

Assessing the Effectiveness of Structured Teaching Module on Knowledge Regarding Lifestyle and Body Mass Index among School Children (06 to 12 Years) at Selected Schools, Rourkela, Odisha

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Abstract: ***Aims and Objective:** 1) To assess the knowledge of student regarding life style and body mass index by conducting pre - test. 2) To evaluate the effectiveness of structured teaching module on knowledge regarding lifestyle and body mass index among school children 3) To associate posttest level of knowledge score among school children on lifestyle practices and body mass index with selected demographic variables. **Hypotheses:** H0: There will not be significant effect between the pre test and post test knowledge scores regarding lifestyle and its impact on body mass index among school children (06 to 12 years). H1: There will be a significant effect between the pre test and post test knowledge scores regarding lifestyle and its impact on body mass index among school children (06 to 12 years). **Methods:** Evaluatory approach was used in this study. it aimed to evaluate the effectiveness of structured teaching module on knowledge regarding impact on lifestyle practices and its impact on body mass index. The research design is the plan, structure and strategy of investigation of answering the research questions, is the overall plan or blue print the researcher selects to carry out the study. The research design selected for this study was pre experimental one group pre and post test design. The pilot study was conducted in Krishna's Vikash Ind. Global School, Rourkela for the period of one week 10 school children (6 to 12 years) in order to test the feasibility, relevance and practicability of the tool. A result show that the pre - test score is significantly lesser than the post test score and the study is feasible and practicable to carry out the main study. **Result:** In this study, the pre test and the post test level of knowledge. In the pretest majority (96%) of the school children had inadequate knowledge level and 4% had moderate level of knowledge. Nobody scored adequate in pre test. But in the post test, majority of the school children (57%) had moderate knowledge level and 43% of them scored adequate knowledge level. The above findings summarizes that, the structured teaching module has significant beneficial effect in the level of knowledge among school children. The comparison of mean pre test and post test knowledge level on lifestyle practices and its impact on body mass index among school children. The post test mean score 63.7 was high when compared to the pre test mean score of knowledge. which shows that there is significant difference between the pre test and post test level of knowledge regarding life style practices and its impact on body mass index among school children. Hence, the formulated research Hypothesis H1 was accepted. There is no significant association exist between the demographic variables of lifestyle practices and its impacts on body mass index among school children. **Interpretation and Conclusion:** The study to evaluate the effectiveness of structured teaching module on knowledge regarding life style practices body mass index among school children at selected schools Rourkela. The study involved pre and post - test to measure the impact of module. Results show a significant improvement in knowledge post intervention, indicating the modules effectiveness. The findings highlight the need for educational programs to address lifestyle related health issues among children.*

Keywords: childhood obesity, body mass index, structured teaching module, lifestyle practices, school children

1. Introduction

“Healthy Habits Today and Happy Tomorrow!”

School children are often in a stage of seeking independence. and children are greatly influenced in eating habits by peers, mass media, social and cultural norms and lack of nutrition knowledge. during school age the influence of the family tends to decline and children begin to eat more meals outside the home and family setting.

Childhood obesity is one of the major health issues of modern society. It has been observed that the health problems of adult obesity can be prevented if obesity is controlled in childhood itself. Childhood is a critical period for the onset of the obesity and associated morbidity. research over the past four decades suggest that the childhood is a period when dietary and life style patterns are initiated, that has implication for coronary heart disease and other morbidity risk in later adult life.

The body mass index (BMI) is the metric currently in use for defining anthropometric height/weight characteristics in adults/children and for classifying (categorizing) them into groups. The common interpretation is that it represents an index of an individual's fatness. It also is widely used as a risk factor for the development of or the prevalence of several health issues. In addition, it is widely used in determining public health policies.

The BMI has been useful in population - based studies by virtue of its wide acceptance in defining specific categories of body mass as a health issue. However, it is increasingly clear that BMI is a rather poor indicator of percent of body fat. Importantly, the BMI also does not capture information on the mass of fat in different body sites. The latter is related not only to untoward health issues but to social issues as well. Lastly, current evidence indicates there is a wide range of BMIs over which mortality risk is modest, and this is age related.

Childhood lifestyles plays significant impact on both physical and psychological health. The mechanism of obesity development is not fully understood and it is believed to be a disorder with multiple causes. environmental factors like lifestyle preferences, and cultural environment play important roles in the rising prevalence of obesity worldwide.

In general, BMI changes and obesity are assumed to be the results of an increase in caloric and fat intake. on the other hand, there are supporting evidence that excessive sugar intake by soft drink, and steady decline in physical activity have been playing major roles in the rising rates of obesity all around the world. Consequently both over - consumption of calories and reduced physical activity are involved in childhood obesity.

By 2025, India will have over 17 million obese children and stand second among 184 countries where the number of obese children are concerned, according to a study. As body mass index (BMI) increases so does the risk for chronic disease. Cardiovascular disease, along with diabetes, some type of cancer and musculoskeletal diseases are bound to increase as BMI increase.

The prevalence of diabetes mellitus (DM) and cardiovascular disease (CVD) is increasing in urban India. Overweight in school age children is a marker of overweight in adult age, and it shows an association with various health problem like nervousness, irritability, sleeplessness and headache. Food prevalence of obese children was 17.8% for boys and 15.8% for girls, among Indian urban children.

Childhood obesity is three times more in children when either parent is overweight. The increasing incidence of obesity in children has shown poor weight reduction in later life and it emphasize the importance of focusing on prevention of these major health problem.

1.1. Need of the Study

Globally overweight and obesity are risk factors for cardiovascular disease, certain type of cancers related to gastro intestinal system, type II diabetes, hyper tension, osteo arthritis, gall stones and Musculo - skeletal problems.

School age children is a fascination period of life that makes the transition from being a dependent child to becoming a independently functioning adolescence. In the present environment lot of our school age children lead an unhealthy life. Diet, eating pattern, physical activity, sedentary lifestyles, environmental factors and psychological factors contribute to obesity. It was said that obesity is related to increased mortality and morbidity rate with excess body fat being significant risk factor for a number of chronic disorders. There is an association between excess weight and obesity in children with inactivity. The time spent on sleeping was a positive factor for maintaining a balance between weight and height.

The World Health Organization (WHO) describes overweight and obesity as one of today's most important public health problems. Obesity has become a major

epidemic increasing the burden of public health problems and contributes to 2.6 million deaths worldwide every year. As the standards of living continue to rise due to rapid industrialization and urbanization, weight gain and obesity are now beginning to pose a growing threat to the health of the citizens thus it needs to be intervened at the right time in the right way. At present, the emerging issue is the increase in number of childhood obesity in developing nations like India, and the socioeconomic and public health burden that will be faced by these nations in the near future.

