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RESEARCH ARTICLE

A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAM ON KNOWLEDGE REGARDING IRON DEFICIENCY ANEMIA AMONG ADOLESCENT GIRLS WITH MAIN OBJECTIVES TO ASSESS THE EFFECTIVENESS OF STRUCTURE TEACHING PROGRAM ON IRON DEFICIENCY ANEMIA AMONG ADOLESCENT GIRLS

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Abstract

Introduction Iron is an important micronutrient which is Very Importan t 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 patholo gical reason can affect mental and physical growth resulting in decrease d learning capacity and work productivity. Iron Deficiency Anemia is characterized by a defect in hemoglobin synthesis, resulting in hypochr omic and microcytic red blood cells. Iron deficiency can result either due t o less nutritional supply, increased demand or blood loss due to any reason. Anemia is a serious global public health problem that partic ularly affects young children, Adolescent and pregnant women. Althou gh ID A occurs at all ages and Involves both sexes, adolescent girls are more prone to it. The World Health Organization (WHO) defined adole scents as the population of 10-19 years of age. About three fourth of adolescent girls do not meet the dietary requirements.Majority of the adolescents think that they are in goo d health and show little concern for protecting their health.The main nutritional problems of adolescents are micronutrient deficiencies like Iron deficiency, fol ate and vit.A. According to a study by WHO on anaemia during 1993,2005, the world wide prevalence of anaemia was 25%. According to WHO guidelines for t he control of IDA, nutritional anaemia is a major public health problem in India and is primarily due to iron deficiency.

The National Family Health Survey-3 (NFH S-5,19-2021) data suggests that the prevalence of anaemia in adolescent girls (15-19 years) is 59.1%. According to the National Nutrition Monitoring Bureau Survey (NNMBS) 2006, the prevalence of anaemia in adolescent girls (12-14 years) is 68.6% whereas In (15-17 years) it is 69.7%. Aim- main aim of A study to assess the Effectiveness of Structured Teaching Program on knowledge regarding Iron Deficiency anaemia among Adolescent girls with main objectives to assess the effectiveness of Structure Teaching Program on Iron deficiency anemia among Adolescent Girls .

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Introduction:-

Anemia is a nutritional disorder mainly caused by iron deficiency especially in disadvantaged adolescent girls Based on WHO guideline, adolescence are said to be anemic when the hemoglobin level is less than 12mg/dl .Anemia is a major public health problem worldwide and is often ignored in both developed and developing countries. Preschool children, pregnant women and adolescents constitute vulnerable group of anemia.''The adolescent girl still remains young planet that neither gets light or water, she remains the flowers that could have blossomed but did not'' The world adolescent derived from the Latin word 'adolescence meaning 'to grow, to mature'.There are about 1.2 billion adolescents in the world, which is equal to $1/5^{th}$ of the world population and their numbers are increasing out these 5 million adolescents are living in developing countries.India is the one of the fastest growing youth populations in the world with an estimate 190 million adolescent in which 22% are girls. This is vulnerable period in the human life cycle for the development of nutritional anemia which affects both sexes and all age group, particularly in developing countries, among adolescents, girls constitute a vulnerable for anemia. The prevalence of anemia among adolescence is 27% in developing country and 6%in developed countries.

Anemia is one of the most common hematological abnormalities found in children. It is the reduction in oxygen - carrying capacity or as a reduction in the red cell mass of the body. There is also evidence that anemia may result in reduced growth and increased morbidity.The main causes are family with limited resources; the female child is more likely to be neglected and the added burden is menstrual blood last [normal/abnormal] precipitates the crises too. Other associated risk factors for anemia are low intake of meat [fortified food with iron], frequent dieting, vegetarian eating styles, meals skipping, significant weight loss, heavy menstrual period, rapid growth, participation in endurance sports and intensive physical training.A recent report from UNICEF says more than half of adolescent girls in India's as adolescent girls in India are anemic. Malnourishment among India's as adolescent population is found to be higher than even some of the least developed countries Sub - Saharan Africa.Anemia accounts for a majority of the nutritional problem across the globe and it is principally engendered by deficiency of iron although it occurs in all the age group, prevalence is on a higher side among women of childbearing age. Its prevalence is inordinately higher among developing nations, because of low socioeconomic status and indigent access to healthcare services.In developing countries, the adolescent group is more exposed to nutritional challenges and adolescent girls are more vulnerable to the disease. Studies showed that adolescent anemia was the greatest nutritional problem encountered in developing countries. India had reported high prevalence of anemia among adolescent girls, which is apparently higher when compared with the other developing nations.

Need of The Study:-

Anemia is one of the most universally prevalent diseases in the world today. Iron deficiency anemia is the most common micronutrient deficiency.WHO(World Health Organization) studies show higher rate in developing countries.The iron deficiency anemia is common 52% of pregnant women and about 35-40% of non-pregnant
Anemia is caused by inadequate supply of dietary iron, is the most prevalent nutritional disorder in the united states and the most common disturbances. Almost 16% of lower income children are anemic.Nutritional anemia is one of india's major public health problems. The prevalence of anemia ranges from 33% to 89% among pregnant women and is more than 60% among adolescent girls.Anemia is generally recognized as the greatest nutritional problems among adolescent girls and diet is likely a major factor. In a review of 32 studies from or developing countries the overall prevalence of anemia was the order of 27%.In the international center for research on women studies rates ranged from 16%-55% in India. The international nutritional anemia consultation group estimates 46% of the world's children belong to 5 - 14 years are anemic. Majority of this anemia is occurring in individuals from the developing world as discussed in a recent study.Majority of the adolescents think that they are in good health and show little concern for protecting their health. Main nutritional problem of adolescents are micronutrients deficiencies like iron deficiency, foliate and vitamin A. The prevalence of anemia was 68.8% and associated with diet consumed.

Dietary inadequacies likely more of threat among adolescent girls because of erratic eating pattern and specific psycho social factor underlying these combined with the particularly high nutritional requirements for rapid growth. Anemia in adolescent girls poses a great health hazard. Their physical, mental, emotional and social development takes the prominence during their period of time. The lowered hemoglobin status hampers and stunts this growth associated with development .Awareness to adolescent girls is a matter of fact to be considered due to their negligence to have healthy adolescent girls ,one needs to be strong and healthy. The health education given to them will give them the insight to practice healthy life styles and there by prevent anemia. Adolescence is a period of peak growth for girls nutritional requirements in relation to body size are more during adolescence. In a country like India

with varing social customs and common belief against female, there is a high prevalence of malnutrition and anemia among adolescent girls. The increased aptitude on slimming and physical beauty conscious has made the girls more vulnerable to anemia.-Nov-Dec(2020)

Iron deficiency anemia is one of the most prevalent nutritional deficiencies in the world, especially among adolescence girls. Adolescence gain 20% of the adult weight and 30% of the adult height in the adolescent period itself.A high prevalence of iron deficiency anemia reflects their poor status of nutrition because of their rapid growth combined with poor eating habits and menstruation. The world health organization(WHO) states that the worldwide mortality rate of iron deficiency anemia was 60,404,000 in 2005. National family health survey in 2006 showed that 56% of adolescent girls were anemic in India.Based on this information, the researcher feels that it is important to prevent iron deficiency anemia among adolescent girls.- Dec(2021)

Problem Statement:-
‘‘A study to assess the level of knowledge regarding management of anemia among adolescent girls in “ St.Mary’s School Vikasnagar, Dehradun.’’

Objective Of The Study:-
1. To assess the level of knowledge regarding anemia among adolescent girls.
2. To find out the association between the knowledge level of regarding anemia and its management with their selected demographic variables.

Operational Definition:
Descriptive:-describing something, especially in a detailed, interesting way.
Assess:-To determine the rate or value of something. Here it refers to make judgement about the prevention and knowledge level of adolescents girls regarding Anemia.
Knowledge:-In this study knowledge refers to Facts, information and skills acquiured through experiences or education. Here it refers to the assessment of knowledge about Anemia among adolescents girls in St.Mary’s School Vikasnagar, Dehradun.
Anemia:-Anemia happens when the number of red blood cells or the haemoglobin concentration within them is lower than normal.
Prevention:-Anemia can be prevented by eating a healthy diet,avoiding blood loss, and taking iron supplements when needed.
Adolescents:- Adolescence is the phase of life between childhood and adulthood, from ages 10-19.[WHO]

Assumption:-
(a) Anemia can impact development of adolescent girls.
(b) Anemia can impact on concentration, education performance and development of adolescent girls.
(c) The knowledge regarding anemia may vary in adolescent girls based on different age and intelligence level.
(d) The adolesecent girls will be honest while responding to questionnaire.
(e) The adolescent girls will have some previous knowledge regarding anemia.

