

FOOD CHOICES AND HEALTH PROFILE OF PRETEENS

By

SAVITHA.M

(15PFD010)

**A THESIS SUBMITTED TO THE
AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER
EDUCATION FOR WOMEN
COIMBATORE - 641043**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN
FOOD SERVICE MANAGEMENT AND DIETETICS**

APRIL 2017

FOOD CHOICES AND HEALTH PROFILE OF PRETEENS

By

SAVITHA.M

(15PFD010)


**A THESIS SUBMITTED TO THE
AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER
EDUCATION FOR WOMEN
COIMBATORE - 641043**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN
FOOD SERVICE MANAGEMENT AND DIETETICS**

APRIL 2017

Certified as a Bonafide Research Work


Signature of the
Head of the Department


Signature of the Guide

ACKNOWLEDGEMENT

The investigator exalts **GOD ALMIGHTY** for being her refuge and strength and praises Him for His everlasting love, bountiful mercy and amazing grace showered on her throughout the study.

The investigator expresses her reverential gratitude to Late **Thiru.T.S.AVINASHILINGAM Ayya Avargal**, the founder and the Chancellor of this renowned University and the Late **Padmasri Dr.(Mrs) RAJAMMAL P.DEVADAS**, M.A., M.Sc., Ph.D (Ohio State), D.Sc. (Madras), Hon.DHL (Oregon State), Former Chancellor, the architect of this temple of learning.

She expresses her deep sense of gratitude to **Dr.(Thiru).T.S.K.MEENAKSHISUNDARAM**, M.A., M.Phil., Ph.D. Former Chancellor, and **Shri.Dr.P.R.KRISHNAKUMAR**, Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore for granting permission to carryout thesis.

The scholar expresses her boundless thanks and gratitude to **Dr.(Mrs).PREMAVATHY VIJAYAN**, M.Sc., M.Ed., Dip.Spl.Edn., M.Phil., Ph.D, Vice Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore for granting permission to pursue this research.

She expresses her gratitude to **Dr.(Mrs).S.KOWSALYA**, M.Sc., Dip.Ed., M.Phil., Ph.D, Registrar, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore for providing the opportunity to conduct my thesis work.

The investigator expresses her gratitude to **Dr.(Mrs).K.MANIMOZHI**, M.Sc., M.Phil., Ph.D, Controller of Examinations for her kind support and encouragement in facilitating for the conduct of the study.

She expresses her heartfelt thanks to **Dr.(Mrs).VASUGI**, M.Sc., MBA., M.Phil., Ph.D, Dean and Professor, Faculty of Home Science, Avinashilingam

Institute for Home Science and Higher Education for Women, Coimbatore, for her help and constant support to carry out the research.

The investigator expresses her heartfelt thanks to **Dr.(Mrs.) V.SARADHA RAMADAS**. M.Sc., MBA (Hotel Mgt.), M.Phil., Ph.D. Professor and Head, Department of Food Service Management and Dietetics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore,

The investigator expresses her deep sense of gratitude and whole hearted thanks to her supervisor **Dr.(Mrs.)S.THILAGAMANI. M.Sc., M.Phil., Ph.D**, Assistant Professor, Department of Food Service Management and Dietetics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, whose ability to probe beneath the text was a true gift and her insights have strengthened this study significantly. Her meticulous guidance, deep concern, constructive suggestions, continued motivation, enduring support and gentle care rendered from the initial to the final level of the study enabled the investigator to complete the research successfully.

The investigator acknowledges with gratitude the good wishes and encouragement of all the Staff Members of the Department of Food Service Management and Dietetics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore.

Her acknowledgement is due to all the students who participated in the study with whose willingness and co-operation the study was made possible.

The investigator expresses her heartfelt thanks to her **Parents, Family Members, Sisters, Brother and Friends, School headmistress and Teachers** whose motivation, care, concern and support cannot be expressed in words.

She offers her regards and profound thanks to all those who supported her in any respect during the course and completion of the study.

CONTENTS

Chapter No	Title	Page No
	LIST OF TABLES	
	LIST OF FIGURES	
	LIST OF PLATES	
	LIST OF APPENDICES	
I	INTRODUCTION	1
II	REVIEW OF LITERATURE	7
	A. Food Choices and Lifestyle Practices of Preteens	7
	B. Diet Related Disorders and Population in Preteens	9
	C. Disease Prevention through Diet and Lifestyle modification	12
III	METHODOLOGY	19
	A. Selection of Area and Designing Tools for the Study	20
	B. Assess the Health Profile of the Preteens	21
	C. Health Education to Preteens, Parents and Teachers	23
	D. Association of Food Choices and Health Profile of Preteens	28
	E. Interpretation and Analysis of Data	28
IV	RESULTS AND DISCUSSION	30
	A. Profile of the Preteens	30
	B. Health Assessment of the Preteens	35
	C. Dietary and Lifestyle Patterns of the Preteens	36
	D. Association of Food Choices with Health Profile of the Preteens	50
V	SUMMARY AND CONCLUSION	53
	BIBLIOGRAPHY	
	APPENDICES	

LIST OF TABLES

Table No	Title	Page No
I	AGEWISE DISTRIBUTION OF PRETEENS	31
II	TYPE OF FAMILY IN PRETEENS	32
III	EDUCATION DETAILS OF PARENTS IN PRETEENS	33
IV	OCCUPATION DETAILS OF THE PARENTS OF THE PRETEENS	34
V	INCOME STATUS OF THE PARENTS OF THE PRETEENS	35
VI	BMI STATUS OF THE PRETEENS	36
VII	DIETARY PATTERN OF THE PRETEENS	37
VIII	CONSUMPTION OF MEAL PATTERN	38
IX	SKIPPING OF MEALS AMONG THE PRETEENS	39
X	CONSUMPTION PATTERN OF INTAKE FOR FRUITS AND VEGETABLES OF THE PRETEENS	39
XI	TYPES OF FOODS PREFERRED BY THE PRETEENS	41
XII	CONSUMPTION PATTERN OF SNACKS BY THE PRETEENS	41
XIII	FAVOURITE SNACKS OF THE PRETEENS	42
XIV	CONSUMPTION OF BEVERAGES	43
XV	CONSUMPTION OF FAST FOODS	44
XVI	DETAILS OF CONSUMPTION OF BAKED FOODS AMONG PRETEENS	45
XVII	CONSUMPTION OF STREET FOODS OF PRETEENS	45
XVIII	CONSUMPTION OF PROCESSED FOODS BY THE PRETEENS	46
XIX	CONSUMPTION PATTERN OF FATS AND OILS	47
XX	EXERCISE PATTERN OF THE PRETEENS	48
XXI	PHYSICAL ACTIVITY PATTERN OF THE PRETEENS	49
XXII	HOBBIES OF THE STUDY PARTICIPANTS	49
XXIII	SLEEP PATTERN OF THE PRETEENS	50
XXIV	IMPACT OF HEALTH EDUCATION AMONG THE PRETEENS	51

LIST OF FIGURES

Figure No	Title	Page No
1.	RESEARCH DESIGN	29
2.	AGE WISE DISTRIBUTION OF PRETEENS	30
3.	DIETARY PATTERN OF THE PRETEENS	37
4.	SKIPPING OF MEALS AMONG THE PRETEENS	38
5.	TYPES OF FOODS PREFERRED BY THE PRETEENS	40

LIST OF PLATES

Plate No	Title	Page No
1.	HEIGHT MEASUREMENT	22
2.	WEIGHT MEASUREMENT	22
3.	INTERACTION WITH PRETEENS	26
4.	HEALTH EDUCATION TO TEACHERS	28

LIST OF APPENDICES

Appendix No.	Title
I	ETHICAL CLEARANCE FORM
II	QUESTIONNAIRE TO ELICIT BASELINE DATA AND FOOD CHOICE FROM PRETEENS
III	HEALTH EDUCATION MODULE FOR PRETEENS
III A	HEALTHY FOOD CHOICES
III B	BALANCED DIET
III C	PHYSICAL ACTIVITY
III D	FOOD PYRAMID AND MY PLATE
III E	HYGIENE AND SANITATION
III F	LIFE STYLE PATTERN
IV	MODULES FOR PARENTS
IV A	TRADITIONAL FOOD VS FAST FOOD
IV B	WORKING SIMPLE AND HEALTHY COOKING
V	HEALTH EDUCATION MODULES FOR TEACHERS
V A	FOOD CHOICES AND HEALTH
V B	PERSONAL HYGIENE AND HEALTH
V C	PHYSICAL ACTIVITY
VI	CHECKLIST TO ASSESS KNOWLEDGE ON FOOD CHOICES FROM PRETEENS
VII	CHECKLIST TO ELICIT DETAILS ON HEALTH CONCEPTS FROM PARENTS
VIII	CHECKLIST TO ELICIT DETAILS ON HEALTH CONCEPTS

I. INTRODUCTION

Food security at the individual, household, national, regional and global levels are achieved when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. In most industrial countries such as USA and UK, the effects of increased income have generally been considered as beneficial, resulting in better quality diets, better healthcare, lower morbidity and mortality from infectious diseases and lower risk of diet related disorders (Marmot, 2012).

Unhealthy diets and physical inactivity are among the leading causes of the major non-communicable diseases, including cardiovascular disease, type 2 diabetes and certain types of cancer and contribute substantially of the global burden of disease death and disability (FAO, 2012).

The burden of mortality, morbidity and disability attributable to non-communicable diseases is currently greatest and continuing to grow in the developing countries, where those affected are on younger age groups. Rapid changes in diet and pattern of physical activity further cause rapid rise in diet related disorders (Mary, 2011).

Dietary pattern is driven by certain factors which has a direct impact on the lifestyle of people leading to changes in choices of food. The food choice has a direct impact on nutritional health of the people as bad food choices can have adverse effects on overall health. A strategy is needed to overcome this anomaly of bad food choices and is the end solution (Zaidi et al., 2012).

Food choices among children are too drastic and can be changed to healthy choices at the earlier ages. A healthy balanced diet for children provides essential vitamins, minerals and other nutritional goodies that kids need for healthy growth and development. Vitamins and minerals are vital for our bodies to function properly as each nutrient plays a specific role in the body (Amcoff, 2011).

To ensure kids are getting the vitamins, minerals and other goodies they need, it is important that they eat a wide variety of nutritious foods from all the different food groups. As a general guide, children should eat lots of fruits and vegetables, whole grains and grams, moderate amounts of lean meat, fish, nuts and dairy products such as cheese, yoghurt, milk, curd and only occasional consumption of junk and fast foods (Anita et al., 2013).

Different colours of fruits and vegetables usually contain different combinations of nutrients. A rainbow of colours on the child's plate (green, white, yellow, orange, blue, purple, red) to get the most nutritional value out of the meal is the desirable and an attractive healthy meal. Children often snack on sugary sticky foods that may stay in the teeth and provide an ideal environment for growth of the bacteria that cause dental caries. Also the continued exposure of the teeth to the sugary drinks, such as juice, contributes to dental caries in children. The American Academy of Pediatrics, Committee on Nutrition, 2013.

The transition in food eating pattern basically has two main parts. The first one is quantitative and the second one qualitative. Under quantitative it suggests that caloric intake increases with proportionally equal intake in all food products, the overall nutritional structure remains stable. Under qualitative diet transition is caloric saturation achieved with the total diet structure changes. Skipping breakfast is related to increased Body Mass Index and risk of obesity (Clark and Block et al., 2012).

In addition to population growth, urbanisation, a growing middle class and rising income, the rapid expansion of supermarkets and wholesalers in developing countries have been well documented in the literature (Reardon et al., 2013).

Concerns about composition of food and nutritional requirements for a healthy and active life review the changing eating pattern of South East Asian countries. Traditional diets especially in urban cities have been modified and replaced by diets which are high in fats, salts and animal products.

These areas have also seen to have reduced intakes of fresh fruits and vegetables. This has resulted in complete transition in nutrition. Generally food consumption is measured in kilocalories per capita per day and this has remained the key factor for measuring and evaluating the contents of food habits. Drastic increase has been observed in energy contribution to the food we consume by addition of vegetable oils and added sugars and salts (Jan and Tee, 2014).

In addition to dietary transition, Physical activity is a key determinant of energy expenditure and thus it is fundamental to energy balance and weight control. Physical activity reduces risk for cardiovascular diseases and diabetes and has substantial benefits for many conditions, not only those associated with obesity. The beneficial effects of physical activity on the metabolic syndrome are mediated by mechanisms beyond controlling excess body weight. For example physical activity reduces blood pressure improves the level of high density lipoprotein cholesterol improves control of blood glucose in overweight people, even without significant weight loss and reduces the risk for colon cancer and breast cancer among women.

For physical activity, it is recommended that individuals engage in adequate levels throughout their lives starting from younger ages. Different types and amounts of physical activity are required for different health outcomes, at least 30 minutes of regular, moderate intensity physical activity on most days reduces the risk of cardiovascular disease and diabetes, colon cancer and breast cancer, muscle strengthening and balance training can falls and increase functional status among older adults.

Demographic and socioeconomic changes influence the living and working habits of population. Economic growth, modernisation, urbanisation and socialisation has changed the diet and Lifestyle of Indian families.

The transition from a traditional to modern Lifestyle, along with consumption of diet rich in fat and calories combined with a high level of mental stress has compounded the health problem. The way we eat, perform exercise,

take rest, play, behave with others, think, plan, drive a vehicle, sleep carry out routine work and commitments and the total living style are all included in the term “Lifestyle” (Edelstein and Sharlin, 2013).

Our time schedule for working hours rest, eating habits, concepts of entertainment and comfort and the nature of people around us would change the mode of our life pattern, with a shift in eating habits, smoking, drinking, bad nutritional habits and the adoption of the sedentary Lifestyle has lead to the increasing prevalence of Lifestyle diseases like obesity claims study by Fisher et al., 2012.

Routine work and day today activities of life depends on various environmental factors such as social, political, economical, ecological, family background. When the basic necessities are not easily fulfilled, it is but natural that the man would try different strategies to achieve them.

Jahns et al, 2011 expresses that today we hardly find time to our health unless something goes wrong with it. Our values for our health care, job, self esteem, relationship with our family members and others would change totally when we adopt this fast and competitive lifestyle.

Because of computer games and other indoor activities, children are spending lesser time playing sports. They burn less calories and thus tend to gain weight. Along with sedentary Lifestyle, there is also academic pressure that our children face every day. There is home work, tuitions, exams, grades to worry about and these pressure often result in less physical activity (Saelens et al, 2014).

Due to diet and lifestyle transition the consumption of cereals and vegetables decrease and intake of sugar, fats and other animal products increases and further is affected by availability of food, accessibility of food and choice of food, this may be further influenced by other factors such as geography, consumer attitude, religion, culture and demography income and lower prices of food has resulted in over consumption of animal and processed food. Although the educated class can choose to adopt a healthy lifestyle

people compared to people with less food choices have no option, but to purchase less healthy and nutrition deprived food.

There has also been lack of education regarding the nutritional food and balance diet. With regard to the physical environment, children are more likely to eat foods that are available and easily accessible, and they tend to eat greater quantities when larger portions are provided. Additionally, characteristics of the social environment, including various socioeconomic and socio cultural factors such as parents' education, time constraints, and ethnicity influence the types of foods children eat.

Mealtime structure is also an important factor related to children's eating patterns. Mealtime structure includes social and physical characteristics of mealtimes including whether families eat together, television viewing during meals, and the source of foods at restaurants and schools (Guyomard, 2011).

With the growing problem of childhood obesity, recent research has begun to focus on family and social influences on children's eating patterns. Research has demonstrated that eating pattern of children are strongly influenced by characteristics of both the physical and social environment.

Parents also play a direct role in children's eating patterns through their behaviors, attitudes, and feeding styles. Interventions aimed at improving children's nutrition need to address the variety of social and physical factors that influence children's eating patterns (Nickolas, 2010).

The media, particularly television, also have an enormous potential influence and can overshadow familial influences. Individual factors identified include knowledge, attitudes and food preferences; only the latter have been identified as a strong determinant of healthy eating in both children and adolescents. Only a few determinants, such as economic factors and food security, the content of media nutritional messages, and the issue of flavours, neophobia and food preferences, have undergone some examination by Canadian researchers (French et al, 2012).

These middle school years are a time of magical blossoming and period where preteens lose connection to parents and find place and connect in their peer world. Also the body is flooded by lots of hormonal changes. Their need to discover themselves and a higher nutritional demand are the highlights of these preteens aged 9 to 12 years.

Positive discipline through parenting and healthy classroom peer influences by teachers at school have a predominant role in protecting children at this age. The percentage of overweight children has more than doubled in urban areas and these children in the rural areas.

The culprits include large food portions especially the processed foods, sedentary lifestyle, high stress levels especially with the academics. Hence this study aims at a holistic approach to make preteens become more independent in terms of nutrition, emotional health and body changes through effective strategies for preteens their parents and teachers thereby promote the health of the children and was undertaken with the following objectives.

- To study the food choices of preteens in rural and urban areas.
- To identify the variations in food choices and health profile of preteens in rural and urban area
- To relate the food choices and health profile in rural and urban preteens and
- To educate Preteens, Parents and Teachers on healthier food choices.

II. REVIEW OF LITERATURE

The review of literature pertaining to the study entitled, “**Food Choices and Health Profile of Preteens**” is discussed under the following headings:

- A. Food Choices and Lifestyle Practices of Preteens
- B. Diet Related Disorders and Population in Preteens
- C. Disease Prevention through Diet and Lifestyle modification

A. Food Choices and Lifestyle Practices of Preteens

Children eat foods only when they like it. Food acceptance patterns develop early in life, and childhood is a time of particular sensitivity for developing food preferences. Indeed, food preferences developed during infancy remain relatively stable and are reflected in food choices made later in life (Cashdan et al., 2010).

Because parents are responsible for making foods available to children and adolescents, they can have a profound impact on preferences and, hence influence consumption. Other research has demonstrated the importance of not only availability but also accessibility of healthier foods (Skinner et al, 2011).

The development of food preferences can be explained in part by Rozin’s concept of food neophobia. Research has demonstrated that food neophobia is an important predictor of fruit and vegetable intake. Children who are reluctant to try new foods generally have lower intakes of fruit and vegetables (Rozin et al, 2012).

However, research has demonstrated that exposure to foods is key to developing preferences and that repeated exposure can overcome dislike of foods. In a study with elementary school aged children, daily exposure to an unfamiliar vegetable were associated with a significant increase in children’s liking and consumption of the vegetable (Wardle et al, 2013).

In general, children choose to eat the foods that they are served most often, and they tend to prefer to eat foods that are readily available in the home when fruit and vegetables are available, children are more likely to eat fruit and vegetables (Baranowski et al, 2011).

Thus, the foods to which children are routinely exposed shape preferences and consumption (Birch et al., 2013).

When foods are easily accessible and ready to be eaten, children are more likely to eat them, among school children, fruit and vegetable intake is higher when these foods are not only available but also provided in accessible locations with easy for the child to reach and in accessible sizes such as apple wedges, carrot sticks (Baranowski et al, 2013).