A recent World Health Organization (WHO) report has highlighted that cardiovascular disease are even now more numerous in India. The incidence of diabetes is also on the increase and is expected to rise by 20% world wide in the next two decades. The global increase in diabetes will partly be due to increasing trends towards obesity, unhealthy diets and sedentary life styles, India & Chinas incidence is projected to rise by 50% by 2025.

Recommended Physical activity for children stated that children should participate in 60 minutes or more of daily physical activity, most of which should be moderate to vigorous in intensity. Physical activity may promote weight loss, reduction of visceral fat, lower blood pressure and even prevent of the onset of type 2 diabetes. Engaging in regular physical activity during childhood is hypothesize to reduce the health risks associated with inactivity and benefit health both during childhood and adulthood. Regular physical activity can strengthen muscles and bones, help young people to maintain a healthy body weight and reduce the likelihood of high blood pressure, cholesterol or type 2 diabetes.

Dietetics professional, physicians, nurses and other health care professionals can assist child's in their efforts to prevent overweight by providing information and supporting these key behaviors, while working to create environment that support healthful lifestyle changes. Hence the study is aimed at determine the lifestyle and its impact on body mass index among school children.

1.2 Problem Statement

Assess the effectiveness of structured teaching module regarding lifestyle and body mass index among school children (06 to 12 years) at selected schools.

1.3 Objectives

- To assess the knowledge of student regarding life style and its impact on body mass index by conducting pre - test.
- To evaluate the effectiveness of structured teaching module on knowledge regarding lifestyle and its impact on body mass index among school children
- To associate posttest level of knowledge score among school children on lifestyle practices and its impact on body mass index with selected demographic variables.

1.4 Operational Definitions

Assess: Refers to ascertaining the effectiveness of structured teaching Program regarding lifestyle and body mass index among school children (06 to 12 years)

Effectiveness: Refers to the impact of structured teaching Program regarding lifestyle and body mass index among school children (06 to 12 years) as revealed by pre - test and post - test knowledge scores.

Structured teaching program: Refers to planned learning material prepared by the investigator regarding physical activity, eating pattern, sleeping pattern, and its effect on BMI for a duration of 60 minutes using appropriate audio visual aids.

Life Style: In the study, it refers to an integrated way of life style of school children (06 to 12 years) with practices, physical activities, eating habits, sleeping patterns.

Knowledge: In the study, it refers to the awareness of school children (06 to 12 years) regarding lifestyle and its impact on body mass index.

School Children: In the study, it refers to the school students those who are aged between 06 to 12 years, studying in the selected schools at Rourkela.

Body mass index: It is the measure of body fat that is the ratio of the weight of the body in kilograms to the square of its height in meters.

1.5 Hypothesis

H0: There will not be significant effect between the pre test and post test knowledge scores regarding lifestyle and its impact on body mass index among school children (06 to 12 years)

H1: There will be a significant effect between the pre test and post test knowledge scores regarding lifestyle and its impact on body mass index among school children (06 to 12 years)

1.6 Assumptions

- The school children may have inadequate knowledge regarding lifestyle and its impact on body mass index.
- The school children may have interest to know more about lifestyle and its impact on body mass index.
- Structured teaching program will enhance the knowledge of school children regarding lifestyle and its impact on body mass index.

1.7 Limitation

The limitations of the study were: -

- The study focused only on school children age group of 6 to 12 years.
- The study is limited to sample size 100.
- The study is limited to the selected schools in Rourkela.

Delimitation

The delimitation of the study were:

- The study focused only on school children age group of 6 to 12 years at the time of data collection.
- The study is delimited to the school children who are not willing to participate in the study.

1.8 Conceptual Frame Work

Conceptual frame work means interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme.

A conceptual frame work is a group of concepts and set of proportions that spell out the relationship between them. Conceptual framework plays several interrelated roles in the progress of science. The overall purpose is to make scientific findings meaningful and generalizable.

The present study aims at evaluating the effectiveness of structured teaching module for assessing the knowledge of school students aged (6 to 12 years) regarding lifestyle practices and its impact on body mass index in selected school at Rourkela. The conceptual framework for this study is based on general system theory, introduced by Ludwig Von Bertalanffy (1968) and explained by Putt (1978).

According to this theory “A system is a set of objects or elements in interaction to achieve a common goal. The function of any system is to convert or process energy, information or materials into a product or outcome for use within the system, or outside of the system (the environment) or both. In all systems activity can be resolved into an aggregation of feedback circuits such as input, throughput and output.

Input consists of the energy and raw material transformed by the system, for example information, money, energy, time, individual effort and raw material of some kind. In this study input refers to the school students who have different background factors and previous knowledge related to the topic.

Throughput is the process used by the system to convert raw materials or energy from the environment into products that are usable by either the system or the environment, for example, thinking, planning, constructing and sharing information. In this study it refers to the administration of structured teaching module for school students on knowledge regarding lifestyle practices and its impact on body mass index, and the following process was adopted.

- Preparation of the blueprint of the tool.
- Pre testing the knowledge using knowledge questionnaire.
- Preparation and validation of structured teaching module on life style practices and its impact on body mass index.
- Administration of structured teaching module.
- Post test of the knowledge using the same tool.

Output is the product or service which results from the systems throughput or processing of human technical, social or financial input, for example documents and decisions. In

this study it refers to the gain in knowledge scores. It is evaluated through a comparison between pre and post knowledge score of the subjects.

Feedback is the information about some aspect of data or energy processing that can be used to evaluate and monitor the system and to guide it to more effective performance, for

example patient satisfaction surveys, sales reports and test results. In this study a higher knowledge scores obtained by school students, and in the post test will indicate that structured teaching module is effective in increasing their knowledge regarding life style practices and its impact on body mass index among school children.