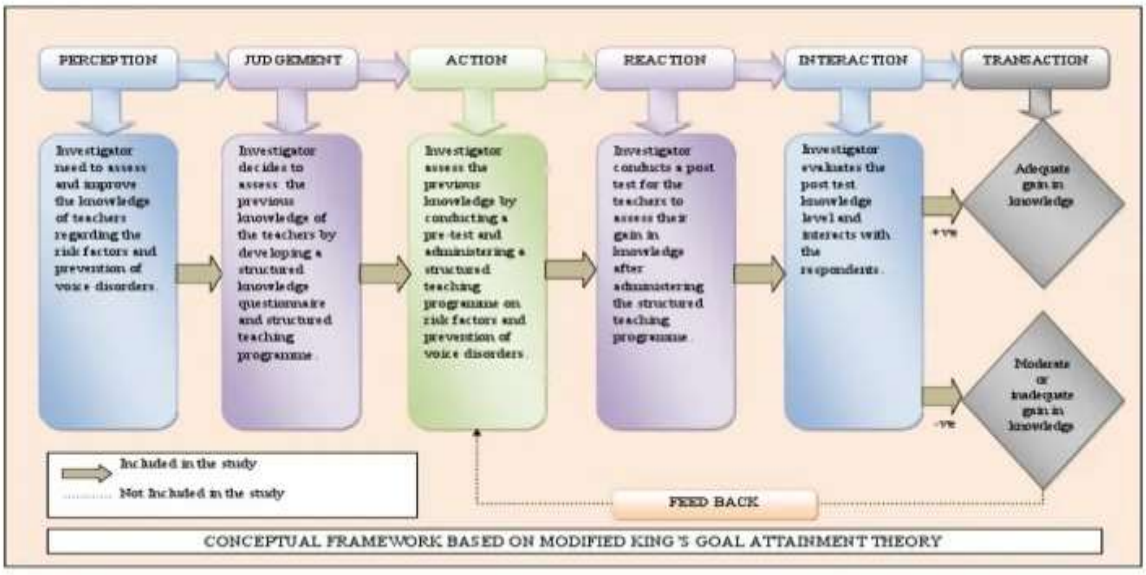
Hypothesis:-
H1-There will be significant association between level of knowledge and selected demographic variable.
H0- There will be no significant association between level of knowledge and selected demographic variable.

Delimitation Of The Study:-
1. The study is only limited to adolescent girls.
2. This study is limited to the adolescent girls who are present at the day of data collection.

Conceptual Framework:-
Conceptual framework can be said as essential of research for better understanding of the key concept of research and the relationship between the research variables. Conceptual framework involves different theories that have been proven and given by different theorists, which can be applicable to get an idea and reference on which research may proceed.

Modified King's goal attainment theory was adapted to explain the concept:

Imogene king's theory is based on the idea that it must be firstly based on the mutual goal setting between the nurse and the client in which the major role of a nurse is to assess client's concerns, problems and disturbance in health. The other things are nurse and client's perception of inference along with the amount of information shared in between them to attain the identified goal.



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Chapter – Ii:-

LITERATURE REVIEW

Review of Literature:-

- **Review of literature related to Anemia:-**

- **(R. Sridevi)** et al Asst. Prof/ HOD of Dept, Vinayaka mission's college of nursing Karaikal has conduct a research on the level of knowledge regarding Anemia among adolescent girls in V.O.C Higher Secondary School at kotucherry, Karaikal in year 2016. Data was collected from 70 adolescent girls by using convenient sampling. Data were analyzed by descriptive and inferential statistic - 2016
- **Kamala Verma;** 2 Ginish C. Baniya has conducted a research study on prevalence, knowledge, and related factors of Anemia among School going adolescent girls in a remote area of western Rajasthan which was published in the journal of Family Medicine and Primary Care in April, 2022 and published online at 13 March, 2022. It is a cross - sectional study of 625 adolescent girls aged 11years to 19years was carried out by questionnaire that included socio - demographic, clinical and knowledge question about Anemia. -2020
- **Dayana B.A.A; Snega.R; Kowsalya.T** Department of Medical Surgical Nursing, Saveeta college of Nursing, SINATS, Chennai, Tamilnadu, India has conducted a research study to assess the knowledge level of Anemia among adolescent girls in Eriyamangalam in year 2020. A quantitative approach with descriptive research design was used. 30 adolescent giels were selected by using non-probability convenience sampling technique. Self structurd questionnaire was used to collect the demographic data and knowledge level of anemia among adolescent girls. -2020

- **Review of literature related to management of anemia:-**

- **Tamilsevi S; Muthumari; Vijayrani**Prince has conducted a research study on effectiveness of dietary intervention on iron deficiency anemia among adolescence girls from selected rural area in Dharapurum which was published in the Asian journal of nursing education and research in volume - 12, issue - 4 in year 2022. evaluative approach was used for the study in which 60 adolescent girls with hemoglobin level of below 11g/dl were selected as sample by using non-probability purposive sampling technique. The data were analyse by using described inferential statistics. The study results shows that; the mean score of pre-test and post-test of hemoglobin among adolescents girls were 8.95 and 11.24 respectively and the mean difference was 2.29 - 2022
- **Dr. MahendraSingh** ;Department of community and family Medicines ; AllMS, Rishikesh, Uttarakhand, India has conducted A research study to cross –sectional study in a monthly campaign including 5,776 beneficiaries. Camps were organised at hospital Campus, school 'district hospital, Community health centre , Primary health centre ,Sub centre Anganwadi health worker slum
- Areas.5,776 participants 53.3percent were anaemic .Females (54.6 percent) 33.5 % of pregnant females were found to be Anaemic .Reduce the prevalence of anaemia and promote the Health individual ,community as well as the country .Kristine Jimenez ,MD, Stefanie KulniggDabsch specialist in internal Medicine, Gastroenterology ,and Hematology at Medical University of Vienna in Vienna, Austria has conducted a research study to proper management improves quality of life,reduces the need for blood transfusion ,treatment option include oral and intravenous iron therapy. A total of 100 adolescents females (11-20 years old) were included in this study result is positive endoscopic examination is still recommended-2008
- **Sanjeev M Chaudhary et al. Vasant R Dhage;**Depatment of preventive and social medicine, Government medical college and hospital, Nagpur Maharashtra, India has conducted a research study to cross survey in an sectional Urban area under urban health trainningcentre, Department of preventive and social Medicine. A total of 296 adolescents females [10-19 years old] were included in this study Statistical analyses were done using percentage, chinese square test, and students 't' test. The prevalence of anemia was found to be 35.1 percent.
- **Kristine Jimenez, MD, stefanieKulniggDabsch** specialist in internal medicine, gastroenterology, and hepatology at Medical University of Vienna, Austria has conducted a research study to proper management improves quality of life, reduces the need for blood transfusions, treatment option include oral and intravenous iron therapy. A total of 100 adolescents girls [10-19 years old] were included in this study.Result is positive, endoscopic examination is recommended. -2021
- **Dr. Lokesh Singh,** Department of community and Family medicines was conducted at Hyderabad in 2015, to determine the nutritional knowledge among adolescent girls the study was undertaken on 100 adolescent junior collage students. A random sampling technique method was used. A questionnaire has been developed to collect the data. Result reveals that only 25 percent of the subjects were having good knowledge about anemia. Study conclude that the nutritional education
- Intervention is required for the adolescent girls to create awareness and to disseminate the knowledge related to the prevention and control of anemia. The knowledge of the adolescent girls was inadequate regarding anemia and its prevention and the age of the sample was statically associated with their knowledge score. -2019

- **Sarita Ahwal** department of obstetrics and gynecological nursing, Rufaida college of nursing, New Delhi, India a cross-sectional study was conducted in Udhamsing Nagar, Uttarakhand, in 2020 on anemia prevalence and contributoryfactors among 390 adolesents girls, Random Sampling, method was used to select sample, data was collected using self-structured questionnaires. The result show that iron supplementation, nutrition education among adolescent girls and overall hygiene are important to improve iron status. -2023
- **Harendra Singh** has conducted the study on adolescents anemic health knowledge, attitude and practices among adolescents girls of Chitwan District Nepal .A Descriptive analysis was done and data were analyzed using chi-square. A five pointlikert scale was applied to computer knowledge attitudes, and practices of the adolescent girls and result found most of the adolescent girls had good knowledge about anemia. -2021
- **AbilashSasidharannairChandrakumari, S jaikumar**, This study was a cross-sectional study conducted among 255 adolescent girls, After getting informed consent from the subjects, the informarion regarding age, sociodemographic status, menstrual histiry and short clinicals details were recorded. Blood samples were collected and analyzed using automated hematology analyzer. The majority of the anemia girls [55.64 percent]were having mild degree of anemia. Among 255girls, 188[73.73%) were from the early adolescent age group[10-14 years). Prevalence of anemia[52.24%] was high among the late adolescents and those belonging to low socio economic class. -2023
- **Sumit Malhotra, Kiran Goswami** was conducted in 28 villages of Ballagarh Block of District Faridabad, Haryana. From the computerized health Management information system data a random list of 363 adolescent girls was generated. Adolescent girls who had attained menarche wew included in the study. Hemoglobin level was measured for all the consented or assented participants using a digital hemoglobinometer .A total result of 272 participants were enrolled in the study.
- Mean [SD] age at menarche was 13.2 years. 195 anemic adolescent girls, severe, moderate, and mild anemia was observed in 4.8%, 41.2% and 25.7%.-2022
- **Abdieahman Ahmed and Abdulkarim Mohammed** a cross-sectional study was conducted in a higher secondary school in Godey to estimate the prevalence of anemia among school going adolescent girls and to identify the associated factors. Hb levels were assessed directly in the school Data related to socio-demographic, Socio -economic characteristics, dietary habits. past health status and anemia related knowledge among adolescent girls were collected by Interview method and analyzed with the help of SPSS version 25. A result of total of 372 school adolescents participated in this study with a response rate of 100%. The mean age with a SD of the adolescent girls was 17.8 [+ 1.2] years. -2022
- **Puuspa Sari, Raden Tina Devi Judistiani,** department of public health, faculty of Medicine west Java, Indonesia, a cross-sectional study was conducted with 95 adolescent girls and 85 women between April and November 2018 Cluster random sampling was used to select the participants from seven villages in the Jatinangordistrict.Anthropometrics were gathered to determine the body mass index, and venous blood samples were analyzed for CBC and Hb levels
- Descriptive statistics followed by bivariate and multivariable logistic regression were used to identify anemia-associated factors. Result of iron deficiency anemia among the girls was 21.1% and 9.4% among women. in growth and with an average hemoglobin levels in adolescent girls of 10.75gm/dl (+0.79) and in adults 11.20 gm/dl (+0.61], The majority of our samples were not stunted were also within a normal weight range. -2023
- **Dayana BA A Snega R. Kowsalya** Department of collage study to anemia among adolescent girisess the o assess knowledge res Mysore 1 convenient sampling questionnaire was analyzed by 100 samples were restarth regarding preverersion of ris in the selected area of selected by non-prot technique. Th was utilized to col using descriptive olestThe structured lect data, Dara waistics The result had average level scene had that 76% of the ado knowledge score and the educationa group 13 y years and the girls age samampl secondary sch vel of onal status of adolescent educational status of ary school was 100% Study concludes mple was statically associated with that the age of the sample their knowledge score. -2021