Today children lead sedentary lives and even parents don't have the time to play with children. Outings now are more about going to malls, not gardens or parks. Watching television most of the time There has been a complete change in the eating patterns of the people and the driving factors for this change are liberalization, the free trade policies which has lead to burgerisation, the foreign direct investment, spurting of supermarkets and fast food chains, increase in the purchasing power of the people, urbanization, better access to internet and other communication systems. Due to changes in family and social environment there has been a revolutionized change in children s lifestyle and eating habits (Story and French, 2014).

These changes are mainly due to increase in working women, decline in the birth rates and reduction in the size of the families. The advancements in food technology, fishing and agricultural methods employed for food production have led to change in the food pattern.

Ease of access to health services and better education facilities, very strong influence of television, decline in the age for children to start going to school, children getting access to money for spending which prompts them to buy unhealthy food without parental control are all the leading factors for changes in the eating habits.

Dietary patterns have shifted from traditional and staple food to modern diet. Traditional food include rice and other food crops like sweet potatoes, pulses and various other traditional foods are being abandoned by people. There has been a sudden increase in intake of meat products, products containing wheat, fats and oils, sweeteners etc. all these contribute to increase total energy intake. There is also an overall reduction in variety of the foods we eat, and due to the consumption of more refined and processed food our overall health has been impacted (Dennison et al, 2011).

A study was done on fast food consumption pattern and obesity among school going children in five different schools in Lucknow district. The most children had preferences for consuming fast foods. Such as Pizza, Burger, Samosa (Singh and Mishra, 2014).

B. Diet Related Disorders and Population in Preteens

In some developed countries where non- communicable diseases have dominated the national burden of disease, age specific death and disease, rates have been slowly declining. Progress is being made in reducing premature death rates from coronary artery disease, cerebrovascular diseases and some tobacco- related cancers. However, the overall burden and number of patients remain high and the numbers of overweight and obese adults and children and of the cases, closely linked of type 2 diabetes are growing in many developed countries. Non- communicable diseases and their risk factors are initially mostly linked to economically successful groups in low and middle income countries. However, recent evidence shows that, over time pattern of unhealthy behavior and the non- communicable diseases associated with the cluster among poor communities and contribute to social and economic inequalities.

In the poorest countries even though infectious diseases and under nutrition dominate their current disease burden, the major risk factors for chronic diseases are spreading. The prevalence of overweight and obesity is increasing in developing countries and even in low income groups in richer countries. An integrated approach to the causes of unhealthy diet and

decreasing levels of physical activity would contribute to reducing the future burden of non-communicable diseases.

Diet and physical activity influence health. Although the effects of diets and physical activity on health often interact particularly in relation to obesity, these are additional health benefits to be gained from physical activity that are independent of nutrition and diet and these are significant nutritional risks that are unrelated to obesity. Physical activity is a fundamental means of improving the physical and mental health of individuals.

Limit energy intake from total fats and shift fat consumption away from saturated fats unsaturated fats and towards the elimination of Tran's fatty acids. Increase consumption of fruits and vegetables and legumes, whole grains and nuts. Limit the intake of free sugars. Limit salt consumption from all sources and ensure that salt is iodized.

The lifestyle of people has undergone many changes since the Paleolithic age of hunter gatherers to industrialization and leading towards non communicable diseases of today s world. This change in lifestyle has also brought about changes in dietary patterns have highlighted the fact that youngsters visit fast food channels just for the sake of fun and some change from daily routine. It was found that lifestyle changes and taste buds are backed by the urban culture and has a strong impact on the kind of food demanded and the utilization pattern by the people (Goyal and Singh, 2010).

Changing lifestyle and work habits are the two major factors deciding consumer's preference for fast food that is driving them towards junk foods health (Nichanj, 2011).

Malnutrition can be defined as the lack of a sufficient quantity quality of nutrients to maintain the body system at some definable level of functioning. It has been estimated that 37 to 80 per cent of all pre-school children in the developing countries suffer from protein calorie Malnutrition as assessed by the manifestation of syndromes, nutritional indexes, and weight deviations. Mild to moderate malnutrition, also called chronic under nutrition, is much more

common than severe forms, and is often difficult to recognize. The severe forms are either due to insufficient protein and calories (marasmus) or to an acute protein loss or deprivation (kwashiorkor).

The consequences are somewhat different, but obviously there is a continuum between normality, marasmus, and kwashiorkor. The consequences of early malnutrition depend on a complex pattern of factors such as its severity and timing (pre-and/or post-natal) and the psycho-social milieu.

In this study to compare food and nutrient intake of the children to affect the malnutrition and to assess the causes of food insecurity among 150 tribal children in odisha children aged 3 to 5 years. There are 32 percent of children were normal, 34 percent of children were wasted, 2.2 percent of children were stunted and 12 percent children was wasted and stunted. This study has suggested to give education for parents in order to improve health care facilities and the food security of the households (Lenxa., 2016).

Nutritional status of obese school going children were assessed in 600 obese school going children with 224 boys and 376 girls in 6 to 16 years of age group. The results of the study found that there were fewer intakes of all five food groups. The protein and energy intake was high. So the vitamins and minerals intake were found to be less among these children (Rajkumar et al, 2016).

A study on consumption patterns of sugar-sweetened beverages in 62 children aged 12 to 19 years in United States revealed that the total sugar-sweetened consumption has increased among children four to five percent. This study further concluded that creating awareness on beverages consumption and henceforth to encourage healthful beverage consumption (Han and Lisa, 2013).

A study on overweight and obesity in children aged 10 to 20 years revealed that the percentage of overweight children has nearly doubled from seven percent to 13 percent, and the percentage of overweight adolescents has almost tripled from 5 percent to 14 percent. Countless studies have

determined that overweight children and preteens are more likely to become overweight and obese adolescents and adults. Conditions associated with obesity, such as Type 2 diabetes, high blood lipids, hypertension, early maturation, and orthopedic problems, are showing up in increasingly younger children with greater frequency (Dietz, 2012).

C. Disease Prevention through Diet and Lifestyle Modifications

Apart from that India is facing economic burden also as projected by WHO estimations that mortality from diabetes, heart diseases and stroke costs about 210 billion in India in the year 2005. Much of the heart disease and stroke in these estimates was linked to diabetes. WHO estimates diabetes, heart disease and stroke together will cost about Rs.333.6 billion over the next 10 years in India alone.

According to WHO estimates up to 80 percent of cases of coronary heart diseases, 90 percent of type 2 diabetes cases and one third of cancers can be avoided by increases physical activity healthier diet and stopping smoking

In all food groups are necessary to meet the requirements for essential nutrients for lead good health. Has reveled among the school children aged 6 to12 years. The nutritional status was assessed overall 38 percent of 6 to 12 year school aged children were found to be undernourished. In this study the children less 70 percent for all nutrients consumed except protein, energy, thiamine and niacin. However all these dietary diversity indices failed to show any relationship with nutritional status of school childern aged 6 to 12 years (Nitya etal, 2016).

In a study conducted among 200 school going children in rural and urban school children two methods were used to assess the nutritional status of the childrens. Anthropometric measurements and dietary intake was used. The consumption pattern of mid day meal, pulses and green leafy vegetables was assessed. The result revealed that 32.5 percent were underweight, 3.5 percent were severely underweight (Rena et al, 2013).

In a study to assess the obesity in school going children and their socio economic status with 1500 school going children aged of 6 to16 years. The result showed that the obesity and Overweight children were high in nuclear families. And also create nutrition awareness programmes for parents played a prominent role in the health of the children (Rajkumar et al, 2016).

In a study on personal hygiene of school children in rural area with 400 school children using questionnaire. The result showed that the most of the school going children developed a good sense of hygiene and also the awareness towards keeping themselves clean. Such studies will improve the personal hygiene. And also create awareness for personal hygiene. Creating awareness at this young age will bring a behavioural change towards a healthy living (Vismita etal, 2014).

A study on the prevalence and awareness of lifestyle disease related risk factors in school going children aged 8 to 12 years of Delhi. A total of 293 participants from both the schools aged 8 to12 years were included 10 percent students were classified as obese whereas 11 percent were labeled as overweight. Nearly 39 percent students were underweight. Hence that 60 percent said that parents and family were most information about their health. The recommended level of physical activity was being practiced by 55 percent of the students though more than 90 percent knew that physical activity is good for health. However imparting knowledge and increasing awareness is not sufficient to prevent the onset of lifestyle diseases amongst school children (Anand et al, 2011).

Childhood obesity has reached epidemic levels in developed as well as in developing countries. Overweight and obese children are likely to stay obese into adulthood and more likely to develop non-communicable diseases like diabetes and cardiovascular diseases at a younger age. The mechanism of obesity development is not fully understood and it is believed to be a disorder with multiple causes. In general, overweight and obesity are assumed to be the results of an increase in caloric and fat intake, excessive sugar intake by soft drink, increased portion size, and steady decline in physical activity have been

playing major roles in the rising rates of obesity all around the world. Childhood obesity can profoundly affect children's physical health, social, and emotional well-being, and self esteem (Sahoo et al, 2015).

A study on Lifestyle behavior of adolescents in its age of 12 to 19 years in Karachi. Females were more depressed than males. 61.8 percent females are to be involved for late night activity and 58.9 percent respondents getting less than eight hours of sleep daily and only 16.8 percent of the respondents to involved physical activity. Creating awareness at this young age will bring a behavioral change towards a healthy living (Rahim, 2010).

Cardio vascular diseases generally manifest in adulthood, the process of atherosclerosis can begin early in childhood. For the most children, atherosclerosis vascular changes are minor and can be minimized or even prevented with adherence to a healthy lifestyle (Ferranti et al., 2017).

A study on food consumption patterns that are changing with time and the role played by the food environment in altering the intake patterns and thereby the health outcomes. There is a transition in the consumption patterns among individuals all over the world towards energy dense, high fat, high sugar and salt, processed and ready to eat foods. This shift and the role played by the food environment in changing the consumption patterns has brought about adverse effects on the health of the people making them more prone to obesity and other degenerative diseases. To need for formulating policies that would aim at promoting healthy food consumption patterns by educating the consumers and creating awareness about the adverse effects of eating unhealthy foods. Appropriate strategies are also needed to make positive changes in the food environment and thus the consumption patterns (Shreya et al., 2014).

Obesity during childhood and adolescence is a growing problem in the United States, Canada and around the world that leads to significant physical, psychological, and social impairment. In recent years, empirical research on factors that contribute to the development and maintenance of obesity has

begun to consider peer experiences, such as peer rejection, peer victimization, and friendship. A number of limitations and issues in the theoretical and empirical literatures are also discussed, along with future research directions. Revealed that the involvement of children and adolescents' peer networks in prevention and intervention efforts may be critical for promoting and maintaining positive behavioral health trajectories (Julie et al, 2014).

A study on healthy eating among children and youth. We defined healthy eating as "eating practices and behaviours that are consistent with improving, maintaining and or enhancing health. Revealed that focussed on children or youth and reported at least one factor relevant to healthy eating. Among collective factors, familial factors and the nature of foods available in the physical environment, including at home, schools and in fast-food establishments, stand out as significant influences on healthy eating in children and youth. Research priorities for Canada in the area of determinants of healthy eating and surveillance of eating behavior are identified (Marry et al, 2012).

A study on children's eating patterns in Singapore in terms of frequency, sources and types of food. A sample that includes preschoolers, school going children and teenagers. Two sets of data were collected. The first is three days food diary that was administered to 80 school boys, aged 12 to 15 who are involved in a physical intervention study in the Trim and Fit programme. A total of 57 and 198 valid returns were obtained respectively. Based on the lunch and dinner meals eaten by all respondents, 50 percent of the meals were found to be high fat and low fiber. An average of 20 percent of those interviewed ate out at least five to seven times a week.

Such an eating pattern may have contributed to the recorded high obesity level and this can lead to serious diseases in their later part of life. And this study to assess the nutritional knowledge and social factors that impact such an eating pattern among the children. To effect a long term behavioral change, so to be create the awareness on current nutrition and health education curriculum in schools and at the national level (Schubert et al, 2012).

A study on impact of poor nutrition on the academic performance of grade seven learners at two primary schools in Chivi, Zimbabwe. In this study, a qualitative phenomenological case study design was used with focus group discussions, interviews and observations as data collection instruments to twelve grade seven learners, three headmasters and four teachers. Findings revealed that malnutrition affected physical growth, cognitive development and it consequently impacts on academic performance, health and survival of learners (Chinyoka, 2014).

Post traumatic stress disorder (PTSD) is a severe psychological trauma which results in an emotional suffering and a significant impairment in social area of functioning, revealing an intricate clinic summary which proves to be a tackling challenge concerning the therapeutic response. Among the general population PTSD is commonly associated with the highest rate in the use of medical and other professional services which makes it one of the most costly mental disorders.

In this study on prevalence of obesity has tripled among persons aged 6 to 19 years. Multiple chronic disease risk factors, such as high blood pressure, high cholesterol levels, and high blood glucose levels are related to obesity. Schools have a responsibility to help prevent obesity and promote physical activity and healthy eating through policies, practices, and supportive environments (Bauer, 2011).

Increasing incidence of lifestyle disorders among Indians are largely attributed by unhealthy lifestyle practices like poor dietary pattern, inadequate physical activity smoking alcohol consumption and stress. Lifestyle modification programs are provided effective in behavior modification and promotion of healthy lifestyle practices among adolescents. A school based interventional study was conducted among adolescents.

Food intake, lifestyle behaviors, and obesity are linked to the development of chronic diseases such as type 2 diabetes, certain cancers, and cardiovascular diseases. It is recognized that physical and social environment

influences individuals' behaviors, and some population subgroups such as racial or ethnic minorities and individuals with low socioeconomic status or limited literacy or language abilities seem to be especially vulnerable to disparities in disease risk factors, disease prevalence or health outcomes. Certain life cycle phases appear to be especially important for health promotion and disease prevention (Damian et al, 2013).

A study on poor health and malnutrition in early childhood may affect cognitive abilities. This study looks into the effect of nutritional on college students in North Tripura district. The study shows that, the tribal students have lower Body Mass Index values than their nontribal counterparts which may be due to the tribal students having less access to convenience foods. Their poor nutritional status reflects in their academic achievements which are lower than their nontribal counterparts (Saha, 2013).

A study on physical activity between normal weight and obese children with a total of 129 obese children and 142 normal weight children revealed that 10 percent of obese children involved physical activity and other children did not involved in physical activities (Saatela et al, 2010).

In this study on health of teens must be considered in light of current and future risk issues that pose an immediate threat to teen health and behaviors, factors that contribute to the chronic diseases, and can affect teens as they age. Three types of behavior - those that result in injuries, alcohol and drug use, and sexual activity to contribute to leading causes of mortality and morbidity among 10 to 12 years old has revealed causes that contribute to 72 percent of all deaths are motor vehicle crashes, 31 percent, nearly half alcohol-associated, homicide 18 percent, suicide 12 percent and unintentional injuries 11 percent Every year, nearly 25 percent of all new HIV infections, one quarter of all new infections with other sexually transmitted diseases, and one million pregnancies occur among teenagers (Lowry et al., 2010).

A sample of 902 middle-school and high-school adolescents to be included 53 percent female, 47 percent male and their parents 89 percent

female, 11percent male. Results showed that parents who reported purchasing fast food for family meals at least 3 times per week were significantly more likely than parents. Fast-food purchases for family meals were negatively associated with parental vegetable intake. In this study showed that to be educated on the effects of fast food for family meals and how to choose healthier, convenient family meals (Dianne et al., 2010).

A study on unhealthy dietary habits and a lack of physical activity for adults. With 61 percent of all U.S. adults classified as overweight, this epidemic may soon catch up with cigarette smoking as a leading cause of preventable death, as is to be expected, children are not immune from this national epidemic. Thirteen percent of U.S. children ages 6 to11 are overweight and 14 percent of children aged 12 to19 are overweight (Dietz., 2012).

A study on overweight and obesity, today's teens are not choosing the types or amounts of foods that they need for a healthy lifestyle. Only about one percent of teens are meeting the food group. Less than 30 percent of teens eat the recommended amount of fruits, grains, meats, and dairy and 36 percent eat the recommended amount of vegetables. The Youth Risk Behavioral Surveillance System (YRBSS), a self-report school-based survey developed by CDC, found that only 21.4 percent of high school children had consumed the recommended five servings a day of fruits and vegetables, and half of all children consumed less than one serving a day (Meredith et al, 2011).

A good dental health among children in the United States today should be easy regular tooth brushing, flossing, exposure to fluoride, and attention to good nutrition, together with visits to a dentist twice a year, should be enough to assure that a child rarely suffers the pain of an abscessed tooth, or loses a tooth to severe decay. However, many young children, especially those living in poor families, continue to suffer with mouths full of deep cavities, swollen jaws and cheeks, and episodes of around-the-clock pain. Some children regard tooth decay as inevitable and the pain associated with dental therapy as so unpleasant that they would rather have their teeth pulled than fixed (Lewit and Kerrebrock, 2011).

Maintaining good dental health in children is important not only because it prevents childhood pain and suffering and the school absenteeism that results from dental disease, but also because tooth loss in childhood can adversely affect how the jaws and teeth function as the child matures. Furthermore, unhealthy teeth are considered unattractive, and negative responses to the appearance of a child's teeth can impair the child's social confidence. Dental health can influence a child's overall chances for success just as do other, more frequently recognized aspects of physical health (Dharnendra and Bhatt, 2014).

A children's dental health has improved substantially over the past two decades, with large declines in the average number of cavities per child, a number of children experience a disproportionate share of dental disease. Poor children in particular, because they are less likely than their wealthier peers to receive dental services, are at the highest risk of suffering the pain and consequences of untreated dental disease. Although federal law requires states to provide dental services to poor children through the early and periodic screening, diagnosis, and treatment (EPSDT) component of the Medicaid program, in practice many poor children fail to receive these services. Obesity prevention programs focused on diet and exercise are becoming more and more available to young children (Etelson et al, 2012).

It is beneficial to start tooth care at a young age. Introducing a toothbrush during the toddler years can initiate a good oral hygiene routine that continues through life (Mahan and Stump, 2010).

III. METHODOLOGY

The methodology pertaining to the study titled “**Food Choices and Health Profile of Preteens**” was carried out in the following stages.

- A. Selection of Area and Designing Tools for the Study
- B. Assess the Health Profile of the Preteens
- C. Health Education to Preteens, Parents and Teachers
- D. Association of Food Choices and Health Profile of Preteens
- E. Analysis and Interpretation of Data

A. Selection of Area and Designing Tools for the Study

A total of two Higher Secondary Schools at Coimbatore each representing rural and urban areas at Coimbatore were identified for selection of study participants. The study participants comprised preteens in the age group between 9 and 12 years from Government higher secondary school at Vellamadai pancyayat for rural area and KG Matriculation school at Annur for urban area. A total of 259 study participants with 123 girls and 136 boys studying in classes Six and Seven were included for the study using purposive sampling. “A sampling design is called as purposive sampling, When the samples are drawn on the basis of personal judgment of a person” (James et al, 2015).

The inclusion criterion for the selection of study participants were Preteens aged 11 and 12 years. Both boys and girls from class Six and Seven and those who were willing to contribute to the study. The exclusion criterion was children with any congenital diseases, children undergoing treatment if any and preteens aged 9 and 10 since the school authorities refused permissions. The proposal for the conduct of the research was approved by the Institutional Human Ethics Committee of Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore and is enclosed as (Appendix I).

