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A Descriptive Study to Assess the Knowledge Regarding Prevention of Anemia Among Adolescent Girls in the Selected Area

*Rama Danapure**
Community Health Nursing, Kasturba Nursing College, Kasturba Health Society, Sevagram, Wardha, Maharashtra, India

ABSTRACT

The investigator conducted this study to assess knowledge regarding prevention of anemia among adolescent girls in the selected area. Objective of the investigator were 1) To assess the knowledge regarding prevention of anemia among adolescent girls. 2) To associate the findings with selected demographical variables. The investigator developed a structured questionnaire and the conceptual framework adopted for this study was based on health promotion model. Tool got validated by 11 experts. Reliability of the tool was established by the split half method using Karl Pearson formula and the reliability of the structured questionnaire on knowledge was found to be r=0.81 that indicated that the tool was reliable. With descriptive survey approach, the investigator used survey research design for this study. The pilot study was conducted from 11th Nov. to 20th Nov. 2013 as per laid down criteria. 20 subjects were selected for pilot study from nonprobability convenient sampling technique. The investigator obtained permission from the principal of school to conduct the main study. Main study started from 17th Dec to 6th Jan 2014. 100 samples were selected by nonprobability convenient sampling technique. The structured questionnaire was utilized to collect data. The data was decided to be analyzed by using descriptive statistics on the basis of objectives and research question of the study. To figure the data, a master data sheet was prepared by the investigator. The collected data was analyzed in terms of frequency, mean, percentage, standard deviation.

The following are major study findings section wise: Majority of the adolescent girls' age group 13 years (32%); The educational status of sample in secondary school was 100%; Majority of the samples of dietary pattern: vegetarian 86%; Majority of the sample (42%) nuclear family; Majority of the sample (58%) belonged to Hindu religion; Majority of the sample (47%) had family income of Rs. 3000–5000. Finding shows that (76%) of the adolescent girls had average level of knowledge score. Finding shows that the age of the sample was statistically associated with their knowledge scores. Finding shows that type of dietary pattern of sample is statistically associated with their knowledge scores. On the basis of the findings of the study, it is suggested that the subsequent studies can be accompanied. Comparative studies can be done to assess the various practices in various regions of the country. Studies can be conducted to assess the prevalence of anemia in adolescent girls. Experimental study can be conducted on similar topic. The investigator concluded that the knowledge of the target population was inadequate regarding prevention of anemia among adolescent girls in selected school.

Keywords: anemia, assess, knowledge, prevention

Corresponding Author
E-mail: ramaschate7@gmail.com

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INTRODUCTION

"Healthy Adolescent, Wealthy Nation"

Today's children are tomorrow's citizen. There is no more precious thing than the health of our children. Adolescent is a "coming of age", as children grow into young adults. This adolescent period is of intense growth, not only physically but also mentally and socially. During this time, 20% of final adult height and 50% of adult weight is attained. Because of this rapid growth, adolescents are especially vulnerable to anemia. Proper nutrition, including adequate iron intake, play important part of teenager's growth and development.

During adolescence, teenagers acquire knowledge and skills that help them to become independent and successful, but iron deficiency anemia can affect their learning, growth and development. Therefore, adequate information can help the teenagers to stay healthy and prevent iron deficiency anemia [1].

The development of a country can be determined by estimating the health of the children in that country. There are 1.2 billion youngsters aging 10–19 year in evolving nations, making up one fifth to one sector of their country's people. Adolescents have usually been measured a low risk group for poor health, and often receive few healthcare resources and scant attention. However, this method disregards the statistic that many health problems advanced in life can be improved or circumvented by assuming healthy lifestyle ways in adolescents [2].

According to WHO the adolescent period is from the age of 10 years to 19 years, that is, second decade of life. It can be distinguished as early adolescence, age 10–13 years; middle adolescence, ages 14–16 years, late adolescence, age 17–20 years. The adolescents and youth together are phrased as young people (10–24 years). The world's adolescent population (age 10–19 years) is calculated to stand at more than 1 billion, yet adolescents remain a largely neglected, difficult-to-measure, and hard-to-reach population in which the needs of adolescent girls, in actual, are regularly ignored. This area of adolescent health has been challenging to study, and there are many unknown factors and consequences for iron deficiency during adolescence in terms of standards, measurement indicators and health consequences.

As per Population bureau in 1996 30 % of the total population was that of adolescents (284.02 million). The adolescence is the period of relatively good health in spite of the storms and stresses of rapid physical growth, physiological changes, sexual and emotional growth and development [3]. Health is a fundamental human right and it is central to the concept of quality of life[4]. Adolescent constitute over one fifth of India's population [4]. Adolescence begins when the secondary sex characteristics appear and ends when somatic growth is completed and the individual is psychologically mature, capable of becoming a contributing member of society.

Teenagers are in the age group of 12 to 18 years. Girls commence to menstruate at this age. The girls have weight approximately 42–64 kg and height approximately 155–169 cm. Total nutrient requirements are increased during adolescence age to support a period of dramatic growth and development. Eating right food at right time prevents the nutritional deficiencies especially Iron deficiency disorders [5]. Iron is one of the micronutrient. It is used for formation of hemoglobin, oxygen transportation, brain development, regulation of body temperature and muscle activity. When the iron is decreased in human body, it is called as iron deficiency. Iron deficiency is the most common etiological factors in

anemia. The decreased hemoglobin level is called as iron deficiency anemia [6].

Education about importance of taking low cost iron rich foods such as drumstick leaves, dates, jaggary, ragi, and green leaves, fruit to the rural areas, and avoiding the meal skipping to eat jung foods and fast foods will prevent the iron deficiency anemia. Regular hemoglobin screening tests will identify the iron deficiency anemia in early stage [6].

Weekly Iron supplementation for adolescent girls will prevent the severe iron deficiency anemia and its complications. Iron supplementation should be given before meals because iron absorbs easily in acidic nature or it may be given along with citrus juice like lime or orange juice. The Nurse should encourage the preventive measures among adolescent girls [6].

Adolescents with chronic illness, heavy menstrual blood loss, or who are underweight or malnourished are at increased risk for iron deficiency and should be screened during health supervision or specialty clinic visits. Among girls, however, menstruation rises the danger for iron shortage anemia throughout their adolescent and gestation years. However, offspring from all backgrounds can grow iron shortage anemia. Adolescent girls whose diet was supplemented with iron felt less fatigued their ability to concentrate in school increased and their mood improved [7]. Hence, intake of iron rich diet should be enhanced to fight against the most common nutritional disorder.

According to world health organization (WHO) the hemoglobin level should be 12 g/dl for adolescent girls, and the hemoglobin level less than 12 g/dl is considered as iron deficiency anemia. WHO graded the hemoglobin level 10 g/dl as considered as mild iron deficiency anemia, hemoglobin between 7 g/dl to 10 g/dl considered as moderate iron deficiency anemia and hemoglobin less than 7 g/dl considered as severe iron deficiency anemia [8]. The young adolescent faces many problems because of their life style changes such as eating Junk foods, fast foods, snacking, skipping of the meal which is common in urban adolescent girls [8].

Some are malnourished due to lack of knowledge about dietary iron, poor socio economic status, low income family which is common in rural areas and also in menstrual period the adolescent girls used to lose 45 ml of blood (i.e.) 22 mg of iron [9].

To avoid being the part of this statistics the best solution is the appropriate preventive measures. There are three potential interventions for the prevention of anemia. These include dietary diversification, food fortification and individual supplementation. Dietary diversification involves promotion of a diet with a wider variety of iron containing food, encouraging families with deficient iron intake to eat meat, fish, or poultry, whole or enriched grain; and foods high in ascorbic acid [10].

Background of the Study

As there has been much increase in the prevalence rate of anemia among the adolescent girls. It is necessary to prevent it among them in order to foster normal growth and development. So, several studies have revealed that anemia is more prevalent among adolescent girls especially the menstrual girls. Prevalence of anemia is increasing day by day because of several factors such as faulty dietary practice, lack of menstrual education, lack of health education and faulty life style.

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 several reasons. In a family with inadequate resources, the female child is more likely to be ignored. She is depressed of good food and education and is used 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 usual.

According to WHO, globally anemia effects 1.6 billion people (95% CI:1.50 – 1.74 billion) which correspond to 24.8% of the population (95% CI:22.9 – 26.7%). The highest prevalence is in school age children (47.4%, 98% CI: 45.7 – 49.1), and the lowest prevalence is in men (12.7%, 95% CI: 8.6 – 16.9%). However, the population group with the highest number of persons pretentious is non-pregnant women (468.4million, 95%CI:446.2–490.6%). Anemia is among the most mutual illnesses moving human beings. Nearly half the blood flowing in our veins and arteries consists of RBC which carries oxygen to the tissues. Approximately one million new blood cells are formed daily in the bone marrow. The raw materials required in the production of these cells are iron, proteins & vitamins, especially in building up the red coloring matter called hemoglobin. A red cell has a life span of approximately one hundred and twenty days and is then it is destroyed and replaced, so each person should have about 15gm of hemoglobin per 100ml of blood, and a blood count of approximately five million red cells per millimeter of blood [11].

The Healthcare and Research Association for Adolescents, Noida and the Nutrition Foundation of India, New Delhi calculated women in the same regions and villages considered in NFHS-II and determined that the prevalence and severity of anemia in rural adolescent girls was much higher than that reflected in NFHS-II: 84 % prevalence, of which 9.2 % fell into the severe anemia category15.The Indian Council for Medical Research (ICMR)'s district nutrition review data also stated comparable anemia occurrence of 84.2 %, with 13.1 % being in the simple anemia category16[12].