- **Review of literature related to effect of anemia on adolescent girls:-**

- **Mashavu H. Yussuf**Depatment of Pathology Shri Sai Medical College and Research Institute ,Ammapettai ,Tamil Nadu has conducted a research study to among adolescents (10-19 years) is a leading cause of morbidity and mortality .The survey was conducted 2,479 School going adolescent aged (10-17 years) from 42 schools on the Zanzibar Tanzania. Hemoglobin concentration was measured along with the collection of socio-demographics , health , food frequency , and water sanitation and hygiene data. Based on WHO cut off anaemia ,53.3% of the sample had anaemia(Mild ,Moderate , or Severe). Using chi - Square tests and logistic regressions , We determine the females of Anaemia. -2019

- **Melkam Tesfaye** Department of medical Laboratory Science and Pathology College of Health Services ;Jimma University has conducted A research anemia adolescence girls reduced physical and mental capacity and diminishe concentration in work and educational performance. A cross sectional study among 408 School adolescents in Bonga Town ,Southwest Ethiopia ,from March 15,2014 to May 25 ,2014, An interviewer administered questionnaire was used to collect sociodemographic data. Blood and stool samples were analyzed for haematological and parasitological analyses . The overall prevalence of anemia was 15.2% (62/408), of which 83.9% compromised mild anemia.
- **Dr. Priyanka Chaudry** Department of Medical Surgical Nursing ,DeshBhagt University School of Nursing, Punjab India ,A study to assess the knowledge level of prevention of anemia adolescent girls .One group pre test and post test experimental descriptive research design is used to collect sample of Mohali of 100 adolescent girls . The sample is collected through purposive sampling technique .The data is collected by socio – demographic questionnaire and self instruction module . Adolescent girls had inadequate knowledge 40% ,had moderate knowledge and 2% ,had adequate knowledge in pre test before administering standard teaching program. -2021

- **Review of literature related to prevalence of anemia:-**

- **Dr.Priyanka Chaudhary, Ms. Ramanpreet Kaur** a cross-sectional study was conducted under anemia Mukt Bharat camp, in Delhi in 2019,on prevalence of anemia among school going adolescent girls. The study included 203 adolescent girls attending class 9th, 10, 11 and 12th through random sampling. anemia was semi structured questionnaire was used to collect data. The result show that prevalence of found was concluded that anemia was highly prevalent among adolescent girls and factors vegetarian diet underweight deworming and presence of pallor were found to be associated with anemia. Liketo be 59%.-2022
- **Ansari Nagar, Ne Shashi Kant Sanjeev Gupta** department of Biostatistics All India Institute of Medical Sciences An Delhi a cross-sectional study was conducted in rural on prevalence of in 2019 Study conducted. were selected through of anemia among adolescent girts ted among 255 adolescent purposive using questionnaire New plesue data cent girts Samp Sampling techniqu shows th Ret was collected us ence of anemia was found to be 48.6 overall prevalence Majority of anemia. of a the aneicPrevalerce of girls 55.4 5.64% were having mild degree low socio-anemia (52.24% was high amon the late adolescent and those belonging to incipere is a urtherconclude . The study further concluded that there is a significant relationship between anemia and socio-economic status. -2022
- **Roy Arokiam Daniel, Mani Kalaivani**, Centre for community Medicine All India Institute Of Medical Sciences New Delhi India was cond conducted a cross-sectional -sectional study study targeting adolescent girls will allow a opportunity to correct their nutritional health and improve their obstetric outcomes. Hence we did a systematic review and meta-analysis of community-based studies to obtain a comprehensive pooled estimate of the prevalence of anemia among adolescents girts in India-2024
- **Shekhar Chauhan, Pradeep Kumar** department of public health, Secondary data analysis 1 was data from The understanding the ther of adoles performed on cross-section the mple size was 20,594 adolescents aged The 19 years sin Uttar Pradesh and Bihar har India outcome variable was anemia and the y variables were explanatory v tion working status, media exposure ationwor caste religion, residence and states statistics ar status, wealth index. Descriptiv and bivartate analysis were used to find the preliminary results. -2021
- **Ms. Deepti, Ms.P.Chitra** Master of Science in Nursing, Associate professor, Assistant Professor, Department of Medical Surgical Nursing Desh Bhagat University Punjab, India A cross-sectional study was conducted of India in 2018, on anemia 526 adolescents were selected by simple random sampling technique and data was collected through structured questionnaire study reveals that the total prevalence of anemia girls was 45.7%. Conclusion of study was problem of anemia is high among females-2018
- **Veena Melwani** Department of community medicine, Gandhi Medical Coilege, Bhopal, Madhya Pradesh, A cross-India A sectional study was conducted in a school of jimma town in 2019, to assess the prevalence of anemia and associated factors. Data were collected from 528 secondary school adolescent girls. A multi stage sampling technique was used to select the study participants. A portable battery-operated hemocue HB 30/+analyzer was used to measure the hb level, living condition of the adolescent girls, dietary diversity score, duration of menses, and low economic status were positive predictor variables, Therefore, iron rich and diversified food consumption should be given attention. -2019
- **Shekhar Chauhan, Pradeep Kumar** a cross-sectional survey was conducted in sharanpur block in UP in 2024, on prevalence of anemia among 100 adolescent girls aged 10-19 years.Random sampling technique was used to select sample data was collected through pre structured interview. Result show that 74% subjects were found to anemic with varying degree ranging from mild [16%], moderate [54%], and severe 4%. Study

concluded that despite being a time of vulnerability, adolescent girls is time of greatest opportunity for being a heathy adult. -2022

Research Methodology:-

Research methodology is the systematic process used by researcher to plan, execute and analyze studies in a structured and reliable manner. The chapter includes research approach, design of the study, identifying variable under study, the setting of the study, population, sample and sample technique sampling criteria, development and description of tool, validity and reliability of tool, description of pilot study, data collection procedure and plan for data analysis.The present study was aimed to assess level of knowledge regarding anemia among adolescent girls.

Research Approach:

Research approach are the plans and the procedures for research that span the steps from broad assumptions to detailed method of data collection, analysis, and interpretation.

The research approach adopted in this study was quantitative approach .

Research Design:

The research design refers to the overall strategy that you choose integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data. (De Vaus, D. A, 2006) Research design adopted for the study is descriptive research design.

Variables:

Variables are the characteristics, events or responses that represents the elements of the research question in a detectable and measurable way. In quantitative research, the concepts that are of interest are translated into measurable characteristics called variables. Independent Variable: The independent variable in the present study is Dependent Variable:The dependent variable in the present study is Demographic Variable: The demographic variables in the present study are age, education status of parents, residential area, monthly income of family, religion ,dietary pattern, source of information regarding anemia, occupation of parent, economic status of family, standard of adolescent girl.

Research Setting:

The research setting refers to the place where the data is collected. The study sample are selected from St Mary School Vikasnagar, Dehradun.

Population:
Polit and Hungler (1999-37) refer to the population as an aggregate or totally of all the objects, subjects or members that conform to set of specification. The population for the study consists of adolescent girls of selected school of Dehradun

