JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

# "TURNING THE TIDE ON ANAEMIA:IMPACT OF ANIMATED VIDEO ON HEALTH EDUCATION FOR ADOLOSCENT GIRLS"

**SUDHIKSHA P[1]**
**[1] III B.Sc. Food Science and Nutrition**
**Department of Food Science and Nutrition[1] ,**
**Dr. N.G.P Arts and Science College, Coimbatore, Tamil Nadu, India**

**ABSTRACT :**

**AIM**: The purpose of this study was to evaluate teenage girls' understanding of anaemia through a video-assisted educational program. **Method and material** : Knowledge-based questionnaires are applied to assess the knowledge of the subjects before and after the Awareness program. Immediately following the pre-assessment, the study participants were shown a video-assisted education program. Dr. NGP Arts and Science College in Tamil Nadu's Coimbatore district served as the study's site. Convenience sampling was used to choose 50 teenage girls in total. **RESULT**: The data was gathered, and the results were evaluated. This has been concluded that 85% significant increase in Knowledge in post assessment The findings indicate that teenage females had more understanding of the significance of anaemia, its causes, symptoms, diet, antinutritional factors, and deworming as a result of this health education program.

**KEYWORDS:** Anaemia, Knowledge, Study, adolescent girls, video assisted teaching programme.

## INTRODUCTION :

The WHO20 report shows that 52% of pregnant women and around 35 to 40% of normal women are anaemic in developing countries due to iron deficiency. About 43% of below-5 children, 27% of adolescents in the developing countries, and 6% in developed countries21 are anaemic. The prevalence of anaemia was as high as 72 and 69% among children in developing countries, such as India22 and Jordan23 respectively. A much lower prevalence of around 5% was reported in Norway24 and the United States. **(Prasanth et al, 2017)**

According to WHO 2014, deficiency of iron and folic acid is the main reason for anaemia worldwide. It is because of prolong iron imbalance, lack of dietary intake of iron or poor absorption. Iron deficiency can be occurred because of the increased need of iron in pregnancy and loss of iron by menstruation blood loss and helminth. **(WHO ,2014)**

The most common symptom of anaemia is fatigue. A low red blood cell count can also cause shortness of breath, dizziness, headache, coldness in your hands or feet, pale skin, gums and nail beds, as well as chest pain. Symptoms of haemolytic anaemia include Jaundice, Pain in the upper abdomen, Leg ulcers and pain, A severe reaction to a blood transfusion. Treatments for haemolytic anaemia include blood transfusions,

medicines, plasmapheresis, surgery, blood and marrow stem cell transplants and lifestyle changes**. (Natasha and Yasmin 2010).**

Meat, fish and poultry are rich sources of bioavailable iron. Plant sources of iron are generally less well absorbed, though including "enhancers" such as the organic acids citric, malic or ascorbic acid (i.e. vitamin C) may improve the absorption of iron from these foods. In addition, adding heme iron from animal-source foods (especially from beef, but also from lamb, pork, liver and chicken) to foods containing non-heme iron will also increase the overall bioavailability and absorption of iron from a meal**. (Allen L H, 2008)**

Nutrition education is defined as "any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food and nutrition-related behaviour conducive to health and well-being; nutrition education 12 is delivered through multiple venues and involves activities at the individual, community, and policy level". **(Jones & Bartlett, 2007)**

Video-based learning (VBL) is now recognized by Technology-Enhance Learning (TEL) researchers as a powerful learning resource in online teaching activities. VBL has unique features that make it an effective learning method that can enhance and partly replace traditional classroom-based and teacher-led learning approaches. VBL can change the way we learn as well as how we teach. Videos can help students by visualizing how something works and show information and details difficult to explain by text or static photos. In addition, videos can attract students' attention, thus motivating them and engaging them to increase their collaboration. Using videos thus can lead to better learning outcomes**. (Zhang, 2006)**
Audiovisual media that can be used to conduct health education is video media. Audiovisual media in the form of videos can be used to increase interest in counselling activities **(Firdawiyanti, 2023)**