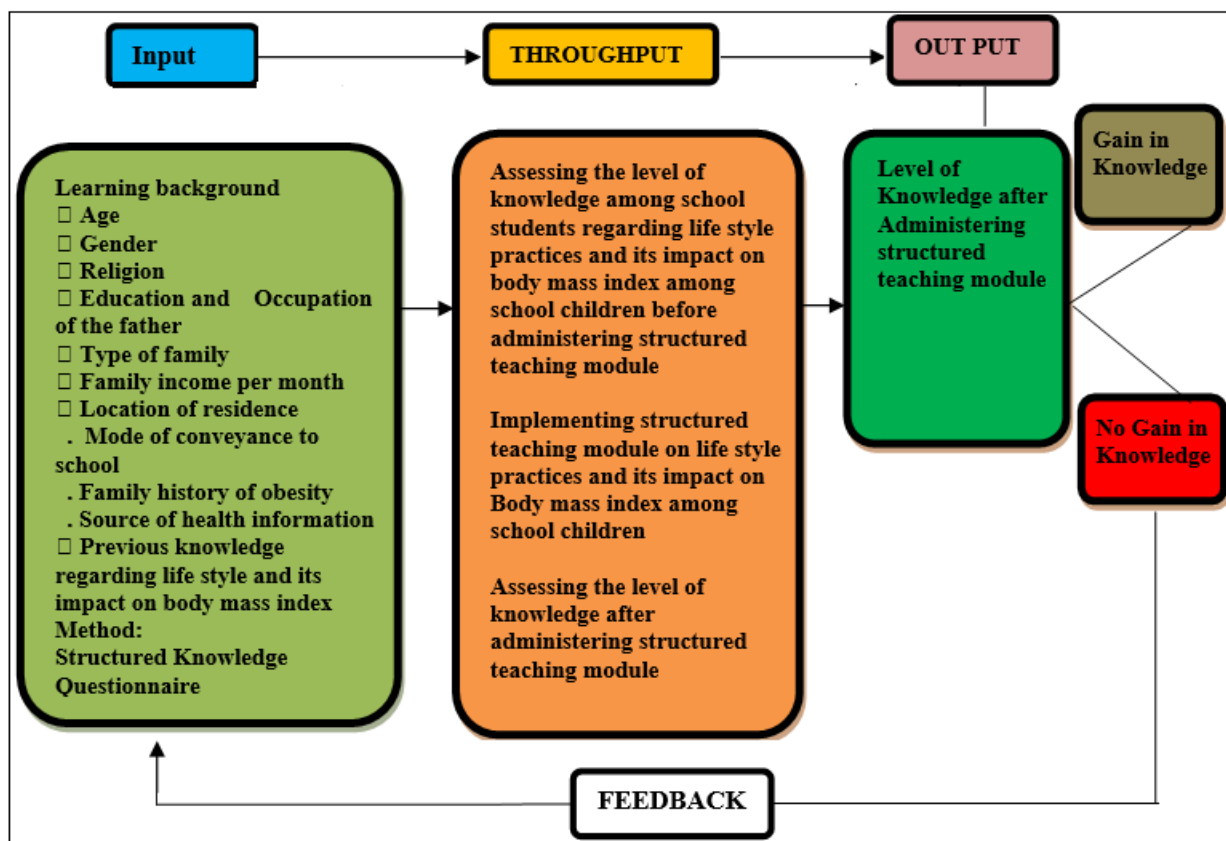


Figure 1: Conceptual Framework (Ludwing Von Bertalanffy’s modified general system theory)

1.9 Outline of the Report

The structured teaching module will improve the knowledge among children on lifestyle and its impact on body mass index which will help them to improve lifestyle and maintain body mass index.

2. Review Of Literature

Review of literature is an important step in which an exclusive and extensive search on the concerned topic is done to gather relevant information (Polite, 2004). Review of literature is an essential step in the development of the research project. It further helps in broad conceptual context in which the problem fits methodology, construction of the tool, development of instructional module and analysis by data. The researcher presents their review under the following headings:

- Section A: Studies related to prevalence of BMI issues among the children.
- Section B: Studies related to life style practice of School children.
- Section C: Studies related to effects of high BMI in children.
- Section D: Studies related to maintenance of Body Mass Index in children.

Section A- Studies Related to Prevalence of BMI Issues among the Children

This systematic review and meta - analysis examined the relationship between healthy eating patterns and reduced risk of obesity in children. The authors analyzed data from 22 studies involving 34, 111 children aged 2 - 18 years.

Key Findings:

- 1) Children who consumed a healthy diet (rich in fruits, vegetables, whole grains, and lean proteins) had a 24% lower risk of obesity compared to those with unhealthy eating habits.
- 2) The strongest associations between healthy eating and reduced obesity risk were observed in children aged 5 - 12 years.
- 3) Higher intake of fruits, vegetables, and whole grains was associated with lower BMI z - scores.
- 4) Lower intake of sugary drinks and fast food was also linked to reduced obesity risk.

Conclusion: This study provides strong evidence that promoting healthy eating habits in children can significantly reduce their risk of obesity. Parents, caregivers, and healthcare providers should encourage children to adopt balanced diets rich in whole foods and limit unhealthy options. A study found that the prevalence of obesity and

overweight was 7.2% and 19.8% for all, 8.9% and 22.2% for boys, and 5.3% and 17.0% for girls, respectively. which is 3.6/4.7 times higher than that of 1996 respectively, the annual increase rate of obesity and overweight was in average 156% and 52%, respectively. the distribution pattern of prevalence of overweight and obesity in geographic areas and gender was that the northern regions had higher prevalence than the west and the central regions and the prevalence among boys was higher than girls. the obesity/overweight ratio was still at a high risk level.

A cross-sectional and longitudinal studies found that 5, 8, 11 and 14 year-old showed that the prevalence of obesity has gradually decreased since the early 2000s, with the highest prevalence in the late 1990s to early 2000s, except for 14 year-old males. longitudinal studies showed that the critical periods for developing obesity were in the pre-school age period (between 5 and 6 years-old) and in the high school period in males, and mainly in the late infantile period in females.

A study said rates of severe childhood obesity has tripled in the last 25 years, with significant differences by race, gender and poverty. 3.8% of children aged 2 to 19 years old had a BMI \geq 9th percentile, with higher prevalence among boys than girls (4.6% Vs 2.9%; $p < .001$). prevalence was highest among blacks.

A study said that obesity in our environment is strongly associated with a family history of obesity and a sedentary lifestyle. the prevalence of obesity as determined by large waist circumference was 31.7% at the okrika (rural) centre and 16.9% at the port harcourt centre. healthy eating and social habits, and increased physical activity need to be strongly encouraged.

A study found that the prevalence of overweight and obesity were 20% and 11%, respectively. the prevalence of overweight was higher among schoolchildren with father in private work ($P < 0.01$) and the prevalence of overweight and obesity was higher among schoolchildren with highly educated mothers ($P = 0.008$). finally, it was recommended that health education programmes regarding obesity should be provided to all schoolchildren, their families and teachers.

Section B: Studies Related to Life Style Practices of School Children

A longitudinal studies was conducted on childhood obesity an emerging problem in urban Indian children. 598 children aged 6 - 8 years visiting ST. Johns medical college hospital Bangalore were selected as samples, the children were studied for their physical activity patterns sleep duration sedentary habits and eating behaviors as potential determinants of overweight the results suggests that duration of sleep, TV viewing and consumption of fried foods may be significant factors that contribute to overweight.

A study related to life style of school children. the purpose of the survey was to investigate the knowledge and practice of children lifestyle of 7 to 14 year old children attending elementary school. many children live a sedentary life and are dissatisfied with their body weight, one in 5 boys and 1

in 3 girls have been on a slimming diet at least once. about two thirds of the children regularly consumed vitamin or mineral supplements and at the same time just over half of them knew how much fruit should be eaten daily. the unfavorable lifestyle of the great majority of school children may have implications for their health during adulthood.