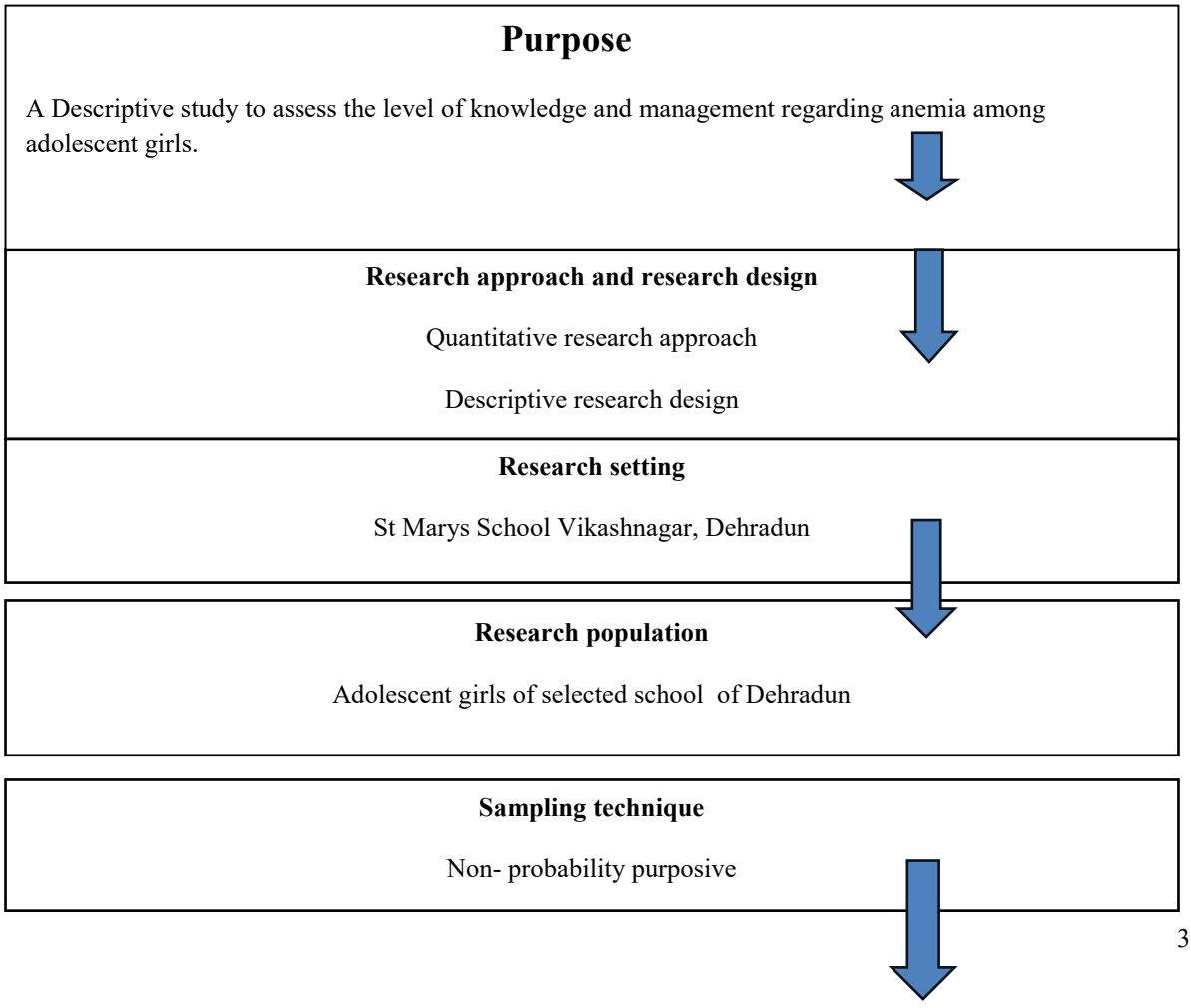
Sample And Sample Size:
The sample is a subset of a population that is used to represent the entire group as a whole (Kendra Cherry, 2015). The study sample was 60 adolscent girls of selected school of Dehradun who met the inclusion and exclusion criterion for the sample selection.

Criteria For Selection Of Sample:
To meet the criteria the subjects were screened as follows. All the subjects who fulfilled the following set criteria were included in the study.

Inclusion Criteria:
1. Aged between 12 to17years who attend menarch..
2. Who are willing to participate in the study.
3. Available during the data collection procedure.

Exclusion Criteria:
1. Absent during the data collection procedure.
2. Who are not willing to participate in the study.
3. Other than adolescent girls.

Purpose
A descriptive study to assess the level of knowledge regarding management of anemia among adolescent girls.



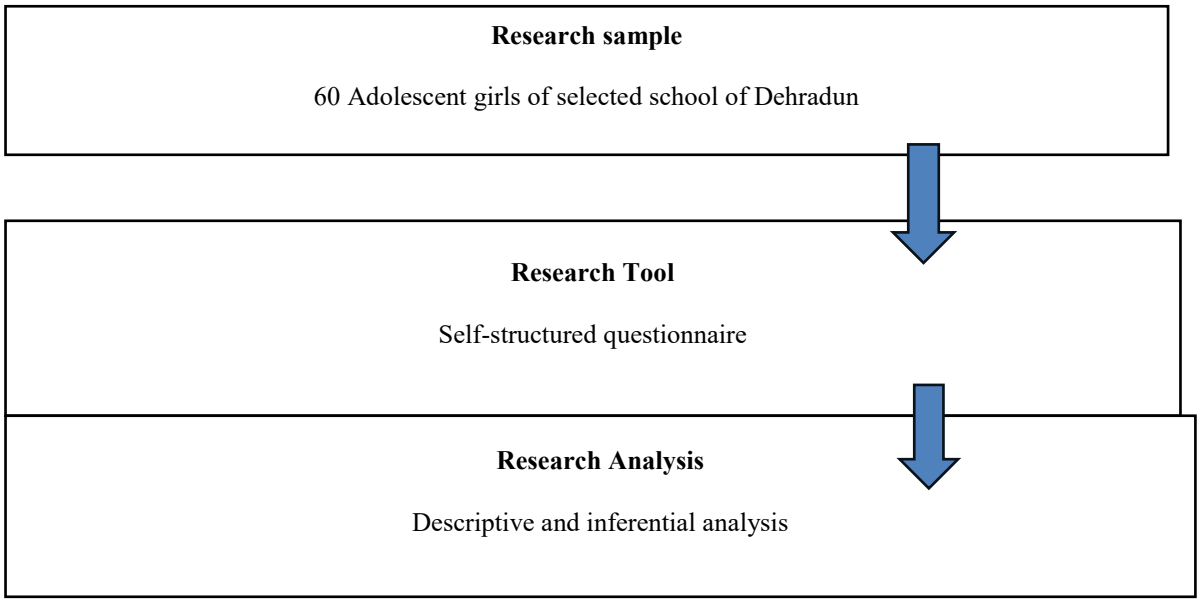


Fig- 1: Systematic representation of research methodology

Sampling Technique:
Sampling technique refers to method of selecting portion of the population and sample to represent the entire population [Pilot and Hunger, 1991]. The non-probability purposive sampling technique was found appropriate for the present study.

Tool For Data Collection:-
Research instruments are the testing device for measuring a given phenomenon, such as a paper and pencil test, a questionnaire, an interview, a research tool, or a set of guidelines for observation [Mosby's Medical Dictionary, 2009]. All the questions were developed by the researcher in English language. The requirement of translating the questionnaire was not found as the adolescent girls were able to read and understand the English language properly, as the mode of learning in professional education is English. Tool is divided into two parts:

Part 1: Socio-demographic profile:-
The socio-demographic tool consists of 10 multiple choice questions. Each question contains several options, and the sample must choose on option only from the given options.

It includes the following items:
1. Religion
2. Age
3. Monthly income of family
4. Standard of adolescent girls
5. Dietary pattern
6. Economic status of family
7. Occupation of parents
8. Residential Area
9. Source of information regarding anemia
10. Education status of parents

Part 2: Self Structured questionnaire:-
This part consists of 30 self-structured questions on knowledge regarding anemia among adolescent girls.

Scoring Key:-

S.NO.	Quality of Life	CATEGORY	PERCENTAGE
1.	High Quality of Life	Between 1-20	0%
2.	Moderate Quality of Life	Between 21-40	70%
3.	Low Quality of Life	Between 41-60	30%

The percentage distribution on quality of life in context of visually impaired among adolescents:

- 0% Adolescents had High Quality of Life
- 70% Adolescents had Moderate Quality of Life
- 30% Adolescents had Low Quality of Life

Validity Of Tool:-

Validity refers to the degree to which an instrument measures what it supposed to measuring. -Pilot and Hungle Validity is the appropriateness, meaningfulness and usefulness of the interference made from the scoring of the instrument. -American Psychological Foundation To ensure the content validity, tool along with objectives and criteria checklist. The tool was given to three experts of the field. The experts were given a criteria checklist and requested to give their opinion and suggestions regarding the reluctancy, accuracy and appropriateness of items. Based on the suggestion of the expert the necessary modifications were made in the tool, thereafter final tool is prepared.

Pilot Study:-

A pilot study is referred to a small-scale preliminary try out of the method to be used in a large study, which acquaints the researcher with the problem that can be corrected in proportion for the research study or is done to provide researcher with an opportunity to try out the procedure, method, and tools of data collection. Pilot study is a small-scale rehearsal of main study to test the feasibility of proposal research process/ protocol. - Kumar. R, 2018 The pilot study is conducted for the group with 10 adolescent girls of selected school of Dehradun using non probability purposive sampling method who fulfill the inclusion criteria is selected as samples. Verbal consent is obtained from the 10 samples. The pilot study was conducted in selected school of Dehradun. It was conducted on 09 -11-24 from morning 10 am to 1 pm. After obtaining formal permission from Principal, the investigator selected 10 samples who fulfilled the inclusive criteria by using non probability purposive sampling technique. Data includes 10 demographic variables and 30 questionnaires. A short introduction about the study was given and informed consent was obtained from selected adolescent girls. The findings were accepted by the experts. There was no modification in self- structured questionnaires. The researcher identifies the feasibility of conducting the main study. The investigator assessed the knowledge of 60 adolescent girls. The adolescent girls were interested and cooperated well. The necessary data was collected, analyzed, and interpreted. There are no modifications was made in the tools.

Reliability Of Tool:-

Reliability is another important feature of a research instrument. It is more important to achieve the highest quality of measurement achieve the highest quality of measurement possible in research. Evaluation of the reliability of research instrument is concerned with question of consistency. Reliability concerned with consistency and accuracy of an instrument. A test is considered reliable if researcher frequently gets the same reading at different time interval. . The correlation coefficient of knowledge score reliability is 0.73

Ethical Consideration:-

The study was conducted after the approval of the Principal of selected school of Dehradun. The procedure was explained to participants and consent was taken before starting the data collection. Assurance was given to the study participants regarding the confidentiality of the data collected.