**OVERVIEW ON ADOLSCENTS:**

The World Health Organization (2003) states that adolescence in girls is a unique time that marks the passage from girlhood to womanhood, the beginning of female puberty, and reaching maturity, which is demonstrated by a variety of hormonal, behavioral, psychological, and physiological changes, the most prominent of which is the onset of menstruation. The ongoing physical maturation process in girls, which is menstruation, directly affects the body and brain to alter their needs, interests, and moods. Then, as they start to look and act differently, an array of social influences further accelerates the social and emotional changes in them. This is marked by feelings of anxiety, eagerness to know about this natural phenomenon, shyness, and embarrassment. For this reason, stress issues often first emerge in adolescence

One of the most fascinating stages of human life, adolescence signifies the transition from being a dependent child to an adult who can function independently. The second decade of life, adolescence is a critical and dynamic time in everyone's life, during which they experience puberty, physically begin to reach adult size, develop more sexually defined bodies, and establish their ability to reproduce **(Magatama & Nalina Devi, 2002).** Adolescence is a time of intense changes that occur within the personality of a young girl or boy who, as neither an adult nor a child, finds themselves in a no man's land, caught between the carefree childhood years and the adult responsibilities of adulthood.

Adolescence is a time when a young girl or boy experiences significant changes in their personality. Since they are neither an adult nor a child, they find themselves in a tricky situation where they must balance the carefree life of childhood with the obligations of adulthood. **Jeanne (2010).**
"Adolescence" is a theoretical concept that is always changing and influenced by physiologic, psychological, temporal, and cultural factors. The years between puberty and the development of social independence are commonly regarded as this crucial developmental stage **(Steinberg, 2014)**. The most widely accepted

chronologic definition of adolescence spans the ages of 10 to 18, though depending on the source, it can also include a period of 9 to 26 years **(APA, 2002).**

**ROLE OF IRON AMONG ADOLESCENCTS:**

Iron is an important micronutrient which is essential for various functions in human body. It is essential for cellular growth and differentiation, oxygen binding, transport and storage, enzymatic reactions, immune function, cognitive function, mental and physical growth etc. So, deficiency of iron due to either physiological or pathological reason can affect mental and physical growth resulting in decreased learning capacity and work productivity. IDA is characterized by a defect in haemoglobin synthesis, resulting in hypochromic and microcytic red blood cells. Iron deficiency can result either due to less nutritional supply, increased demand or blood loss due to any reason. **(Provan D et al,2019).**

The iron is classified into two types they are heave and non heme iron. Heme iron is derived from haemoglobin. It is found in animal foods that originally contained haemoglobin, such as red meats, fish, and poultry (meat, poultry, and seafood contain both heme and non-heme iron). Your body absorbs the most iron from heme sources. **(Christine Mikstas et al, 2020).**

Non-heme iron is found in plant foods like whole grains, nuts, seeds, legumes, and leafy greens. Non-heme iron is also found in animal foods (animals eat plant foods that contain non-heme iron) and iron-fortified foods. Heme iron is better absorbed by the body (about 15-35%) than non-heme iron (about 2-20%). But, plant-based eaters can still meet their daily iron needs by eating plenty of non-heme rich plant foods, like dark leafy greens, whole grains, legumes, dried fruits, nuts and seeds.

Iron's function in oxygen transport and haemoglobin synthesis was the main focus of dietary study for a long time. These days, the majority of anaemia in industrialized nations is caused by low iron intake and/or bioavailability, but only roughly half of anaemia in developing nations is caused by these factors. Other significant causes include parasitic infections, inflammatory and infectious diseases (particularly malaria), and other nutrient deficiencies (vitamin A, riboflavin, folic acid, and vitamin B12). **(BJ Braun et al., 2001)**

Meat items (liver, heart, and muscle) as well as brewer's yeast, wheat germ, egg yolks, oysters, some dried beans, and select fruits all contain high levels of iron. Green vegetables, cereals, fish, and fowl have an intermediate amount of iron. Milk, milk derivatives, and the majority of non-green vegetables are foods that are low in iron. **(JW Harvey, 2004)**