A study on bed time, television and computer habits of primary school children in Germany. the purpose was to determine negative health lifestyle factors in primary school children such as lack of sleep and increased leisure time spent on watching television and computer gaming. a total of 1933 children from 34 schools participated. overall 28% of the children reported going to bed after 9pm on week nights, 16% reported watching television more than three hours daily, and 11% played computer or video games more than three hours daily. physical inactivity and sedentary lifestyle are associated with overweight and obesity in children.

A cross sectional study was on television viewing habits associated with obesity risk factors. the objective was to examine whether children's television viewing may be a useful indicator of risk of obesity. 1560 children aged 5 - 6 years, 947 children aged 06 - 12 years from 24 primary schools were studied.

Children who watched television for more than 2 hours per day were more likely to become obese. obesity was significantly more with children who have one or more serves of high energy drinks and savouring snacks per day. they concluded that children television viewing is associated with obesity.

A study was found that 63% children of pre-pubertal. 40% had a TV set in their bedroom. 13% of the children skipped breakfast and only 38% watched TV \leq 2 hours daily, as recommended and suggest that TV viewing, drinking sweet beverages, skipping breakfast, and maternal BMI are important predictive variables for childhood obesity.

A cross sectional study television viewing habits associated with obesity risk factors. the objective was to examine whether children television viewing may be a useful indicator of risk of obesity. 1560 children aged 5 - 6 years, 947 children 06 - 12 years from 24 primary schools were studied. children who watched television for more than 2 hours per day were more likely to become obese. obesity was significantly more with children who have one or more serves of high energy drink and savoring snacks per day. they concluded that children's television viewing is associated with obesity.

A study on walking to school, distribution by age, sex and socioeconomic status. The purpose of this study was to examine route to school, distance and mode of transport for primary school-aged children. 871 families with children aged 4 - 12 years were studied. being driven by car was the predominant mode of transport to school (75%) and from school (72%) with the prevalence decreasing with the age of the child. the majority of children aged 5 - 12 years live close to school but only a small minority of students walk the distance. walking to school was least common in children from higher socio economic background.

A study organized and unorganized sport and physical activity are negatively associated with being overweight (10 - 24% reduced risk) or obese (23 - 43% reduced risk) while TV watching and video game use risk factors for being overweight (17 - 44% increased risk) or obese (10 - 61% increased risk) physical activity and sedentary behavior partially account for the association of high socioeconomic status and two - parent family structure with the likelihood of being overweight or obese.

A study was stated that children who spent more time watching television, slept less time than those who watched less television, and those children engaged in physical activity slept more time night than sedentary children. our results showed an univariate relationship between long sleep duration and overweight/obesity prevalence as well as with body fat, and these findings are important because sleep duration is a potentially modifiable risk factor that could important to consider in the prevention and treatment of childhood obesity.

Section C: Studies Related to Effects of High BMI in Children

A cross-sectional study design was conducted in children studying in higher grades in different settings. The weight were measured on calibrated scales, a modified BMI criterion for asian populations was used data for collected from 284 students out of sample 52% were found to be underweight whereas 34% of all the children were normal and the findings shows that socio - economic factors are important since obesity increase with overweight while under weight is a problem of lower fast food (meat) and lack of physical activity are some of the other factor that have been highlighted in this study.

A study on childhood overweight and cardiovascular disease risk factors. The National Heart, Lung, and Blood Institute Growth and health study examined association between adolescent overweight and cardiovascular risk factors. girls who were overweight during childhood were 11 to 30 times more likely to be obese in young adulthood. Overweight was significantly associated with increased percentage of body fat. Sum of skin folds and against circumference measurements. Unhealthy systolic and diastolic blood pressure, high density lipoprotein cholesterol and triglyceride levels.

A study on children who often eat tomatoes, fruits, cooked vegetables and citrus have a lower risk of current wheeze. The pattern of association is similar for asthma, High BMI, TV watching, adding salt to foods, and fizzy drink are risk factors for chronic cough. an increased BMI and TV watching are strongly related to respiratory symptoms. our data confirm that dietary factors such as salt, vegetables and fruits are associated with the prevalence of respiratory symptoms in children.

A study was obese children had significantly lower perceived athletic competence, physical appearance, and global self - worth than their normal weight peers. obese girls scored lower in these domains than obese boys and also had reduced perceived social acceptance. obese children were 2 - 4 times more likely than their normal weight peers to have

low domain competence. quantifying risk of psychological distress alongside biomedical risk should help in arguing for more resources in child obesity treatment.

Section D: Studies related to Maintenance of Body Mass Index in Children

A study on A Policy Based School Intervention to prevent over weight and obesity. The purpose of this work was to examine the effects, of a multi component, school nutrition policy initiative on the prevention of overweight and obesity. Participants were 1349 students in grade 4 through 6 from 10 schools. The intervention resulted in a 50% reduction in the incidence of overweight. Significantly fewer children in the intervention schools (7.5%) than in the control schools (14.9%) became overweight after 2 years. A multi component schools-based intervention can be effective in preventing the development of overweight among children in grade 4 through 6 in urban public schools.

A study on prevention of childhood obesity by reducing soft drinks. They described some of the latest research that has examined the association between obesity and the consumption of soft drinks. It has been found that children who consume these drinks have a higher energy intake and are more likely to become overweight. There is an association between obesity and consumption of soft drinks. Initiatives focusing on reducing the consumption of these drinks may help to prevent a further increase in childhood obesity.

A Study on knowledge of healthy lifestyle behavior among teenagers attending selected schools. The purpose was evaluation of the level of teenager's knowledge about pro health behaviors. A group of 100 school students were studied. It was proved that the level of the student's knowledge of certain behaviors varied. The majority of the respondents admitted incomplete knowledge about the subject. They concluded that it would be desirable to give teaching programmed in the schools.

3. Research Methodology

Research methodology is the overall plan for addressing the research problem. It covers multiple aspect of the study structure. It acts as a guide for planning, implementation and analysis of the study. It includes the descriptions of the research approaches, research design, dependent and independent variables, sampling design, sampling criteria, description of the tool, pilot study and a planned format for data collection and a plan for data analysis.

3.1 Research Approach

Evaluatory approach was used in this study. it aimed to evaluate the effectiveness of structured teaching module on knowledge regarding impact on lifestyle practices and its impact on body mass index.

3.2 Research Design

The research design is the plan, structure and strategy of investigation of answering the research questions, is the

overall plan or blue print the researcher selects to carry out the study.

The research design selected for this study was pre experimental one group pre and post test design. Pre experimental one group pre test post test design was adopted for this study.

