



“A DESCRIPTIVE STUDY TO ASSESS THE HEMOGLOBIN LEVEL AMONG ADOLESCENT GIRLS IN SELECTED SCHOOLS AT KARNAL IN A VIEW TO PROVIDE HEALTH EDUCATION TO ADOLESCENT GIRLS”

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ABSTRACT

The WHO Global Database on Anemia for 1993–2005, covering almost half the world's population, estimated the prevalence of anemia worldwide at 25 percent. Although the prevalence of anemia is estimated at 9 per cent in countries with high development, in countries with low development the prevalence is 43 percent. India has the highest prevalence of iron-deficiency anemia among women, including adolescents, worldwide. Between 60 percent and 70 percent of Indian adolescent girls are anemic (Hemoglobin < 12 g/dl). Regarding dietary causes of anemia, the most common kind of anemia includes iron deficiency anemia, however, deficiencies of folic acid, B12, and Vitamin C can also lead to low levels of hemoglobin⁽²⁾. There are multiple causes of anemia including genetic and dietary factors. Women, particularly pregnant women, and children are most at risk of anemia. There are many causes for anemia; these causes may simply be attributed to acquired or congenital disorders. Iron deficiency anemia is the most frequently acquired nutritional anemia and over 2 billion people- i.e., nearly one third- throughout the world have iron deficiency anemia. In developing countries, factors associated with under nutrition of adolescents are: poor household economic condition, periodic food-shortage, child-labor (marker of household income-poverty), burden of disease, poor knowledge about long-term consequences of under nutrition of adolescents, quantity and quality of food, and access to health and nutrition services. In Bangladesh, low family income, education, and periodic food-shortage were associated with inadequate dietary intake which might have led to under nutrition.

BACKGROUND OF THE STUDY

Blood is a connective tissue. It provides one of the means of communication between the cells of different parts of the body and the external environment. Blood is the red fluid that circulates in our blood vessels, i.e. veins and arteries. The main function of blood is to act as the body's transport system but it also has a major role in the body's defense against infection.

Blood supply of oxygen to tissues and It carries oxygen from lungs to the tissues and carbon dioxide from the tissues to the lungs for excretion. Immunological functions, including circulation of white blood cells. Blood regulates body pH and body temperature, and detection of foreign material by antibodies Blood carries nutrients from the alimentary tract to the tissues, and also carries protective substances, e.g. antibodies, to the areas of infection. Blood also carries clotting factors that coagulate blood, minimizing bleeding from ruptured blood vessels blood makes up about 7% of our body weight, and it is less in women and greater in children.

Blood is composed of straw colored transparent fluid, i.e. plasma in which different type of cells such as erythrocytes, leukocytes and thrombocytes are present. Plasma constitutes about 55% and cells about 45% of blood volume. About 55% of blood is blood plasma, a fluid that is the blood's liquid medium, which by itself is straw-yellow in color. The blood plasma volume totals of 2.7–3.0 liters in an average human. It is essentially antiques solution containing 92% water, 8% blood plasma proteins, and trace amounts of other materials. Plasma circulates dissolved nutrients, such as glucose, fatty acids and removes waste products, such as carbon dioxide, urea and lactic acid. There are some of the constituents of plasma are such as, plasma proteins, inorganic salts, nutrients, waste materials, hormones and gases.

Plasma contains proteins that help blood to clot, transport substances through the blood, and perform other functions. Blood plasma also contains glucose and other dissolved nutrients.

Human body contains about 8% of total body weight in average sized adults. Blood volume varies with age, body composition, and method of measurements. There are three types of blood cells in our blood.

INTRODUCTION

Anemia is a general term referring to the condition characterized by abnormally low levels of healthy red blood cells or hemoglobin. The WHO Global Database on Anemia for 1993–2005, covering almost half the world's population, estimated the prevalence of anemia worldwide at 25 percent. Although the prevalence of anemia is estimated at 9 per cent in countries with high development, in countries with low development the prevalence is 43 percent. India has the highest prevalence of iron-deficiency anemia among women, including adolescents, worldwide. Between 60 percent and 70 percent of Indian adolescent girls are anemic (Hemoglobin < 12 g/dl). Regarding dietary causes of anemia, the most common kind of anemia includes iron deficiency anemia, however, deficiencies of folic acid, B12, and Vitamin C can also lead to low levels of hemoglobin⁽²⁾. There are multiple causes of anemia including genetic and dietary factors. Women, particularly pregnant women, and children are most at risk of anemia. There are many causes for anemia; these causes may simply be attributed to acquired or congenital disorders. Iron deficiency anemia is the