Data Collection Procedur:-

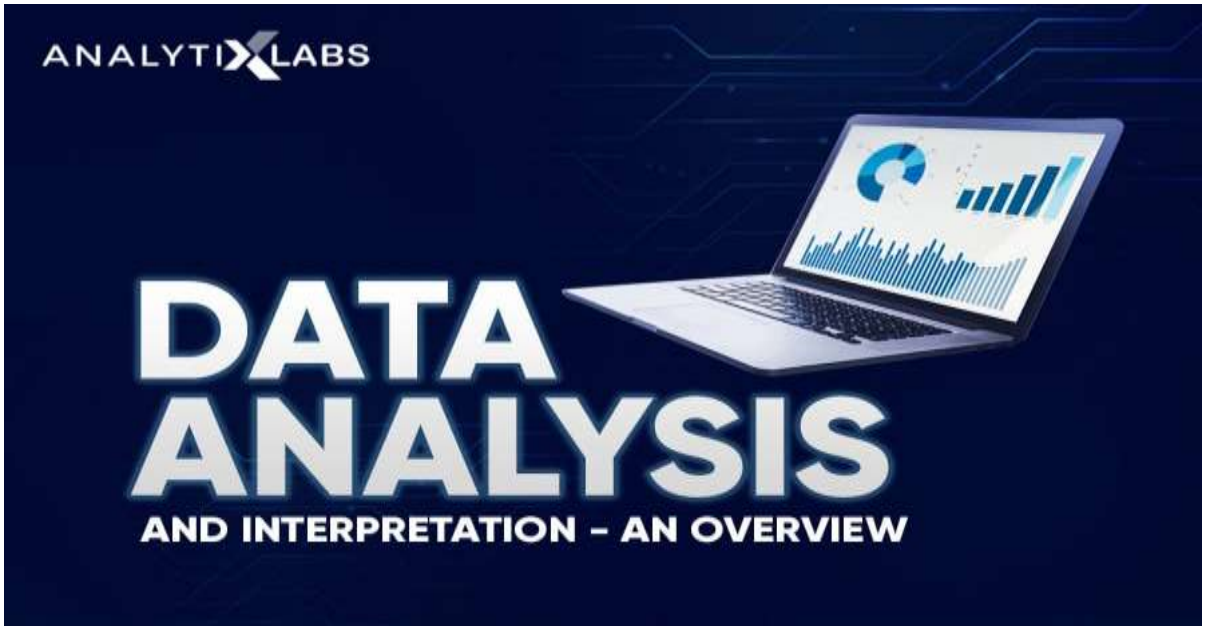
The data was collected from adolescent girls of selected school of Dehradun, before that prior permission was taken from the Principal of the school. A self -introduction was given by the investigator 60 Adolescent girls who fulfilled the inclusion criteria are selected using non-probability purposive sampling technique. Each sample took 30 min to

fill the questionnaire and demographic variable. The investigator obtained the verbal consent from subject prior to the study.

Plan For Data Analysis:-
Data analysis is done to give meaning to the data. The analysis of the data was performed based on objectives and hypothesis, using descriptive and inferential statistics.

Descriptive Analysis:
a) Descriptive statistics i.e. frequency, percentage were used to describe the demographic characteristics of the samples.

Inferential Statistics:
Summary:-
This chapter deals with the methodology adopted for the study. It includes research approach, research design, population, sample and sampling technique, research setting and study instrument. It also includes content validity, reliability, and pilot study. Plan for data analysis was also prepared in this chapter followed by ethical consideration for the study.



Data Analysis & Interpretation:-
The process of arranging and synthesizing data so that research question can be addressed and hypotheses evaluated is known as analysis. Analysis entails calculating specific indices or majors and looking for connections within the data set. It entails testing hypotheses to draw conclusions and estimate the value of unknown population factors. (Kothari C.R, 1995)

The " Descriptive Study To Assess The Level Of Knowledge Regarding Management Of Anemia Among Adolescent Girls In St. Mary's School Vikasnagar, Dehradun" was conducted among 60 samples by purposive sampling and data were collected by unstructured questionnaire schedule from collected data were organized analyzed and tabulated and interpretative using descriptive study.

The data Is presenting in following section:
Section – 1
Percentage distribution of students according to demographic characteristics.
Section – 2
Comparison of level of knowledge among adolescent girls regarding management of Anemia.

Section – 3
Percentage distribution of adolescent girls according to their knowledge.

Method of data collection:-
Unstructured questionnaires were selected as a suitable method to collect them based on the study objective.

Instruments:-
The instruments used for the study were a questionnaire to assess the level of knowledge regarding management of anemia among adolescent girls at St. Mary's School Vikasnagar, Dehradun.

Description of tools:-
The tool were designed in two sections "part – 1", "part – 2" to achieve the objective.
Part – 1
This consist the demographic variables – Age, Standard, Dietary pattern, Economic status of family, Occupation of parents, Source of information, Religion, Area of residence, Educational status and Monthly income of family.

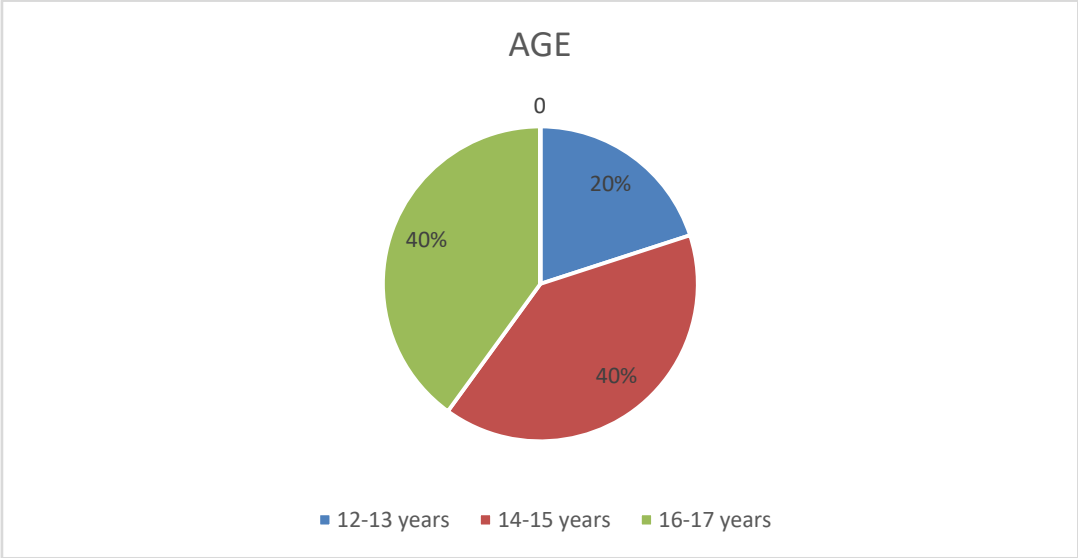
Part – 2
Consist of questionnaires to assess the level of knowledge regarding management of anemia among adolescent girls in St. Mary's School Vikasnagar, Dehradun.

Section – A:-

Table No. 1 : Percentage distribution of students according to demographic characteristics.

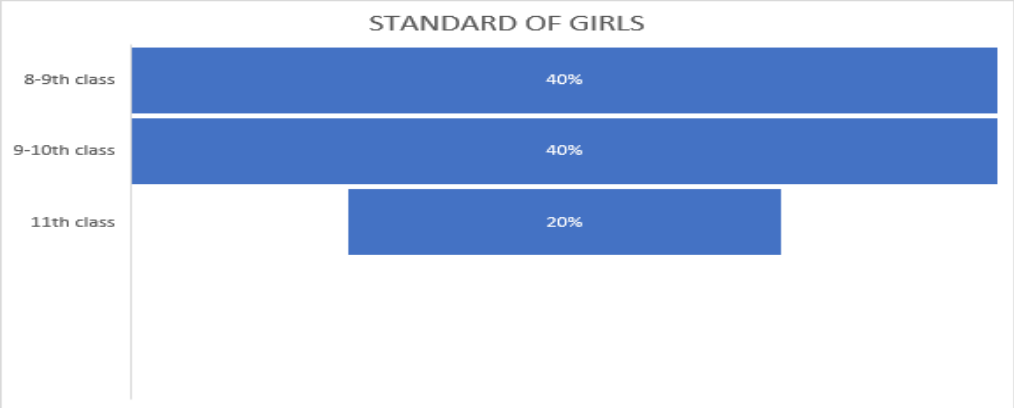
S.NO.	GROUPS	FREQUENCY	PERCENTAGE
1.	AGE		
	a) 12-13 YEARS	2	20%
	b) 14-15 YEARS	4	40%
	c) 16-17 YEARS	4	40%
2.	STANDARD OF ADOLESCENT GIRLS		
	a) 8 – 9 CLASS	4	40%
	b) 9 – 10 CLASS	4	40%
	c) 11th CLASS	2	20%
3.	DIETARY PATTERN		
	a) VEGETARIAN	2	20%
	b) NON-VEGITARIAN	5	50%
	c) BOTH	3	30%
4.	ECONOMIC STATUS OF FAMILY		
	a) MIDDLE CLASS	6	60%
	b) UPPER MIDDLE CLASS	1	10%
	c) UPPER CLASS	3	30%
5.	OCCUPATION OF PARENTS		
	a) GOVERNMENT EMPLOY	2	20%
	b) PRIVATE EMPOLY	7	70%
	c) SEMI PRIVATE EMPOLY	1	10%
6.	SOURCE OF INFORMATION REGARDING ANEMIA		
	a) MASS MEDIA	2	20%
	b) NEWSPAPER	1	10%
	c) TEACHER	7	70%
7.	RELIGION		
	a) HINDU	6	60%
	b) MUSLIM	1	10%
	c) CHIRSTIAN	3	30%
8.	AREA OF RESIDENCE		
	a) URBAN	2	20%
	b) RURAL	6	60%
	c) SEMI - URBAN	2	20%
9.	EDUCATION STATUS OF PARENTS		
	a) 10th CLASS	1	10%
	b) 12th CLASS	2	20%
	c) GRADUATION	7	70%
10.	MONTHLY INCOME OF FAMILY		
	a) 15000 – 20000	1	10%
	b) 20000 – 25000	3	30%
	c) 25000 – 30000	6	60%

Age:- Percentage distribution of students according to their age.