Group	Pre - Test	Experiment	Post Test
E	O1	X	O2

E - Experimental group

O1 - Pretest assessment of knowledge regarding lifestyle practices and its impact on body mass index

X - Self instructional module

O2 - Posttest assessment of knowledge regarding lifestyle practices and its impact on body mass index

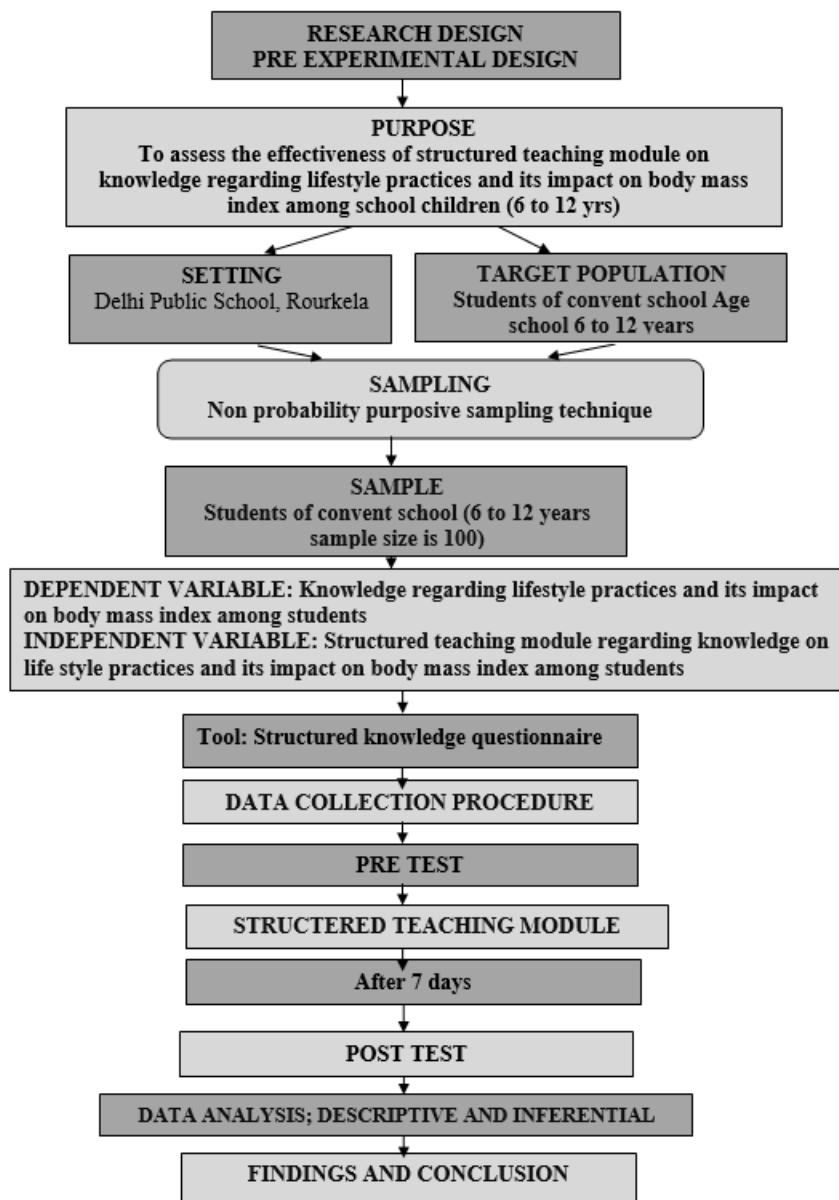


Figure 2: Schematic Representation of Research Design

3.3 Variables: Variables are something that varies. Three types of variables were identified in the study,

Independent Variables: Structured teaching module regarding life style and its impact on body mass index.

Dependent Variables: Knowledge of school children regarding lifestyle and its impact on body mass index

Extraneous Variables: The extraneous variables of this study include age, gender, type of family, religion, education of the child, type of family, dietary pattern, birth order of the child, residence, father’s education, mother’s education,

father’s occupation, mother’s occupation, income per month, presence of obesity in family and life style of the child.

3.4 Setting of the Study: Setting refers to the physical locations and conditions in which data collection has taken place.

The present study was conducted in Delhi Public School, Rourkela.

3.5 Population

Target Population: The target population of the study includes the school children in the age group 6 to 12 years in Rourkela.

Assessable Population: The assessable population of the study included all the school children in the age group 6 to 12 years at selected school Rourkela.

3.6 Sample: 100 school children in the age group 6 to 12 years at selected school, who satisfied the inclusion criteria.

3.7 Sample Size: In this study, the sample size was 100 school children who meet inclusive criteria were selected as samples.

3.8 Criteria for Sampling Selection

Inclusion criteria: The study includes the school children, WHO ARE;

- School children age 6 to 12 years studying in selected schools at Rourkela.
- Available at the time of data collection.
- Willing to participate in the study.

Exclusion criteria: The study excludes the school children WHO ARE NOT;

- Studying in selected schools at Rourkela.
- Available at the time of data collection.
- Willing to participate in the study.

3.9 Sampling Technique

Non probability – Purposive sampling technique was used for this study.

3.10 Development and Description of the Tool

The tool constructed in this study consists of two parts

Section –I: Demographic variables: It consists of the following demographic data.

Age, Sex, Religion, Type of family, Area of residence, Diet pattern, residence, fathers education, occupation, presence of obesity in family, source of health information.

Section - II: Structured self - administered questionnaire: Consists of 30 multiple choice questions related to basic knowledge of diet, exercise, sleep and body mass index with four options among one is the correct response.

3.11 Content Validity

The content validity refers to the degree to which the items in an instrument adequately represent the universal content. In this study content validity of structured knowledge questionnaire and structured teaching module were obtained by giving it to experts from pediatric nursing educators and other related disciplines. The experts were requested to give their opinions and suggestions regarding the appropriateness and relevance of the questions and content. The suggestions given by the experts to modify some of the questions in the

knowledge questionnaire were incorporated in the final draft.

3.12 Ethical Consideration

The research proposal was approved by the dissertation committee, Jaiprakash hospital and Research Centre Rourkela prior to conducting the pilot study and the main study. The permission was obtained from principal of Delhi Public School Rourkela. The verbal consent was obtained from the school children to assess the knowledge regarding lifestyle practice and its impact on body mass index. Assurance was given to the student that confidentiality would be maintained.

3.13 Reliability of the Tool

The reliability refers to the accuracy or inaccuracy rate in measurement device. To establish reliability, the tool was administered to 10 school students (6 to 12 years) from Krishna's Vikash Ind Global School, Rourkela other than the study samples. The split half method was used to test the reliability of the tool. The tool was first divided in to two equivalent halves and correlation for the half test was found using Karl Pearsons Correlation Coefficient formula ($r_{\frac{1}{2}} = 0.79$ $P < 0.05$). There was a significant correlation between the scores. The reliability coefficient of the whole test was then estimated by spearman brown prophecy formula. The tool was found reliable ($r = 0.88$).