most frequently acquired nutritional anemia and over 2 billion people- i.e., nearly one third- throughout the world have iron deficiency anemia. In developing countries, factors associated with under nutrition of adolescents are: poor household economic condition, periodic food-shortage, child-labor (marker of household income-poverty), burden of disease, poor knowledge about long-term consequences of under nutrition of adolescents, quantity and quality of food, and access to health and nutrition services. In Bangladesh, low family income, education, and periodic food-shortage were associated with inadequate dietary intake which might have led to under nutrition. Anemia is a common blood disorder associated with abnormal reduction in red blood cell count (RBC), hemoglobin and hematocrit (Hct) values below the established normal reference values. This reduces the hemoglobin available to supply body tissues and organs with the necessary oxygen to function effectively. Oxygen deprivation is the basis for the classical signs and symptoms seen in most anemic patients. These include, among others, pale skin, early fatigue, shortness of breath, chest pain, headache, signs of edema, and cognitive problems. These signs and symptoms gradually increase and they may be unnoticed in the mild stage because iron is an essential element for the function of various organs, its deficiency may lead to impaired perception and learning difficulties ending up with declined school success. In adolescent, the most frequent cause of megaloblastic anemia is the deficiency of vitamin B12 and folic acid. Fresh vegetables and fruits contain folic acid, but the only source of vitamin B12 is foods of animal origin. Deficiency of vitamin B12 may cause neuropsychiatric problems, impaired behavior, lack of attention, learning difficulties and a decline in the success of the affected student.

In absolute numbers anemia affects 1.62 billion people globally with about 293 million children of preschool age, 56 million pregnant women, and 468 million non-pregnant women estimated to be anemic. Children and women of reproductive age are most at risk, with global anemia prevalence estimates of 47 per cent in children younger than 5 years, 42 per cent in pregnant women, and 30 per cent in non-pregnant women aged 15–49 years Africa and Asia account for more than 85 per cent of the absolute anemia burden in high-risk groups and India is the worst hit. Anemia is estimated to contribute to more than 115,000 maternal deaths and 591,000 prenatal deaths globally per year. Analysis of data on global prevalence shows that anemia is disproportionately concentrated in low socioeconomic groups, and that maternal anemia is strongly associated with child anemia. Nutritional anemia is a major public health problem in India and is primarily due to iron deficiency. The National Family Health Survey-3 (NFHS-3) data suggests that anemia is widely prevalent among all age groups. The prevalence of anemia among girls Hemoglobin Adolescence - a period of growth and development - is a good time to intervene, both before a first pregnancy and during pregnancy, yet Indian public health programs lack strategies to tackle iron-deficiency anemia in adolescent girls anemia caused by dietary factors is a disease that is readily preventable and treatable.

NEED FOR THE STUDY

Adolescence has been defined by the World Health Organization 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 changes take place.

Adolescence is the time to learn and adopt healthy habits to avoid many health and nutritional problems later in life. Adolescents have more easy access to health and nutrition information through schools, recreational activities, and mass media than they have later in their lives. Particularly, health and nutrition knowledge and healthy habits of female adolescents will have critical roles to play in maintaining future family health and nutrition. Nutritional deficiencies have far reaching consequences in adolescent girls. If their nutritional needs are not met, they are likely to give birth to undernourished children, thus transmitting under nutrition to future generations. The nutritional anemia in adolescent girls attributes to the high maternal mortality rate, the high incidence of low birth weight babies, high prenatal mortality and the consequent high fertility rates. This phase of life is also important due to the ever-increasing evidence that the control of anemia in pregnant women can be more easily achieved if a satisfactory iron status can be ensured during adolescence. About 43% of the adolescent deaths are related to pregnancy. Pregnancy during adolescence deprives the girls from achieving their full growth according to their genetic potential. One way to break the intergenerational cycle of malnutrition is to improve the nutrition of adolescent girls prior to conception.

This is a vulnerable period in the human life cycle for the development of nutritional anemia, which has been constantly neglected by public health programs. Girls are more likely to be a victim due to various reasons. In a family with limited resources, the female child is more likely to be neglected. She is deprived of good food and education, and is utilized as an extra working hand to carry out the household chores. The added burden of menstrual blood loss, normal or abnormal, precipitates the crises too often.