A cross sectional study was done to assess the anemia in school going adolescent girls from Ahmadabad city, of the 1295 randomly selected girls in the age group of 6–18 years, prevalence of anemia was 81.8% [13].

Similarly, a study to identify the prevalence of anemia among adolescent girls in an urban slum area from Nagpur city, a cross sectional community-based study was conducted among 272. Prevalence of anemia was found to be very high (90.1%) among adolescent girls [14].

Need for the Study

There is more prevalence of anemia among adolescent girls especially nutritional anemia and iron deficiency anemia, and it can be prevented with the help of providing supplementary therapy and proper educational program. So, for implementing the educational programme we have to assess their knowledge regarding the prevention of anemia among the adolescent girls. That is why investigator conducted this survey study to assess the knowledge regarding prevention of anemia. The result of the study will help for community to plan an appropriate educational programme. The World Health Organization (WHO) has been terrified with the global problem of nutritional anemia for many years. The first FAO/WHO Joint Committee on Nutrition, meeting held in 1949, deliberated the importance of nutritional anemia and recommended that funds should be provided for its study, the first research in nutritional anemia was supported in 1955 and the first international meeting was called in 1958. The WHO still has an

important role to play in this field, encouraging the development of anemia control programs and providing advice and technical assistance to member of countries [15]. Based on all these reasons and based on her experience during his clinical training investigator decided to investigate this problem.

Nutritional anemia is one of India's chief community health problems. The occurrence of anemia ranges from 33% to 89% among pregnant women and is more than 60% among teenage girls. Under the anemia prevention and control program of the Government of India, iron and folic acid tablets are distributed to pregnant women [16].

Changes in the educational system and improvement in the standards of education will increase the workload of students. This will increase the stress among adolescents. It will lead to meal skipping and gives a way to develop iron deficiency anemia. Due to iron deficiency the adolescent girls may get impaired physical work, poor intelligent quotient, decreased motor and cognitive function. So, all adolescent girls should know about iron rich foods, importance of iron intake and functions of iron in Human body [17].

Anemia is a common problem among adolescent girls in this setting, though severe anemia is rare. There is a need to improve their hemoglobin status through dietary modification along with preventive supplementation and nutrition education.

The adolescents require well balance diet to have normal growth and to keep fit. They should learn to relax and eat properly at meal time and avoid taking junk food. They should take whole some snacks preferably made from ground nut, purchase chana, etc. Inadequate diet leads to malnutrition and result in various deficiencies like anemia due to lack of iron especially in girls. Dietary deficiency may be due to ignorance, food facts, illiteracy, size of the family, cultural factors, gender discrimination, and poverty etc. Therefore it is, very important to educate adolescents about nutrition needs of adolescents for planning and preparing nutritious diet using inexpensive food. Besides being nutritious food which is consumed by adolescent should be clean and safe. It should be well cooked under clean and safe environment following all the principles of cooking. Food should be consumed as quickly as possible. Unconsumed food should be stored in properly in the refrigerator below 10^{O}C. Hands must be thoroughly washed with clean water before consuming or preparing the food. The adolescents need to be educated regarding such practice to prevent any kind of infection through food moreover to prevent iron deficiency [18].

National Family Health survey in 2006 showed that 56% of adolescent girls were anemic in India [19]. According to WHO global database on anemia reports that in developing Countries the prevalence of anemia in school age children is 53% [20]. According to UNICEF State of the Adolescents report 2012, nearly 50% of Indian adolescent girls were underweight, with a body mass index of less than. 18.5 [21]. TNN (2011), Ranchi district level health survey (DLHS -09) showed the prevalence of anemia in adolescent girls in district was 60 % while the state figure was 71 % as per the national health & family survey (NHFS- 08) [22].

Iron deficiency anemia is one of the most prevalent common nutritional deficiencies in the world especially among adolescent girls. Adolescents gain 50% of adult weight and 20% adult height in the adolescent period itself [23]. According to Union Health Minister Ghulam Nabi Azad on Tuesday 25th April, 2012 New Delhi said more than 5 Crore adolescents had anemic in India. Adolescent girls are more vulnerable to anemia due to the rapid

growth of the body and loss of blood during menstruation [24]. In world health report of World Health Organization (WHO) states that the worldwide morality rate of iron deficiency anemia is 60,404,000 in 2005 [25].

In Victoria 1996, the incidence rate of iron deficiency anemia was 1, 87,979 cases among adolescent girl. In USA, the incidence rate of iron deficiency anemia was 1 in 24 cases or 4.12% or 11.2 million people. In Australia the incidence rate of iron deficiency anemia was 2,17,000 adolescent girls in 2004. Hence, the investigator selected the adolescent girls and wanted to assess the knowledge regarding prevention of anemia among adolescent girls. So, this study will help to improve the knowledge of pre-university students regarding early detection, dietary management, and pharmacological management [26].

Problem Statement

"To assess the knowledge regarding prevention of anemia among adolescent girls in selected area"

Objective of the Study

(1) To assess the knowledge regarding prevention of anemia among adolescent girls.
(2) To associate the findings with selected demographic variables [27].

Operational Definition

(1) Assess: According to oxford dictionary assess means evaluate or estimate the nature. In this study assess means determination of knowledge regarding prevention of anemia [28–31].
(2) Knowledge: According to oxford dictionary knowledge means information and skill acquired through experience or education. In this study knowledge refers to correct responses given in questionnaire regarding the prevention of anemia [32–35].
(3) Prevention: According to oxford dictionary prevention means keep away from happening or arising. In this study prevention is the preventive measures of anemia.
(4) Anemia: According to oxford dictionary anemia is a condition in which is a deficiency of red cell or hemoglobin occurs in the blood. In this study anemia means the lack of sufficient circulating hemoglobin to deliver oxygen to tissues resulting due to inadequate intake of nutritious food rich in iron by the adolescents [36, 37].
(5) Adolescent girls: According to oxford dictionary adolescent girl is a person who is fully grown and developed. In this study adolescent girls are the girls in the age group of 12–17 years.
(6) Selected Area: According to oxford dictionary carefully choose as being the best part of place [38–40]. In this study selected area means the secondary school where the study conducted.

Scope of Study

(1) Findings of the study will help to find out the knowledge regarding prevention of anemia among adolescent girls.
(2) Health education can be planned in future to prevent prevalence of anemia among adolescent girls.

Assumption

The adolescent girls may not have adequate knowledge regarding prevention of anemia.

Limitation

The sample size is small and limited only to selected school. There for generalization could not be made.

Research Hypothesis

Adolescent girls do not have adequate knowledge regarding prevention of anemia.

Research Question

Does the adolescent girl have adequate knowledge regarding prevention of anemia?

Ethical Aspect

(1) The study was approved by the ethical committee and a formal permission was obtained from the head of the institution [41–43].
(2) Informed written consent has taken from the participant.
(3) The subjects were assured that confidentiality will be maintained.
(4) The subjects were informed that their participation was voluntary and had the freedom to withdraw from the study at any time [44].
(5) No ethical issues confronted while conducting the study.

Conceptual Framework

The conceptual framework prepared for the study is based on Health promotion model proposed by Nola J Pender (1982; Revised 1996).

A conceptual frame work or a model is made up of concepts, which are the mental images of the phenomenon. These concepts are linked together to express the relationship between them. A model is used to denote the symbolic representation of the concepts [45–47].

The health raise model (HPM) proposed by Nola J Pender (1982; revised, 1996) was intended to be a "complementary counterparty to model of health guard."

It defines health as a positive dynamic state and not merely the absence of disease. Health promotion is directed at increasing a client's level of well being [48–50].

The health development model describes the multidimensional nature of persons as they interrelate within their atmosphere to follow health.

The model focused on following three areas:

(1) Individual characteristics and experiences
(2) Behavior-specific cognitions and affect
(3) Behavioral outcome.

The health promotion model notes that each person has unique personal characteristics and experiences that affect subsequent action. The set of variables for social exact knowledge and touch have significant motivational meaning [51–53]. These variables can be modified through nursing actions. Health endorsing behavior is the wanted behavioral outcome and is the end point in the HPM. Health promoting behaviors should result in improved health, enhanced functional ability and better quality of life at all stages of development [54, 55]. The final interactive demand is also inclined by the instant opposing request and likings, which can disrupt an planned health raise action.

This model is a heuristic device that encourages scholars to look integrative at variables that have been shown to impact health behavior [56–58]. The HPM manufactures research findings from nursing, psychology and community health into an explanatory model of fitness conduct that still must experience additional testing [59–61]. Multiple variable models are needed to explain human health behavior. The various health promotion strategies and tools that Dr. Pender have established and offered in the three publications of Health Promotion in Nursing Practice as well as the under giding HPM model can be used as a foundation for structuring nursing protocols and interventions [62, 63]. Nurses in practice should focus on understanding and addressing variables

that are most predictive of given health behaviors (Figure 1).