3.14 Pilot Study

A pilot study is a small scale replica of the main study and covers the entire process of research. For the present study, Pilot study was conducted in Krishna's Vikash Ind Global School, Rourkela after taking administrative approval from the principal. The purpose of the pilot study was to pre test the data collection tools, to find out the feasibility of conducting the study and to decide upon statistical analysis. 10 high school students were purposively selected and on the first day a pre test was conducted for the sample by administering the structured questionnaire on lifestyle practices and its impact on body mass index and BMI. The participants took 20 minutes to complete the test. Following this, a structured teaching impact on BMI among school children took 45 minutes was intervened to the sample. On seventh day post test was administered to the same group using same structured questionnaire. The collected data was then analyzed by descriptive and inferential statistics. The significance of difference between the pre test and post test was found by Paired 't' test. The difference obtained was highly significant ($t = 23.16$ $P < 0.05$). The tool and structured teaching programme were found to be feasible.

3.15 Data Collection Procedure

Investigator took formal administrative permission from the school which were selected for the study. The researcher after obtaining the consent from the participants collected the data. Pre test was conducted in for 40 minutes. The structured teaching programme was conducted on the same date respectively. The duration of each session was 45 minutes. After the sessions investigator clarified the

questions raised by the group. Post test was done after 7 days using the same questionnaire to evaluate the effectiveness of the structured teaching programme. The

data collection procedure was terminated by thanking each respondent for their participation.

3.16 Plan for Data Analysis

Table 1: Plan for Data Analysis

S. No	Date analysis	Methods	Remarks
1.	Descriptive statistics	Frequency percentage	To assure the demographic variables of school children 6 to 12 years.
		Mean, standard deviation.	To assess the pre and post - test knowledge of school children regarding life style and its impact on body mass index.
2.	Inferential statistics	“t” test	To evaluate the effectiveness of structured teaching module on knowledge regarding life style practice and its impact on body mass index.
Chi - square test		To find association between post - test knowledge with their demographic variables.	

4. Data Analysis and Interpretation

This chapter deals with the description of sample characteristics, analysis and interpretation of data collected from school children (6 to 12 years) with their demographic variables. The present study was designed to assess the effectiveness of structured teaching module on knowledge regarding life style practice and body mass index among school children. The collected data was organized and interpreted using descriptive and inferential statistics and was coded and analyzed as per objectives of the study under follow headings.

Organization of Data

The data has been tabulated and organized as follows:

Section A: Description of sample according to their demographic variables.

Section B: Description of sample according to their pretest and post test level of knowledge.

Section C: Comparison of mean pretest and mean post test level knowledge.

Section D: Association of pre - test level of knowledge and their selected demographic variables.

Section A: Distribution of demographical variables

Table 2: Frequency and percentage distribution of demographic variables of school children N=100

S. No	Demographic Variables	Frequency	Percentage	
1.	Age (in years)	6 - 8	30	30
		8 - 10	40	40
		10 - 12	30	30
2.	Gender	Male	58	58
		Female	42	42
3.	Type of Family	Nuclear	43	43
		Joint	55	55
		Single parent family	02	02
4.	Religion	Hindu	75	75
		Christian	10	10
		Muslim	15	15
5.	Diet	Vegetarian	65	65
		Non - vegetarian	15	15
		Eggitarian	20	20
6.	Residence	Urban	43	43
		Rural	53	53
		Remote village	4	4
7.	Fathers education	Illiterate	10	10
		Primary education	60	60
		Secondary education and above	30	30
8.	Occupation	Government job	15	15
		Private job	65	65
		Home maker	20	20
9.	Monthly Income	3000 - 8000/month	30	30
		8001 - 14, 000/month	55	55
		14, 001 & above	15	15
10.	Bad Habits	Over eating	05	05
		Pica	15	15
		Nothing	80	80
11.	Mode of conveyance to school	Walking	65	65
		Cycling	25	25
		By school bus	10	10
12.	Family history of obesity	Yes	10	10
		No	90	90
13.	Source of health information	Teachers	35	35
		Media	55	55
		Health personals	10	10

Table 2 summarizes that demographic characteristics of school children among 100, with regards 30 (30 %) were 6 to 8 years of age, 40 (40%) were having 8 to 10 years of age and 30 samples (30%) were 10 to 12 years of age. In case of gender, majority of the hypertensive patient 58 (58%) were male and 42 were female (42%). Findings related to types of family 43 (43%) were comes under nuclear family and 55 (55%) were comes under joint family. Regarding family monthly income 30 (30%) were earning rupees 3000 to 8000, 55 (55%) were earning from 8001 to 14, 000 and 15 (15%) were earning above 14001/-. In case of bad habits over eating (5%) pica (15) nothing (8%) based on mode of conveyance to school, walking (65%), cycling (25%), by school bus (10%). based on family history of obesity (10%), absence of obesity (90%). Source of information from teachers (35%) media (55%) health personals (10%).

Section B

Description of samples according to their pre - test and post - test level of knowledge

Table 3: Description of sample according to their pre - test level of knowledge (N=100)

S. No.	Level of Knowledge	Pre test			Post Test		
		F	Mean	%	F	Mean	%
1	Adequate	0	0	0	42	66.67	43
2	Moderate	4	36.68	4	57	62.62	57
3	Inadequate	96	28.82	96	0	0	0

Table3; depicts that, the pre test and the post test level of knowledge. In the pretest majority (96%) of the school children had inadequate knowledge level and 4% had moderate level of knowledge. Nobody scored adequate in pre test. But in the post test, majority of the school children (57%) had moderate knowledge level and 43% of them scored adequate knowledge level. The above findings summarizes that, the structured teaching module has significant beneficial effect in the level of knowledge among school children.

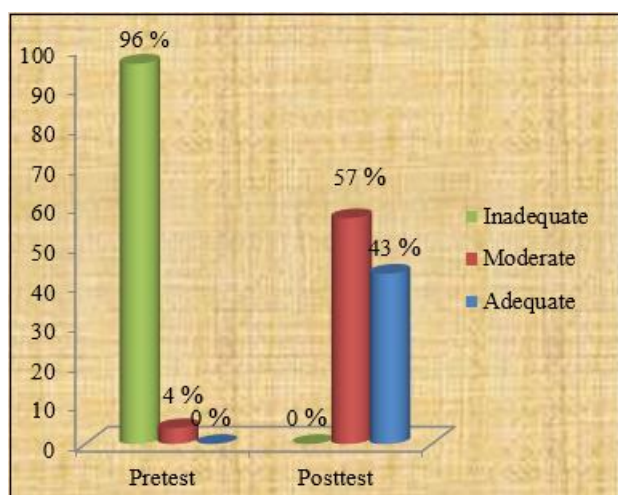


Figure 3: Description of samples according to their pre-test and post-test level of knowledge.

Section - C

Comparison of mean pre test and post test level of knowledge among the samples.