Prevalence of anemia was significantly higher ($p < 0.001$) among adolescent girls belonging to joint family (45.2%) than those belonging to nuclear family (28.3%) (Odds ratio 2.1). Prevalence of anemia was also found to be significantly higher ($p < 0.01$) in those adolescent girls having illiterate (42.2%) and just literate mother (51.9%) as compared to better literate mothers. A significantly high ($p < 0.02$) prevalence of anemia was found in adolescent girls belonging to families having family size > 3 (38%) than 27.2% in those girls from families of family size < 3 (odds ratio 1.6).

A cross sectional study was conducted to estimate the prevalence of anemia among adolescent girls and to study the socio demographic factors associated with anemia. Materials and methods: A cross sectional survey was conducted in selected Anganwadi centers of rural area of Hassan district. Three and Fourteen adolescent's girls (10-19 yrs old) were included in the study. The study was conducted from February to April 2011 (3 months). Data analysis was done by using proportions and Chi-square test. Results: Prevalence of anemia was found to be 45.2%. A statically significant association was found with iron deficiency anemia, weight loss and anemia, pallor and anemia. In the present study it was seen that among the 45.2% of anemic adolescent girls 40.1% had mild anemia, 54.92% had moderate anemia and 4.92% had severe anemia. 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. Very often, in India, girls get married and pregnant even before the growth period is over, thus doubling the

risk for anemia. The nutritional anemia in adolescent girls attributes to the high maternal mortality rate, the high incidence of low birth weight babies, high prenatal mortality.

Adolescents of both the sexes are particularly vulnerable to developing anemia because of rapid growth weight gain and blood volume expansion and in girls additionally. Adolescent girls form a crucial segment of the population and constitute, as it were, the vital "bridge" between the present generation and the next (Raman, 1992). Prevalence of anemia among children, adolescent girls and pregnant women is a major concern. The presence of low level of hemoglobin is the characteristic of anemic persons. Hemoglobin is a medium for transporting oxygen from the lungs to other vital organs of the body. Low level of hemoglobin results in impaired cognitive performance, loco-motor function and, IQ development among children, while among pregnant women it results in premature delivery, low birth weight, prenatal mortality and maternal mortality. Anemia retards physiological growth in adolescent girls. Thus assessment of prevalence of anemia among children, adolescent girls and pregnant women is vital to strengthen So there is a need to control anemia because adolescent girls are more prone to get it & also influence the future generation. Age, religion, caste, father's education and mother's working status of adolescent girls didn't show any significant relationship with the prevalence of anemia in these adolescent girls

OBJECTIVE

1. To assess the Hemoglobin level of adolescent girls.
2. To develop and validate lesson plan on anemia in a view to provide health education to adolescent girls.
3. To find the association of anemic status of selected variables.

REVIEW OF LITERATURE

A review of literature on the research topic makes the researcher familiar with the existing studies and provides a foundation upon which to base new knowledge. It involves the systematic identification, location, scrutiny and summary of written materials that contain information on a research problem” (Polit & Hungler, 1999)

Literature means writings and a body of literature refers to all the published writings in a particular style on a particular subject. A review of the literature is an essential part of one’s academic research project. The review is a careful examination of a body of literature pointing toward the answer to your research question. Literature reviewed typically includes scholarly journals, scholarly books, authoritative databases and primary sources. Sometimes it includes newspapers, magazines, other books, films, and audio and video tapes and other secondary sources. Primary sources are the origin of Information under study, fundamental documents relating to a particular subject or idea. Often they are firsthand accounts written by a witness or researcher at the time of an event or discovery. These may be accessible as physical publications, as publications in electronic databases, or on the Internet. Secondary sources are documents or recordings that relates to or discuss information originally presented elsewhere. These, too, may be accessible as physical objects or electronically in databases or on the Internet. All good research and writing is guided by a review of the relevant literature.