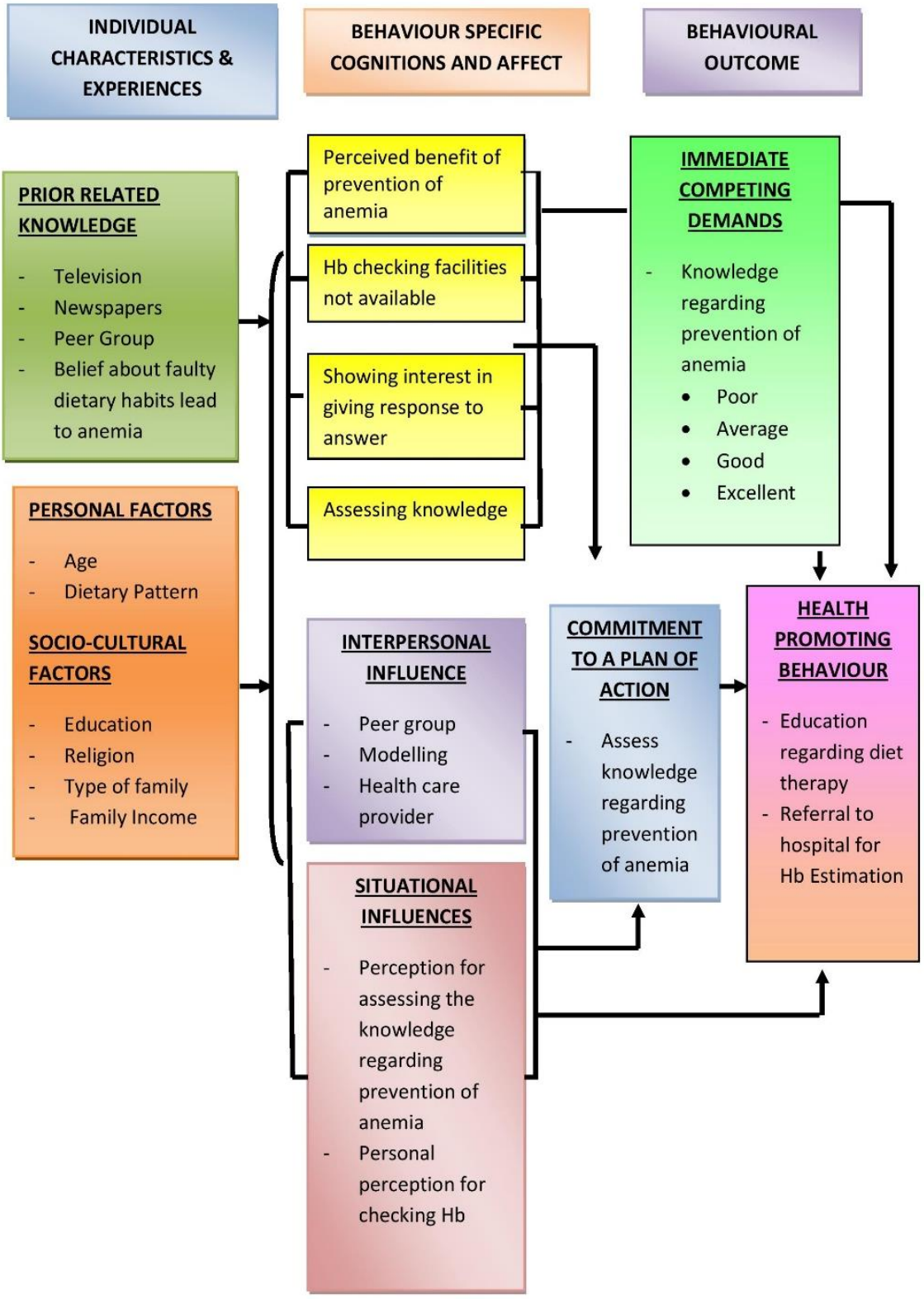

Fig. 1. *Conceptual framework on health promotion model by Pender 1982 (revised 1996).*

Summary

This article dealt with the introduction, background of the study, need for the study, problem statement, objectives, hypothesis, assumption, operational definition, scope of the study, research

question, ethical aspect and conceptual framework of the study.

REVIEW OF LITERATURE

According to Polit and Hungler (1993) A literature review is important for developing a broad conceptual context in to which the research problem fits. The review also serves the essential function of providing the individual researcher with a perspective on the problem, necessary for interpreting the result of study. The review of literature was selected from published journals, articles, textbooks and medical searches.

Review of literature is divided in to three parts

(1) Literature related to knowledge regarding anemia
(2) Literature related to prevalence of anemia
(3) Literature related to prevention of anemia

RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the problem. It contains of the numerous steps that are usually approved by a research in studying the problem sideways with the reason behind him [64, 65]. The methodology of research indicated the general pattern of organizing the procedure for gathering valid and reliable data for the purpose of the study.

This article deals with description of methodology and different steps, which are undertaken for collecting and organizing data for investigation [66–68]. It includes research approach, research design, research setting, population sample and sampling technique, development and description of the tool, ethical consent, pilot study, data collection and plan for data analysis [69, 70].

Research Approach

Research approach is the most significant part of any research. The appropriate choice of the research approach depends upon the purpose of the research study, which has under taken [71–73]. Therefore, the approach helps to decide about the presence or absence as well as the manipulation and control over variables. The approach of research study depends on several factors, but primarily on the nature of phenomenon under study.

Descriptive survey approach is used in this study. This approach was selected because the aim of this research study was to assess the knowledge regarding prevention of anemia among adolescent girls. The Descriptive survey approach would help the investigator to evaluate the knowledge regarding prevention of anemia among adolescent girls [74, 75].

Research Design

Researcher's overall plan for conducting answer to the research question or for testing the research hypothesis is referred to as the research design.

The Research Design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. A research design is the theoretical construction on the basis of which the investigation is showed. It establishes the blue print for the collection, dimension and study of data.

The research design used in this study was nonexperimental survey research design (Figure 2).

Variable

Within the context of a research investigation, concepts are generally referred to as variable. A variable as the name implies something that varies, Weight, height, body temperature. Each of these properties varies from one individual to another.

(1) Independent variable
(2) Dependent variable

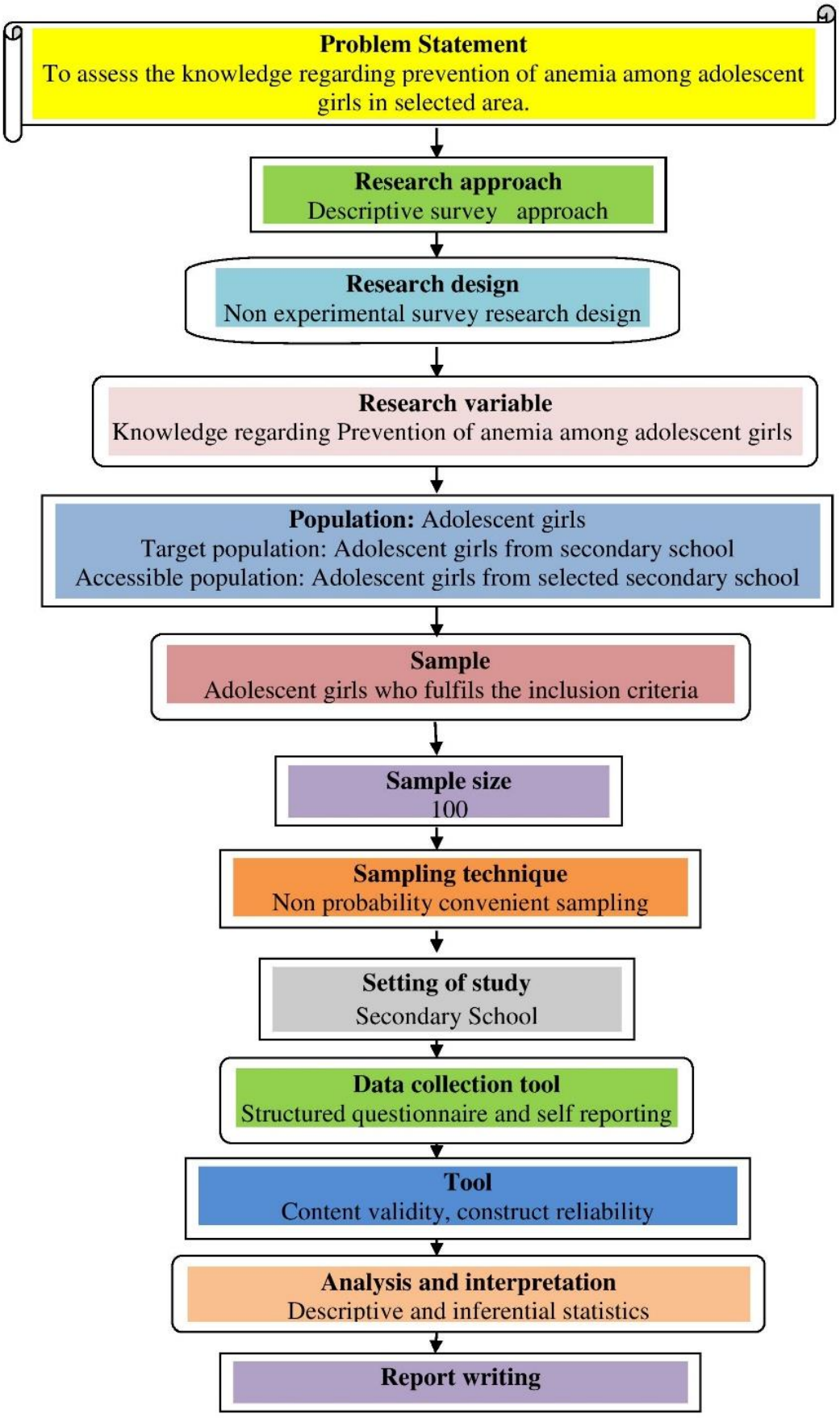

Fig. 2. *Schematic representation of research design.*

Independent Variable
An independent variable is a stimulus or activity that is manipulated by researcher to create an effect on the dependent variable. It is also called an intervention or experimental variable.

Dependent Variable
"It is response, behavior or outcome that the researcher wants to predict or explain changes in the dependent variable are presumed to be caused by the independent variable."