Table 4: Comparison of mean pre test and post test level of knowledge among the samples. (N100)

Sl. No	Level of Knowledge	Mean	Mean Difference	Standard Deviation (Sd)	"t" Value
1.	Pre Test	29.1	34.6	3.7	2.3752
2.	Post Test	63.7		2.9	

The above table depicts comparison of mean pre test and post test knowledge level on lifestyle practices and its impact on body mass index among school children. The post test mean score 63.7 was high when compared to the pre test mean score of knowledge. The obtained value was greater than table value at level of significance, which shows that there is significant difference between the pre test and post test level of knowledge regarding life style practices and its impact on body mass index among school children. Hence, the formulated research Hypothesis H1 was accepted.

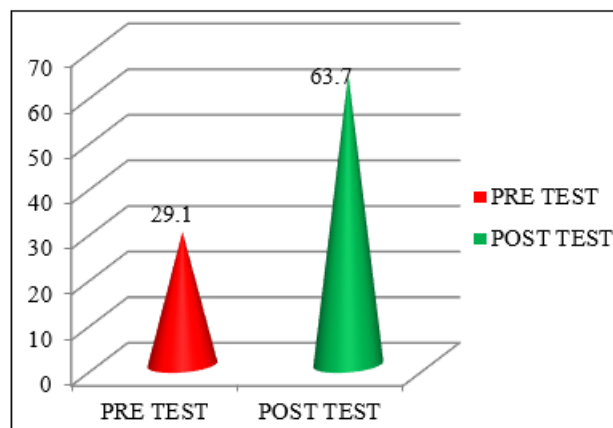


Figure 4: Comparison of mean pretest and post test level of knowledge among the sample.

Section D: Association of Post Test Level of Knowledge with their Selected Demographic Variables among School Children

Table 5

S. No	Demographic Variables	Level of Knowledge				CHI – Square Value
		Moderate Knowledge		Adequate Knowledge		
		No.	%	No.	%	
1.	AGE					X ² =1.440, d. f=2 p=0.4868, N. S
	6 - 8	15	50.00	15	50.00	
	8 - 10	15	37.50	25	62.50	
	10 - 12	11	36.67	19	63.33	
2.	GENDER					X ² =4.624, d. f=1 p=0.0318, N. S
	Male	29	50.00	29	50.00	
	Female	12	28.57	30	71.43	
3.	FAMILY					X ² =0.103, d. f=2 p=0.9499, N. S
	Nuclear	18	41.86	25	58.14	
	Joint	22	40.00	33	60.00	
	Single parent family	1	50.00	1	50.00	
4.	RELIGION					X ² =1.116, d. f=2 p=0.5723, N. S
	Hindu	29	38.67	46	61.33	
	Christian	4	40.00	6	60.00	
	Muslim	8	53.33	7	46.67	
5.	DIET					X ² =0.489, d. f=2 p=0.7832, N. S
	Vegetarian	28	43.08	37	56.92	
	Non - vegetarian	5	33.33	10	66.67	
	Eggitarian	8	40.00	12	60.00	
6.	RESIDENCE					X ² =25.845, d. f=2 p=0.0082, N. S
	Urban	14	32.56	29	67.44	
	Rural	24	45.28	29	54.72	
	Remote village	3	75.00	1	25.00	
7.	Fathers education					X ² =0.579, d. f=2 p=0.7487, N. S
	Illiterate	4	40.00	6	60.00	
	Primary education	23	38.33	37	61.67	
	Secondary education and above	14	46.67	16	53.33	
8.	Fathers Occupation					X ² =0.498, d. f=2 p=0.7832, N. S
	Government job	5	33.33	10	66.67	
	Private job	28	43.08	37	56.92	
	Home maker	8	40.00	12	60.00	
9.	MONTHLY INCOME					X ² =4.383, d. f=2 p=0.1117, N. S
	3000 - 8000/month	11	36.67	19	63.33	
	8001 - 14, 000/month	27	49.09	28	50.91	
	14, 001 & above	3	20.00	12	80.00	
10.	BAD HABIT					X ² =1.526, d. f=2 p=0.4662, N. S
	Over eating	2	40.00	3	60.00	
	Pica	4	26.67	11	73.33	
	Nothing	35	43.75	45	56.25	
11.	MODE OF CONVEYANCE					X ² =1.924, d. f=2 p=0.3822, N. S
	Walking	25	38.46	40	61.54	
	Cycling	13	52.00	12	48.00	
	By school bus	3	30.00	7	70.00	
12.	FAMILY HISTORY OF OBESITY					X ² =0.372, d. f=1 p=0.5419, N. S
	Yes	5	50.00	5	50.00	
	No	36	40.00	54	60.00	
13.	SOURCE OF HEALTH INFO					X ² =4.817, d. f=2 p=0.899, N. S
	Teachers	11	31.43	24	68.57	
	Media	23	41.82	32	58.18	
	Health personals	7	70.00	3	30.00	

The above table depicts the association of lifestyle practices and its impacts on body mass index among school children, with their Age calculated value of chi - square (1.44), Gender calculated value of chi - square (4.624), Type of family calculated value of chi - square (0.103), Religion calculated value of chi - square (1.116), Diet calculated value of chi - square (0.489), Residency calculated value of chi - square (25.845), Father's Education calculated value of chi - square (0.579), Father's occupation value of chi - square (0.498), Monthly income calculated value of chi - square (4.383), Bad habits calculated value of chi - square

(1.526), Mode of conveyance calculated value of chi - square (1.924), Family history of obesity calculated value of chi - square (0.372), source of health information calculated value of chi - square (4.817) were more than the table value of significance. So there was no significant association exist between the demographic variables of lifestyle practices and its impacts on body mass index among school children.

5. Discussion

The present study was designed to assess the effectiveness of structured teaching module on knowledge regarding the lifestyle practices and body mass index among school children's in a selected school Rourkela.

To find out the effectiveness of structured teaching module, the investigator adapted pre experimental one group pre - test post - test design and 100 school children (6 - 12 yrs) were selected through purposive sampling technique

The first objective was to assess the pretest knowledge regarding Lifestyle practices and body mass index among school children

In this study, pretest knowledge score regarding lifestyle practices and its impacts on body mass index among school children were assessed. Majority of children (96%) had inadequate knowledge and (4%) had moderate level knowledge. Nobody had adequate knowledge in the pretest.

The second objective was to assess the effectiveness of structural teaching module on knowledge regarding life style practices and its impact on body mass index.

In this study, in the pretest majority (96%) of the school children had inadequate knowledge level and 4% had moderate level of knowledge. Nobody scored adequate in pre test. But in the post test, majority of the school children (57%) had moderate knowledge level and 43% of them scored adequate knowledge level. The above findings summarizes that, the structured teaching module has significant beneficial effect in the level of knowledge among school children. The obtained t value (2.3752) was greater than the table value of significance, which shows there is a significant difference between the pre test and post test level of knowledge regarding lifestyle practices and its impacts on body mass index among school children. Hence, the formulated research hypothesis **H1 was accepted.**

The third objective was to find out the association between the pre - test level of knowledge with the selected demographic variables.