Bronner YL. (1996) conducted a study to explore the relationship between nutritional status outcomes

among ethnically diverse children and cultural and environmental contexts. Articles from the body composition measure, diet, and physiologic outcomes among ethnically diverse children were identified through on-line literature searches and references from articles reviewed. These studies were critically reviewed and selected if they reported findings resulting from use of accepted methodologies. Explanations consistent with evaluation of results from the studies and reports were developed by synthesis of the findings. Children from underserved, ethnically diverse population groups were at increased risk for obesity, increased serum lipid levels, and dietary consumption patterns that do not meet the Dietary Guidelines for Americans. More than 80% of all US children consume more than the recommended amount of total fat and saturated fat. These factors, which were noted during childhood, may track into adolescence, placing these children at increased risk for the early onset of chronic diseases such as non-insulin-dependent diabetes mellitus, cardiovascular disease, hypertension, and some forms of cancer. Although federally funded food assistance programs are changing rapidly, currently they provide foods that, when eaten as recommended, exceed the Dietary Guidelines for these children. Future interventions to improve the health and nutritional status of our nation's children, especially those from underserved, ethnically diverse groups should be culturally appropriate and implemented at the levels of individuals, families, and communities.

Srihari G, Eilander A, Muthayya S, Kurpad AV, Seshadri S.(2007) Study showed that anemia prevalence (haemoglobin concentration <120 g/L) ranged from 19 to 88% across five different cities in India. Other micronutrient deficiencies including, folate, riboflavin, in one study and clinical signs of deficiency in three other studies Overweight and obesity were prevalent among 8.5-29.0% and 1.5-7.4% respectively among school children, as indicated by 11 studies. Predominant components in children's diet were cereals and pulses, followed by milk and milk products the fruits and vegetables component was comparatively lower. Nutritional status of MHSES children in India needs attention especially with respect to the high prevalence of anemia, overweight and obesity. There are indications that micronutrient deficiencies exist, but sufficient data are lacking, in particular biochemical data. A current estimate using well designed methodologies of prevalence of micronutrient deficiencies and information on the etiology of anemia among children of middle and high socio economic status (MHSES) groups would be valuable to help understand the nutritional status and extent of micronutrient malnutrition.

Malnutrition affects the mental development of the children, according to the studies reviewed by tropical metabolism research unit, conversation of the West Indies Kingston to find out the effect of severe malnutrition on mental development – severely malnourished children demonstrate marked behavioral disorder in the acute stage. They are more apathetic, less active and explore their development – less both in quantity and complexity than children who are with other disease mohl. K.J. Nutrition Research centre, Houton USA Conducted a study to assess the nutritional status of children in hospital and in the field. This study serves as a guide to early nutritional interventions. Indicators for early nutritional intervention are-Height for age and weight for height or age, Height for age measurements less than 95% of expected height, Weight for height Early nutritional intervention is essential to restore normal body composition

Lawrence U.S.(2008) Conducted a study to determine the pattern of physical growth and nutritional impact on it in low socio economic semi urban town in Nigeria .Anthropometric data was collected with BMI height and weight was compared with the reference population the result showed thinness and stunting were higher in boys than girls.

Lastra – ES Cudero L-G (1996) conducted a cross sectional study to evaluate malnutrition prevalence of children under five in Mexico in 31 urban and 562 rural area according to the report of study concluded by Mattos A, Morais, M (1999) Department of pediatrics, university of Paulo scholabraid to evaluate the nutritional status and dietary habits of Indian children. Result was of 103 children less than 5 years of age 23% percentile protein energy malnutrition according to Gomez's 2'S criteria of which only 2% with grade II malnutrition and no child presented severe PEM.

Sudesh Joodetal (1995) According to the study conducted by the Department of foods and nutrition, Haryana Agricultural University on 90 rural preschool children in 4 areas of Haryana state to assess the nutritional status of preschool children the mean of the daily intake of all nutrients were found lower than their respective recommended dietary intake, (RDI) mean of height and weight of 10 children were found lower in two areas when compared to their reference values. On the basis of weight for age and height for age criteria as well as clinical examination majority of children were normal in one village. That the current mid-day meal programs in India should be viewed more as a feeding programmed rather than a nutritional programmed since its primary objective is to alleviate hunger and improve school attendance and enrolment.

A study was conducted by College of Nursing, MAHE, Manipal, Karnataka to determine the physical health status of pre-school children in a village of Udupi district of Karnataka state in 1998. The objectives were to assess the physical health status of children to assess' birth order of the child, number of siblings of the child, gender of the child, child care arrangements and socio- economic status of parents and to find out the association between physical health statuses of pre-school children. The study used system's model and Co-relational survey. Data were collected from 100 samples. A significant association was observed between the physical health status of the children and the employment status of the mother [chi square = 4.003, $p < 0.05$], and no significant association was found between physical health status and age of parents, educational status of parents, birth order of the child, number of siblings of the child, gender of the child, child care arrangements and socio economic status of parents.