Research Variables
In expressive, exploratory, relative, and qualitative research studies, variables are detected or restrained in natural setting as they occur, without manipulating or impressive the result of interference or conduct. Here no independent variable is manipulated and no case effect relationship is examined; these variables are considered as research variables.

Therefore, research variables can be defined as qualities, attributes, properties, or characteristics which are observed or measured in a natural setting without manipulating and establishing cause and effect relationship. In this study research variable is knowledge regarding prevention of anemia.

Research Setting
Setting is the physical location and condition in which data collection takes place. This study was conducted in selected secondary school.

The investigator found the setting appropriate to conduct the study because adequate numbers of adolescent girls were available from school, who could be taken for the study and permission was taken from the principal to the conducted study.

Population
Population denotes the entire group of subjects under study.

In this study the population was adolescent girls.

Target Population
The entire population in which the researchers were interested and in which they would like to generalize the research findings.

In this study target population was the adolescent girl from secondary school.

Accessible Population
Accessible population refer to those cases that conform to the eligibility criteria.

In this study accessible population adolescent girls form selected secondary school.

SAMPLE AND SAMPLING TECHNIQUE
Sample
Sample is a sub set of population elements. A component is the most elementary unit, about which data is composed; in nursing research essentials are usually human.

In this study sample was adolescent girls from selected school and who fulfilled the inclusion criteria.

Sampling Technique
Sampling technique is an important step in the research process. It is the process of selecting representative units or subsets of a population of the study in a research. Nonprobability convenient sampling technique was used to select the sample. Non-probability convenient sampling entails the selection of most readily available individuals as subject in the study. It represents typical conditions and researchers knowledge about his population and its elements can be used to hand pick cases.

The investigator selected the sample that is adolescent girls from selected secondary school.

Sample Size
It is the number of sample selected in the study.

In this study sample size was 100.

Sampling Criteria
Criteria for Sample Selection
The criterion for sample selection was mainly depicted under two headings, which included the inclusion and exclusion criteria.

Inclusion Criteria
(1) Adolescent girls who can understand Marathi.
(2) Adolescent girls who are in age group of 12–17 years.
(3) Adolescent girls who are studying in secondary school.
(4) Adolescent girls who are willing to participate in the study.
(5) Adolescent girls who are available at the time of the data collection.

Exclusion Criteria
(1) Adolescent girls who were absents at the time of study.
(2) Adolescent girls who had receive health education or training program regarding prevention of anemia.
(3) Adolescent girls who had under gone treatment of anemia.

Data Collection Tool
The study was to assess the knowledge regarding prevention of anemia among adolescent in selected secondary school. Hence, a self-administered structured knowledge questionnaire was used.

Development and Description of the Tool
The investigator developed the tool after updating his theoretical knowledge regarding prevention of anemia among adolescent girls. The investigators own experience, theoretical knowledge and guidance from the experts along with the review of literature helped in developing the tool necessary for the study.

Tool used for the study were:
(1) Closed ended questionnaire.
(2) Tool prepared in English and Marathi. structured questionnaire consists of two parts:

Part A
It consists of demographic characteristics regarding adolescent girls, i.e. age, education, type of dietary pattern, religion, type of the family, family income.

Part B
It consists of multiple choice questions to assess the knowledge regarding prevention of anemia among adolescent girls.

Scoring Technique
The knowledge questionnaire consisted of 30 closed ended multiple choice questions with a single correct answer. Every correct answer was given with a score of one (1) and every incorrect/unanswered item was given with a score of zero (0). The maximum score on knowledge questionnaire was thirty (30). The obtained knowledge score was categorized under the following level. This categorization is purely for this study only.

Level of knowledge score	Percentage score
Poor	0–25%
Average	26–50%
Good	51–75%
Excellent	>76%

Validity
Validity refers to the degree to which an instrument measures what it is supposed to measure. Content validity refers to the degree to which the items in an instrument adequately represent the universe of content. To ensure content validity of the tool, structured questionnaire on assess the knowledge regarding prevention of anemia

among adolescent girls were submitted to 15 experts. Out of this, 11 validated contents of the tools were received from the experts with their valuable suggestions and comments. Their suggestions were taken into consideration and necessary modifications were incorporated in the final preparation of the self-structured knowledge questionnaire.

Reliability of the Tool

Reliability is the degree of consistency or accuracy with which an instrument measures the attribute which it designs to measure.[62] Reliability of the structured knowledge questionnaire was established by the split half method. This was done to rule out any bias or any confusion with the questions, which would be elicited after the actual administration of questionnaire. Co-efficient of correlation for the two sets of scores was done with the help of Karl Pearson's formula, where '*r*' value obtained was r= 0.81 which showed that the tool was reliable.

Feasibility of the Study

It is a small-scale test to determine the feasibility of the larger study e.g. Pilot study**.** Tool was tested on 20 samples each that were eligible for the study and the researcher found that the tool was feasible. This sample was excluded in the main study.

Pilot Study

"A pilot study is a miniature run of the main study." The pilot study was conducted from 11th Nov. to 20th Nov. 2013 as per laid down criteria. 20 subjects were selected for pilot study using nonprobability convenient sampling technique.

The findings of the pilot study were analyzed. The pilot study assisted the investigator to imagine applied problems that could be met while leading the chief study. It also gave an insight into the actual process of data collection and analysis. The subjects who were included in the pilot study were excluded in the main study.

Data Collection

Data collection is defined as gathering of information needed to address a research problem.

Method of Data Collection

Phase-I

The investigator obtained permission from the principal of school to conduct the main study. Main study was conducted from 17th Dec to 6th Jan, 2014.

Phase-II

The investigator introduced herself to the student and maintained good communication. Before collecting the data, the investigator informed about the importance of this study and ascertained the willingness of the participants. The main study was started by choosing 100 subjects by using non-probability convenient sampling technique in the selected area in Maharashtra.

Phase-III

A validated structured questionnaire was given to sample for their response.

In the main study 100 adolescent girls were selected as subjects. The total duration of the data collection was 21 days. The data was gathered by using structured questionnaire. Written informed consent was taken and assured regarding the confidentiality of the matter. The investigator collected the group of adolescent girls, made them comfortable and oriented them to the study and administered questionnaire to them, instructed them not to interact with each other and their doubts were clarified. Once the questionnaire was completed, investigator collected them back. The samples were allowed 35 minutes to complete their response. After the data gathering process the investigator thanked

all the study samples as well as the authorities for their cooperation.

Plan for the Data Analysis

The data were analyzed by using descriptive and inferential statistics on the basis of objectives of the study. To compute the data, a master data sheet was arranged by the investigator.

Descriptive statistics:

- Frequency and percentage for distribution of demographic variables.
- Frequency and percentage of assessment of existing knowledge regarding prevention of anemia among adolescent girls.
- Mean and standard deviation used for assessment of level of knowledge regarding prevention of anemia among adolescent girls and it interpreted by summarizing into four categories such as poor, average, good and excellent.

Inferential Statistics

ANOVA was used to find out association between knowledge with selected demographic data.

Summary

This article dealt with the research methodology adopted for the study. It includes research approach, research design, sample and sampling technique, research setting, the study instrument, validity, reliability, pilot study, data gathering process and plan for data analysis.

ANALYSIS AND INTERPRETATION

This article deals with analysis and interpretation of the data collected from 100 samples from adolescent girls regarding prevention of anemia in relation to prevention of anemia. The present study has been taken up to assess the existing knowledge regarding prevention of anemia among adolescent girls in selected area.

A structured questionnaire to collect knowledge was used for data collection. The analysis was done with the help of inferential and descriptive statistics.

The Objectives of the Study

(1) To assess the knowledge regarding prevention of anemia among adolescent girls.
(2) To associate the findings with selected demographic variables.

Organization of Findings

The analysis and interpretation of the observations are given in the following section:

(1) Section A: Distribution of sample in relation to demographic variables.
(2) Section B: Assessment of existing knowledge regarding prevention of anemia among adolescent girls.
(3) Section C: Assessment of level of Knowledge regarding Prevention of Anemia of adolescent girls.
(4) Section D: Association of knowledge score in relation to demographic variables.

Distribution of Adolescent Girls in Relation to Demographic Variables

This section deals with distribution of adolescent girls with regards to their demographic variables. A convenient sample of 100 subjects was drawn from the study population, who were selected from selected areas. The data obtained to describe the sample characteristics including age, education, dietary pattern, religion, type of family and monthly family income (Rs), respectively.

Table 1 shows the frequency and percentage distribution of demographic variables such as age, education, type of dietary pattern, religion, type of family and monthly family income.

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Table 1. *Distribution of adolescent girls in relation to demographic variables. (n=100).*

Demographic variables Age (years)	Frequency	Percentage (%)
12 years	7	7.0
13 years	32	32.0
14 years	20	20.0
15 years	19	19.0
16 years	18	18.0
17 years	4	4.0
Education		
Secondary	100	100.0
Higher secondary	0	0.00
Type of dietary pattern		
Vegetarian	86	86.0
Nonvegetarian	14	14.0
Religion		
Hindu	58	58.0
Muslim	1	1.0
Christian	0	0.00
Other	41	41.0
Type of family		
Nuclear	42	42.0
Joint	34	34.0
Single parent	9	9.0
Other	15	15.0
Monthly family income (Rs)		
Rs 3000–5000	47	47.0
Rs 5001–10000	25	25.0
Rs 10001–20000	17	17.0
Rs 20001 and Above	11	11.0

Table 1 shows that (32%) of the sample were from age group 13 year, whereas 20% belong to age group 14 years, (19%) belong to age group 15years, (18%) belong to age group 16 years, (7%) belong to age group 12 years, (4%) belong to age group 17 years.