B. Assess the Health Profile of the Preteens

A well designed questionnaire was used to assess the health profile of the study participants. A questionnaire is a data collection instrument consist of a series of questions and others that prompt for the purposes of gathering information from respondents (Abawi, 2013).

Assessment of health profile was done with anthropometric measurements, dietary pattern and lifestyle practices. Anthropometric measurement comprises of Height, Weight and with the height and weight recorded, Body Mass Index was calculated. Dietary pattern of preteens with specific details on meal pattern, food intake and consumption of fast foods were elicited. The lifestyle pattern included physical activity such as aerobic exercises, meditation practices, hobby time and sleep pattern. The Questionnaire designed to assess the health profile of the preteens is given as (Appendix II).

i) Anthropometric Assessment

“Anthropometry deals with physical measure that provides an indirect assessment of body composition, growth and development. This is considered to be the most sensitive parameter for assessing the nutritional status” (National Institute of Nutrition 2009).

Anthropometric measurements comprise of Height, Weight and Body Mass Index (BMI). The height of the selected individual was recorded by the flexible measuring tape. The preteens were requested to stand erect to the wall and the height was marked on the wall. The height was then recorded. The body weight of the preteens was inscribed using the bathroom scale. The procedure was done with the measuring weight followed by zeroing the scale before the subject stepped on the machine. The subject was asked to remove the foot wear, stand straight and stay still on the scale and then the reading was recorded.

Body Mass Index (BMI)

The height and weight recorded from the study participants were used to calculate the Body Mass Index. Body Mass Index helps to estimate the body fatness and health risk of preteens. The Body Mass Index was calculated with the height and weight recorded using the formula.



Plate 1: Height Measurement



Plate 2: Weight Measurement

Body Mass Index (BMI), a simple index for Weight to Height (Weight in Kgs/ Height in m²) was calculated and is classified as underweight, overweight and obesity in preteens in accordance to the Center for Disease Control and Prevention (CDC), National Center for Health Statistics (2013). The interpretation was as follows.

BMI 1 st to 4 th percentile	:	Underweight
BMI 5 th to 84 th percentile	:	Healthy weight
BMI 85 th to 94 th percentile	:	Overweight
BMI 95 th to 100 th percentile	:	Obese

ii) Dietary Pattern

In order to study the dietary pattern among preteens, details such as the type of diet, type and quantity of fats consumed, consumption of dairy products, junk foods, fast foods and beverages were elicited.

Dietary assessment comprises the aspects such as food consumption including information on the type of foods consumed and preferred, and frequency with their opinion and attitudes towards food (Krishnaswamy, 2012). Hence the dietary pattern also included pattern of intake for type of street foods, type of processed and preserved foods, fruits and vegetables and consumption pattern of fats and oils.

iii) Lifestyle Pattern:

The lifestyle pattern was elicited with the details on physical activity such the type of indoor and outdoor games for the preteens. Details on the practice of Yoga and Meditation by the Preteens with duration and frequency was recorded. And also it was mostly important to children for our health and Lifestyle habits. Sleeping pattern were also included to this lifestyle habits.

C. Health Education Tools for the Conduct of the Study

Based on the health profile, preteens were given Health Education and it comprised of holistic education to preteens. "Health education offers a great opportunity to individuals to learn about the essentials of nutrition for the health and to take steps to improve the quality of their diet and their well being".

Education on diet and lifestyle modifications were imparted to all the preteens. Educational modules were designed for group counseling. Six health education sessions with 30 minutes each was conducted to impart education to all the study participants. The benefits aimed from the designed health education modules are;

- They should be able to know how to select healthier food choices and to maintain our body healthy
- They should practice healthy food pattern.

A total of 259 preteens were involved in both rural and urban schools for the health education. In order to create awareness among the study participants, interactive aids were used such as lecture, power point highlighting the importance of healthy food choices, importance of proper hygiene and sanitation and good Lifestyle practices.

i) Health Education to the Preteens

Based on the health profile, preteens were given Health Education and it comprised of holistic education to preteens, parents and teachers.

Module No	Details of Health Education Module	Duration in Minutes	Aids
<i>For preteens</i>			
1	Healthy food choices	30	Lecture
2	Balanced diet	30	Power point
3	Physical activity	30	Lecture
4	Food pyramid and My plate	30	Lecture
5	Hygiene and sanitation	30	Lecture
6	Lifestyle practices	30	Lecture
<i>For parents</i>			
1	Traditional food Vs Fast food	30	Lecture
2	Cooking simple and healthy recipes	30	Lecture + demonstration
<i>For Teachers</i>			
1	Food choices and health	30	Power point
2	Personal hygiene and health	30	Lecture
3	Physical activity	30	Lecture

Module 1: Healthy food choices

This module was to enlighten and educate on nutrition concepts and help children to assess their food choices, to introduce basic concepts about calories, energy balance and macro and micronutrient needs. Information that support behavioral changes of preteens are given in this module and is given as (Appendix III a).

Module 2: Balanced diet

This module was to create awareness and also to be educate the importance of balanced diet to the preteens. It must contain all five food groups included in our daily consumption to correct proportions and also foods in such quantities (Appendix III b).

Module 3: Food Pyramid and My plate

This module elicited the information regarding the importance of balancing calories, eat smaller portions, to consume more fruits and vegetables, choose one percentage of fat-free dairy products, eat whole grains, and reduce the sugars, fat and salt, drink lots of water were the contents of this module food pyramid and My plate (Appendix III c).

Module 4: Physical activity

This module elicited the information regarding the importance of physical activity for the preteens and their benefits in building strong bones and muscles and also that help in reducing the risk of obese and overweight was being educated (Appendix III d).

Module 5: Lifestyle pattern

Education on lifestyle practices such as physical activity compare Walking, Cycling, Yoga and Meditation for the life based skills like stress relief and healthy life to be lead. And also the awareness of eating habits for the preteens (Appendix III e).

Module 6: Hygiene and sanitation

This module was to create awareness to preteens regarding personal hygiene and sanitation practices that the preteens have to follow in their daily routine and also to educate them the importance of hand washing techniques, food handling methods and avoiding plate wastage and careful disposal of wastes (Appendix III f).



Plate 3: Interaction with Preteens

ii) Health Education Module for the Parents

A total of 20 parents in both rural and urban were educated to enlighten parents on food choices to children at home and school was involved for education after their consent to be a part of this present study.

To create the health awareness to the parents, different methods of cooking that prevents the loss of nutrients and that are necessary for the child growth were educated. It highlighted on the importance of traditional foods. These modules were supported with lecture method and demonstration as an educational aid.

Module 1: Traditional foods Vs Fast foods

This session elicited information to the parents regarding their knowledge on traditional foods and ways to incorporate it in their meals for children. The ill effects of consuming the fast foods and the unhealthy food habits that creates nutritional deficiencies along with weight gain that can severely limit lifestyle and shorten life span was educated. The merits of consumption of traditional foods as against the fast and junk foods was also highlighted with its consequences (Appendix IV A).

Module 2: Cooking simple and healthy recipes

This session was to educate parents regarding simple and easy to cook recipes that is balanced and provides all the necessary nutrients that are required for the children. The simple innovative, attractive, tasty, nutritionally balanced and healthy recipes that makes the children to consume food was being educated. Demonstrations of the simple and wholesome packed lunches for children were displayed such as Stuffed chappathi, Vegetable biriyani, Rice with potato and greens, Tomato rice, Stuffed parathas, Vegetable sandwiches and Fruit milk shake (Appendix IV B).

(iii) Health education modules for Teachers

A total of 10 teachers at selected the two schools in rural and urban areas were enlightened on food choices to children at school and their role in food choices.

In order to create the awareness for teachers and their the ways to make the preteens healthy and active and follow personal hygiene. A total of three sessions were done for the teachers and was supported with lecture as an educational aid. The module comprised information on Food choices and Health, Personal hygiene for the children and the physical activity to be involved by them in their day to day life.

Module 1: Food choices and health

This module was to create awareness to teachers regarding the importance of food and their healthy food choices for the preteens (Appendix V A).

Module 2: Personal hygiene and health

This module was to create awareness to teachers regarding personal hygiene and sanitation practices that the preteens have to follow in their daily routine and also educate them the importance of sharing this information to their school children apart from their academics (Appendix V B).

Module 3: Physical activity

This module elicited the information regarding the importance of physical activity for students and their benefits in building strong bones and muscles and also that help in reducing the risk of obese and overweight was being educated. The benefits of physical activity and its importance were also highlighted (Appendix V C).

D. Association of Food Choices and Health Profile of Preteens

Based on the data elicited from preteens on the food choices, health status comprising anthropometric, dietary and lifestyle pattern of the preteens and were categorised as undernourished, well nourished and over nourished preteens. A check lists were designed to assess the knowledge, Attitudes and Practice of the preteens, Parents, Teachers before and after imparting Health Education (Appendix VI, VII, VIII).



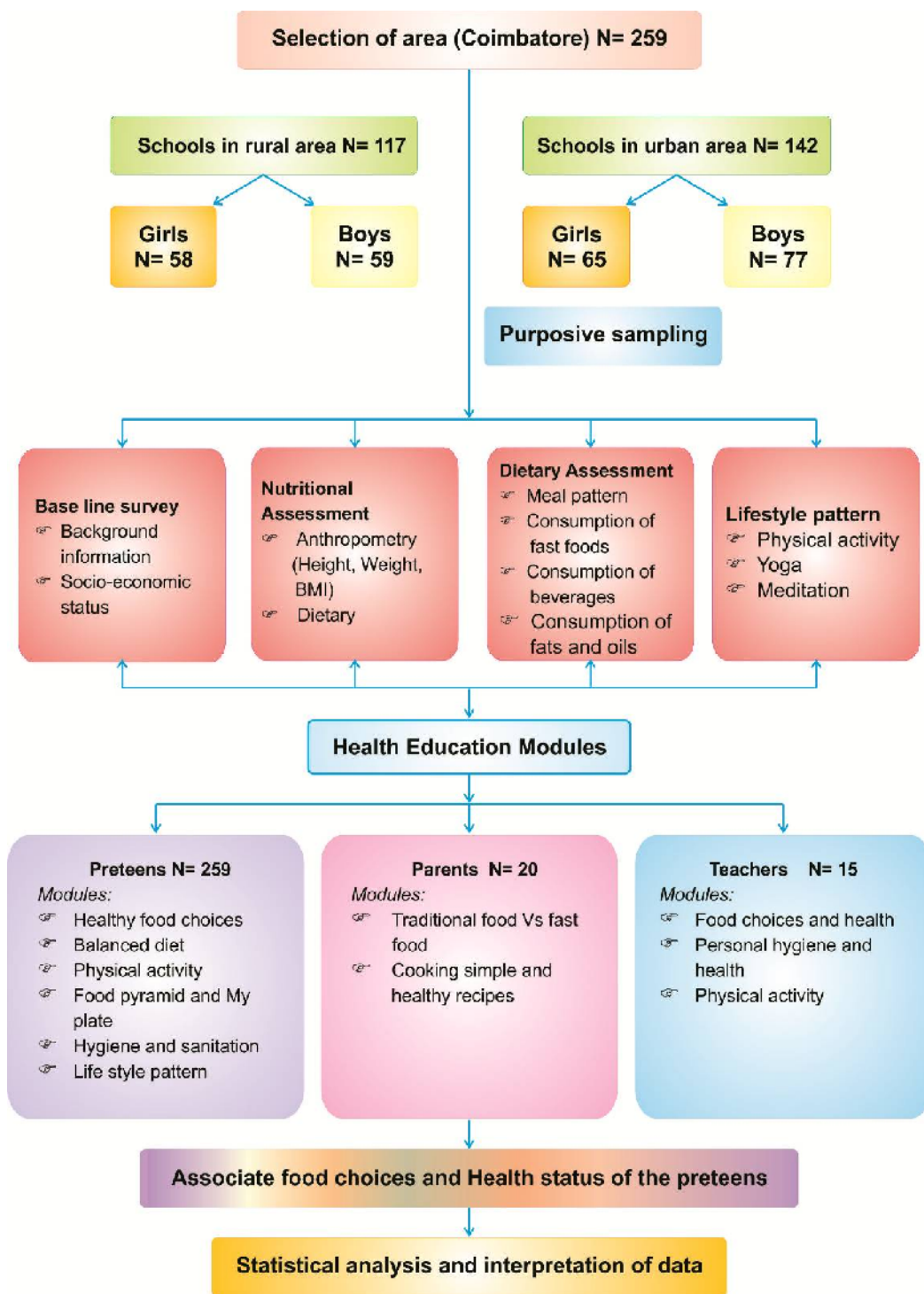
Plate 4: Health education to Teachers

E. Analysis and Interpretation of Data

The data were statistically analyzed in order to study the difference among preteens in rural and urban areas with reference to food choices, Pattern of intake for foods, Physical activity and lifestyle practices.

In addition to the health education to preteens, data on education to parents, teachers were also assessed with checklist for variations in Knowledge, Attitude and Practice and was statistically analysed as a part of health and food choices of preteens with parents and teachers.

'T' test based on t-distribution and is considered an appropriate test for judging the significance of difference between the mean of two samples (Kothari, 2009). Hence t-test was used in the study to assess the significant difference between food choices of the preteens with risk for health profile. The methodology of the present study is schematically presented in the Figure 1.



RESEARCH DESIGN

FIGURE 1

IV. RESULTS AND DISCUSSION

The results of the study titled is discussed under the following headings

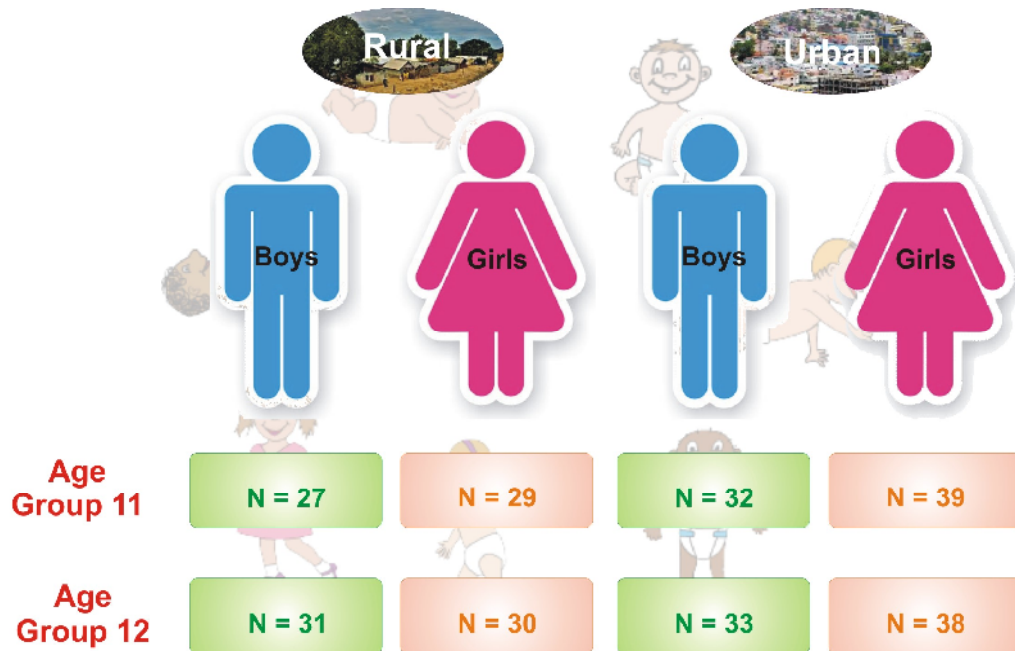
- A. Profile of the Preteens
- B. Health Assessment of the Preteens
- C. Dietary and Lifestyle Patterns of the Preteens
- D. Association of Food Choices with Health Profile of the Preteens

A. Profile of the Preteens

The Profile of the Preteens comprised of Agewise distribution, Type of family, Education details of parents and siblings of preteens, Occupation details of the parents of the preteens and income levels of the parents of the preteens is discussed in the following pages.

i). Agewise Distribution of the Preteens

The Agewise distribution of the preteens was showed in Figure 2.



AGEWISE DISTRIBUTION OF PRETEENS

FIGURE 2

ii). Type of the family system

The type of family system is given as Table I.

**TABLE I
TYPE OF FAMILY IN PRETEENS**

N= 259

Family type	Rural (N= 117)				Urban (N=142)				Total	
	Girls	Boys	Total		Girls	Boys	Total			
	N= 58	N= 59	No	%	N= 65	N= 77	No	%	No	%
Joint family	10	9	19	16.2	7	6	13	9.1	32	12.4
Nuclear family	48	50	98	83.7	58	71	129	90.8	227	87.6

The details on family system adopted by the families of the preteens for the present study in the rural and urban areas indicated that 90.8 percent in urban and 83.7 percent in rural area had nuclear family system. It was also noted that the joint family system was higher in the rural families with 16.2 percent when compare to 9.1 percent at the urban area this indicates the nuclear family system predominates more in the urban and rural areas (Sabarwal, 2015). This is also in tune with the study by Sabarwal, 2015 that nuclear family system was higher in the urban population.

iii). Education details of parents and siblings of preteens

The education details of the parents and siblings of the preteens is given as Table II.

TABLE II
EDUCATION DETAILS OF PARENTS IN PRETEENS

N= 259

Education Details	Rural (N= 117)				Urban (N=142)				Total	
	Girls	Boys	Total		Girls	Boys	Total			
	N= 58	N= 59	No.	%	N= 65	N= 77	No.	%	No.	%
Education details of Father										
Illiterates	20	31	51	43.5	5	3	8	5.6	59	22.7
Primary	9	12	21	17.9	10	7	17	11.9	38	14.6
Secondary	10	5	15	12.8	13	20	33	23.2	48	18.5
Higher secondary	11	7	18	15.3	12	15	27	19.01	45	17.3
Degree	8	4	12	10.2	25	32	57	40.1	69	26.6
Education details of Mother										
Illiterates	32	33	65	55.5	8	7	15	10.6	80	30.9
Primary	18	17	35	29.9	10	8	18	12.6	53	20.4
Secondary	5	4	9	7.6	18	14	32	22.5	41	15.8
Higher secondary	3	5	8	6.8	13	20	27	19.01	35	13.5

Education details of Siblings

N= 150

Education Details	Rural (N= 90)				Urban (N= 60)				Total	
	Girls	Boys	Total		Girls	Boys	Total			
	N= 44	N= 46	No.	%	N= 35	N= 25	No.	%	No.	%
Illiterates	-	-	-	-	-	-	-	-	-	-
Primary	21	19	40	44.4	18	12	30	50	70	46.6
Secondary	14	16	30	33	10	9	19	31.7	49	32.6
Higher secondary	9	11	20	22	7	4	11	18.3	31	20.6
Degree	-	-	-	-	-	-	-	-	-	-

The education details of fathers of the preteens showed that 43.5 percent were illiterates in rural area as against five percent in urban areas. It was also noted that 26.6 percent were degree holders in both rural and urban areas.

The education details of mothers of the preteens showed that 55.5 percent were in illiterates in rural area and 10.6 percent in urban area. And also 34.5 percent were in urban mothers are degree holders.