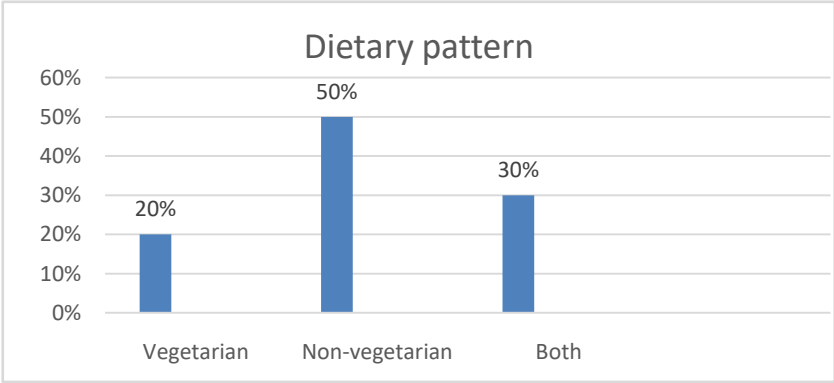
A pie chart showing percentage distribution according to age. The percentage distribution of students according to their age was 12 – 13 years 20%, 14 – 15 years 40%, 16 -17 years 40%.

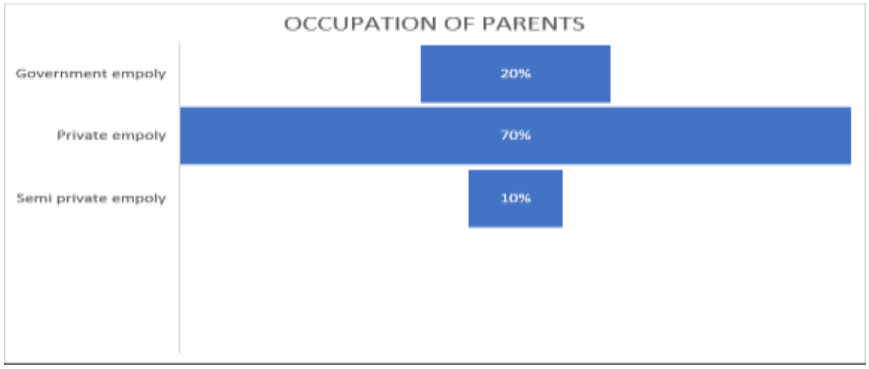
Standard:-Percentage distribution of students according to their standard.

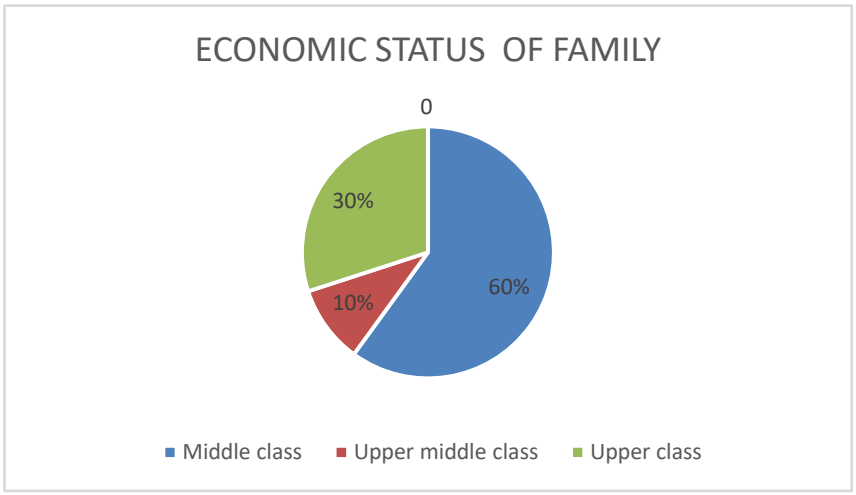


A funnel graph shows percentage distribution of standard of adolescent girls. The percentage distribution of standard of adolescent girls shows that 40% of girls are in 8 – 9th class, 40% of girls are in 9 – 10th class and 20% of girls are in 11th class.

Dietary Pattern:- Percentage distribution according to the Dietary pattern of adolescent girls.







A column graph showing the percentage distribution according to their dietary pattern. This percentage shows that 20% adolescent girls are vegetarian, 50% adolescent girls are non-vegetarian and 30% adolescent girls are both.

Economic Status Of Family:-
Percentage distribution according to the economic status of family

A pie chart shows the percentage distribution according to the economic status of family. This distribution shows that 60% of family member are middle class, 10% of family member are upper middle class and 30% of family member are upper class.

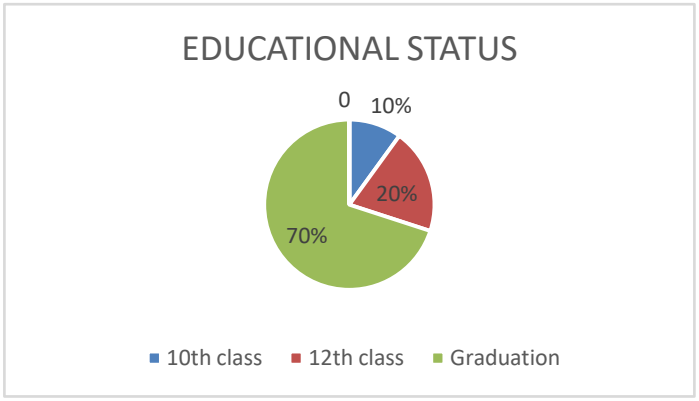
Occupation Of Parents:-
Percentage distribution according to the occupation of parents.

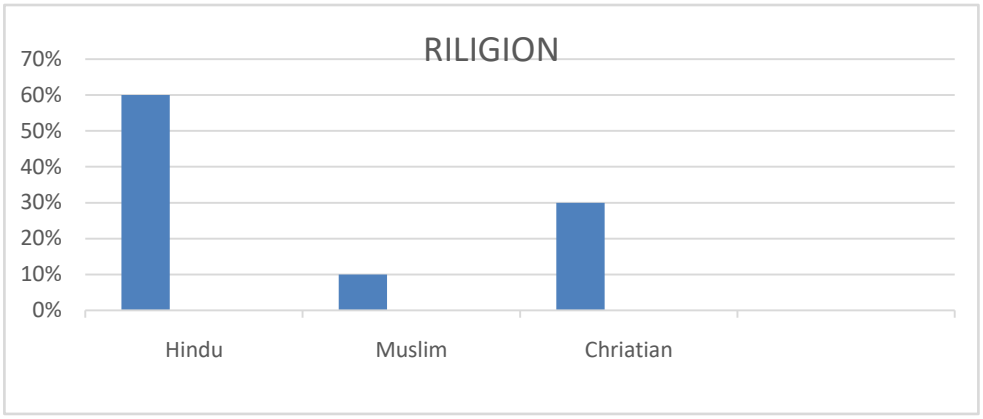
A funnel graph shoes the percentage distribution according to the occupation of family member. This distribution shows that 20% of parents are government employ, 70% of parents are private employ and 10% of parents are semi private employ.

Source of Information Regarding Anemia:
Percentage distribution according to the source of information of adolescent girls.

A bar graph shows the percentage distribution according to the source of information regarding anemia. The percentage distribution of students according to their source of information shows that 70% from teacher, 10% from news paper and 20% from mass media.

Religion:-
Percentage distribution according to the religion



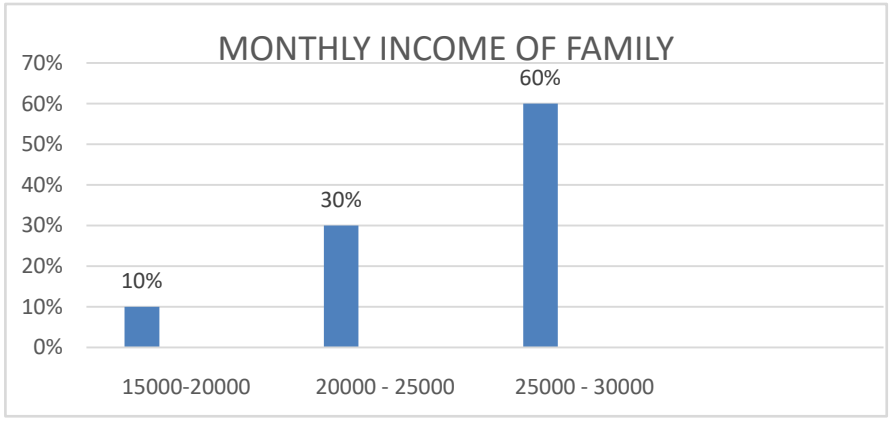


A column graph shows the percentage distribution according to the religion of adolescent girl. This distribution shows that 60% girls are Hindu, 10% girls are Muslim and 30% of girls are Christian.