It was observed that 100% sample were from secondary school.

Out of total sample (86%) follow vegetarian pattern and (14%) sample were following nonvegetarian pattern.

(58%) of the sample were belonging to Hindu religion, 41 (41%) sample were belonging to other religion. whereas (1%) were belonging to Muslim religion.

(42%) Samples were belonging to nuclear family, (34%) sample were belonging to joint family, (15%) sample were belonging to other and (9%) sample were belonging to single parent.

A total of (47%) sample was having family income Rs. 3000–5000 per month, (25%) sample was having family income Rs. 5000–10000, (17%) samples was having family income Rs.10001–20000, (11%) samples was having family income above 20001 (Figures 3–8).

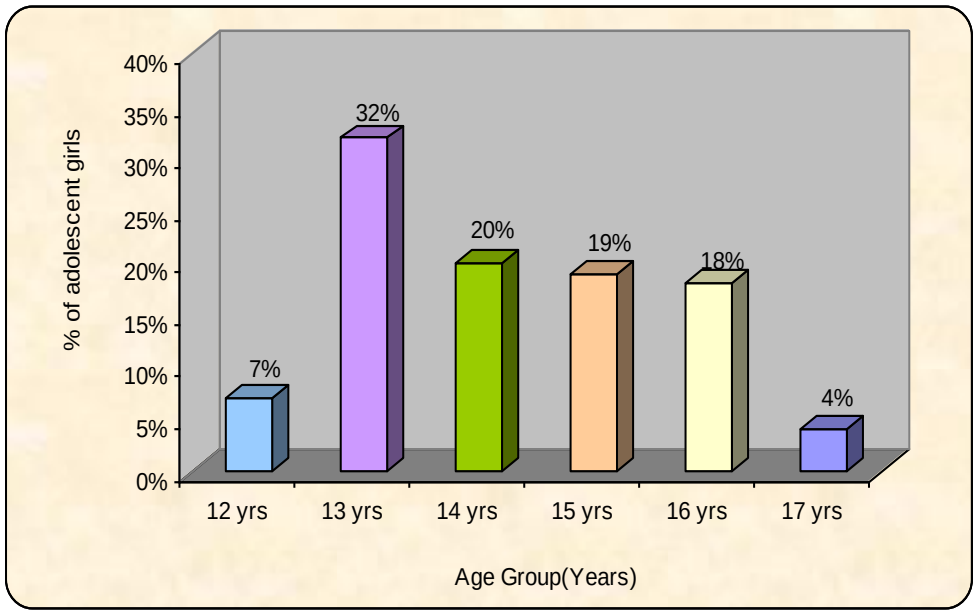

Fig. 3. *Distribution of sample in relation to their age (years).*

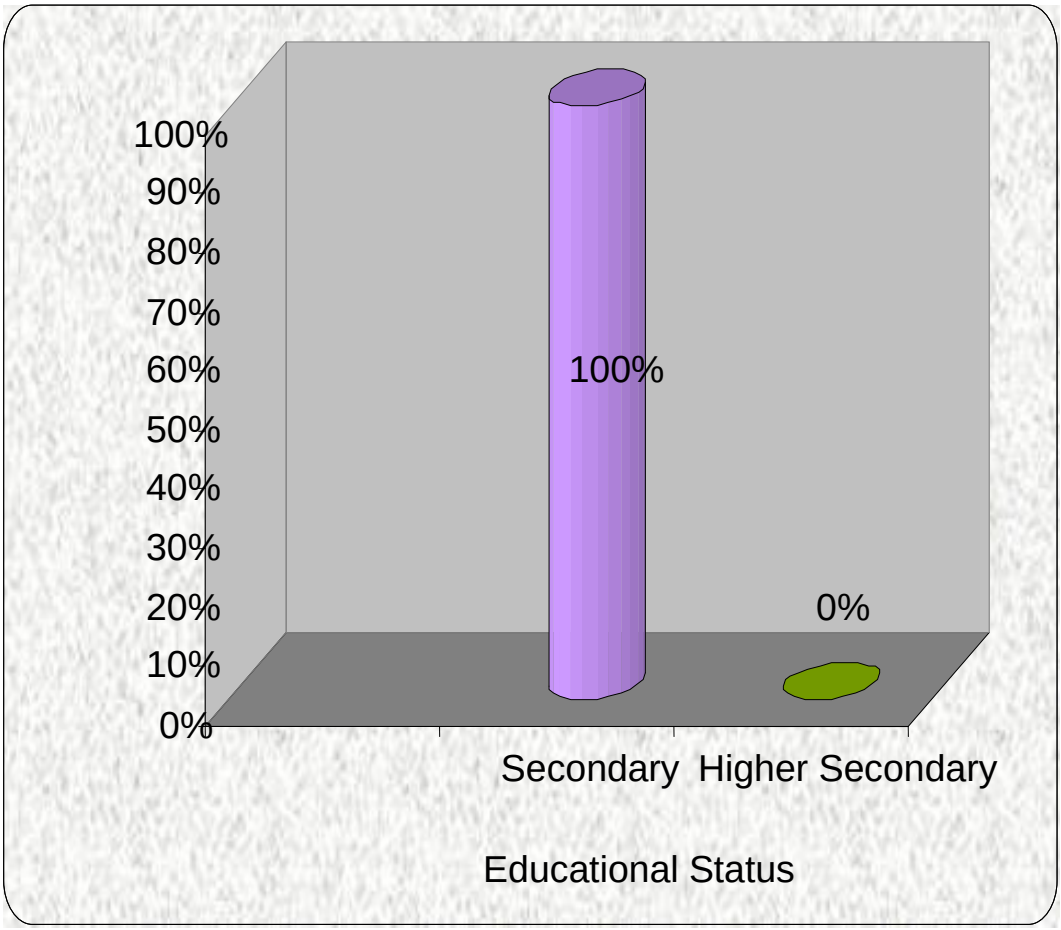

Fig. 4. *Distribution of sample in relation to their educational status.*

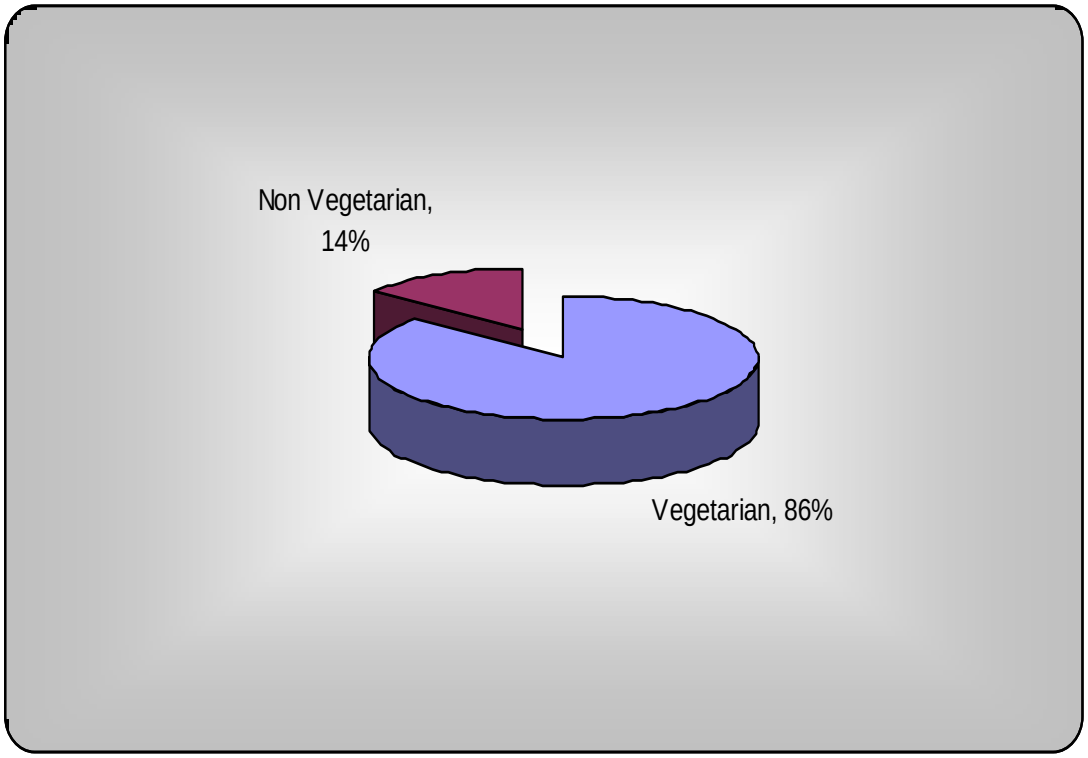