The education details of siblings of the preteens showed that 46.6 percent were in primary level in both rural and urban area, 32.6 were in secondary level and 20.6 percent were in higher secondary level. There are no illiterates in both rural and urban area.

iv). Occupation details of the parents of the Preteens

The occupation detail of the parents of the preteens is given as Table III.

TABLE III
OCCUPATION DETAILS OF THE PARENTS OF THE PRETEENS

N= 259

Occupation Details	Rural (N= 117)				Urban (N=142)				Total	
	Girls	Boys	Total		Girls	Boys	Total			
	N= 58	N= 59	No.	%	N= 65	N= 77	No.	%	No.	%
Occupation details of father										
Labour	24	28	52	44.4	18	16	34	23.9	86	33.2
Business	6	4	10	8.5	14	32	46	32.3	56	21.6
Teacher	-	-	-	-	9	12	21	14.7	21	8.1
Driver	8	9	17	14.5	12	9	21	14.9	38	14.6
Agriculturist	20	18	38	32.4	12	8	20	14.08	58	22.3
Occupation details of Mother										
Labour	34	32	66	56.4	27	26	53	37.3	119	45.9
Homemaker	16	20	36	30.7	19	30	49	34.5	85	32.8
Teacher	2	-	2	1.7	15	12	27	19.01	29	11.1
Business	-	-	-	-	-	6	6	4.2	6	2.3
Agriculturist	6	7	13	11.1	4	3	7	4.9	20	7.7

Occupation details of fathers of the preteens in the rural area showed that 44.4 percent were laborers' with daily wages such as carpenters, painters and work stations 32.4 percent were engaged at agriculture. The occupation details of the fathers of the urban area indicated that 32.3 percent were businessmen engaged with business such as finance, marketing, small scale industries.

The details of occupation of the mothers of the preteens reported that 56.4 percent in the rural areas and 77.3 percent in the urban area were laborers' working at textile mills and companies it was also noted that 30.7 percent and 34.5 percent in the rural and urban areas respectively were homemaker.

v). Income status of the parents of the preteens

The income status of the parents of the preteens is given as Table IV.

TABLE IV
INCOME STATUS OF THE PARENTS OF THE PRETEENS

N= 259

Income Status £	Rural (N= 117)						Urban (N=142)						Total	
	Girls		Boys		Total		Girls		Boys		Total			
	№	%	№	%	№	%	№	%	№	%	№	%	№	%
Monthly income status of father														
< 20,000	46	79.3	40	67.8	86	73.5	10	15.4	8	10.4	18	12.7	104	40.2
< 25,000 - 35,000	9	15.5	15	25.4	24	20.5	35	53.8	48	62.3	83	58.5	107	41.3
>35,000	3	5.2	4	6.8	7	5.9	20	30.8	21	27.2	30	21.1	59	15.05
Monthly income status of mother														
< 20,000	49	84.5	51	86.4	100	85.5	25	38.5	31	40.3	56	39.4	156	60.2
< 25,000 - 35,000	9	15.5	8	13.6	17	14.5	33	50.7	37	48.1	70	49.3	87	33.6
>35,000	-		-				7	10.8	9	11.7	16	11.3	16	6.2

HUDCO Classification, 2015

The details on monthly income of the father of the preteens in the rural area showed that 73.5 percent were with low income involved in daily wages

such carpenter, painters, maid and also the 58.5 percent were with middle income and 15.5 percent were with high income in urban area.

The monthly income details of the mothers of the preteens reported that 85.5 percent were with low income involved in rural areas and also the 33.6 percent were with middle income and 6.2 percent in the high income category at the urban area. Increasing the low income countries especially in India (Mohan et al, 2013).

B. Health Assessment of the Preteens

The health assessment of the preteens comprised Body Mass Index of the preteens and is discussed.

i). Body Mass Index of the preteens

The Body Mass Index (BMI) of the preteens as given as Table V

TABLE V
BODY MASS INDEX OF THE PRETEENS

N= 259

Categories	Rural (N= 117)						Urban (N=142)						Total	
	Girls		Boys		Total		Girls		Boys		Total		Total	
	$\frac{N}{n}$	%	$\frac{N}{n}$	%	$\frac{N}{n}$	%	$\frac{N}{n}$	%	$\frac{N}{n}$	%	$\frac{N}{n}$	%	$\frac{N}{n}$	%
Under weight	42	72	38	64.4	80	68.3	34	52.3	26	33.7	60	42.2	140	54.05
Normal weight	12	20.6	16	27.1	28	23.9	22	33.8	30	38.9	52	36.6	80	30.8
Over weight/ obese	4	6.8	5	8.4	9	7.6	9	13.8	21	27.2	30	21.1	59	15.05
Chi ² Value	83.267** (P= 0.015)						63.45** (p = 0.014)							

** - Significant at 1 % level

The Body Mass Index of the preteens when compared with the standard percentils chart, preteens in the underweight category were higher in rural areas with 68.3 percent and 42.2 percent in urban areas. The percentage of girls in the underweight category were higher than boys. Also it was alarming to note that 7.6 percent preteens in rural area and 21.1 percent in the urban area were overweight, indicating dual burden of diseases being underweight and on

the other hand being overweight. In accordance to the Center for Disease Control and prevention (CDC) National Center for Health Statistics (2013). The data signifies the double burden namely underweight and overweight.

When the data was analysed statistically with chi square test, the Body Mass Index had a significant relationship among rural and urban preteens cautioning the need for interventions at younger age groups.

C. Dietary and Lifestyle pattern of the Preteens

The Dietary and lifestyle patterns of the Preteens comprised of Meal pattern, Consumption pattern of intake pattern for fruits and vegetables, preferred foods, Consumption pattern of snacks, favourite snacks, consumption of fast, baked, street and processed foods by the preteens, Consumption of fats and oils of the preteens. In lifestyle pattern of the preteens comprised of physical activity, exercise, hobbies and sleep pattern of the preteens is discussed in the following pages.

i). Dietary pattern of the Preteens

The dietary pattern of the preteens is given as Table VI.

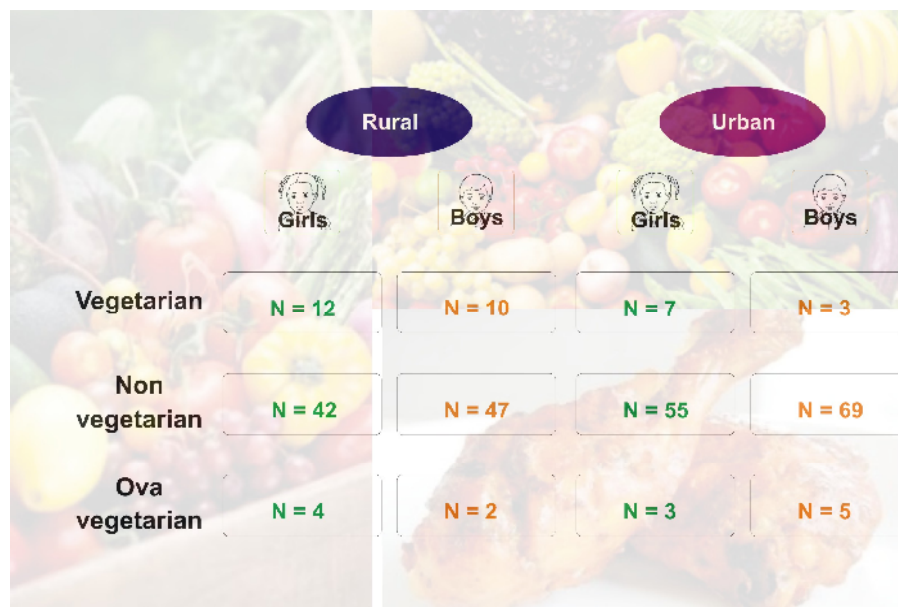
TABLE VI
DIETARY PATTERN OF THE PRETEENS

Dietary Pattern	Rural (N= 117)						Urban (N=142)						Total	
	Girls		Boys		Total		Girls		Boys		Total		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Vegetarian	12	20.6	10	16.9	22	18.8	7	10.7	3	3.8	10	7.04	32	12.4
Non-vegetarian	42	72.4	47	79.6	89	76	55	84.6	69	89.6	124	87.3	213	82.2
Ova vegetarian	4	6.8	2	3.3	6	5.1	3	4.6	5	6.4	8	5.6	14	5.4
Chi square Value	110.492** (P = 0.0011)						123.285**							

** - Significant at 1 % level

Non-vegetarianism predominated both among rural and urban preteens and was seen among 82.2 percent preteens. Vegetarians were only 16.9 and 7

percent both rural and urban preteens. When the data were statistically analysed with chi square, the results showed significance at one percent level revealing the transition of food intake among both rural and urban preteens.



DIETARY PATTERN OF THE PRETEENS

FIGURE - 3

ii). Consumption of Meal pattern

The consumption of meal patterns is given as Table VII.

**TABLE VII
CONSUMPTION OF MEAL PATTERN**

Meal pattern	Rural (N= 117)						Urban (N=142)						Total	
	Girls		Boys		Total		Girls		Boys		Total			
	N= 58	%	N= 59	%	No	%	N= 65	%	N= 77	%	No	%	No	%
Two	7	12.1	8	13.7	15	12.8	11	16.9	10	12.9	21	14.7	36	13.8
Three	48	82.7	44	74.5	92	78.6	42	64.6	48	59.7	88	61.9	180	69.4
Four	3	5.1	7	11.8	10	8.5	12	18.4	21	27.2	33	23.2	43	16.6

The meal pattern observed among preteens showed that 17.6 percent of rural children 61.9 percent in urban had three meal pattern followed it was allowing to note that 12.8 percent of the rural children 14.7 percent of urban children had only two meals which would pave way for deficiency for nutrients.

iii). Skipping of meals among the Preteens

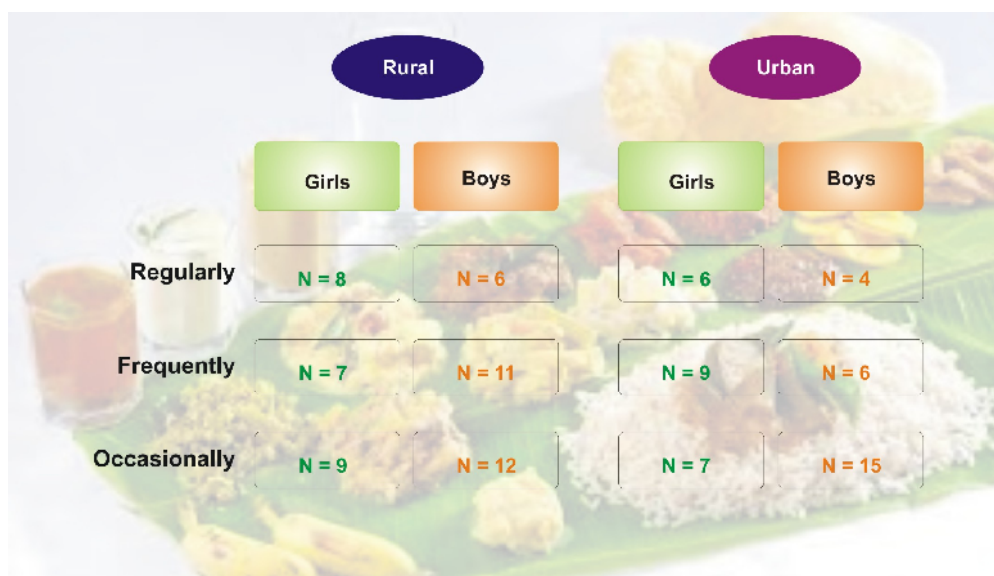
The skipping of meals among the preteens is given as Table VIII.

TABLE VIII
SKIPPING OF MEALS AMONG THE PRETEENS

N= 100

Skip meal pattern	Rural (N=53)						Urban (N=47)						Total	
	Girls		Boys		Total		Girls		Boys		Total			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Regularly	8	33.3	6	20.6	14	26.4	6	27.3	4	16	10	21.3	24	24
Frequently	7	29.1	11	37.9	18	33.9	9	40.9	6	24	15	31.9	15	15
Occasionally	9	37.5	12	41.3	21	39.6	7	31.8	15	60	22	46.8	22	22

The skipping of meals by preteens was noticed among 14 percent rural preteens with 33.3 percent girls and 20.6 percent boys. The urban scenario showed that 21.6 percent skipped meals with 27.3 percent girls and ten percent boys. It also evinced that preteens in urban area skipped meals regularly because of lack of time, and also girls were observed to skip both in urban and rural areas.



SKIPPING OF MEALS AMONG THE PRETEENS

FIGURE - 4

iv). Consumption Pattern of Intake for Fruits and Vegetables by the preteens

Consumption pattern of intake for fruits and vegetables by the preteens is given as table IX.

**TABLE IX
CONSUMPTION PATTERN OF INTAKE FOR FRUITS AND VEGETABLES
OF THE PRETEENS**

N= 100

Intake of fruits and vegetables	Rural (N= 95)						Urban (N=102)						Total	
	Girls		Boys		Total		Girls		Boys		Total			
	N= 46	%	N= 49	%	N=	%	N= 52	%	N= 50	%	N=	%	N=	%
Regularly	18	39.1	12	24.4	30	31.6	17	32.6	21	42	38	37.2	68	34.5
Frequently	16	34.8	13	26.5	29	30.5	21	40.3	17	34	38	37.2	67	34.01
Occasionally	12	26.1	24	48.9	36	37.8	14	26.9	12	24	26	25.4	62	31.4

The consumption of the fruits and vegetables regularly was observed only among 34.5 percent of preteens and 31.4percent consumed occasionally, which reduces the intake of fibre to the body. Manson et al, 2012 also suggested increase of fruits and vegetables in our daily intake.

v). Types of foods preferred by the preteens

The types of foods preferred by the preferred by the preteens is given as table X.

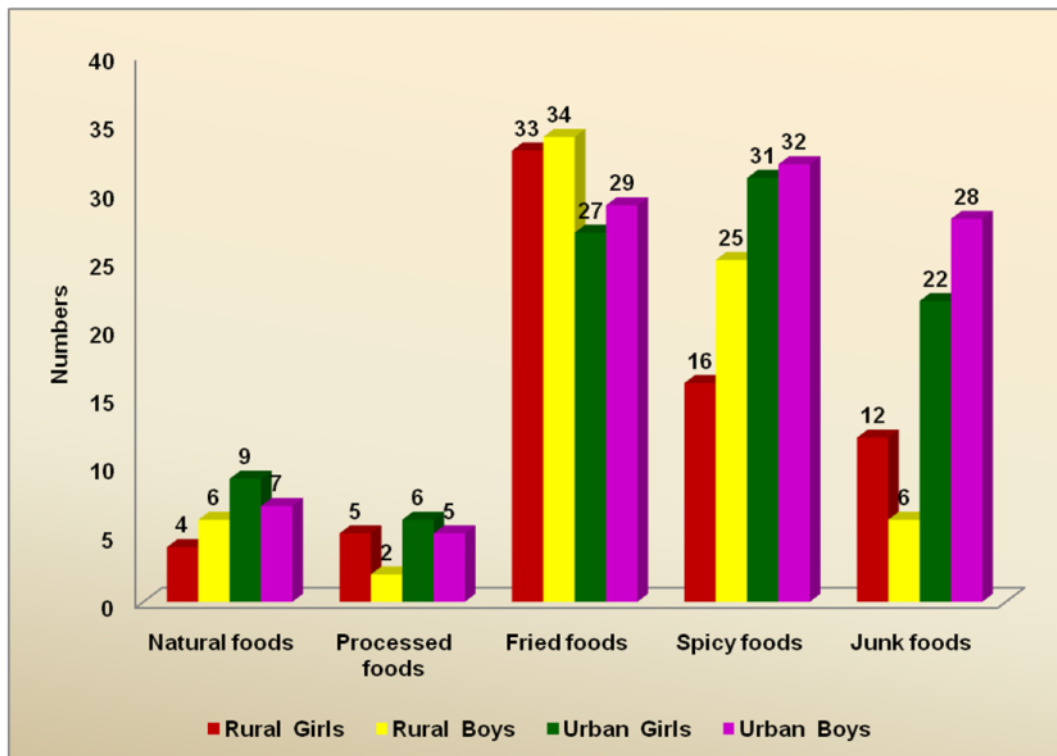
**TABLE X
TYPES OF FOODS PREFERRED BY THE PRETEENS**

N= 259

Type of food	Rural (N=117)						Urban (N=142)						Total	
	Girls		Boys		Total		Girls		Boys		Total			
	N= 58	%	N= 59	%	N=	%	N= 68	%	N= 74	%	N=	%	N=	%
Natural foods	4	6.8	6	10.2	10	8.5	9	13.8	7	9.1	16	11.2	26	10.03
Processed foods	5	8.6	2	3.4	7	5.9	6	9.2	5	6.5	11	7.7	18	6.9
Fried foods	33	56.8	34	57.6	67	57.2	27	41.5	29	37.6	56	39.4	123	47.5
Spicy foods	16	27.5	25	42.4	41	35.04	31	47.6	32	41.5	63	44.4	104	40.1
Junk foods	12	20.6	6	10.2	18	15.4	22	33.8	28	36.4	50	35.2	68	26.2

* Multiple Response

The consumption of processed foods such as canned foods and packed foods was most preferred by preteens among 6.9 percent and 47.5 percent of both rural and urban preteens. Consumption of fried foods consumed fried foods such as vadai, bonda, chips was higher with 56 percent in rural and 47 percent in urban area. The junk food consumption was high with 35.2 percent among urban preteen. High consumption of snacks, fatty foods, salty foods and sugar found to increase the development of Lifestyle disorders later in life (Midlet et al. 2010).



TYPES OF FOODS PREFERRED BY THE PRETEENS

FIGURE - 5

vi). Consumption pattern of snacks by the Preteens

The consumption pattern of snacks by the preteens is given as Table XI.

**TABLE XI
CONSUMPTION PATTERN OF SNACKS BY THE PRETEENS**

N= 259

Snacks Consumption	Rural (N=117)						Urban (N=142)						Total	
	Girls		Boys		Total		Girls		Boys		Total			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Mid morning	25	43.1	16	27.1	41	35.04	13	20	12	15.6	32	22.5	73	28.2
Afternoon	30	51.7	26	44.1	56	47.9	33	50.7	32	41.5	65	45.7	121	85.2
Evening	27	46.5	19	32.2	46	39.3	31	47.6	28	36.4	59	41.5	105	40.5
Late night	-	-	-	-	-	-	4	6.2	9	11.6	13	9.2	13	5.01
Throughout the day	4	6.8	9	15.3	13	11.1	5	7.7	2	2.6	7	4.9	20	7.7

*Multiple response

The snacking pattern among the preteens showed that 32.4 percent of the rural preteens consumed snacks in the midmorning and it was equally observed during the lunch in the afternoon which was 37.6 percent were as it was observed along with lunch and it also alarming that consumption of snacks late night after dinner was observed among 77.7 percent of the preteens.

vii). Favourite Snacks of the Preteens

The favourite snacks consumption of the preteens is given as Table XII.