The present study reveals that there is no significant association between the pre test score with their selected demographic variables, Age calculated value of chi - square (1.44), Gender calculated value of chi - square (4.624), Type of family calculated value of chi - square (0.103), Religion calculated value of chi - square (1.116), Diet calculated value of chi - square (0.489), Residency calculated value of chi - square (25.845), Father's Education calculated value of chi - square (0.579), Father's occupation value of chi - square (0.498), Monthly income calculated value of chi - square (4.383), Bad habits calculated value of chi - square (1.526), Mode of conveyance calculated value of chi - square (1.924), Family history of obesity calculated value of chi - square (0.372), source of health information calculated value of chi - square (4.817) were more than the table value of significance. So there was no significant association exist between the demographic variables of lifestyle practices and its impacts on body mass index among school children.

6. Summary, Conclusion, Implication and Recommendation

6.1 Summary

The study was designed to evaluate the effectiveness of structured teaching module on knowledge regarding the life style practices and body mass index among school children in a selected school Rourkela.

The Objectives of the study were,

- To assess the knowledge of student regarding life style and body mass index by conducting pre - test.
- To evaluate the effectiveness of structured teaching module on knowledge regarding lifestyle and body mass index among school children
- To associate posttest level of knowledge score among school children on lifestyle practices and its impact on body mass index with selected demographic variables.

The Hypotheses of the study were,

H0: There will not be significant effect between the pre test and post test knowledge scores regarding lifestyle and body mass index among school children (06 to 12 years)

H1: There will be a significant effect between the pre test and post test knowledge scores regarding lifestyle and body mass index among school children (06 to 12 years)

6.2 The Conceptual Framework

The present study aims at evaluating the effectiveness of structured teaching module for assessing the knowledge of school students aged (6 to 12 years) regarding lifestyle practices and body mass index in selected school at Rourkela. The conceptual framework for this study is based on general system theory, introduced by Ludwig Von Bertalanffy (1968) and explained by Putt (1978)

Input consists of the energy and raw material transformed by the system, for example information, money, energy, time, individual effort and raw material of some kind. In this study input refers to the school students who have different background factors and previous knowledge related to the topic.

Throughput is the process used by the system to convert raw materials or energy from the environment into products that are usable by either the system or the environment, for example, thinking, planning, constructing and sharing information. In this study it refers to the administration of structured teaching module for school students on knowledge regarding lifestyle practices and its impact on body mass index, and the following process was adopted.

Output is the product or service which results from the systems throughput or processing of human technical, social or financial input, for example documents and decisions. In this study it refers to the gain in knowledge scores. It is evaluated through a comparison between pre and post knowledge score of the subjects.

7. Methodology

Evaluatory approach was used in this study. it aimed to evaluate the effectiveness of structured teaching module on knowledge regarding impact on lifestyle practices and its impact on body mass index. The research design is the plan, structure and strategy of investigation of answering the research questions, is the overall plan or blue print the researcher selects to carry out the study. The research design selected for this study was pre experimental one group pre and post test design.

8. Major Findings of the Study

In this study, the pre test and the post test level of knowledge. In the pretest majority (96%) of the school children had inadequate knowledge level and 4% had moderate level of knowledge. Nobody scored adequate in pre test. But in the post test, majority of the school children (57%) had moderate knowledge level and 43% of them scored adequate knowledge level. The above findings summarize that, the structured teaching module has significant beneficial effect in the level of knowledge among school children.

The comparison of mean pre test and post test knowledge level on lifestyle practices and its impact on body mass index among school children. The post test mean score 63.7 was high when compared to the pre test mean score of knowledge. which shows that there is significant difference between the pre test and post test level of knowledge regarding life style practices and its impact on body mass index among school children. Hence, the formulated research Hypothesis H1 was accepted.

The association of lifestyle practices and its impacts on body mass index among school children, with their Age calculated value of chi - square (1.44), Gender calculated value of chi - square (4.624), Type of family calculated value of chi - square (0.103), Religion calculated value of chi - square (1.116), Diet calculated value of chi - square (0.489), Residency calculated value of chi - square (25.845), Father's Education calculated value of chi - square (0.579), Father's occupation value of chi - square (0.498), Monthly income calculated value of chi - square (4.383), Bad habits calculated value of chi - square (1.526), Mode of conveyance calculated value of chi - square (1.924), Family history of obesity calculated value of chi - square (0.372), source of health information calculated value of chi - square (4.817) were more than the table value of significance. So, there was no significant association exist between the demographic variables of lifestyle practices and its impacts on body mass index among school children.

9. Conclusion

The aim of the study to evaluate the effectiveness of structured teaching module on knowledge regarding life style and body mass index among school children at selected schools Rourkela. The study finding provide the statistical evidence that clearly indicates that structured teaching module has significant effect on the level of knowledge of

school children regarding life style practices and its impact on body mass index.

10. Nursing Implication

The findings of the study have implications in the field of nursing practice, nursing education, nursing research and nursing administration.

Nursing Practice

The findings of the study revealed that school students have inadequate knowledge regarding healthy life style nurses who are aware of this fact can guide the children and the student nurses who are caring for children. Nurses also can use the structured teaching program used in the study to widen and update their knowledge regarding life style practices and body mass index

Nursing Education

The facts about health problems are known to everyone, but the prevention are mostly unaware to the health professional also, So the nurses should be adequately instructed about it. The staff nurse should have an adequate knowledge about it. So based on the findings of the study the nursing educators can take steps to educate the staff nurses regarding lifestyle practices and its impacts on health.

Nursing Research

Based on the findings further research studies can be conducted among nurses and nursing students on different aspects of knowledge and practice in caring and educating the school students regarding healthy life style problems among students. The essence of research is to build a body of knowledge in nursing as it as an evolving profession. The findings of the present study serve as the basis for the professionals and the students to conduct further studies. The generalization of the study result can be made by replication of the study.

Nursing Administration

Nurse administrator has a key role in planning, organizing and conducting the in - service education. Based on the findings of the study nurse administrator can organize and conduct in - service program on the topic Nurse administrators can also include this topic in their orientation program for newly employed graduates.

11. Limitation

The limitations of the study were: -

- The study focused only on school children age group of 6 to 12 years.
- The study is limited to sample size 100.
- The study is limited to the selected schools in Rourkela.

12. Recommendations

The following recommendation are drawn

- 1) The study can be replicated on a large sample.
- 2) A descriptive study can be conducted to identify the factors influencing lifestyle problems among school children

- 3) A comparative study can be undertaken to evaluate different teaching strategies like SIM and Video assisted teaching.

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