Area of Residence:-
Percentage distribution according to the area of residence.

A graph shows the percentage distribution according to the area of residence. This distribution shows that 20% girls are from urban area, 60% girls are from rural area and 20% girls are from semi- urban area.

Education Status of Parents:- Percentage distribution according to the education of parents



A graph shows the percentage distribution according to the education status of parents. This distribution shows that 10% of parents are 10th class pass, 20% of parents are 12th class pass and 70% of parents are graduate.

Monnthly Income Of Family:-
Percentage distribution according to the monthly income of family members.

A column graph shows the percentage distribution according to the monthly income of family members. This distribution shows that 10% of family's monthly income in between 15,000 - 20,000, 30% of family's monthly income in between 20,000 - 25,000 and 60% of family's monthly income in between 25,000 - 30,000.

Discussion:-

The findings of the study have been discussed with references and objectives, considering other studies conducted in the same area.

Findings and Discussion:-
The discussion of the findings of the study is made under the following sections:

Section 1: Demographic Characteristics:-
This section consists of a self-structured questionnaire to assess demographic characteristics such as age, class, type of family, dietary habits, socioeconomic status, and parental education of adolescent girls.

Section 2: Knowledge Regarding the Management of Anemia:-
A self-structured questionnaire was used to assess the level of knowledge regarding anemia management among adolescent girls.

The findings of the present study reveal that, at the time of data collection:
• 50% of adolescent girls had poor knowledge regarding anemia management.
• 30% of adolescent girls had moderate knowledge regarding anemia management.
• 20% of adolescent girls had good knowledge regarding anemia management.
These results indicate that the majority of adolescent girls have poor knowledge about anemia management, emphasizing the need for health education programs focusing on anemia prevention, causes, symptoms, and treatment.

Major Findings Of The Study:-
• 50% of adolescent girls had poor knowledge regarding anemia management.
• 30% of adolescent girls had moderate knowledge regarding anemia management.
• 20% of adolescent girls had good knowledge regarding anemia management.
• Most students were unaware of dietary sources of iron and the importance of iron supplementation.

• Family income, parental education, and dietary habits were key factors influencing knowledge levels.
• The study highlights the need for school-based health awareness programs to improve knowledge regarding anemia prevention and management.

Implications:
The self-structured questionnaire used in this study can serve as an effective tool for assessing knowledge levels regarding anemia management among adolescent girls. Schools and health organizations can utilize this tool to identify gaps in knowledge and develop targeted awareness

There is a literature gap in understanding adolescent girls' knowledge of anemia and its management. More research is needed to:
• Evaluate the effectiveness of school-based health education programs on anemia prevention.
• Identify barriers to accessing iron-rich foods and supplements among adolescent girls.

Summary:-
This chapter deals with summary of the study , that is problem statement , objectives, hypothesis, assumption, conceptual framework , findings and key conclusion.

Problem statement :-
A descriptive study to assess the level of knowledge regarding management of anemia among adolescent girls.

The Objective Of This Study Were;-
It 's primary objective is to assist the knowledge of adolescent girls regarding management anemia.

Assumptions:-
1. Maximum adolescents will have adequate level of knowledge regarding management of anemia
2. We assume that most of the adolescents would have taken the following precautionary Measures such as early detection, iron supplementation, nutritional education, healthy eating Habits etc

Conceptual Framework:-
The "general system model" was adopted for conceptual framework as in depth review of literature was done for the study .The instruments used for the study are mentioned in 3 section.

Section – A:-
Demographic variables

Section – B:-
It consists of questionnaire related to the knowledge regarding management of adolescents girls were selected by using convenient technique.
The Study was conducted at ST.Mary's School Vikasnagar, Dehradun Prior permission was obtained from concerned authorities of selected school, Date was collected by self-administerial questionnaire technique.

Section- C:-
Association between level of knowledge and selected demographic variables.

Section- A:-
Demographic characteristics of study samples:-
- Highest percentage of participants (40%) in the age group of 14 - 17years.
- Highest percentage of participants (60%) belongs to rural area.
- Highest percentage of participants (70%) got the information from teachers.
- Highest percentage of participants (50%) of adolescents girls are non-vegetarian.

Conclusion:-

- On the basis of study results following conclusion were drawn.
- The Purpose of the present study was to find the level of knowledge among adolescents anemic girls.

Nursing Implications:-
- The implication of the study result has been discussed in nursing practice, nursing education , nursing research and nursing administration .

Nursing Practice:-
- As one of the most important role nurse's play to impact knowledge and to create awareness among adolescent girls , Nurses should have good knowledge about adolescents anemic girls. In Nursing Practice with adolescent girls diagnosed with anemia , focus on nutritional education , iron supplementation , and addressing underlying factors like menstrual hygiene and access to healthcare , while also promoting healthy lifestyle choices and providing emotional support.

Nursing Education:-
- Nursing education for adolescent anemic girls should focus on understanding anemia , its causes , symptoms , and prevention , emphasizing healthy eating habits , iron supplementation , and regular check-ups, and promoting positive attitudes towards health.

Nursing Research:-

- As the research provide evidence used to support nursing practice , on the basis of finding of present day , nursing professionals can conduct further researches on adolescent anemic girls by using different approaches , design and can assess different variables.

Nursing Administration:-

- In Nursing administration for adolescent girls with anemia, focus on prevention , early detection, and effective management through interventions like nutritional education , iron supplementation, and addressing underlying causes.

Limitations:-

1. The study only assessed the knowledge and management taken by anemia adolescents girls .
2. The study did not use any educational interventions .
3. Small sample size.
4. Structured knowledge questionnaire used for data collection restrict the amount of information that can be obtained from the sample . To overcome the above limitations some recommendation are suggested.
5. The study is only limited to the adolescent girls.

Recommendation:-

1. Similar study can be conducted by using experimental design.
2. The study can be conducted among large population to generalize the findings.
3. Further study can be conducted by using variables such as attitude.

1. Pareek, P., & Hafiz, A. (2015). "A Study on Anemia Related Knowledge Among Adolescent Girls." International Journal of Nutrition and Food Sciences, 4(3), 273-276. This study evaluated the nutritional knowledge of 100 adolescent girls in Hyderabad, revealing that only 25% had good knowledge about anemia.

Sciencepublishinggroup.Com:-

2. Siddiqui, M. Z., Goli, S., Reja, T., Doshi, R., &Chakravorty, S. (2017). "Prevalence of Anemia and Its Determinants Among Non-Pregnant and Pregnant Women in India." Asia Pacific Journal of Public Health, 29(3), 205-215. This study indicated that adolescents had acceptable knowledge levels about the causes, treatment, and prevention of anemia.

Pmc.Ncbi.Nlm.Nih.Gov:-

3. Rahman, M. J., Rahman, M. M., Sarker, M. H. R., Kakehashi, M., Tsunematsu, M., & Ali, M. (2024). "Prevalence and Influencing Factors with Knowledge, Attitude, and Practice Toward Anemia Among School-Going Adolescent Girls in Rural Bangladesh." PLoS ONE, 19(11), e0313071. This study found a high prevalence of anemia among adolescent girls in rural Bangladesh and highlighted the need for school-based nutritional education and improved sanitary facilities.

Journals.Plos.Org:-

4. Kumar, K. J., & Gupta, A. (2020). "TheKnowledge and Attitude Towards Anaemia Amongst Adolescent Girls in Delhi." International Journal of Child Nutrition, 9(1), 19-24. The study concluded that adolescent girls should be sensitized with knowledge of anemia prevention to enhance their understanding and promote better health practices.

Journals.Lww.Com:-

5. Rahman, M. J., Rahman, M. M., Sarker, M. H. R., Kakehashi, M., Tsunematsu, M., & Ali, M. (2024). "Prevalence and Influencing Factors with Knowledge, Attitude, and Practice Toward Anemia Among School-Going Adolescent Girls in Rural Bangladesh." PLoS ONE, 19(11), e0313071. This study found a high prevalence of anemia among adolescent girls in rural Bangladesh and highlighted the need for school-based nutritional education and improved sanitary facilities.

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List of statistical formulae

1. Mean (x) = ΣX/ N
2. Mean percentage (Mean%) = Mean x 100/Maximum score

3. Standard deviation (SD) SD= = √ (∑ (x – x-) 2 /n)
4. Chi-Square x2=Σ (observed - expected)2 /expected =(O-E)2/E
5. Df =(r-1)(c-1)

Where Df = degree of freedom
r = No. of rows
c= No. of columns
Where SD Standard deviation
SE- Standard error

Tool for assessment of level of knowledge regarding Anemia among adolescent girls Demographic Data

S.No.	Groups	Frequency	Percentage
1.	**AGE**		
	a) 12-13 YEARS	2	20%
	b) 14-15 YEARS	4	40%
	c) 16-17 YEARS	4	40%
2.	**STANDARD OF ADOLESCENT GIRLS**		
	a) 8 – 9 CLASS		
	b) 9 – 10 CLASS	4	40%
	c) 11th CLASS	4	40%
		2	20%
3.	**DIETARY PATTERN**		
	a) VEGETARIAN	2	20%
	b) NON-VEGITARIAN	5	50%
	c) BOTH	3	30%
4.	**ECONOMIC STATUS OF FAMILY**		
	a) MIDDLE CLASS	6	60%
	b) UPPER MIDDLE CLASS	1	10%
	c) UPPER CLASS	3	30%
5.	**OCCUPATION OF PARENTS**		
	a) GOVERNMENT EMPLOY	2	20%
	b) PRIVATE EMPOLY	7	70%
	c) SEMI PRIVATE EMPOLY	1	10%
6.	**SOURCE OF INFORMATION REGARDING ANEMIA**		
	a) MASS MEDIA	2	20%
	b) NEWSPAPER	1	10%
	c) TEACHER	7	70%
7.	**RELIGION**		
	a) HINDU	6	60%
	b) MUSLIM	1	10%
	c) CHIRSTIAN	3	30%
8.	AREA OF RESIDENCE		
	A) URBAN	2	20%
	B) RURAL	6 2	60%
	C) SEMI - URBAN		20%
9.	EDUCATION STATUS OF PARENTS		
	A) 10th CLASS		
	B) 12th CLASS	1	10%
	C) GRADUATION	2	20%