**TABLE XII
FAVOURITE SNACKS OF THE PRETEENS**

N= 259

Favourite snacks	Rural (N=117)						Urban (N=142)						Total	
	Girls		Boy		Total		Girls		Boys		Total			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Sweets	21	36.2	16	27.11	37	31.6	27	41.5	25	32.5	52	36.6	89	34.4
Baked foods	25	43.1	15	25.4	40	34.1	38	58.5	33	42.8	71	50	111	42.8
Fried foods	43	74.1	14	23.7	57	48.7	37	56.9	36	46.7	73	51.4	130	50.2
Junk foods	20	34.4	14	23.7	34	29.1	45	69.2	49	63.6	94	66.2	128	49.4

*Multiple responses

The most preferred snacks of the preteens were sweets such as laddoo, jelebi as expressed by 34.4 percent followed by consumption of baked foods

such as cake, puffs by 42.8 percent preteens. Consumption of fried foods such as Chips, Samosa by 50.2 percent preteens was also noted consumption of junk foods was observed more in the urban children with 66.2 percent as compared to rural children.

viii). Consumption of beverages

The consumption of beverages of the preteens is given as Table XIII.

TABLE XIII
CONSUMPTION OF BEVERAGES

N = 259

Type of beverages	Rural (N=117)						Urban (N=142)						Total	
	Girls		Boy		Total		Girls		Boys		Total			
	№	%	№	%	№	%	№	%	№	%	№	%	№	%
Coffee	42	72.4	41	69.5	83	70.9	30	46.1	31	40.2	61	42.9	144	55.6
Tea	33	56.9	31	52.5	64	54.7	31	47.7	28	36.3	59	41.5	123	47.5
Milk	51	87.9	46	77.9	97	82.9	51	78.5	61	79.2	112	78.8	209	80.6
Health drinks	53	91.3	43	72.9	96	82.1	55	84.6	48	62.3	103	72.5	226	87.1
Fresh juices	49	84.5	41	69.5	90	76.9	51	78.5	43	55.8	94	66.2	184	71.04
Carbonated drinks	45	77.6	47	79.7	92	78.6	49	75.5	52	67.5	101	71.1	193	74.5

* Multiple Response

The details of beverages consumption revealed that the coffee consumption of the rural preteens was 70.9 percent and 42.9 percent in urban area. 80.6 percent of both rural and urban preteens consumed the milk. Health drinks such as horlicks, complain, boost consumption was higher in urban preteens with 87.1 percent. Fresh juices such as mango, orange, watermelon, grapes consumption was higher in urban than the rural preteens which was 71.4 percent. Carbonated drinks like coca-cola, Soda, Pepsi and seven up were consumed by both rural and urban preteens. The urban children possess higher consumption of carbonated beverages.

ix). Consumption of Fast Foods

The fast food consumption of the preteens is given as Table XIV.

**TABLE XIV
CONSUMPTION OF FAST FOODS**

N= 259

Fast food consumption	Rural (N=117)						Urban (N=142)						Total	
	Girls		Boy		Total		Girls		Boys		Total			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Burger	15	25.8	12	20.3	27	23.1	31	47.7	37	48.1	68	47.8	95	36.6
Pizza	18	31.03	21	35.5	39	33.3	39	60	48	62.3	87	61.3	126	48.6
Doughnuts	10	17.2	18	30.5	28	23.9	27	41.5	32	41.5	59	41.5	87	33.5
Sandwich	25	43.1	28	47.5	53	45.3	41	63.1	46	59.7	87	61.2	140	54.1
French fries	21	36.2	32	54.2	53	45.3	38	58.5	41	53.2	79	55.6	132	50.9
Kabab	26	44.8	22	37.3	48	41.2	27	41.5	29	37.6	56	39.4	104	40.1
Fried chicken	43	74.1	48	81.4	91	77.7	55	84.6	60	77.9	115	80.9	206	79.5
Potato ships	56	96.5	61	103.3	117	100	69	106.2	61	79.2	130	91.5	247	95.4
Tapioca chips	66	113.7	68	115.3	134	114.5	62	95.4	63	81.8	125	88.02	259	100
Onion chips	58	100	55	93.2	113	96.5	58	89.2	52	67.5	110	77.5	223	86.1
Popcorn	34	58.6	35	59.3	69	58.9	38	58.4	33	42.8	71	50	140	54.1
Burger	15	25.8	12	20.3	27	23.1	31	47.7	37	48.1	68	47.8	95	36.6

* Multiple Response

The consumption pattern of fast foods was common among preteens both in rural and urban area. The fried snack items like potato chips, tapioca chips by 95.4 percent and 100 percent in rural and urban preteens. And also the fast food consumption like pizzas was observed among 61.3 percent in urban areas.

x). Details of consumption of baked foods among preteens

The consumption of baked foods of the preteens is given as table XV.

TABLE XV
DETAILS OF CONSUMPTION OF BAKED FOODS AMONG PRETEENS

N= 259

Baked food items	Rural (N=117)						Urban (N=142)						Total	
	Girls		Boy		Total		Girls		Boys		Total			
	№	%	№	%	№	%	№	%	№	%	№	%	№	%
Plain cake	30	51.7	32	54.2	62	52.9	38	58.4	41	53.2	79	55.6	141	54.4
Cream cake	48	82.7	42	71.1	90	76.9	46	70.8	50	64.9	96	67.6	186	71.8
Bread	25	43.1	21	35.6	46	39.3	28	43.1	30	38.9	58	40.8	104	40.2
Bun	18	31.03	20	33.9	38	32.4	25	38.4	28	36.4	53	37.3	91	35.1
Cookies	30	51.7	38	64.4	68	58.1	40	61.5	37	48.1	77	54.2	145	55.9
Biscuits	36	62.1	35	59.3	71	60.7	38	58.5	30	38.9	68	47.8	139	53.6

* Multiple Response

The baked products especially the consumption of cream cakes was observed by 71.8 percent of preteens both in rural and urban area. Consumption of plain cakes was observed by 54.4 per cent preteens. Other backed foods such as cookies, biscuits, breads were also preferred by preteens.

xi). Consumption pattern of street foods of preteens

The consumption pattern of street foods of preteens is given in Table XVI.

**TABLE XVI
CONSUMPTION PATTERN OF STREET FOODS OF PRETEENS**

N= 259

Street food	Rural (N=117)						Urban (N=142)						Total	
	Girls		Boy		Total		Girls		Boys		Total			
	№	%	№	%	№	%	№	%	№	%	№	%	№	%
Masala puri	28	48.3	31	52.5	59	50.4	34	52.3	30	38.9	64	45.1	123	47.5
Bhel puri	42	72.4	52	88.1	94	80.3	51	78.5	56	72.7	107	75.4	201	77.6
Bani puri	25	43.1	21	35.6	46	39.3	34	52.3	37	48.1	71	50	117	45.2
Chilly mushroom	30	51.7	31	52.5	61	52.1	32	49.2	36	46.7	68	47.8	129	49.8
Chilly gobi	36	62.1	32	54.2	68	58.1	38	58.5	40	51.9	78	54.9	146	56.4
Chat masala	21	36.2	26	44.1	47	40.2	41	63.1	44	57.1	85	59.9	132	50.9
Gobi manchurian	24	41.4	28	47.4	52	44.4	29	44.6	37	48.1	66	46.5	118	45.6
Mushroom manchurian	27	46.6	22	37.3	49	41.8	20	30.8	26	33.8	46	32.4	95	36.7

* Multiple response

The rural preteens consumed street foods higher when compared with urban preteens. Bhelpuri, chilly gobi, masala puri were the street foods preferred by rural and urban preteens.

xii). Consumption of processed foods of the preteens

The consumption of processed foods of the preteens is given as table XVII.

**TABLE XVII
CONSUMPTION OF PROCESSED FOODS BY THE PRETEENS**

N=259

Baked food items	Rural (N=117)						Urban (N=142)						Total	
	Girls		Boy		Total		Girls		Boys		Total			
	№	%	№	%	№	%	№	%	№	%	№	%	№	%
Pickles	52	89.7	45	76.3	97	82.9	50	76.9	48	62.3	98	69.01	195	75.3
Vadagam	34	58.6	32	54.2	66	56.4	33	50.7	30	38.9	63	44.4	129	49.8
Vadal	42	72.4	44	74.6	86	73.5	47	72.3	45	58.4	92	64.8	178	68.7
Veg Samosa	63	108.6	69	116.9	132	112.8	62	95.4	65	84.4	127	89.4	259	100
Jam	38	65.5	41	69.5	79	67.5	46	70.8	41	53.2	87	61.3	166	64.1
Sauces	21	36.2	23	38.9	44	37.6	31	47.7	28	36.4	59	41.5	103	39.8

* Multiple Response

The consumption of pickles such as Mango, Lemon, Garlic was common both among urban and rural preteens. Jams such as apple, orange, plum, strawberry was also preferred both by urban and rural preteens for midmorning, evening snacks. Preteens expressed these foods were available at home.

xiii). Consumption pattern of fats and oils

The consumption pattern of the fats and oils by the preteens is given as Table XVIII.

TABLE XVIII
CONSUMPTION PATTERN OF FATS AND OILS

N= 259

Fat and oil Consumption Quantity per Serving 3 tsp	Rural (N=117)						Urban (N=142)						Total	
	Girls		Boy		Total		Girls		Boys		Total			
	№	%	№	%	№	%	№	%	№	%	№	%	№	%
Refined oil	34	58.6	32	54.2	66	56.4	33	50.7	30	38.9	63	44.4	129	49.8
Gingelly oil	18	31.03	21	35.5	39	33.3	39	60	48	62.3	87	61.3	126	48.6
Palm oil	25	43.1	28	47.5	53	45.3	41	63.1	46	59.7	87	61.2	140	54.1
Olive oil	12	20.6	6	10.2	18	15.4	22	33.8	28	36.4	50	35.2	68	26.2
Coconut oil	22	37.9	24	40.7	46	39.3	27	41.5	39	50.6	66	46.5	112	43.2
Vanaspathi	11	18.9	18	30.5	29	24.8	24	36.9	30	38.9	54	38	83	32.04
Butter	12	20.6	16	27.1	28	23.9	22	33.8	30	38.9	52	36.6	80	30.8

* Multiple Response

The consumption pattern of fats and oils showed that 49.8 percent of the preteens used refined oil both rural and urban areas. Gingelly oil, palm oil and coconut oil were also used in food preparation at the homes of the preteens. All the study participants used refined oil every day as a source of visible fat that 30.8 percent of the urban preteens consumed butter. The use of combination of oils was not found in most of the homes. As the cost of palm oil was economically low, the use of palm oil for cooking was found high. So preference of eating foods with palm oil will result in obesity this increased risk for Lifestyle disorders like cardiovascular disease, as palm oil found to be contain only saturated fatty acid. The study found that 54.1 percent of the preteens consumed palm oil. Palm oil are high in saturated fat with increasing risk for heart disease (Agho et al., 2015).

xiv). The lifestyle practices of the preteens

The lifestyle practices studied were physical activity pattern, yoga, meditation, hobbies and sleep pattern of the preteens is given as following pages.

Physical activity pattern of the preteens

The Physical activity pattern of the preteens is given as Table XIX.

TABLE XIX
PHYSICAL ACTIVITY PATTERN OF THE PRETEENS

N= 259

	Rural (N= 117)						Urban (N=142)						Total	
	Girls N= 58	%	Boy N= 59	%	Total N	%	Girls N= 65	%	Boys N= 77	%	Total N	%	Total N	%
Walking	44	75.9	46	77.9	90	76.9	47	72.3	49	63.6	96	67.6	186	71.8
Cycling	52	89.7	54	91.5	106	90.6	58	89.2	69	89.6	127	89.4	196	75.7
Swimming	10	17.2	52	88.1	62	52.9	11	16.9	58	75.3	69	48.6	127	49.03
Skipping	43	74.1	13	22.03	56	47.9	52	80	15	19.5	67	47.9	82	31.7

* **Multiple Response**

The physical activity pattern of preteens who walked to and from school was 71.8 percent in both rural and urban preteens. Also 75.7 percent of preteens had spent time cycling to schools, tuitions from home. The rural preteens as a form of physical activity among boys and skipping was a form of activity by girls at rural and urban area.

xv). Practice of Yoga by the Preteens

The practice of yoga by the preteens is given as Table XX.

**TABLE XX
PRACTICE OF YOGA BY THE PRETEENS**

N= 259

Physical activity	Rural (N= 117)								Urban (N=142)							
	Yoga				Meditation				Yoga				Meditation			
	Girls N= 58	Boys N= 59	No	%	Girls	Boys	No	%	Girls N= 65	Boys N= 77	No	%	Girls	Boys	No	%
20 mins	15	18	28	23.9	-	-	-	-	26	30	56	39.4	19	21	40	28.2
30 mins	30	41	71	60.7	-	-	-	-	33	38	71	50	-	-	-	-
45 mins	26	38	64	54.7	-	-	-	-	31	33	64	45.1	-	-	-	-
Onehour	22	26	48	41.02	-	-	-	-	29	20	49	34.5	-	-	-	-

* Multiple Response

The study reported that 23.9 and 39.4 percent of the rural and urban preteens were involved yoga for 20 minutes. Only 28.2 percent of the urban preteens were involved with meditation for 20 minutes. High physical activity reduces the heart disease and lifestyle disorders. And also the regular moderate physical activity and meditation, yogasanas and pranayama may help to control lifestyle disorders (Singh et al., 2016).

The practice of meditation has to be incorporated in the school curriculum, so that yoga and meditation will act as stress busters for the children.

xvi). Hobbies of the study participants

The hobbies of the preteens is given as Table XXI.

**TABLE XXI
HOBBIES OF THE STUDY PARTICIPANTS**

N=259

Games	Rural (N= 117)						Urban (N=142)						Total	
	Girls N= 58	%	Boy N= 59	%	Total N	%	Girls N= 65	%	Boys N= 77	%	Total N	%	Total N	%
Reading Books	31	53.4	20	33.9	51	43.6	36	55.4	39	50.6	75	52.8	126	48.6
Television	52	89.7	56	94.9	108	92.3	63	96.9	73	94.8	99	69.7	207	79.9
Video games	18	31.03	35	59.3	53	45.3	28	43.1	33	42.9	61	42.9	114	44.01
Mobile game	42	72.4	54	91.5	96	82.1	59	90.7	62	80.5	121	85.2	217	83.8
Playing Cards	12	26.1	28	47.5	40	34.2	18	27.7	31	40.3	49	34.5	89	34.4
Playing Chess	22	37.9	24	40.7	46	39.3	27	41.5	39	50.6	66	46.5	112	43.2

* Multiple response

Mobile Games was the most preferred leisure time activity by 83.8 percent preteens. The leisure time spent with video games was 44.01 percent of both rural and urban preteens. Playing cards was noticed among 34.4 percent of both rural and urban preteens. Many common forms of sedentary behavior like using computers and watching television were activities that increased risk of cardiovascular disease (Katzmarzyk et al., 2010).

xvii). Sleep pattern of the preteens

The sleep pattern of the preteens is given as Table XXII.

**TABLE XXII
SLEEP PATTERN OF THE PRETEENS**

N=259

Sleep pattern	Rural (N= 117)						Urban (N=142)						Total	
	Girls N= 58	%	Boy N= 59	%	Total N	%	Girls N= 65	%	Boys N= 77	%	Total N	%	Total N	%
5-6 hrs	39	67.2	35	59.3	74	63.2	29	44.6	32	41.6	61	42.9	135	52.12
6-8 hrs	11	18.9	18	30.5	29	24.8	24	36.9	30	38.9	54	38	83	32.04
8-10 hrs	8	13.8	6	10.2	14	11.9	12	18.5	15	19.5	27	19	41	15.8

The sleep pattern of the rural and urban preteens showed that more than one fourth of the children had less than eight hours of sleep and was observed among 24 percent in rural preteens and 38 percent urban preteens indicating poor sleep pattern at this younger ages. Also children reported that they had access to television and mobile phones during sleep time.

D. Association of food choices with Health Profile

The Association of Food choices with health profile of preteens was done among preteens, parents and teachers and is discussed below.

1) *Impact of health education among the preteens*

Impact of the health education is given as table XXIII.

TABLE XXIII
IMPACT OF HEALTH EDUCATION AMONG THE PRETEENS

Mean scores	Rural (N= 117)				Urban (N=142)			
	Girls		Boys		Girls		Boys	
	Pre	Post	Pre	Post	Pre	Post	Pre Edn	Post Edn
Knowledge Scores Maximum scores: 9	6	18	12	18	15	18	15	21
Attitude Scores Maximum scores: 9	9	15	9	15	12	19	14	18
Practice Scores Maximum scores: 9	6	18	9	12	12	20	12	18
F value	18.783** (P= 0.001)				17.18** (p= 0.001)			

** - Significant at 1% level (p< 0.01)

The health education to the Preteens was a welcomed section by all the Preteens and all the preteens showed a keen interest in understanding the concepts on nutrition, healthier food choices, importance of breakfast, regular meal, sleep pattern and adequate physical activities such as cycling, walking and games. There was a significant gain in Knowledge, Attitude and Practice scores revealing that awareness and education at this younger age will be beneficial for behavioural modifications. The post education scores were higher

among urban preteens and showed a higher knowledge scores among boys and practice scores among girls evincing the fact that the girls were ready to put in practice whatever knowledge they have gained. Among the rural Preteens, it was observed that girls perceived the health concepts better than boys.

The data when interpreted statistically with ANOVA had a significant improvement at one percent level indicating the benefits of the health awareness programmes among both underweight and overweight preteens.

ii) Impact of Health Education among the Parents and Teachers

The Impact of Health Education among the Parents and Teachers is given as Table XXIV.

TABLE XXIV
IMPACT OF HEALTH EDUCATION AMONG THE PARENTS AND TEACHERS

Mean Scores	Parents (N=20)				Teachers (N=15)			
	Rural		Urban		Rural		Urban	
	Before	After	Before	After	Before	After	Before	After
Knowledge Scores Maximum scores: 9	3	6	6	9	3	9	3	6
Attitude Scores Maximum scores: 9	3	6	3	6	6	9	6	8
Practice Scores Maximum scores: 9	3	9	3	9	3	9	6	9
F value	0.362 ^{NS} (P = 0.638)				3.678 * (P = 0.025)			

* - Significant at 5 % level

NS- not Significant

The care takers of the Preteens being the parents and teachers also showed a keen interest in knowing the health facts and aspired to understand the ways in which modifications can be done in the meals of the children at

home and school. There was an acceptable increase in Knowledge, Attitude and Practice among the parents and teachers.

The statistical interpretation of data for Knowledge, Attitudes and Practice among the parents and teachers showed that there was significance variations among teachers as children at these age group always admire teachers as their role model enlightening the unique role of teachers beyond academics.

This indicated a significant role of parents and had the mean scores increased after education but did not show a statistical significance which may be attributed to the reason of too short duration of health education programmes to the parents especially the parents from the rural areas.

V. SUMMARY AND CONCLUSION

Dietary and food choices, lifestyle and behavioral pattern are important factors for the health and wellbeing of the preteens. Healthy and balanced diet plan with an active Lifestyle pattern plays a strong foundation and ensure the quality life of the Preteens. Hence the study titled “Food choices and health profile of the preteens” was undertaken to assess food choices and enlighten preteens on healthy food choices.

