps in this direction can instill these both approaches.

8.1. Educational Institution Based Approach

Some of the steps that can be integrated at educational institution level in this direction are: -

- Schools/Colleges are the basic institutions where the early/developmental phase begins leading to middle and late phases of adolescence. It is here that we can formulate effective intervention methods towards health promotion, prevention and treatment.
- School based health programmes can be helpful to promote healthy life styles.
- Counseling center can be set up in school/college to handle these problems of adolescents especially girls. These centers can be very effective as they reach a long way as no parents are there and students can share their problems, difficulties with the counselor.
- Involve teachers in this process. Make them aware and they can motivate children on day-to-day basis to have proper nutritious food and its importance in our life.
- Adolescent clinics can be set up to tackle menstruation and reproductive problems of adolescent girls.
- Medical camps can be organized in school/college.
- Organize talks/lectures by doctors/health educationist in educational institutes. They can guide the adolescents in the right perspective.
- Various co-curricular activities like debate, poster making and declamation etc. should be organized in school/college. It will make adolescents more aware.
- Supply of iron and folic acid tablets based on symptoms of anemia can be helpful.
- Health awareness programs can be organized and in them benefits of good dietary behavior, healthy food intake, menstruation concept and remedy of anemia can be discussed in detail.
- It should be taken care that education about maintaining positive healthy lifestyles and preventing problems that may endanger health, does not mean just dissemination of facts and information. Instead of providing just facts, it should help prepare the students for real-life situations that they may have to face in their daily life. This can only be possible if the students are imparted life skills as part of their education.
- Interactive and novel methods should be used to involve and motivate the adolescents. Role plays and group discussions can be utilized to make them active participants in learning knowledge and skills related to healthy lifestyles.
- School curriculum should include material about benefits of good diet for a healthy life, importance of good diet in life of an adolescent girl, concept of anemia, its disadvantages and how to fight with anemia etc.
- The school environment has a very powerful influence on students eating behavior. Teachers and school play a very important role in this direction. They should promote children to bring healthy tiffins to school.
- Overall knowledge of adolescents regarding nutritional contents of various edibles is low. This lack of awareness is more in rural adolescent girls. So, interventional steps be taken at school level to enhance their knowledge of balanced diet along with hazards of unbalanced diet.

8.2. Community Based Approach

Some of the steps that can be integrated at community level in this direction are:

- Electronic media especially television and radio can play an important role in proper dissemination of information. Role of television as a powerful medium of communication to disseminate information effectively to the adolescents should be appreciated and made use of to educate them.
- There should be activities to promote healthy behavior in the community because the behavior of various role models in their environment is seen to significantly influence the adolescents' attitude towards life.
- Various schemes/programmes working in direction to reduce anemia and inculcate good dietary habits should include adolescents in them. Adolescents especially girls should be an integral part of these schemes/programmes.
- Since friends are among the chief sources of information as well as main influencing factor in moulding many adolescent behaviors, their role must be acknowledged in this direction.
- Information Education and Communication (IEC) activities. i.e. dramas, plays, Street plays etc can be helpful to create awareness about importance of good diet and anemia in life.
- IEC awareness material, i.e. pamphlets, posters related to the benefits of good dietary behavior and problem of anemia can be distributed in school/college. It can be helpful for adolescent students to gain knowledge.
- Counseling facilities should be available on the grass root level.
- Non Government Organizations (NGOs) should intervene with health awareness programs for the adolescent girls.
- Among eating habits of the adolescents, the consumption of healthy and nutritious food should be encouraged. Benefits of healthy food habits in life should be advocated and practice of the same should be inculcated among them.
- Involve public health sector medical staff to educate adolescent girls about benefits of healthy eating and to check anemia among adolescent girls and then give appropriate guidance and medicine if necessary. In it follow up should also be included.
- Involve parents/family in this process. They should be made aware about importance of nutritious food, good health and problems due to anemia in future life of the girl child. They need to be counseled to not discriminate among sons and daughters and treat them equally.
- Key dietary behaviors need to be promoted among adolescent girls like eat three or more meal; eat fruits, vegetables; drink milk; eat with the family so that girls get enough to eat and are not fed on the left over. Make girls aware about foods that are cheap, easily available and good sources of nutrients.
- The role of mothers is very vital in inculcating habit of bringing tiffin to school. Parents especially mothers should encourage daughters to carry tiffin along with them. Further tiffins should have vegetables or fruits in them. In this direction, parents need to be made aware about the importance of healthy food in this phase of life and that good health is important for both daughters and sons.
- Anemia is a major public health concern in India. Emphasis in this direction need to be laid on general population with special concern on adolescents, women, rural and under privileged population.
- Overall knowledge of community regarding nutritional contents of various edibles is low. This lack of awareness is more in rural, illiterate families. So, interventional steps be taken at community level to enhance their knowledge of balanced diet along with hazards of unbalanced diet.

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