In a study conducted by AIMS, A under Integrated Child Development Services (ICDS) scheme is the largest national programme for the promotion of the mother and child health and their development in the world. The beneficiaries include children below 6 years. The package of services provided by the ICDS scheme includes supplementary nutrition, immunization, and health check-up and pre-school education the scheme services are rendered essentially through the Anganwadi worker (AWW) at a village

METHODOLOGY

The research methodology includes the strategies to be used to collect and analyze the data to accomplish the research objectives. The methodology of research indicates the general pattern for organizing the

procedure for gathering valid and reliable data for an investigation. This chapter deals with the methodology adopted for the study. It includes research approach, research design, setting, sample and sample technique, development and description of tools, pilot study, data collection and plan of data analysis.

The present study was carried out to assess the HB level among adolescent girls in selected school of Karnal in a view to provide health education.

RESEARCH APPROACH

The research approach indicates the basic procedure for conducting the research. It is a vehicle for hypothesis testing or answering research question. A research approach tells the researcher what data to collect & how to analyze it. It is the overall plan chosen to carry out the study. It also suggests the possible conclusions to be drawn from the data. In view of the nature of the problem & to accomplish the objectives of the study, non-experimental research approach is considered to be the most appropriate to collect data related to HB level among adolescent girls at selected school of Karnal in a view to provide health education.

RESEARCH DESIGN

A research design is the overall plan for obtaining answer to the research questions or for testing hypothesis. The selection of research design is the most important step as to provide the framework for the study. The research design depicts the overall plan for organization of a scientific investigation. In present study a Descriptive Survey Design was considered to be the most appropriate to assess the HB level among adolescent girls in selected school of Karnal in a view to provide health education.

SETTING

Setting is the physical location and condition in which data collection takes place in the study. The selection of appropriate set up is very important because the set up can influence the way people behave and feel, and how they respond.

The setting of present study was selected Govt. senior secondary school of Gharaunda, karnal (Haryana).

Criteria for selection of setting were:-

- ❖ Availability of subjects
- ❖ Feasibility of conducting study
- ❖ Economy of time and easy access

POPULATION

Population is the entire set of individuals having common characteristics. Accessible population is the aggregate of cases that confirm to the designated criteria and that are accessible to researcher as a pool of subject of the study.

For the present study, the population comprised of;

Target population: students of Govt. senior secondary schools of Ghraunda, (Karnal).

Accessible population: students of Govt. senior secondary schools of Ghraunda, Karnal(Haryana).

SAMPLE AND SAMPLING TECHNIQUE

SAMPLE

A sample is a small proportion of population selected for observation and analysis.

Sample of present study comprised of students of 9th class of Govt. senior secondary school, Ghraunda , Karnal (Haryana).

SAMPLING TECHNIQUE

Sampling refers to the process of selecting a portion of the population to represent the entire population". Sampling is necessary because it is more economical and efficient to work within a small group of elements.

In present study, the schools were selected by using convenience sampling technique and students were selected by using Purposive sampling technique.

INCLUSION CRITERIA: The study included students who were:

1. Available at the time of study
2. Willing to participate in the study
3. Able to understand Hindi or English

SAMPLE SIZE: Sample size was 60.

DATA COLLECTION TOOLS AND TECHNIQUES

Data collection tools are devices that a researcher uses to collect the data.

Research tools are the devices used to collect the data. The instrument facilitates the observation & measurement of the variable of interest.

The present study aimed to assess the HB level among adolescent girls in selected school of Karnal in a view to provide health education.

DATA COLLECTION TOOLS:

SECTION 1: Sample characteristics

SECTION 2: Lesson plan

TECHNIQUES: The paper and pencil technique was used to collect data.

PILOT STUDY

Formal administrative approval was obtained from principal of respective Govt. girl's senior a secondary school of Ghraunda, Karnal, Haryana.

The pilot study was conducted in the month of May 2024, to find out the feasibility of conducting the study and to decide the plan of statistical analysis. 15 students (selected from Govt. girls senior secondary school of Ghraunda) were selected for the pilot study by using purposive sample technique. The tool was administered to the subjects and the purpose of the study was explained. To obtain a free and frank response, the subjects were assured about the confidentiality of their response. The analysis of pilot study was done in accordance with the objectives of the study. Findings of the pilot study revealed that it was feasible to conduct the study and the criterion measures were found to be effective. The plan for statistical analysis was also determined.