The methodology comprised a total of 259 study participants studying in Classes Six and Seven. A total of Two Higher Secondary School at Coimbatore each representing rural and urban areas at Coimbatore were identified for selection of the study participants. The study participants were from Government higher secondary school at Vellamadai pancyayat for rural area and KG Matriculation school at Annur for urban area.

Assessment of health profile was done with anthropometric measurements, dietary pattern and lifestyle practices. Anthropometric measurement comprises of Height, Weight and with the height and weight recorded, Body Mass Index was calculated. Dietary pattern of preteens with specific details on meal pattern, food intake and consumption of fast foods were elicited. The lifestyle pattern included physical activity such as aerobic exercises, meditation practices, hobby time and sleep pattern

The salient findings of the study are:

- The family system adopted by the families of the preteens in the rural and urban areas indicated that 90 percent in urban and 83 percent in rural area had nuclear family system. It was also noted that the joint family system was higher in the rural families with 16 percent when compared to 9 percent at the urban area.
- The education details of fathers of the preteens showed that 43 percent were illiterates in rural area as against five percent in urban areas. It was also noted that 26 percent were degree holders in both rural and urban

areas. The education details of the mothers of the preteens showed that 55 percent were illiterates in rural area and 10 percent in urban area.

- The details on monthly income of the father of the preteens in the rural area showed that 73 percent were with low income involved in daily wages such as carpenter, painter, maid and also 58 percent were with middle income and 15 percent were with high income in the urban area.
- The monthly income details of the mothers of the preteens reported that 85 percent were with low income and also 33 percent were with middle income and six percent in the high income category at the urban area.
- The Body Mass Index of the preteens when compared with the standard of percentiles chart, preteens in the underweight category were higher in rural areas with 68 percent and 42 percent in urban areas. It was also alarming to note that 7 percent preteens in rural area and 21 percent in the urban area were overweight, indicating a dual burden of diseases being underweight and on the other hand being overweight.
- Non-vegetarianism predominated both among rural and urban preteens and was seen among 82 percent preteens. It was alarming to note that 12 percent of the rural children and 14 percent of urban children had only two meals which would pave way for deficiency for nutrients.
- The urban scenario showed that 21 percent skipped meals with 27 percent girls and ten percent boys. It also evinced that preteens in urban area, skipped meals regularly because of lack of time, and also girls were observed to skip both in urban and rural areas.
- The consumption of fruits and vegetables regularly was observed only among 34 percent of preteens and 31 percent consumed occasionally. The junk food consumption was high with 35 percent among urban preteen.
- The snacking pattern among the preteens showed that 35 percent of the rural preteens consumed snacks in the midmorning and it was equally observed during the lunch in the afternoon which was 47 percent. It was

also alarming that consumption of snacks late night after dinner was observed among 77 percent of the preteens.

- The most preferred snacks of the preteens were sweets such as laddoo, jalebi by 34 percent followed by consumption of baked foods such as cake, puffs by 42 percent preteens. Consumption of fried foods such as Chips, Samosa by 50 percent preteens.
- The details of beverages consumption revealed that the coffee consumption of the rural preteens was 70 percent and 42 percent in urban area. Carbonated drinks like coca-cola, soda, Pepsi and seven up were consumed by both rural and urban preteens. The urban children possess higher consumption of carbonated beverages.
- The consumption pattern of fast foods was common among preteens both in rural and urban area. Fried foods and fast food consumption like pizzas was observed among 61 percent in urban areas.
- The baked products especially the consumption of cream cakes was observed by 71 percent of preteens both in rural and urban area. Consumption of plain cakes was observed by 54 per cent preteens.
- The rural preteens consumed street foods higher when compared with urban preteens. Bhelpuri, chilly gobi and masala puri were the street foods preferred by rural and urban preteens.
- The consumption of pickles such as mango, lemon, garlic were common both among urban and rural preteens. Jams such as apple, orange, plum and strawberry were also preferred both by urban and rural preteens for midmorning, evening snacks.
- Gingelly oil, palm oil and coconut oil were also used in food preparation at the homes of the preteens. All the study participants used refined oil every day as a source of visible fat that 30 percent of the urban preteens consumed butter. The use of combination of oils was not found in most of the homes.
- Walking was one of the common forms of physical activity by 71 percent rural and urban preteens. And also 75 percent of preteens spent time for cycling.

- The study reported that 23 and 39 percent of the rural and urban preteens were involved in yoga for 20 minutes every day. Only 28 percent of the urban preteens were involved with meditation for 20 minutes every day.
- Mobile Games was the most preferred leisure time activity by 83.8 percent preteens. The leisure time spent with video games was 44.01 percent of both rural and urban preteens.
- The sleep pattern of the rural and urban preteens showed that more than one fourth of the children had less than eight hours of sleep and was observed among 24 percent rural and 38 percent urban preteens indicating poor sleep pattern at this younger ages.

Conclusion

Healthy food choices evoked at earlier ages will have a strong foundation for quality Health and Well being. Imparting Knowledge, instilling Attitude and Practice of behavioural modifications in diet and lifestyle practices among the preteens with a holistic approach of bringing the preteens with the parents and teachers would build confidence for the healthy growth and mask away the sedentary lifestyle, the gadget way. Continuous monitoring and practice of simple health and lifestyle choices will certainly have a positive impact on the population groups especially the younger age groups. Healthy food choices and lifestyle pattern will have intelligent area at the younger minds and will continue throughout their life for health promotion.

Scope for the Future Research Work

- Designing softwares on Health Education Modules for Preteens, Parents and Teachers.
- Long term Education and follow up to evaluate food choices and health status of the Preteens.
- Influence of Parents and Teachers in healthy food choices of the preteens.

Bond sheet Black and White : 1-21,23-25,27,29-36,39,41-56 (48)

Bond sheet Colour : 22,26,28,30,37,38,40 (7)

Glossy colour : 29 (1)

BIBLIOGRAPHY

- ✂ Agenta, A and Susanne, B (2010), Towards a healthy diet: from nutrition recommendations to dietary advice, A review of scientific knowledge regarding dietary fat, carbohydrate and protein food for the youngest and oldest people. *Scandinavian Journal of Food and Nutrition* 51(1), Pp.31-40.
- ✂ Amcoff and Anand, (2011), A healthy balanced diet and Growth and development of children, Chapter 4: Vitamins and Minerals, Pp.48-52.
- ✂ American Academy of Pediatrics, Committee on Nutrition, 2013.
- ✂ Anita and Holden, (2013), Important of nutritious food for the children, Increased consumption of fruits and vegetables, *Nutrition and child health*, second edition, Pp.47-69.
- ✂ Baranowski, T., Cullen, K.W and Baranowski, J, (2013), Psychosocial correlates of dietary intake, *Advancing dietary intervention. Annual Review Nutrition*, 19(2), Pp- 17-40.
- ✂ Brenda piper and Bauer., (2011), A healthy balanced and prudent diet, Chapter three, first edition. Pp.175-177.
- ✂ Cashdan, 2010, Food Preferences in developed during infancy remain relatively stable and are reflected in food choices made later in life.
- ✂ Centers for Disease Control and Prevention. *School Health Guidelines to Promote Healthy Eating and Physical Activity*. November 21, 2013. Published by National center for chronic disease prevention and health promotion, 60(5), Pp.1-76.
- ✂ Chandrashree Lenka, (2016), Dietary assessment of tribal children suffering from different degrees of malnutrition in Odisha, HIND Institute of science and technology, *International journal of food science and research*, 7(2), Pp.212-224.
- ✂ Charles and Chinyoka., Basic concept of health education, Pp.359- 361.
- ✂ Cherian. DR.K. M, (2016). Food and health, *The Legendary Medical Professionals of India*, 4(10), P.385.
- ✂ Chidambaranathan, C and Jenitha, Marry, (2013), Knowledge of balanced diet, *Pupic health in India, Indian Journal of Nutrition*, Pp.89-90.
- ✂ Clark. P and Block M, (2012), Skipping breakfast is related to increased Body Mass Index and risk of obesity, *Basic concept of health*, Pp.50-61.
- ✂ Dennison (2011), *Modeling food behavior, Effective ways to promote increased consumption of healthy foods*. 3 rd edition, Pp.32- 43
- ✂ Dharnendra, P and Bhatt, (2014), *Health education, Dental health of the childrens*, P.78.
- ✂ *Dietary Guidelines for Americans*, (2010), Sugar-sweetened beverages are liquids that are sweetened with various forms of sugars that add calories. Source: U.S. Department of Agriculture and U.S. Department of Health and Human Services, Seventh Edition.
- ✂ Dietz, (2012), A study on overweight and obesity in children aged 10 to 20 years, *Internationals Journal of Medical science*, P.56-63.
- ✂ Edelstein, V and Sharlin, S, Etelson., (2013), *Nutrition and life cycle for the children, Demographic and socioeconomic changes influence the living and working habits of the population, Obesity prevention programs focused on diet and exercise to young children, Modern lifestyle of children*. Pp.21, 48.
- ✂ Fisher, J.O, Birch L.L, French., (2012), Restricting access to a palatable food affects children's behavioral response, food selection, and intake, *Diet and Nutrition*, 69, Pp.1264-72.
- ✂ Fogelholm, O Nuutinen, M Pasanen, (2010), Parent and child relationship of physical activity patterns and obesity, *International Journal of Obesity*, 23(1), Pp.1262-1268.

- ✘ Geneva, 2012, Marketing activities of global soft drink and fast food companies in emerging markets a review, In World Health Organization, Globalization, diets and non communicable diseases.
- ✘ Ghafoorunisa and Krishnadsamy.K (2014) "Diet and Heart Disease, National Institute of Nutrition, Hyderabad. P.2.
- ✘ Goyal Singh and Gupta, Guyomard., (2011), Food nutrition and health, National Institute of nutrition in research on the dietary pattern of Indians, Pp.19-22.
- ✘ Goyaland Singh, (2010), That lifestyle changes and taste buds are backed by the urban culture and has a strong impact on the kind of food demanded and the utilization pattern by the people.
- ✘ Hanks., Just., Smith., and Wansink, (2012), Designing spaces and crafting choices for students to eat healthier, Pp.42-45.
- ✘ Hanson.C and Lisa. R. (2013), Consumption patterns of sugar-sweetened beverages in 627 children aged 12 to 19 years in United States, Journal of Medical science. Pp.123-143.
- ✘ Hawkes and Henson, (2010), An overview of global food trade. Perspectives and policy of Trade, food, diet and health,Pp.16-33.
- ✘ Health education curriculum analysis Tool, A Guide for Health Education Teacher Preparation Programs in Institutions of Higher Education, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Pp.2-8.
- ✘ Heather, P., Theresa, A and Nickolas, (2012), A Review of Family and Social Determinants of Children's Eating Patterns and Diet Quality Journal of the American College of Nutrition, Published by the American College of Nutrition. 24(2) Pp.83-92.
- ✘ Huma Zaidi, (2012), Diet and Nutrition, Significance of balanced diet for the children. ICMR advisory committee (1981) recommended the composition of balanced diet, Pp.19-22.
- ✘ Jan.V, Tee and Julie., (2014), Composition of food and nutritional requirements for a healthy and active life review, Traditional diets, Pp.46-51.
- ✘ Jenita Mary, (2011), Rapid changes in diet and pattern of physical activity further diet related disorders. Non- communicable diseases in India, 3 rd edition, Pp.86-90.
- ✘ Jennifer Adkins Ernst, Anastasia Snelling, (2013), Community Voices for Health, Pp.4-32.
- ✘ Jennifer P. Taylor, R, Susan Evers, Mary McKenna, P. Damian., (2013), Determinants of Healthy Eating in Children and Youth, Canadian Journal of Public Health, 96 (3).
- ✘ Kalpana, B, (2012), Fundamentals of diet and nutrition, Diet plans to be change the life habits, Pp.180-190.
- ✘ Kerri, N.,Boutelle., Jayne, A., Fulkerson., Dianne., Neumark-Sztainer., Mary., Story and Simone A French, (2012), Fast food for family meals relationships with parent and adolescent food intake, home food availability and weight status Public Health Nutrition, 10(1), Pp.16-23
- ✘ Kothari, C.R, (2009), Research methodology, second revised edition, New age international publishers (India), P.196.
- ✘ Lenxa, C, (2016), Food and nutrient intake of the children to affect the malnutrition. Assess the causes of food insecurity among the children aged 3 to 5 years. Pp.85-90.
- ✘ Leon F., Ricardo.,Tashweka, M and Anderson,(2011), Effects of education on health, Institute of Education, University of London, Pp.171-175.
- ✘ Lewitwalt and Kerrebrock, (2011), The challenge to improve global health: Financing the Millennium Development Goals. Journal of the American Medical Association, 291(21), Pp.2636-2638.
- ✘ Marmot, 2012, prevention of obesity in children's, Diet related Disorders among the children, 4th edition Pp.31-38.

- ✂ Monika Singh, Sunita Mishra, (2014), Fast food consumption pattern and obesity among School children in Lucknow District, International journal of science and research, 3(6), Pp.1671-1674.
- ✂ Neumark-Sztainer D, Hannan PJ, Story M, Croll J, Perry C. (2013), Family meal patterns: Associations with socio demographic characteristics and improved dietary intake among adolescents. Journal of American Diet Association. 103, Pp.317-22.
- ✂ Nichanj and Nickolas, (2011), Changing lifestyle and work habits, Chapter 5: Consumer preference of fast food, P.82.
- ✂ Niraja Sharma (2013), Child nutrition, Dietary allowances for various nutrients, Indian council of medical research, First edition.
- ✂ Nitya, D.J and Bhavani R.V, (2016), Do Dietary Diversity Indices Reflect the Nutritional status of school aged children. M.S.Swaminathan Research Foundation, Chennai, Tamil Nadu. Indian journal of nutrition and dietetics, 53(4), Pp.405-414.
- ✂ Ogden, J and Johnson, K, (2012), Obesity of young children age of 6 to 11 years are estimated to be overweight in the United States. P.63.
- ✂ Popkin and Du (2013), Snacking among children is an important source of energy, Parent Education to Strengthen Families and Reduce the Risk of Maltreatment.
- ✂ Promoting Healthy Eating and Physical Activity in the Classroom, Washington, DC, U.S. Government Printing Office, December 2, 2010.
- ✂ Rajkumar M, Kamble and Anuradha, Dubey (2016), Nutritional status of selected obese school going children in western Maharashtra. HIND Institute of science and technology, International journal of food science and research. 7(2), Pp.226-232.
- ✂ Rajkumar., Kamble., Anuratha and Dubey, (2013), Study of obesity among school children and their Socio economic status, International journal of food science and research, 7(1) , Pp.70-73.
- ✂ Rena N, Khetarpaul, N Rena, N, Khetarpaul N and Rani V, (2013), Gender comparison status of school going children consuming Mid day meal, Asian journal of home science, 8(1), Pp.55-58.
- ✂ Robinson B.S and William S.R (2011), Nutrition throughout lifecycle, fifth edition, P.146.
- ✂ Rozin. S and Hard., Skinner, J,Rahim, (2013), Food and Nutrition Service. The development of food preferences to the children, Pp.16-31.
- ✂ Sabarwal, (2015), The Modern family system, 31(7), Pp.788-789.
- ✂ Singh and Mishra, 2014, food consumption pattern and obesity among school going children in five different schools for Lucknow district.
- ✂ Skinner, J.D., Carruth, B.R., Moran, J., Houck, K., Schmidhammer, J., Reed, A., Coletta and Toddlers, (2011), Food preferences and Concordance with family members' preferences, 30(1), Pp.17-22.
- ✂ Story and French, (2014), Lifestyle practices among the childrens, Due to changes in family and social environment there has been a revolutionized change in childrens lifestyle and eating habits, Pp.132-139.
- ✂ Tanu, A., Phalguna, K., Jugal, K& Ingle, G.K (2011), Awareness about Lifestyle Diseases Associated Risk Factors in School Going Children in Delhi Journal of Nursing Science & Practice, 1(1), Pp.1-9.
- ✂ Vismita, P., Nishi, F and Surbhi, C, (2014), Personal hygiene Habits among school-Going children in rural areas of Jaipur, International journal of scientific research and reviews, Pp.126-142, 3(2).
- ✂ World Health Organization (2011). Cardiovascular Disease, Global status Report of MCD, Geneva, 2010 and 2011, Pp.1-4.

APPENDIX- I
ETHICAL CLEARANCE FORM

INSTITUTIONAL HUMAN ETHICS COMMITTEE



Avinashilingam

Institute for Home Science and Higher Education for Women

University

(Estd. u/s 3 of UGC Act 1956)

Chairman

Dr. S. Ramalingam
Principal, PSG Institute
of Medical Sciences
& Research, Coimbatore

Member Secretary

Dr. P. R. Padma
Professor, Department of
Biochemistry, Biotechnology and
Bioinformatics

Members

Dr. S. Premakumari
Mr. K. Arulmoli (Legal Expert)
Dr. A. Saraswathy
Mrs. V. Mangayarkarasi
Dr. S. Kowsalya
Dr. N.S. Rohini
Dr. Subhashini K. Sripathi
Mrs. S. Radha Devi
Mrs. Judith Justin

3rd February 2017

To
Ms. Savitha M
Department of Food Service Management and Dietetics
Avinashilingam Institute for Home Science and
Higher Education for Women
Coimbatore – 641 043


Dear Madam,

Ref: Your proposal No. IHEC/16-17/FSMD-02 entitled "Food choices and health profile of preteens" submitted for approval of the IHEC

The Institutional Human Ethics Committee of our University hereby grants approval to your research proposal No. IHEC/16-17/FSMD-02 entitled "Food choices and health profile of preteens" submitted by you. The Approval number for the same is AUW/IHEC/FSMD-16-17/XMT-02.

We wish you all the best in your research endeavours.

Regards,


Dr.P.R.Padma
Member Secretary



APPENDIX - II

QUESTIONNAIRE TO ELICIT BASELINE DATA AND FOOD CHOICE FROM PRETEENS

Name : _____ Roll No : _____
Age : _____
Gender : _____
Class : _____
School : _____
Address : _____
Phone No : _____
Family Details : _____

Name	Age	Education	Occupation	Income

1) Health profile

Anthropometric Assessment

Height : _____ cms

Weight: _____ kgs

BMI : _____

2) Dietary Pattern

1. What type of meal pattern do you follow?

Vegetarian Non-vegetarian

Ova-vegetarian Lacto-vegetarian

2. Do you have regular meals?

Yes No

If yes, what is your frequency of meal in a day?

Three Four Two

3. Do you follow any special diet?

Yes No

If yes, what type of diet?