		7	70%
10.	MONTHLY INCOME OF FAMILY		
	A) 15000 – 20000	1	10%
	B) 20000 – 25000	3	30%
	C) 25000 – 30000	6	60%

Self Structured Questionnaire:-

Q 1. What is the primary cause of iron deficiency anemia?

a) Lack of vitamin B 12
b) Insufficient iron intake
c) Excessive bleeding
d) Chronic disease

Q2). Which of the following is a symptom of anemia?

a)Increased energy level
b)Weight gain
c)Fatigue and weakness
d)Improved cognitive function

Q3). What is the name of the protein in red blood cells that carries oxygen?

a)Hemoglobin
b)Myoglobin
c)Ferritin
c)Transferrin

Q4). Which type of anemia is caused by a deficiency of vitamin B12?

a)Iron deficiency anemia
b)Pernicious anemia
c)Sickle cell anemia
d)Thalassemia

Q5). What is the treatment for severe anemia?

a)Dietary changes only
b)Supplements and dietary changes
c)Blood transfusion
d)Surgery

Q6). What is the term for anemia caused by abnormal hemoglobin production?

a)Thalasemia
b)Sickle cell anemia
c)Pernicious anemia
d)Iron deficiency anemia

Q7). What is the name of the test used to measure the average size of red blood cells?

a)Mean corpuscular hemoglobin (MCH)
b)Mean corpuscular volume (MCV)
c)Mean corpuscular hemoglobin concentration (MCHC)
d)Red blood count (RBC)

Q8).Which type of anemia is characterized by an abnormal ‘’Sickle’’shaped of RBC?

a)Sickle cell anemia
b)Thalassemia
c)Iron-deificiency anemia
d)Pernicious anemia

Q9).What is the primary function of erythropoietin in the body?
a)To stimulate white blood cell production
b)To regulate RBC production
c)TO increase platelets count
d)To enhance immune function

Q10).Which of the following is a complication of untreated anemia?
a)Increased risk of infection
b)Decreased risk of bleeding
c)Improved cognitive function
d)Reduced risk of heart disease

Q11).What is the name of the dietary supplement that can help prevent folic acid deficiency anemia?
a)Iron sulphate
b)Vitamin B12 injections
c)Folic acid tablets
d)Vitamins C

Q12).what is the name of the genetic disorder that affects hemoglobin productions loading to anemia?
a) Thalassemia
b) Sickle cell anemia
c) Hemophiliia
d) Cystic fibrosis

Q13). Anemia is defined as a hemoglobin level less than
a) 10g/dl
b) 11g/dl
c) 12g/dl
d) 13g/dl

Q14). What is the most common cause of anemia in the adolescent girls?
a) Vitamin B12 deficiency
b) Iron deficiency
c) Folic acid deficiency
d) Chronic diseases

Q15). Which of the following is a risk factor for anemia in adolescent girls?
a) High iron diet
b) Low menstrual bleeding
c) Vegetarian diet
d) Regular physical exercises

Q16). What is the recommended daily iron intake for adolescent girls?
a) 8mg
b) 12mg
c) 15mg
d) 18mg

Q17). Which lab test is most commonly used to diagnose iron deficiency anemia?
a) Serum creatinine
b) Blood glucose level
c) Complete blood count [CBC]
d) Liver function test

Q18). Which of the following foods is highest in iron content and recommended for adolescent girls with anemia?
a) Dairy products
b) Red meat
c) Citrus fruits
d) Whole grain

Q19). Which of the following symptoms might indicate severe anemia in adolescent girls?
a) Dizziness and fainting
b) Increased energy
c) Regular menstrual cycle
d) Normal skin color

Q20). Which demographic is at the highest risk of developing iron deficiency anemia?
a) Post- menopausal women
b) Adolescent girls with heavy menstrual bleeding
c) Adolescent boys
d) Pregnant women

Q21. What is the primary function of hemoglobin in RBC?
a) To transport nutrients
b) To carry oxygen from lungs to the rest of the body
c) To fight infections
d) To remove CO2 from the body

Q22). What is the role of ferritin in the body?
a) Transport oxygen
b) Synthesize hemoglobin
c) Produce white blood cell
d) Store iron

Q23). A diet rich in which of the following can help prevent anemia
a) Vitamin D and calcium
b) Protein and fibre
c) Iron and vitamin C
d) Fats and carbohydrates

Q24). Which of the following is an important dietary source of non – heme iron, which is commonly found in plant based foods?
a) Eggs
b) Spinach
c) chicken
d) Fish

Q25). Which condition could result from excessive iron supplementation?
a) Iron deficiency
b) Iron overload [Hemochromatosis]
c) Hypocalcemia
d) Hypoglycemia

Q26). How does heavy menstrual bleeding contribute to anemia in adolescent girls?
a) It causes excessive iron loss
b) It decreases RBCs production
c) It increases iron absorption
d) It improves hemoglobin synthesis

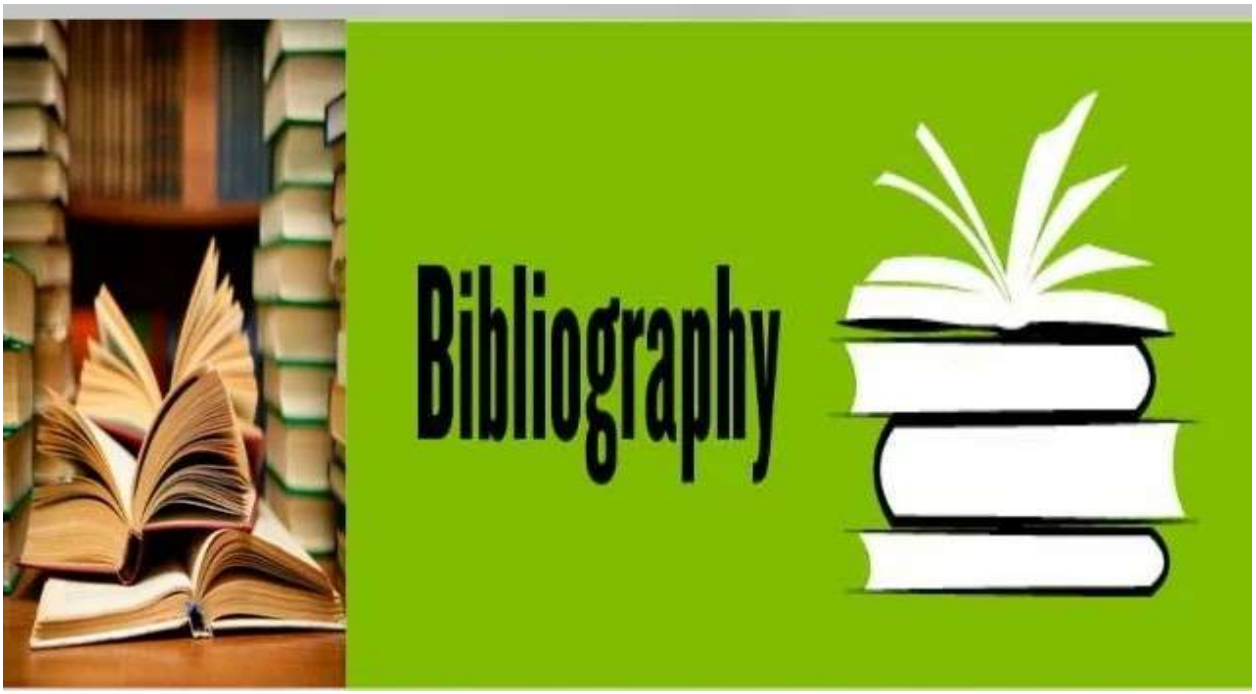
Q27). How does anemia affect the body?
a) The blood does not deliver enough oxygen to the body
b) Blood becomes thin
c) Tissues retain fluids
d) none of the above

Q28). How does iron – deficiency anemia affect children and teens?
a) More fatigue
b) Increased irritability
c) Aggravates hyperactivity
d) A and B

Q29). Anemia can contribute to which of these among older adults
a) More falls
b) High blood pressure
c) Dimineshed eye sight
d) Diabetes

Q30). What anemia is megaloblastic ?
a) Chronic posthemorrhagic anemia
b) Folic acid deficiency anemia
c) Aplastic anemia
d) Hemolytic anemia

Answer Key:-
Ans1) B
Ans2) C
Ans3) A
Ans4) B
Ans5) C
Ans6) A
Ans7) A
Ans8) A
Ans9) B
Ans10) A
Ans11) C
Ans12) A
Ans13) C
Ans14) B
Ans15) C
Ans16) D
Ans17) C
Ans18) B
Ans19) A
Ans20) B
Ans21) B
Ans22) D
Ans23) C
Ans24) B
Ans25) B
Ans26) A
Ans27) A
Ans28) D
Ans29) A
Ans30) A



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