PROCEDURE OF DATA COLLECTION

Formal administrative approval was obtained from principal of respective senior secondary school of Ghraunda, Karnal , Haryana to conduct the study. 60 students were selected for the study by using purposive sampling technique Data were collected from May, 2024 within the timing of 11:00 am to 2:00 pm. In order to develop rapport, self introduction and introduction to the nature of study were given to adolescent girls of senior secondary schools of Karnal To obtained free and frank response, the purpose of study was explained and the subject were assured about the confidentiality of their response. Overall it took 25 – 30 minutes in collecting the data from the students of one particular school.

PLAN FOR DATA ANALYSIS

According to the objectives of the study and opinion of the experts it was planned to organize, tabulate, analyze and interpret the data by using both descriptive and inferential statistics. The data obtained in the study would be analyzed using both descriptive and inferential statistics i.e. mean, median, and standard deviation, coefficient of correlation and chi square test.

SUMMARY

The present study was aimed to assess the HB level of adolescent girls of selected schools at Karnal in a view to provide health education to adolescent girls.

The objectives of the study were:-

1. To assess the HB level of adolescent girls.
2. To develop and validate lesson plan on anemia in a view to provide health education to adolescent girls.
3. To find the association of anemic status of selected variables.

A review of related research and non-research literature helped the investigator to develop tools and content on Hemoglobin level among adolescent girls of selected schools of Karnal. It also further enabled the investigator to develop the methodology of the study and decide plan for data analysis.

The non-experimental research approach was adopted with descriptive survey design to collect the data regarding the HB level of adolescent girls of selected schools of Karnal in a view to provide health education to adolescent girls.

The study was conducted in Govt. girl's high school of Ghraunda, Karnal (Haryana).

The purposive sampling technique was used to obtain an adequate sample size. The sample comprise of 60 students.

The tools developed and used for data collection was structured knowledge questionnaires. It was comprised of two sections. Section-1 comprises of sample characteristics of adolescents girls (such as age, HB level, religion, family income, type of family) and Section-2 comprise of lesson plan.

The content validity of the tool was established by 5 experts from the field of medical-surgical nursing, child health nursing, community health nursing and obstetrical nursing. The reliability coefficient of structured knowledge questionnaires was calculated by.

A pilot study was conducted for determining the feasibility of the study and to decide upon the plan for data analysis, on 15 adolescent girls (selected from Govt. girls high school of Ghraunda) Karnal, Haryana.

Final data was collected from 60 adolescent girls from 12th may to 15th may, 2015.

The collected data was organized and analyzed according to the objectives of the study.

LIMITATIONS

The study was limited to selected schools of only one district and small sample size; it was difficult to make broad generalization of findings.

RECOMMENDATION

Based on the findings of the study following recommendation are offered for the future research:

1. The study can be replicated on large sample to validate and generalize its findings.
2. A study may be conducted to assess the prevalence of anemia among adolescent girls attending schools.
3. A study may be conducted to assess the effectiveness of public awareness programmed in term of knowledge of Govt. girls high schools regarding anemia.
4. A study may be conducted to assess the effectiveness of public awareness programmed in term of knowledge of Govt. girls high schools regarding anemia among parents of children with anemia.
5. A study may be conducted to assess the physical need of the adolescent girls with anemia.

CONCLUSION

The adolescent girls of Govt. girl's high schools were having poor knowledge regarding anemia and its prevention. The age of the adolescent girls of Govt. girl's high school were found to be significantly associated with level of knowledge.

REFERENCES:

1. Ahmed, F., Khan, M. R., Akhtaruzzaman, M., Karim, R., Williams, G., Torlesse, H., Nahar, B. Long-Term Intermittent Multiple Micronutrient Supplementation Enhances Hemoglobin and Micronutrient Status More Than Iron + Folic Acid Supplementation in Bangladeshi Adolescent's girls with Nutritional Anemia. The Journal of Nutrition, 2010. 140(10), 1879– 1886.<https://doi.org/10.3945/jn.109.119123>