Low fat Low sodium

Low calorie Low protein Others

4. Do you skip meals?

Yes No

If yes, how often

Regularly frequently occasionally

5. Do you take fruits & vegetables?

Yes No

If yes, what is your frequency?

regularly frequently occasionally

6. What type of food you prefer most?

Natural foods Processed foods

Fried foods Spicy foods Junk foods

7. When do you eat snacks?

Morning Afternoon Evening Late Night throughout the day

8. What is your favorite snack?

Sweets Pastries Puffs

Vada and Bajji Chat Items Lays

Kurkure Packed Savouries Others

9. What type of beverages do you drink?

Type of Beverages	Quantity/ Serving (ml)	Daily	Twice a day	Once in a day	Thrice a week	Rarely	Never
Coffee							
Tea							
Milk							
Fresh juices							
Apple juice							
Mango							
Lime							
Grapes							
Orange							
Watermelon							
Others							
Health drinks							
Horlicks							
Complan							
Bournvita							
Boost							
Others							
Energy drinks							
Glucose							
Green tea							
Mint tea							
Carbonated drink							
Soda							
Pepsi							
7up							
Coca-Cola							
Fanta							
Tango							

10. Do you prefer fast foods?

Yes No

If yes, how often,

Once in a week twice a week daily rarely

11. Which is your favourite fast food?

Food stuffs	Quantity/ Serving	Daily	Weekly once	Monthly	Occasionally
Burger					
Pizza					
Doughnuts					
Sandwich					
French Fries					
Kebab					
Fried chicken					
Potato chips					
Tapioca					
Onion					
Popcorn					

12. What type of baked food items do you consume?

Food stuffs	Quantity/ Serving	Daily	Weekly once	Monthly	Occasionally
Plain cake					
Cream cakes					
Bread					
Biscuits					
Bun					
Cookies					
Others					

13. Which type of street foods do you eat?

Food stuffs	Quantity/ Serving	Daily	Weekly once	Monthly	Occasionally
Masala puri					
Bhel puri					
Pani puri					
Chilly mushroom					
Chaat masala					
Chilly gobi					
Gobi manchurian					
Mushroom manchurian					
Others					

14. What are the processed and preserved food do you eat?

Food stuffs	Quantity	Daily	Weekly Once	Monthly	Occasionally
Pickles					
Vadagam					
Vadal					
Veg. Samosa					
Jam					
Sauces					
Others					

3) Lifestyle pattern

1. What type of physical activity do you do?

Walking Cycling Swimming Others

2. What was the duration of physical activity in minutes?

10 mins 15 mins 20 mins 30 mins

3. Details on frequency, for physical activity

Daily Weekly Once Monthly Twice Rarely

4. What type of indoor games do you play?

Video Games Mobile Game Cards Chess

5. What was the duration of games do you play?

10-15 mins 30 mins one hour above one hour

6. Details on frequency for playing games

Daily Twice In A Week Monthly Twice Rarely

7. What are the other activity do you follow?

Yoga Meditation

8. What was the duration for these activities?

20 mins 30 mins 45mins one hour

9. Details on frequency,

Daily Weekly Twice Monthly Rarely

10. How many hours do you sleep per day?

6-8 hours 5-6 hours 7-9 hours

Food stuffs	Quantity/ Serving	Daily	Weekly once	Rarely	Twice a week	Never
Peas Horse gram Peas green Soya Bean Rajmah						
<p>Green leafy Vegetables: Drumstick leaves Fenugreek leaves Manathakkali leaves Amaranth leaves Mint leaves Corriander leaves Parrupu keerai Ponnankanni keerai Curry leaves Agathi keerai Spinach</p> <p>Other vegetables: Ash Gourd Beans Cabbage Bitter gourd Bottle gourd Snake gourd Ridge gourd Brinjal Cluster beans Broad beans Cauliflower Drumstick Pumpkin Ladies finger Sundakai</p> <p>Roots and Tubers: Carrot Beet root Onion big Onion small Potato Radish pink Radish white Sweet potato Tapioca Yam, elephant</p>						

Food stuffs	Quantity/ Serving	Daily	Weekly once	Rarely	Twice a week	Never
Fruits: Apple Amla Banana Dates Grapes green Grapes blue Guava Jack Fruit Lemon Lemon Sweet Mango Musk melon Seethaphal Sapota Strawberry Tomato Watermelon						
Milk and Milk products: Milk Curds Butter Milk Cheese Khoa Paneer Milk powder						
Meat and poultry and fish: Egg Chicken Mutton Pork Beef Mathi Katla Cat fish Lobster (Nandu) Eral						

5. What kind of fat and oils are used by you at home?

Fat and oils	Quantity/ purchased (lit)	No of members in the family	Weekly once	Weekly twice	Monthly twice
Refined oil					
Groundnut oil					
Coconut oil					

Gingelly oil					
Vanaspathi					
Dalda					
Butter					
Ghee					

6. Do you follow food guide pyramid?

Yes No

7. Do you prefer any other outside foods for your child?

Yes No

8. If yes, details on

Food stuff	Quantity/ serving	Daily	Weekly	Monthly	Occasionally
Fast food:					
Burger					
Doughnuts					
French Fries					
Pizza					
Sandwich					
Processed food:					
Pickles					
Vadagam					
Vadal					
Samosa					
Baked food:					
Cake					
Bread					
Biscuits					
Bun					
Cookies					

9. Did you go for restaurants Yes No

If yes, details of frequency,

weekly once monthly twice occasionally rarely

10. Do you encourage for your child in any other activities

Video games mobile games out door games

11. How many hours you give for your child in activity

One hour 1-3 hours 2-4 hours above 5 hours

12. Do you prefer fat rich foods for your child Yes No

13. If yes, what kind of fat rich foods?

Vadai Bonda Chips

QUESTIONNAIRE TO ELICIT FOOD PATTERN OF STUDENTS FROM THE CLASS TEACHER

Name of the teacher : Age : Class :
 School : Website : Mobile :
 Address :

1. Do you teach students in class about food choices? Yes No
2. Do you have lunch in class along with the students? Yes No
3. Do you monitor snack consumption at class? Yes No
4. Do you advice students about the foods to be brought for lunch and snacks? Yes No If yes, details on

List of snacks	List of lunch foods
Fruit salad	Whole grains
Vegetable salad	Sandwiches
Sprouted salad	Greens
Bengal gram sundal	Egg roll
Dates	Veg.biriyani
Sweet corn	Vegetable paratha roll
Banana	Fruits
Bread	Channa, curd
Fresh Juices	Tomato rice, Lemon rice, Curd rice
Vegetable soup	Beetroot rice
Others if any, specify	Others if any specify

5. Do you prefer any physical activity for your class children? Yes No
6. Do you prefer mid day meal programme in your school? Yes No
7. Do you give any nutrition education for your students? Yes No
8. Do you teach children about hygiene and sanitation? Yes No
9. If yes,

S.No	Activities	Yes	No	Remarks
1.	Wash hands before food			Sanitizer <input type="checkbox"/> Soap <input type="checkbox"/> Warm water <input type="checkbox"/>
2.	Take bath daily			Once a day <input type="checkbox"/> Twice a day <input type="checkbox"/>
3	Trim nails			Weekly once <input type="checkbox"/> Monthly twice <input type="checkbox"/> Two month once <input type="checkbox"/> Rarely <input type="checkbox"/>
4.	Keep school bag and lunch bag clean			Weekly once <input type="checkbox"/> Monthly twice <input type="checkbox"/> Two month once <input type="checkbox"/>
5.	Polish your shoes			Daily <input type="checkbox"/> Two days once <input type="checkbox"/> Weekly twice <input type="checkbox"/>
6.	Clean your socks			Daily <input type="checkbox"/> Two days once <input type="checkbox"/> Weekly twice <input type="checkbox"/>

HEALTH EDUCATION MODULE FOR PRETEENS

APPENDIX III A

HEALTHY FOOD CHOICES

Health is the state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.

- ✍ Eat balanced meals
- ✍ To include healthy foods in the daily menu for the children
- ✍ To include nutritional foods in our daily intake pattern of foods
- ✍ Eat three meals a day with healthy snacks.
- ✍ Increase fiber in the diet with judicious use of whole grams, grains, vegetables and fruits
- ✍ And decrease the use of salt.
- ✍ For growing children and adolescents, it is generally recommended to watch total fat consumption in the diet, rather than counting calories.
- ✍ Food choices to be help children in becoming physically active
- ✍ Drink water. Try to avoid carbonated drinks and juices that are high in sugar.
- ✍ Information about nutrition that can support behavioral changes of preteens.
- ✍ Two categories of nutrients include macronutrients and micronutrients.
- ✍ Eating the proper balance of nutrients are from fresh fruits and vegetables that are seasonally available and that can provide you with all of the macro and micronutrients.

APPENDIX III B BALANCED DIET

BALANCED DIET



Energy Giving Foods

- ✦ We have to consume energy giving, body building and protective and regulatory foods.
- ✦ The energy giving foods are carbohydrates rich foods such as cereals, roots and sugar, fat rich foods such as fat and oils, body building group of foods which are rich in proteins.



INTRODUCTION

- ✦ A balanced diet must contain carbohydrate, protein, fat, vitamins, mineral salts and fibre.
- ✦ It must contain these things in the correct proportions and also foods in such quantities.
- ✦ Different foods in the right amount and proportions provide an 'essential nutrition' and hence make a balanced diet.



Body building Food



Top Non-Animal Protein Sources

Tempeh 1 cup = 45g	Sesame 3 oz = 31g	Soybeans 1 cup = 21g	Lentils 1 cup = 18g
Black Beans 1 cup = 25g	Kidney Beans 1 cup = 23g	Veggie Burger 1 patty = 13g	Chickpeas 1 cup = 12g
Baked Beans 1 cup = 12g	Firm Tofu 4 oz = 12g	Quinoa 1 cup = 9g	Peanut Butter 2 TBSP = 8g

- ✦ It includes milk and milk products, meat and meat products, fish, eggs, pulses, nuts and oil seeds.
- ✦ The third group is called protective food and it includes yellow and orange foods (mango, papaya).



- ✦ Citrus fruits (lemon, lime, orange) and other food such as plum and banana and the vegetables green leafy vegetables (mustard, spinach).

- ✦ Yellow and orange foods (carrot, pumpkin) and other vegetables such as ladies finger, brinjal, cauliflower and cabbage.



Nutrients

Carbohydrate:

- Carbohydrates are power supplies to our body.
- Energy is needed in large quantities in adolescents and adults for growth and development, increase metabolic rate and remain active throughout the day.
- Potatoes, bread and various grains are what you should eat to supply your body with CHO and starch.

ENERGY FOODS FOR RUNNING



FAT

- Fats are very much needed although they should be only unsaturated fats and omega 3 & 6 fats.
- Fats provide energy
- Some vitamins like vit-A,E,D,K need fats to get soluble
- Fats form a layer beneath our skin protecting warmth to our body.
- Have good amounts of nuts and seeds

List the fruits that are rich in:

1. Vitamin C
2. Vitamin E
3. Vitamin D
4. Vitamin A
5. Vitamin B



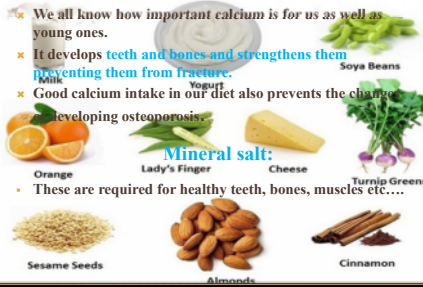
Weekly Children's Newspaper www.robinage.com

Another essential nutrient to maintain our hemoglobin level, develop brain cells and increases concentration



Top 20 Calcium rich foods - for Building strong bones.

- We all know how important calcium is for us as well as young ones.
 - It develops teeth and bones and strengthens them preventing them from fracture.
 - Good calcium intake in our diet also prevents the chance of developing osteoporosis.
- Mineral salt:**
- These are required for healthy teeth, bones, muscles etc....



PROTEIN

These provide a source of materials for growth and repair.

20 Protein Rich Foods

Proteins are needed to build up new tissues and renew old tissues

- Proteins are also needed for the production of enzymes and hormones that controls the various functions of our body.
- All dairy products, meat, fish, eggs, pulses and soya are rich sources of proteins

VITAMINS

- These are required in very small quantities to keep you healthy.
- These nutrients are essential for our body although in smaller quantities compared to proteins and carbohydrates.
- Although in small amounts they should be a part of our daily diet as deficiency occur for any health problems



This is required to help your intestines functions correctly it is not digested.

Fibers are needed to normalize our bowel movements and also helps prevent some serious chronic diseases like cardiovascular conditions, cancer and diabetes.



20 Calcium-rich plant foods in India

with their calcium contents per 100gms
(Calcium content in mg/100gms only 100mg)



Source: ICMR & IIS

Prepared by: Neel (neelgupta@rediffmail.com)

FIVE FOOD GROUPS



FOOD TO BE INCLUDED AND AVOIDED



RECIPE FOR EXAMPLE

- ✗ Early morning- Milk
- ✗ Break fast – Veg - Sandwich, Banana, Milk
- ✗ Lunch- Rice, Dhal, Greens porriyal, Vegetables, Fruits
- ✗ Evening- Sundal or salads
- ✗ Dinner - Carbathi, Gravy, Fruit
- ✗ Bed time- Milk, Fruit

AVOIDED FOODS



Junk Food

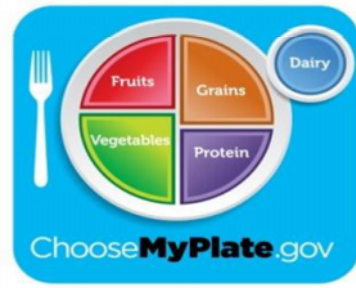
Junk food always contains extra fats and calories. They are very hard for our stomach to digest.

Burger, Finger chips, Samosa, Chips, Pizza

Food guide pyramid



FOOD GUIDE PYRAMID



EATING HABITS

- *A toddler may prefer finger food.
- *The child may over eat.
- *The child may under eat.
- *Appetite change from one day to the other.

"A Healthy Eating Habits Always Starts From Home"



HEALTHY FOODS



BALANCED DIET FOR SCHOOL LUNCH



Sleep

Get at least 9 hours of sleep each night.

- Go to bed and wake up at the same time every day.
- You can have a light snack (try a glass of warm milk)
- Avoid sugar and caffeine.



Blue represents milk:

- Get your calcium-rich foods.
- Milk and milk products contain calcium and vitamin D, both important to building and maintaining bone tissue
- Whole cow's milk may be introduced after an infant's first birthday, but lower-fat or skim milk should not be used until the child is at least two years old.

FOOD+ SLEEP+ PHYSICAL ACTIVITY

Food

- Fruits
- Veggies
- Whole grains
- Low-fat dairy (like yogurt, milk, and cheese)
- Protein (like lean meats and poultry, fish, beans, nuts, and seeds)
- Water
- Breakfast
- Healthy snacks
- Avoid caffeine.
- Make sugary foods and drinks an occasional treat.

THE FOOD PYRAMID

Divided into 6 colored bands representing the 5 food groups plus oils:

Orange represents grains:

- Make half the grains consumed each day whole grains. Whole grain foods include oatmeal, whole wheat flour, whole cornmeal, brown rice, and whole wheat bread.

Green represents vegetables:

- Choose a variety of vegetables, including dark green and orange colored kinds (peas and beans), starchy vegetables, and other vegetables.

Red represents fruits:

- Any fruit or 100 percent fruit juice counts as part of the fruit group. Fruits help us to stay strong and healthy.
- Fruits may be fresh, canned, frozen, or dried, and may be whole, cut-up, or pureed.

Yellow represents oils:

- Know the limits of fats, sugars, and salt/sodium.
- Make most of your fat sources from fish, nuts, and vegetable oils.
- Limit solid fats like butter and shortening.



Purple represents meat and beans:

- Go lean on protein. Choose low fat or lean meats and poultry.
- Vary your protein sources. Choose more fish, nuts, seeds, peas, and beans.



With this reduction in energy intake, they will grow into a healthy weight as they age.

Help your child to find higher-calorie foods that can be cut from his/her daily intake.



APPENDIX III C

PHYSICAL ACTIVITY

- To include for the basic healthy activities are to be given like yoga.
- Knowledge about the health orientated angle of all forms of bodily activity with children and understanding of the official recommendations about physical activity.
- Aim to be active for at least an hour every day
- Is a must workout, aerobics, walking or jogging regulates heart rate giving you more energy to work hard through the day.
- Exercise early in the morning won't make you feel lazy in the day.
- It improves blood- circulation and releases muscle tension giving you a stronger body and mind.
- Yoga helps in overall mind and body development. It is a two- in one medium to keep you healthy both mentally and physically.
- Encourage sports as part of school activities. Kho kho, Kabadi, Dances, Yoga and aerobics should be promoted in school to be physically and mentally healthy and to be active in school.
- Physical fitness is being in good shape or condition and can be achieved through correct nutrition, exercise, hygiene, and rest. When your body is physically fit, your body has the ability to complete tasks successfully and your heart, lungs, blood vessels, muscles, and joints have the ability to perform well.
- The physiological elements of physical fitness include healthy body composition, cardio respiratory endurance, flexibility, muscular strength, and muscular endurance. Body composition is a comparison of the amount of fat and muscle a person has.
- Cardio respiratory fitness is the ability of the heart and lungs to provide oxygen-rich blood to muscles. Flexibility is the range of motion of your joints.
- Muscular endurance describes how long your muscles can work before tiring.
- Muscular strength is the amount of force a muscle can produce especially in activities, like sprinting and weight training that require short bursts of energy.

APPENDIX III D

FOOD PYRAMID AND MY PLATE

- Divided into 6 colored bands representing the 5 food groups plus oils:
- **Orange represents grains:**

Make half the grains consumed each day whole grains. Whole-grain foods include oatmeal, whole-wheat flour, whole cornmeal, brown rice, and whole-wheat bread. Check the food label on processed foods - the words "whole" or "whole grain" should be listed before the specific grain in the product.
- **Green represents vegetables:**

Vary your vegetables. Choose a variety of vegetables, including dark green- and orange-colored kinds, legumes (peas and beans), starchy vegetables, and other vegetables.
- **Red represents fruits:**

Focus on fruits. Any fruit or 100 percent fruit juice counts as part of the fruit group. Fruits may be fresh, canned, frozen, or dried, and may be whole, cut-up, or pureed.
- **Yellow represents oils:**

Know the limits on fats, sugars, and salt (sodium). Make most of your fat sources from fish, nuts, and vegetable oils. Limit solid fats like butter, stick margarine, shortening, and lard, as well as foods that contain these.
- **Blue represents milk:**

Get your calcium-rich foods. Milk and milk products contain calcium and vitamin D, both important ingredients in building and maintaining bone tissue. Use low fat or fat-free milk after the age of two years. However, during the first year of life, infants should be fed breast milk or iron-fortified formula. Whole cow's milk may be introduced after an infant's first birthday, but lower-fat or skim milk should not be used until the child is at least two years old.
- **Purple represents meat and beans:**

Go lean on protein. Choose low fat or lean meats and poultry. Vary your protein routine - choose more fish, nuts, seeds, peas, and beans. Activity is also represented on the pyramid by the steps and the person climbing them, as a reminder of the importance of daily physical activity. According to the Dietary Guidelines for Americans 2005, a decrease in energy intake of 50 to 100 calories per day for children who are gaining excess fat can reduce the rate at which they gain weight. With this reduction in energy intake, they will grow into a healthy weight as they age. Help your child to find higher-calorie foods that can be cut from his/her daily intake.