In your body, ferritin is not the same as iron. Rather, iron is stored by the protein ferritin, which releases it when your body needs it. There isn't much ferritin in your blood; most of it is found in the cells of your body. Hepatocytes, or liver cells, and reticuloendothelial cells, or immune system cells, usually have the highest amounts of ferritin. The body stores ferritin in its cells until it is time to produce new red blood cells. The cells will receive a signal from the body to release ferritin**. (Provan D. and others, 2018)**

After that, ferritin attaches itself to transferrin. Ferritin is transported to the site of new red blood cell formation by the protein transferrin. Think of transferrin as an iron-specific taxi. Normal iron levels are crucial, but so is having adequate iron stored in the body. Iron stores can rapidly run out if a person doesn't have enough ferritin. **Wilson, Debra Rose (2020).**

**OVERVIEW ON IRON DEFECIENCY:**

Worldwide, iron insufficiency is acknowledged as the most common dietary deficiency. Iron levels in the body are indicated by the amount of transferrin in the blood. A probable iron deficiency anaemia is revealed

by a high circulation of non-bound iron transferrin in the body, which is a symptom of low iron because there is less iron bound to transferrin. As a kind of homeostasis, the liver produces more transferrin, which allows it to attach to iron and carry it to the cells. Iron deficiency anaemia is characterized by an upregulation of transferrin receptors. **F. Bermejo et al. (2009).**

The most prevalent dietary issue in the world, iron deficiency poses serious public health issues. Women and children are disproportionately affected by iron deficiency (ID) and iron deficiency anaemia (IDA). According to WHO estimates, iron deficiency is the main cause of anaemia in over 2.109 people, or around one-third of the world's population. Premenopausal women are at risk for ID due to a combination of factors, including poor dietary iron intake and the use of restrictive diets to reduce body weight, as well as iron loss in menstrual blood. For women of reproductive age, the recommended daily intake of dietary iron is 18 mg, whereas for men it is 8 mg. **(Trumbo P. and others, 2004).**

The most prevalent nutrient deficit worldwide is iron insufficiency. Iron deficiency symptoms are mild and vague, and they frequently only show up when anaemia is severe. Longer sensory route transmission is one example of the neurodevelopmental impairments observed in infants and children with iron deficiency, with or without anaemia (Grantham-McGregor S et al, 2014).
In poor nations, iron deficiency affects a large number of individuals, particularly pregnant women and children, who suffer from anaemia due to poverty, starvation, and famine. Furthermore, because phytates in grains store iron in a poorly absorbable complex, a diet high in cereals reduces iron bioavailability **(Clara Camaschella et al, 2015).**

The most common causes of iron deficiency and iron-deficiency anaemia are inadequate food consumption, blood loss from intestinal worm colonization, or both. The most frequent causes in high-income nations are particular dietary practices (such as avoiding red meat or following a vegetarian diet) and medical disorders (such as chronic blood loss or malabsorption). **(Dan L. and others, 2019)**

Infants with iron deficiency anaemia are less energetic, less receptive to directions and demonstrations, more cautious, reluctant, and easily fatigued, and they tend to remain nearer to their carers than healthy infants. It has been proposed that these practices, through functional isolation, may lead to poor development. The intensity and timing of the deprivation affect how sensitive the brain is to iron shortage, and the negative consequences of iron insufficiency may or may not be reversible. **(D. S. Provan et al., 2014).**

**NUTRITION EDUCATION ON ANAEMIA:**

Throughout this century, education has been a crucial part of efforts to prevent illness and promote health. There is a long history of campaigns to avoid communicable diseases, promote immunization and other preventive health services, and enhance mother and child health. Health education aimed at these objectives continues to be a vital instrument in developing nations for illness prevention and health promotion **(Don Nutbeam, 2000).**

Any collection of educational activities intended to encourage the voluntary adoption of eating and other nutrition-related behaviours that promote health and wellbeing can be considered nutrition education. An intervention's efficacy must be sufficiently stated in order to be assessed. Efficacy is the capacity to produce the desired result. The length and frequency of the intervention, the number and relevance of the study objectives, the study design and theory, and the fidelity of the intervention are some of the variables that affect how effective nutrition education interventions **(Mary W. Murimi et al).**