2. Anusuya, V. Effectiveness of amla juice with elemental iron among adolescent girls on iron deficiency anaemia in govt. Manohara school at Sellur, Madurai.2015.
3. Bairwa, M., Ahamed, F., Sinha, S., Yadav, K., Kant, S., & Pandav, C. Directly observed iron supplementation for control of iron deficiency anemia. Indian Journal of Public Health. 2017. 61(1), 37. <https://doi.org/10.4103/0019-557X.200250>
4. Bansal, P. G., Toteja, G. S., Bhatia, N., Vikram, N. K., & Siddhu, A. Impact of weekly iron folic acid supplementation with and without vitamin B12 on anaemic adolescent girls: A randomised clinical trial. European Journal of Clinical Nutrition. 2016. 70(6), 730–737. <https://doi.org/10.1038/ejcn.2015.215>
5. Bhuvaneswari, G., Kerubhamani, H., & Gowri, P. M. Effects on Honey dates Amla mix on level of Fatigue on Iron Deficiency Anaemia among Adolescent Girls at Selected Setting. Research Journal of Pharmacy and Technology. 2018.11(8), 3337. <https://doi.org/10.5958/0974-360X.2018.00613.3>
6. Bhuvaneswari, G., Kerubhaman Hepshibha, & Mangala Cowri. Effects on iron and folic acid v's honey dates amla mix on increasing haemoglobin level among adolescent girls. International Journal of Development Research. 2017. 07(09).
7. Chakma, T., Vinay Rao, P., & Meshram, P. K. Factors associated with high compliance/feasibility during iron and folic acid supplementation in a tribal 23 area of Madhya Pradesh, India. Public Health Nutrition. 2013.16(2), 377–380. <https://doi.org/10.1017/S1368980012002704>
8. Chalise, B., Aryal, K. K., Mehta, R. K., Dhimal, M., Sapkota, F., Mehata, S., ... Sawyer, S. Prevalence and correlates of anemia among adolescents in Nepal: Findings from a nationally representative cross-sectional survey. PLOS ONE, 2018. 13(12), e0208878. <https://doi.org/10.1371/journal.pone.0208878>
9. Chaudhary, S., & Dhage, V. A study of anemia among adolescent females in the urban area of Nagpur. Indian Journal of Community Medicine. 2008; 33(4), 243. <https://doi.org/10.4103/0970-0218.43230>.
10. Chandrakumari, A., Sinha, P., Singaravelu, S., & Jaikumar, S. Prevalence of anemia among adolescent girls in a adolescent's girls area of Tamil Nadu, India. Journal of Family Medicine and Primary Care, 2019;8(4), 1414. https://doi.org/10.4103/jfmmpc.jfmmpc_140_19.
11. Camaschella, C. Iron-deficiency Anemia New Eng J Med .2015;372: 1832-43
12. Pavord, S., Myers, B., Robinson, S. et al. UK guidelines on the management of iron deficiency in pregnancy. Br J Haematol. 2012; 156: 588-600.
13. Kassebaum, N. J., Jasrasaria, R., Naghavi, M. et al .A systematic analysis of global anaemia burden from 1990 to 2010. Blood .2014;123: 615-624
14. Johnson-Wimbley, T. D and Graham D. Y. Diagnosis and management of iron deficiency anaemia in the 21st century. Ther Adv Gastroenterol .2011;4: 177-184

15. Vifor Pharma. The European Iron Deficiency Survey: Raising Awareness of Iron Deficiency accessed 10 July 2016 <http://lifeapp.irondeficiency.com/europeaniron-deficiency-survey-summaryreportone-0>
16. Zimmermann, M.B. and Hurrell, R. F Nutritional iron deficiency. Lancet.2007;370:511-
17. WHO. The global prevalence of anaemia in 2011. Geneva: World Health Organization; 2015 accessed 10 July 24 2016. http://apps.who.int/iris/bitstream/10665/177094/1/9789241564960_eng.pdf
18. WHO. Global nutrition targets 2025: anaemia policy brief (WHO/NMH/NHD/14/4). Geneva: World Health Organisation 2014. <https://ci01.scribd.com/document/276047976/Who-Nmh-Nhd-14-4-Eng>
19. WHO. Worldwide prevalence of anaemia 1993-2005: WHO global database on anaemia 2008. http://apps.who.int/iris/bitstream/10665/43894/1/9789241596657_eng.pdf
20. WHO. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Vitamin and Mineral Nutrition Information System. Geneva, World Health Organization, 2011 (WHO/NMH/NHD/MNM/11.1)