Fig. 5. *Distribution of sample in relation to their type of dietary pattern.*

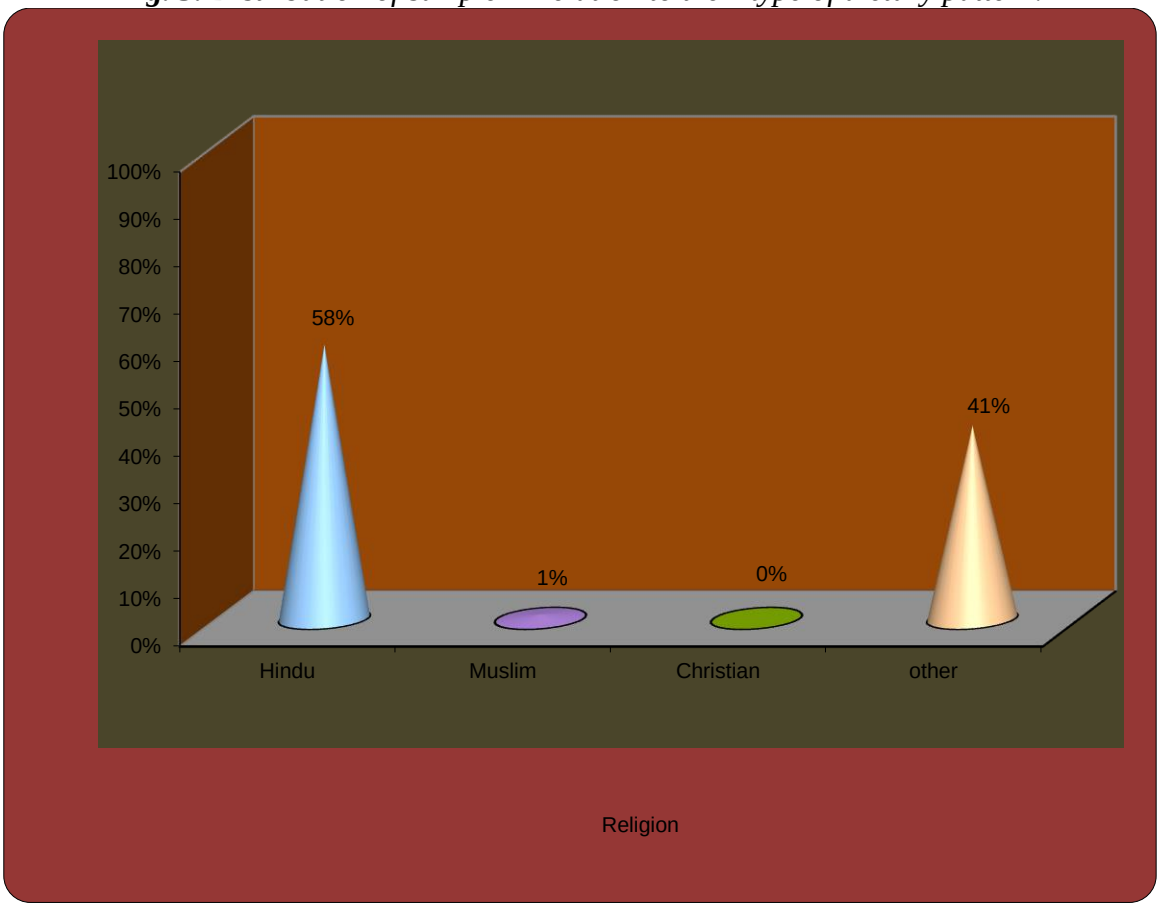

Fig. 6. *Distribution of sample in relation to their religion.*

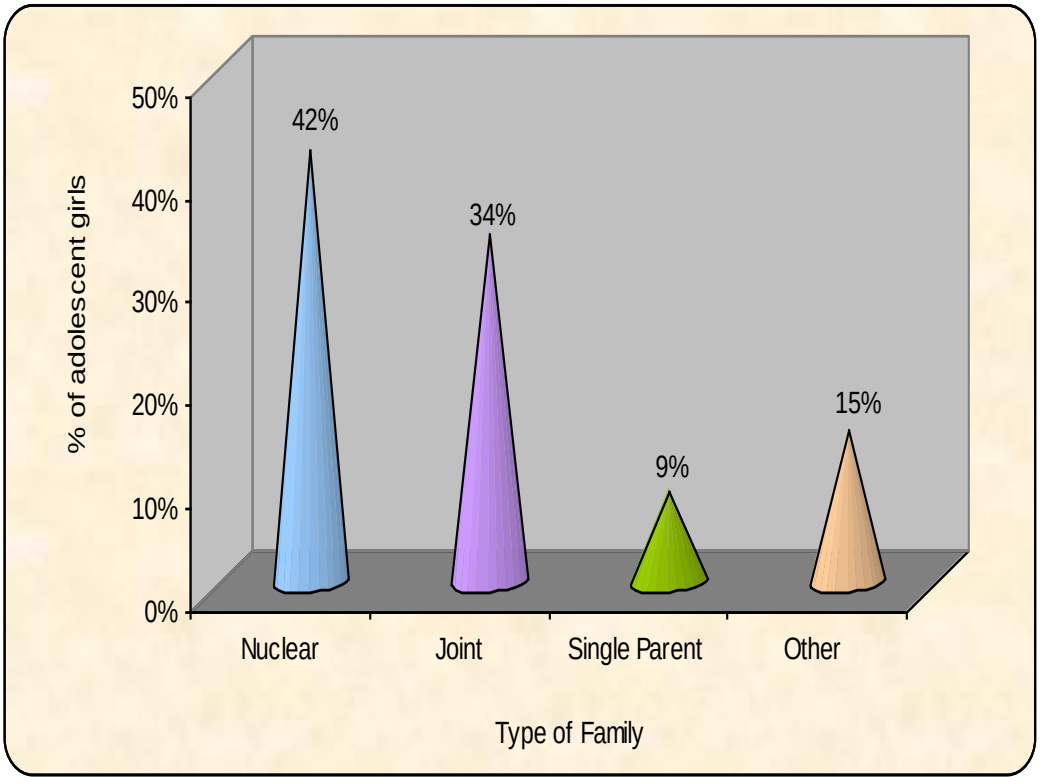

Fig. 7. *Distribution of sample in relation to their type of family.*

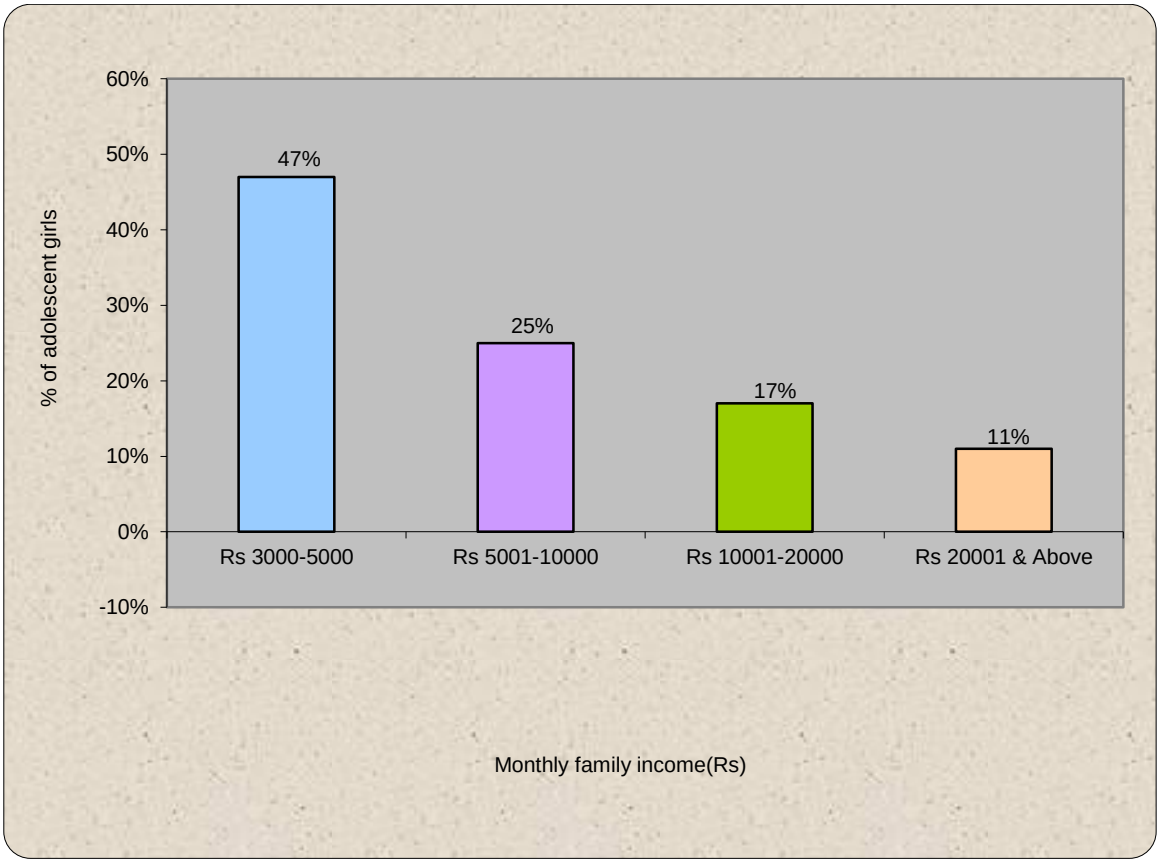

Fig. 8: *Distribution of sample in relation to their monthly family income (Rs).*

Assessment of Existing Knowledge Regarding Prevention of Anemia Among Adolescent Girls

This section deals with the assessment of existing knowledge regarding prevention of anemia among adolescent girls. It includes item in three type general information, causes of anemia and prevention of anemia. The analysis of this item was done in frequency and percentage. Table 2 shows the assessment of existing knowledge regarding prevention of anemia among adolescent girls it includes item in three type general information, causes of anemia and prevention of anemia. The analysis of this item was done in frequency and percentage.