In order to reduce micronutrient deficiencies in teenagers, it has been suggested that nutrition education and awareness be a cost-effective intervention. Additional research on nutrition education among teenagers in

sub-Saharan regions is warranted by a systematic review. Healthy eating habits likely to be influenced by adolescents' increased degree of nutrition awareness. Education on nutrition helped modify behaviour and enhanced

In various nations, it has been demonstrated that nutrition education enhances adolescents' knowledge, attitudes, and healthy eating habits. Pregnant women's weight increased and low birthweight decreased when nutrition education was implemented alone. Researchers added, nonetheless, that adolescents' nutritional status and haemoglobin (hb) levels might not change right away with nutrition education**. Kamalaja and colleagues (2018)**.

Education aimed at promoting desired behavioural changes that ultimately improve people's nutritional status is known as health and nutrition education. It is a low-cost, very successful method of providing many individuals with serious illnesses in underdeveloped nations with access to technology and health services. Adolescent nutrition education regarding anaemia will contribute to a decrease in the prevalence of anaemia by promoting healthy families and communities and improving knowledge, attitudes,and appropriate behaviours. **(Sasmita 2022).**

Since there hasn't been much research on anaemia that focusses on how nutrition education affects teenagers, the purpose of this study is to ascertain how well anaemia nutrition education affects teenage girls' knowledge levels. **Sulistiyanti, Anik (2018)**

**EFFECTIVENESS VIDEO BASED LEARNING:**

To support the process of providing health education, it is necessary to pay attention to educational methods and media. The lecture method of nutrition education is a method used to deliver messages verbally (**Hartanti, 2021).** In addition to methods, it is also necessary to use media as a tool for delivering messages when providing education. Attractive media can accelerate cognitive, affective, and psychomotor changes (Putri et al., 2021). Media that can be used in providing education are visual media and audiovisual media.

Audiovisual media that can be used to conduct health education is video media. Audiovisual media in the form of videos can be used to increase interest in counselling activities **(Firdawiyanti, 2023) .**The cognitive theory of multimedia learning builds on the cognitive load theory, noting that working memory has two channels for information acquisition and processing: a visual/ pictorial channel and an auditory/verbal-processing channel. Although each channel has limited capacity, the use of the two channels can facilitate the integration of new information into existing cognitive structures. Using both channels maximizes working memory’s capacity—but either channel can be overwhelmed by high cognitive load. Thus, design strategies that manage the cognitive load for both channels in multimedia learning materials promise to enhance learning**. (Mayer and Moreno, 2003).**

**CONCLUSION :**

This study concludes that a video-assisted educational intervention significantly enhanced the knowledge of adolescent girls regarding anaemia. The observed 85% increase in post-intervention knowledge underscores the effectiveness of audiovisual methods in conveying critical health information. Participants demonstrated improved understanding of the causes, clinical manifestations, preventive strategies, dietary requirements, antinutritional factors, and the importance of deworming in anaemia prevention. These findings highlight the potential of structured, multimedia-based educational programs as impactful tools in adolescent health promotion and suggest their broader applicability in public health strategies aimed at combating anaemia among vulnerable populations.

**REFERNCE :**

1) Journal of science and technology investigation -ISSN: 2456-8082 Soundarya, N et.al JOSTI-Vol-1-1-November-2016: 10- 17.

2)The National Heart, Lung, and Blood Institute (NHLBI), 2011, IH Publication No. 11-7629A September 2011.

3)Journal of science and technology investigation -ISSN: 2456-8082 Soundarya, N et.al JOSTI-Vol-1-1-November-2016: 10- 17.

4)Chan MS (1997) The global burden of intestinal nematode infections. Fifty years on Parasitol Today 13(11): 438-443. 21.

5)Cappello M, Harrison LM, Bungiro RD (2003) Molecular pathogenesis of hookworm anemia: prospects for a disease-based vaccine. J Parasitol 89: 158-164. 23. Bundy DA, Chan MS, Savioli L (1995) Hookworm infection in pregnancy. Trans R Soc Trop Med Hyg 89(5): 521-522. 24.