Table 2. *Assessment of existing knowledge regarding prevention of anemia among adolescent girls. (n=100).*

Q. no.	Particular	Frequency	Percentage (%)
	General Information		
1	What is anemia?	71	71
2	Which is the most common type of anemia?	45	45
3	How dose Anemia affect the body?	37	37
4	Iron is a.	45	45
5	Iron deficiency lead to	56	56
6	How does iron-deficiency anemia affect adolescent?	45	45
7	What are the constituent of blood?	36	36
8	Content of hemoglobin are.	43	43
9	Normal hemoglobin level in among adolescent is	37	37
10	Which Factor responsible for color of the blood?	46	46
	Causes of anemia		

11	Which are the causes of anemia?	43	43
12	Why nutritional anemia is more common in adolescence?	46	46
13	Which of these are signs of anemia?	44	44
14	Which of the following sign are commonly funds in anemic adolescent?	42	42
15	A spoon shaped nails are seen in..	45	45
16	Which of the following diseases is caused by an abnormal hemoglobin s?	43	43
17	Which type of condition is directly related to bone marrow suppression?	37	37
18	RBC survive for a period of prevention of anemia	48	48
19	How can we diagnose anemia?	46	46
20	Which Vit. Is essential for absorption of iron?	42	42
21	Which are the richest sources of iron?	38	38
22	What is the daily requirement of iron in adolescent?	39	39
23	Iron therapy cannot be given by	46	46
24	Which of the following group is more prone to get anemia?	50	50
25	How nutritional anemia can be prevented?	45	45
26	Which routine practices should be followed to prevent nutritional anemia?	41	41
27	Anemia due to the deficiency of Vit. B12 folic acid to	49	49
28	Anemia due to increased erythrocytes loss is	45	45
29	How much Wk. supplementation of iron and folic acid given to adolescent girls?	45	45
30	Which of the following complication occur due to anemia?	48	48

General Information About Anemia

Majority 71% of the adolescent girls replied correctly for "What is anemia", 36% of the adolescent girls replied correctly for "What are the constituent of blood".

Causes of Anemia

Majority 48% of the adolescent girls replied correctly for "Red blood cells survive for a period of", 37% of the adolescent girls replied correctly for "Which type of condition is directly related to bone marrow suppression".

Prevention of Anemia

Majority 50% of the adolescent girls replied correctly for "Which of the following group is more prone to get anemia", 38% of the adolescent girls replied correctly for "Which the richest source of iron" (Figure 9).

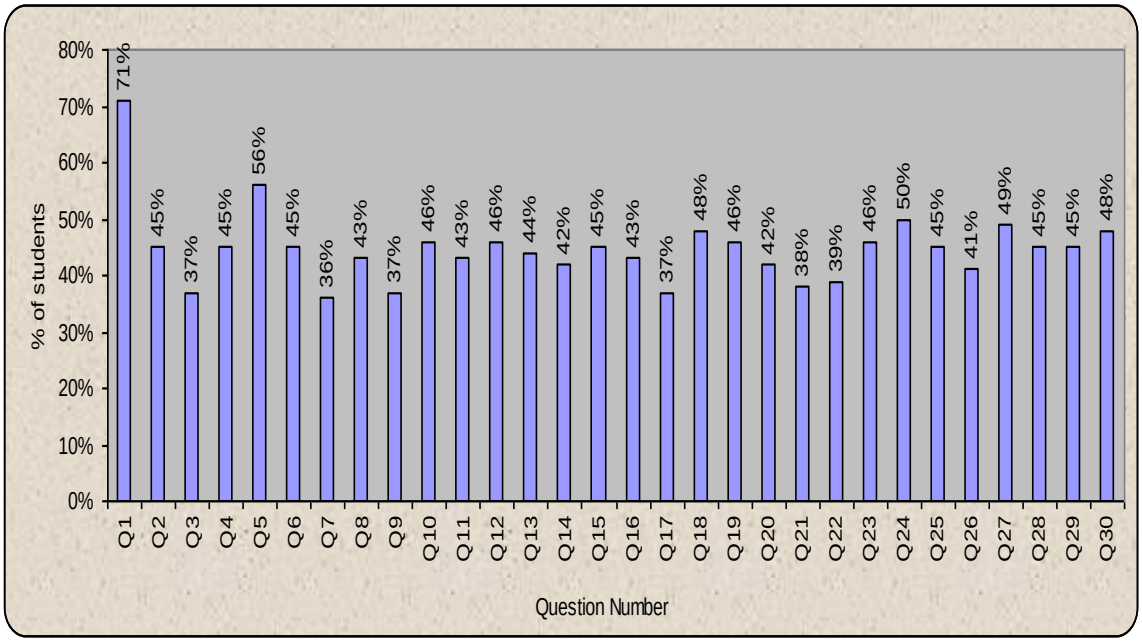

Fig. 9. *Assessment of existing knowledge of adolescent girls regarding prevention of anemia.*

Assessment of Level of Knowledge Regarding Prevention of Anemia Among Adolescent Girls

This section deals with the assessment of level of knowledge regarding prevention of anemia among adolescent girls in selected area. The level of knowledge is divided under following heading poor, average, good, and excellent.

Table 3 shows that 76% of the adolescent girls had average level of knowledge score, 17% had good, 5% had excellent and only 2% of the adolescent girls had poor level of knowledge score. The minimum score was 7 and the maximum score was 26, the mean knowledge score was 13.43 ± 3.92 (Figure 10).

Table 3. *Assessment of level of knowledge score of adolescent girls in relation to prevention of anemia. (n=100).*

Level of knowledge score	Percentage score	Knowledge score	
		Frequency	Percentage
Poor	0–25%	2	2
Average	26–50%	76	76
Good	51–75%	17	17
Excellent	≥ 76%	5	5
Minimum score	7		
Maximum score	26		
Mean score	13.43 ± 3.92		
Mean %	44.76 ± 13.08		

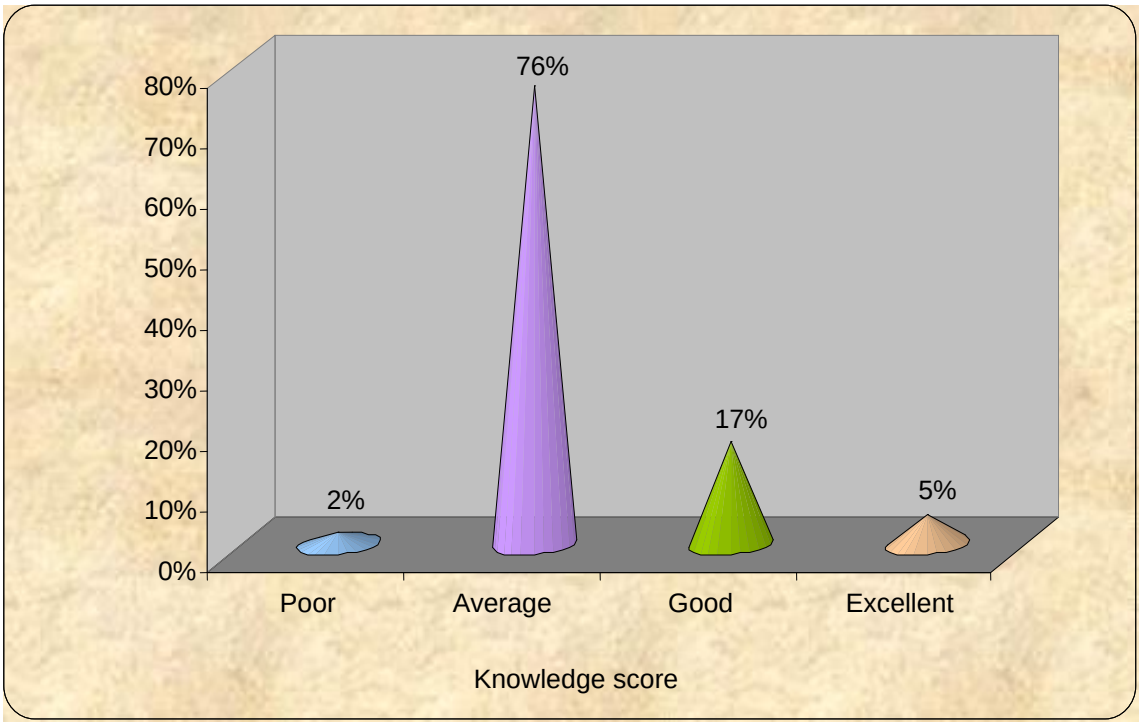

Fig. 10. *Assessment of level of knowledge score of adolescent girls in relation to prevention of anemia.*

Association of Knowledge Score in Relation to Demographic Variables

This section deals with the association of knowledge score of adolescence girls regarding prevention of anemia with their demographic variable in selected school. The hypothesis is tested statistically with distribution of mean, standard deviation and mean difference in knowledge score.

Table 4 shows the association of knowledge score of adolescent girls

regarding prevention of anemia in relation to anemia. The tabulated 'F' values was 2.29(df=5,99) which is less than the calculated 'F' i.e. 46.60 at 5% level of significance. Also the calculated 'p'=0.000 which was much less than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that the age of the adolescent girls is statistically associated with their knowledge scores.

Table 4. *Association of level knowledge score of adolescent girls regarding prevention of anemia in relation to age. (n=100).*

Age (years)	Frequency	Mean knowledge score	F-value	p-value
12 years	7	9.71±1.70	46.60	0.000
13 years	32	10.59±1.91		S, p<0.05
14 years	20	12.50±1.70		
15 years	19	13.89±1.37		
16 years	18	16.27±1.40		
17 years	4	20.75±3.40		

Table 5 shows the association of knowledge scores of adolescent girls regarding prevention of anemia in relation to dietary pattern. The tabulated 'F' values was 1.98(df=98) which is less than the calculated 'F' i.e. 2.07 at 5% level of significance. Also the calculated 'p'=0.040 which was much less than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that type of dietary pattern of adolescent girls is statistically associated with their knowledge scores.