6)Hotz C, Gibson RS. Traditional food-processing and preparation practices to enhance the bioavailability of micronutrients in plant-based diets. J Nutr. 2007;137(4):1097–100. 132.

7)Allen LH. To what extent can food-based approaches improve micronutrient status? Asia Pac J Clin Nutr. 2008;17 Suppl. 1:103–105. 130. Tontisirin K, Nantel G, Bhattacharjee L. Food-based strategies to meet the challenges of micronutrient malnutrition in the developing world. Proc Nutr Soc. 2002;61:243–50. doi:10.1079/PNS2002155. 131.

8)Contento IR. Nutrition Education: Linking Theory, Research, and Practice. Sudbury, MA: Jones & Bartlett, 2007. 8. https://www.dshs.wa.gov/altsa/program-services/nutrition-education.

7)Contento IR. Nutrition Education: Linking Theory, Research, and Practice. Sudbury, MA: Jones & Bartlett, 2007. 8. https://www.dshs.wa.gov/altsa/program-services/nutrition-education

8)World Journal of Advanced Research and Reviews, 2024, 22(02), 2035–2044.

9)D. Zhang, L. Zhou, R. O. Briggs, and J. F. Nunamaker Jr, “Instructional video in e-learning: Assessing the impact of interactive video on learning effectiveness,” Information & Management, 43, 2006, pp. 15-27.

10)World Journal of Advanced Research and Reviews, 2024, 22(02), 2035–204
Effective Educational Videos: Principles and Guidelines for Maximizing Student Learning from Video Content, Cynthia J. Brame, 2014

11)Gupta, A., Kumar, R., Mohan, A., &Rahi, S. (2013). Guidelines for Control of Iron Deficiency Anaemia. New Delhi: Ministry of Health and Family Welfare, Government of India.

12)Journal of adolescent and family health, Alexa C. Curtis University of San Francisco, accurtis@usfca.edu

13)Provan D. Mechanism and management of iron deficiency anaemia. Br J Haematol 1999;105 Suppl1:19-26.

14)Rumbo P, Yates AA, Schlicker S, Poos M. Dietary reference [1] intakes: vitamin A, vitamin K, arsenic, boron, chromium, copper, iodine, iron, manganese, molybdenum, nickel, sili-con, vanadium, and zinc. J Am Diet Assoc 2001; 101 :294– 301.

15)Grantham-McGregor S, Ani C. A review of studies on the effect of iron deficiency on cognitive development in children. J Nutr 2001;131: 649S– 66S; The effects of iron deficiency on infants' developmental test performance.

16)GBD 2016 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet. 2017;390(10100):1211-1259.

17)M. T. Engidaw, M. M. Wassie, and A. S. Teferra, "Anaemia and associated factors among adolescent girls living in Aw-Barrerefugee camp, Somali regional state, Southeast Ethiopia,"PLOS One, vol. 13, no. 10, article e0205381, 2018

18)T. Kamalaja, M. Prashanthi, K. Rajeswari, Effectiveness of health and nutritional education intervention to combat anaemia problem among adolescent girls, Int. J. Curr. Microbial. App. Sci 7 (9) (2018) 3152–3162. [39]

19)Effectiveness of nutrition education on anaemia on the level of knowledge in adolescents' girls. (Anik Sulistiyanti,2018)

20)Harvey JW. Microcytic anaemia. In: Feldman BF, Zinkl JG, Jain MC, eds. Schalm's Veterinary Haematology. 5th ed. Philadephia, Pennsylvania: Lippincott, Williams and Wilkins, 2000:200–204

21)Video-Based Learning (VBL)—Past, Present and Future: an Overview of the Research Published from 2008 to 2019, Video-Based Learning (VBL)—Past, Present and Future: An Overview of the Research Published from 2008 to 2019 Marija Sablić, Ana Mirosavljević & Alma Škugor.

22)VIDEO CONTENT DEVELOPMENT GUIDES BASED ON TEACHING EXPERIENCES Zolzaya Badamjav1 and Uranchimeg Tudevdagva2 1Department of Didactics, Mongolian National University of Education, Ulaanbaatar, Mongolia 2Faculty of Computer Science, Chemnitz University of Technology, Chemnitz, Germany