Table 5. *Association of knowledge score of adolescent girls regarding prevention of anemia in relation to dietary pattern. (n=100).*

Type of dietary pattern	Frequency	Mean knowledge score	F-value	p-value
Vegetarian	86	13.23±3.24	2.07	0.040
Nonvegetarian	14	11.35±2.23		S,p <0.05

Table 6 shows the association of knowledge scores of adolescent girls regarding prevention of anemia in relation to religion. The tabulated 'F' values were 3.07(df=2,99) which is higher than the calculated 'F' i.e. 0.98 at 5% level of significance. Also the calculated 'p'=0.37 which was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that religion of adolescent girls is not associated with their knowledge scores.

Table 6. *Association of knowledge score of adolescent girls regarding prevention of anemia in relation to religion. (n=100).*

Religion	Frequency	Mean knowledge score	F-value	p-value
Hindu	58	13.32±3.39	0.98	0.37
Muslim	1	11±0		NS, p > 0.05
Christian	0	0.00±0.00		
Other	41	12.51±2.84		

Table 7 shows the association of knowledge scores of adolescent girls regarding prevention of anemia in relation to family. The tabulated 'F' values was 2.68(df=3,99) which is higher than the calculated 'F' i.e. 1.13 at 5% level of significance. Also the calculated 'p'=0.33 which was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that type of family of adolescent girls is not associated with their knowledge scores.

Table 7. *Association of knowledge score of adolescent girls regarding prevention of anemia in relation to family. (n=100).*

Type of family	Frequency	Mean knowledge score	F-value	p-value
Nuclear	42	12.90±2.77	1.13	0.33
Joint	34	12.50±3.07		NS,p > 0.05
Single parent	9	14.66±5.38		
Other	15	13.20±2.78		

Table 8 shows the association of knowledge scores of adolescent girls regarding prevention of anemia in relation to monthly family income. The tabulated 'F' values was 2.68 (df=3,99) which is higher than the calculated 'F' i.e. 0.87 at 5% level of significance. Also the calculated 'p'=0.45 which was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that monthly family income (Rs) is not associated with their knowledge scores.

Table 8. *Association of knowledge score of adolescent girls regarding prevention of anemia in relation to monthly family income. (n=100).*

Monthly family income (Rs)	Frequency	Mean knowledge score	F-value	p-value
Rs 3000–5000	47	12.53±3.09	0.87	0.45
Rs 5001–10000	25	13.20±3.18		NS,p>0.05
Rs 10001–20000	17	13.05±2.68		
Rs 20000 and above	11	14.18±4.19		

Summary

This article deals with the data analysis and interpretation in terms of frequency, percentage and various other inferential and descriptive statistics. Thus, it makes significant association between the knowledge of the adolescent girls regarding prevention of anemia with demographic variable.

SUMMARY, MAJOR FINDINGS, DISCUSSION, CONCLUSION, NURSINGIMPLICATION AND RECOMMENDATION

Conducting the research study in itself is not important until its findings are made known to all concerned and the implication of its finding have been discussed. The present article deals with summary, conclusion, implication and recommendation as per the finding of present study.

Summary

This article presents brief summary of the study and its significant findings. It also includes the implications for nursing and health services followed by delimitations. This article also deals with the recommendations for future research in this field.

This article attempts to discuss the finding of the study as per the objectives.

To assess the knowledge regarding prevention of anemia among adolescent girls in selected area.

Discussion

The finding of the study was discussed with reference to the objectives stated in article I and with the findings of the other studies in this section. The present study was commenced as "To assess the knowledge regarding prevention of anemia among adolescent girls in selected area."

According to first objectives of this study result shows that to assess the knowledge regarding prevention of anemia among adolescent girls.

This section deals with the assessment of level of knowledge regarding prevention of anemia among adolescent girls in selected area. The level of knowledge is divided under following heading poor, average, good, and excellent.

It shows that 76% of the adolescent girls had average level of knowledge score, 17% had good, 5% had excellent and only 2% of the adolescent girls had poor level of knowledge score. The minimum score was 7 and the maximum score was 26, the mean knowledge score was 13.43 ± 3.92.

According to second objectives of this study result shows that to associate the findings with selected demographic variables.

It shows the association of knowledge scores with the age of sample. The tabulated 'F' values was 2.29 (df=5,99) which is less than the calculated 'F' i.e. 46.60 at 5% level of significance. Also the calculated 'p'=0.000 which was much less than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that the age of the sample is statistically associated with their knowledge scores.

It the association of knowledge scores with the type of dietary pattern of sample. The tabulated 'F' values was 1.98 (df=98) which is less than the calculated 'F' i.e. 2.07 at 5% level of significance. Also the calculated 'p'=0.040 which was much less than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that type of dietary pattern of sample is statistically associated with their knowledge scores.

A similar study was conducted in Bangladesh, Indian Journal of Community Medicine. Regarding knowledge of anemia among 68,813 adolescent girls with various demographic variables. The findings revealed 60.8% of adolescent girls were having no knowledge of anemia and its signs and symptoms.

CONCLUSION

After the complete analysis, this study leads to the subsequent conclusion.

Overall study shows that 76% of the adolescent girls had average level of knowledge score, 17% had good, 5% had excellent and only 2% of the adolescent girls had poor level of knowledge score. Adolescent girls had average knowledge regarding prevention of anemia. Hence, it is essential to improve their knowledge on prevention of anemia to prevent themselves from complications.

The findings on the present study will help the nursing professionals working in hospitals and community to teach the adolescent girls on identification of anemia and health problems in early stage and its prevention for further complication. Further the significant relationship between education and knowledge score encourage the community health nurse to conduct health education programme regarding prevention of anemia.

Nursing Implications

The findings of this study have consequences for nursing practice, nursing education, nursing administration and nursing research.

Nursing Services

The most important role of the nurse is to provide individual, family and community oriented service with adequate attention to vulnerable group of the community. The nursing services should be based on felt needs of the people. The nurse should be responsible for comprehensive care i. e. preventive, promotive, curative and rehabilitative aspects. The most important is the preventive aspect of the care which is best achieved through the health education. The present study will help the nurses for coordinating health care services to health care professionals. It will also help the nurses to identify where the adolescent girls lack knowledge and keep update knowledge regarding prevention of anemia.

Nursing Practice

When professional liability is recognized, it defines the parameters of the profession and the standards of professional conduct. Nurses should therefore enhance their professional knowledge. The role of nurse has prolonged quickly within past ten ages to comprise knowledge knowledge, autonomy and responsibility.

The community health nurse should consider that every girl is the consumer of nursing and health care. The nurse can provide knowledge about prevention of anemia to the adolescent girls and can utilize to create awareness among the adolescent girls regarding prevention of anemia. Community health nurse can practice the teaching to improve the knowledge and prevent the anemia.

Nursing Education

The present study emphasizes an enhancement of knowledge to develop a favorable attitude towards the adolescent girls regarding prevention of anemia. In order to achieve this, nurse as an educator should focus on the utilization of knowledge regarding prevention of anemia among adolescent girls. Such periodical health education programmes should be conducted by student nurses in hospitals, schools and communities as part of the curriculum and should motivate the adolescent and their family to participate actively. Nurse needs to take role as a motivator, facilitator, educator, counselor and researcher.

Nursing Administration

Findings of the study can be used by the Nursing Administrator in creating policies and plans for providing education to the staff nurses and nursing students. This shall ensure better professional standard of nursing. Moreover, nurse who is knowledgeable about anemia can act as nurse manager, nurse observer, nurse supervisor. Findings of the study can be used by the nursing administrator in creating policies and plans for providing education to the nurses. It will help the nursing administrator to planned and organized and in giving continuing education to nurse for prevention of anemia and complications.

Nurse administrators can arrange in service education, workshop regarding anemia. Health education (teaching) health camps can be arranged for adolescent girls in the community and school, college. Various policies and protocols can be formulated regarding anemia for vulnerable group of the community. Findings of the study can be used by the nurse administrators to improve nursing care.

Nursing Research

Nursing research is an essential aspect of nursing as it uplifts the profession, develop new nursing norms and enhance the body of nursing knowledge. Nursing research improves the image and perception of nursing in society which is urgently required for the future nursing. It also motivates for evidence-based practice.

There is a need for extended and intensive nursing research in the areas of anemia among the adolescent girls. Especially in India adolescent girls are not aware of prevention of anemia; they neglect the scientific and systematic techniques of proper care of anemia. They are neglecting because of family responsibility, work load, lack of health facility accessibility, illiteracy and poverty. Extensive research is needed to see the effect of different methods of teaching in reducing the prevalence of anemia in adolescent girls.

The findings of the study have added to the knowledge in the nursing profession. Other researchers may use the submissions and recommendations for conducting further study. The tool and technique used has added to the body of knowledge and can be used for further references.

Personal Experience

The complete study gave an elevating experience to the investigator. It helped to develop skill in critical thinking and analysis and realize the importance of effective communication with respondent.

The entire study was varied and rich learning experience, which enabled the investigator to develop skill in dealing with different personalities. The concept clarity about research as a whole was increased. At every stage the investigator received guidance and support from guide, this boosted confidence to go ahead and carry out the planned activities. The co-operation from study samples and principals from respective schools was remarkable. The research was a great learning prospect for the investigator.

Recommendations

Keeping in view the findings of the study, the following recommendations are made:

(1) Comparative studies can be done to assess the various practices in various regions of the country.
(2) Studies can be conducted to assess the prevalence of anemia in adolescent girls.
(3) Experimental study can be conducted on similar topic.

Summary

To improve the knowledge regarding prevention of anemia is possible only through intervention of active participation of medical health personnel in education people regarding these aspects of prevention of anemia. For this purpose ARSH clinic, school and college health programme in regard to creating awareness would be helpful. This is particularly important because everybody would like be healthy and be aware regarding these factors.

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