APPENDIX III E
HYGIENE AND SANITATION

- To give knowledge about hygiene and sanitation like the hand washing techniques
- And also the food handling methods
- And also to teach about personnel hygiene
- Importance of maintaining personal hygiene and sanitation
- Provide information on various illness caused.
- Prepare separate guidelines for teachers and parents to inform how to maintain personal hygiene at school and home respectively.
- Keep class and surrounding clean
- Impart education on living healthy in a clean environment.
- Identification of hygiene problems and necessary action
- And also to clean the school bags and lunch bags.
- Trim nails and the uniforms are clean and neat
- The personal hygiene was to be make the children healthy
- The infections are not to be affected the children because of the hygienic practices.

APPENDIX III F

LIFESTYLE PATTERN

- To knowledge about food habits and also the life skills
- To educate for the life based skills like stress relief and healthy life to be lead.
- And also the awareness of eating habits.
- And also the monitor for children spent time in leisure activities
- It incorporates healthy eating habits and educating children on the importance of healthy food.
- Provide information on selection and preparation of healthy food.
- School to promote healthy mid day meals.
- To encourage the child to be involved for the physical activity
- If some childrens to involve for the any physical activities so the disorders like obesity should be reduced.
- Get a minimum 8 hours sleep cause it relaxes your mind and keeps you healthy.

APPENDIX IV
MODULES FOR PARENTS

S.No	Name	Duration in minutes	Aids
1.	Traditional food Vs Fat foods	30	Lecture method
2.	Cooking simple and healthy recipes	30	Lecture and Demonstration

APPENDIX IV A

TRADITIONAL FOOD VS FAST FOOD

- Healthful role model for their Children as Healthy eating status from home.
- Cooking simple and Healthy meals for their children
- To create health awareness for their children
- Method of preventing loss of nutrients
- To garnish the food in a eat variety of foods.
- To educate on basic five food groups in the process of menu planning.
- In traditional recipes are should be prepared for the home and given to their children
- Grandparents and elders often enjoy talking about the foods they eat as children and how they gathered and hunted foods.
- Invite elders to share stories with the children and parents at leisure time and to make the food with their children and dine together.
- Create a small garden at the home and to grow the salad greens for the children

HEALTHY RECIPES FOR PRETEENS

1. French Toast

Ingredients:

- Bread 4-5 Slices
- Semolina/sooji - 2tsp
- Curd - 2tsp
- Green chillies -2
- Onion - 1
- Salt - to taste
- Oil - 2-3 tsp
- Red chilli powder -1/2tsp
- Turmeric powder -1/2tsp
- Coriander leaves -a few
- Garlic crushed -1 pod

Method:

1. In a mixing bowl add semolina/sooji, red chilli powder, turmeric powder, salt, curd, finely chopped onions, green chillies, crushed garlic pod and coriander leaves. Mix in to a smooth and no lump batter preferably of medium consistency so that you can easily spread it on the bread.
2. Heat oil in a tawa and place two breads side by side and apply the above made batter on to the bread carefully.
3. Now flip and spread on the other side and make a fine toast.
4. Take out and serve hot with tomato ketchup.

2. Vegetable Sandwich

Ingredients:

- Wheat bread - 8 slices
- Cucumber, peeled and sliced - ½
- Carrot, peeled n sliced - 1 no
- Tomato, sliced - 1 no
- Onion, sliced - 1 no
- Salt and Pepper as required
- Olive oil

Method:

1. Slice of bread, arrange veggies, sprinkle salt n pepper, spread hummus on another slice of bread, place on top.
2. Drizzle olive oil on a grill pan and toast the sandwich on both the sides until crisp and serve warm.

3. Sandwich Kabab**Ingredients:**

- Brown Bread - 6-7 nos
- Sandwich cheese - 3-4 nos
- Lettuce as needed
- Potato masala as needed
- Green chutney to serve
- Cherry tomato

Method:

1. Cut bread to 4 form squares.
2. Apply potato masala in one square and top it with other square bread.
3. The same way Keep the cheese and lettuce in the square.
4. Arrange the assembled sandwich in a stick and prick a cherry tomato on top

4. Mini Masala Idli**Ingredients:**

- Mini Idlis - 15 to 20
- Ghee - 1 tbsp
- Oil - 1 tbsp
- Idli/Dosa Milagai Podi - 1 tbsp
- Onion - 1
- Capsicum - ½
- Carrot - 1
- Mustard - 1 tsp
- Curry leaves - a sprig
- Salt - as needed

Method:

1. Take idli/dosa batter and pour it in mini idli mould. Steam it for 7-10 mins. Once cooked take the idlis from the mould and keep it aside.
2. Chop onion finely, capsicum into thin strips and grate the carrot. Keep the veggies ready.
3. Heat a pan with ghee and add the mini idlis. Saute them so that it gets coated well with ghee and becomes slightly brown. Keep it aside.
4. In the same pan add oil and temper with mustard seeds and curry leaves.
5. Add finely chopped onions and saute until transparent. To this add capsicum and carrot and required salt. Saute for a min or two. Let it be a little crunchy.
6. Add the fried idlis and saute.
7. Finally add idli/dosa milagai podi and saute so that all the ingredients blend well.

5. Mixed Millet Paniyaram**Ingredients:**

- Varagu - ½ Cup
- Samai - ½ Cup
- Thinai- ½ Cup
- Kuthiraivaali - ½ Cup

- Kambu - ½ Cup
- Cholam - ½ Cup
- Idli rice - ½ Cup
- Urad dal - ¾ Cup
- Fenugreek - 2 Tsp
- Salt - To taste
- Jaggery - 2 Cup, small pieces
- Water - 2 Tbsp
- Cardamom powder - 1 Tsp
- Walnut - 2 Tbsp, chopped

Method:

1. Soak all the millets with parboiled rice for 2 hours.
2. Soak urad dal and fenugreek for 2 hours.
3. Drain the urad dal and fenugreek and grind it into a smooth batter with spreads of some water and transfer into a large vessel.
4. Next, drain the millets and grind into batter with spreads of water.
5. Allow 8-12 hours for fermentation.
6. Take the required amount of paniyaram batter into a mixing bowl and keep it aside.
7. Take the grated or small pieces jaggery add 2-4 Tbsp of water and melt it completely.
8. Add the jaggery syrup into the batter via coffee filter little by little and stir it well.
9. Check the sweetness of the batter and add according to your sweet taste, if not enough add little and mix it well. Heat paniyaram pan on low-medium flame.
10. Add 1 Tsp of oil in every well of the paniyaram pan. Add walnuts to the oil and then pour sweet paniyaram batter to the ¾ of the well, because it will rise while cooking. And cover with lid for 1 minute on lowflame.
11. After it gets cooked take out from the well and keep it in bowl.
12. Serve it hot, if you wish serve with coconut chutney.

6. Cheesy Mini Uttapam

Ingredients:

- Idli/dosa batter - ½ cup
- Grated carrot - 3 tbsp
- Grated cheese - as needed
- Finely chopped coriander leaves - 1 tbsp
- Finely chopped onions - ½ no
- Oil.ghee - 1 tsp

Method:

1. Wash and Grate carrot. Chop onions and coriander leaves finely. Grate cheese n set aside OR u can grate it directly over the dosa. Heat dosa pan and pour a ladleful of batter. Do not spread it. Batter should not be too thick or too thin.
2. After pouring the dosa batter, simmer the flame completely. Leave it for few seconds. Bubble will start to appear.
3. Now spread the grated carrot as outer layer and put some coriander leaves towards the middle. Lastly put the finely chopped onions in the center. Drizzle a tsp of oil/ghee around the dosa. Keep the flame low always else dosa will get burnt.

4. Flip the dosa and leave it for few seconds. Again flip the dosa and add the grated cheese or grate cheese all over the dosa. Leave till cheese melts.
5. Remove and serve hot or allow it to become warm and pack in lunch box.
6. U can make the same dosa for adults by sprinkling idli podi or pepper powder over the dosa. Reduce the quantity of carrot and add more onions.

7. Mixed Veg. Uttapam

Ingredients:

- Dosa dough 2 cup
- Onion chopped ½ cup
- Carrot ½ cup
- Green chilly 4
- Cumin seeds ½ sp
- Salt
- Coriander leaves
- Cumain seeds

Method:

1. Chop one or two onions finely.
2. Chop 4 - 5 Green chillies finely.
3. Chop Coriander leaves and add all the ingredients with Dosa dough.
4. Add some Cumin seeds also.
5. Make thick Dosas out of the dough. Serve with dosa chilly powder.

8. Tomato Dosa

Ingredients:

- large country tomatoes - 1 1/2
- Boiled rice - 1cup
- Urad dal -1/2 cup
- Jeera - ½ tsp
- Red chili - 3
- Salt as required

Method:

1. Soak boiled rice and urad dal for one hour.
2. Cut tomatoes very small pieces.
3. Grind together tomatoes, jeera, chili and soaked rice and urad Dal.
4. Grind it to a smooth paste(takes about 20 min)
5. Heat dosa tava and add oil to it.
6. Put the batter to the tava when its hot and spread it .
7. Add oil to it and Cover it with lid .
8. After a min flip it when the other side is roasted take it out.
9. Serve it with your favourite chutney or sambhar.

9. Cabbage Chickpeas Fried Rice

Ingredients:

- Cabbage - 1.5 cup
- Cooked chana / Chickpeas - 1 cup Cooked
- Basmati rice - 3 cups
- Pepper powder - 1 teaspoon
- Green chillies - 3
- Salt to taste
- Spring onion - 1 bunch
- Soya sauce - 2 teaspoon
- Sesame oil - 1 tablespoon
- Coriander leaves - 1 tablespoon
- Curry leaves - 10

Method:

1. Heat oil in a pan and add white portion of spring onion and garlic.
2. Fry till garlic is brown in color. Add green chillies and curry leaves.
3. Fry for 20 Sec. Add cabbage and fry it in high flame for about 3-4 mins.
4. Add cooked Chickpeas. Fry for 30 sec. Add pepper, salt, soya sauce. And mix well.
5. Add cooked rice mix well. Fry it in high flame for 3-4 mins.
6. Add spring onions, coriander leaves and mix well.
7. Serve hot.

10. Carrot Capsicum Rice**Ingredients:**

- Cooked Rice - 1 cup
- Carrot - 3 No.
- Capsicum - 1 No.
- Cashew / Pista - 25 Gms
- Chilly Powder - as per spice level.
- Salt to taste
- Oil / Ghee - to temper.

Method:

1. Grate the Carrot. Slice the Capsicum thinly lengthwise.
2. Heat a pan with 4 tsp oil, add Cashews and saute well.
3. Add Carrot and Capsicum and saute well.
4. Add the Masala powder - 1 tsp is enough for a cup of Rice.
5. Salt to taste and allow the vegetable to cook until its done. Once the Veggies are cooked add the Rice to it and Mix well.

11. Beetroot Pulao**Ingredients:**

- Basmati rice - 1½ cups
- Beetroot, peeled and grated - 1 large
- Onion, sliced - 1
- Curd/yogurt - 3 tbs
- Chilli powder - ½ tsp
- Turmeric powder - 1/2tsp
- Garam masala powder - ½ tsp
- Green chillies - 2
- Ginger, crushed - 1
- Mint leaves - 2 tbs
- Mustard ½ tsp
- Cumin seeds - ½ tsp
- Salt
- Ghee, Oil - 1 tsp

Method:

1. Wash, soak and drain basmati rice. Cook the rice and allow it to cool.
2. Heat oil in a kadai and temper with mustard and cumin seeds. Add crushed ginger and green chillies.
3. Add the washed cilantro and mint leaves. Saute well. Add the chopped onions and saute till golden
4. Add the grated beetroot and saute well.
5. Add chilli powder, turmeric powder, curd and mix well. Saute till the curd is absorbed and beetroot is cooked
6. Add garam masala, cooled rice and ghee. Cover for 10 minutes.
7. Mix gently and serve hot.

12. Methi Rice

Ingredients:

- Basmati Rice - 1 cup
- Oil - 1 tbsp
- Cashews-1 tbsp
- Big onion - 1
- Green chillies - 1-2
- Turmeric powder - ¼ tsp
- Fresh fenugreek leaves/methi leaves -1 bunch
- Salt to taste

Method:

1. Wash and soak Basmati rice in water for 15 - 20 minutes.
2. Drain and cook adding 2 cups of water.
3. Heat oil and add cashews.
4. Toast them until golden brown and remove them with a slotted spoon and keep them aside.
5. To the same oil, add green chillies and onion and fry until onion turns translucent.
6. Then add roughly chopped methi leaves, turmeric powder and salt.
7. Keep sauteeing until methi leaves wilt and are cooked.
8. Next add the cooked rice, toasted cashews and mix well.

13. Cabbage Rice

Ingredients:

- Basmati rice - 2 cup
- Shredded cabbage - 2 cup
- Grated carrot - 1/2 cup
- Chopped onion - 1 big
- Chopped garlic - 1 tblspn
- Garam masala -1 tspn
- Pepper powder - 1/2 tspn
- Lemon juice -2 tspn
- Water - 3 cup
- Salt
- Oil

Method:

1. Soak basmati rice for 20 minutes
2. Drain the rice and pressure cook it with 3 cups of water, salt and lime juice.
3. One whistle is enough. Let it cool
4. When pressure subsides open the cooker and keep aside
5. Heat a pan with oil.
6. Add chopped garlic. Sauté it well till it leave the raw smell
7. Add shredded cabbage, chopped onion and grated carrot to it.
8. Sauté it well till the cabbage turns light brown colour.
9. Add salt .Be careful while adding salt because already we added little salt in rice.
10. Add garam masala and pepper powder.
11. Add cooked rice and mix it well.
12. Switch off the flame and serve it with raitha or tomato sauce

14. Beetroot Poori

Ingredients:

- Wheat flour -1 cup
- Beet root - 1 medium size
- Oil - 2 -3 tsp + deep frying
- Salt to taste

Method:

1. Wash and chop the beetroot roughly and blend it in a blender until smooth.
2. If the beetroot is dry while grinding add small amount of water.
3. In a mixing bowl take wheat flour, salt and 2-3 tsp of oil and mix well.
4. Now add the beetroot puree and form smooth dough. If required add some water while kneading. Rest it for 10 -15 minutes.
5. Divide the dough into equal size balls and roll into circle using rolling pin.
6. Mean while heat oil in a kadai for deep frying.

15. Palak Poori

Ingredients:

- Wheat Flour - 2 cups
- Spinach - 1 cup
- Salt - as needed
- Water- as needed
- Chilli powder - 1 tsp
- Jeera/Cumin Powder - 1/4 tsp
- Asafoetida - a pinch
- Oil - to deep fry

Method:

1. Separate the spinach leaves from the stem (tender stems can be included), wash 3-4 times and clean it.
2. Heat a pan with water and add salt and asafoetida to it. Bring it to a boil. Then add the cleaned/washed spinach leaves and let it cook for 3-5 mins.
3. Drain the excess water and keep it aside. Do not waste it. Grind the cooked spinach leaves in a mixer into a smooth puree.
4. Take wheat flour, spinach puree, salt, chilli powder and jeera powder in a bowl and mix well.
5. Knead it into a soft dough adding enough water Pinch a small sized ball and roll it into a small circle.
6. Meanwhile heat a pan with oil enough to deep fry. Drop the rolled poori in hot oil and fry it evenly on both sides.

16. Sprouts Paratha

Ingredients:

- Mixed sprouts- ½ cup
- Curry leaves -5-8
- Garlic- 8 cloves
- Green chilles-4-5
- Onion -1 medium size
- Ginger- ½ inch piece
- Salt to taste
- Asafoetida- a pinch
- Turmeric powder- ½ teaspoon
- Garam masala- ¼ teaspoon
- Oil to make parathas

Method:

1. Wash sprouts 2-3 times and strain water.
2. In a food processor pulse ginger, garlic, onion, sprouts, curry leaves, green chilles to make a coarse paste.

3. Finally add the above mixture with flour, salt, asafoetida, ½ tablespoon oil and turmeric. Mix well.
4. Take little water and knead to form a soft dough. Let it rest for 10 minutes.
5. After 10 minutes, divide dough into equal parts and give them a round shape of ball. Take ½ cup dry wheat flour in a plate for dusting. Take one dough ball, flatten it like Pattie and dust dry wheat flour over it. Roll out the paratha.
6. Place it on a hot tava/griddle and cook over medium flame. When tiny bubbles starts to rise on the surface, flip it and reduce the flame to low.
7. Spread 1/4 tsp oil around edges and spread over the paratha. Flip it again and spread 1/4 tsp oil around over it.
8. Press it with spatula and let it cook over medium flame. Cook until golden brown spots appear on both sides.

17. Chicken Bengal Gram Patties

Ingredients:

- Boneless chicken - 250 gm
- Chana dal - 1 cup
- Green chillies - 3
- Ginger- 2 Small
- Curry leaves - 7-8
- Black pepper -1 tsp
- Garam masala powder- ½ tsp
- Salt to taste
- Eggs, slightly beaten-2
- Oil for shallow frying

Method:

1. Mince the chicken in the grinder
2. Grind the chana dal coarsely, leaving some bites.
3. Put over the minced chicken.
4. Add the remaining ingredients upto salt and mix well.
5. Shape into patties and dip in beaten egg.
6. Heat oil in a frying pan to cover the layer.
7. Shallow fry both sides on medium-low flame till golden brown.

18. Pumpkin Pancakes

Ingredients:

To make Pancake Mix :

- All purpose flour - 1½ cups
- Baking powder - 1½ tablespoon
- Sugar - 1½ tablespoon
- Salt - ½ tsp

Wet ingredients:

- Eggs - 1 number
- Pumpkin puree - 1 cup
- Vanilla Extract - 1 teaspoon
- Milk - ½ cup
- Water - As needed

Method:

1. Take a large mixing bowl. Add all the dry ingredients and mix. The dry ingredients are All purpose flour, Baking powder, Sugar and salt and mix well
2. Take the pumpkin puree in a bowl, add the egg and Vanilla Extract.
3. Add the Milk to it and whisk all the contents together.

4. Pour the wet ingredients over the dry ingredients 5. Add some water if required and mix without lumps. The batter should be thick and not too thin.
5. Heat a Griddle. Spread some butter on the griddle. Pour a ladeful of batter on the griddle and allow it to cook till the bubbles are formed.
6. Flip to the other side once the bubbles are seen. Cook on both sides. Serve hot.
7. Serve the pancakes with Butter and Maple syrup.

19. Colorful Protein Pancakes

Ingredients:

- Split moog dal - ½cup
- Chopped spinach -2 tbs
- Chopped carrot-1/3 cup
- Green chili ginger paste -½tsp
- Rice flour - 2 tsp
- Soji flour -2 tsp
- Oil as needed
- Salt to test
- Water -3 to 4 tbs

Method:

1. Once daal is soaked properly, split it in two equal parts.
2. Add spinach in one part and carrot in another part.
3. Grind each part in grinder. Add little water as needed to make smooth batter.
4. Now add 1tsp rice flour and 1tsp soji flour in each (green and orange batter).
5. Add chili ginger paste and salt. Mix it very well.
6. As you can see in picture below, at this point you should have really bright colored batter ready.
7. Turn on stove top on medium heat and put griddle on top of it.
8. Spread some oil on griddle and spread some batter on griddle. Flip it on other side when bottom looks slightly brown and cooked.

20. Gobi Paratha

Ingredients:

For The Dough

- Whole wheat flour- 3 cups
- Oil -2 tsp
- Salt to taste
- Water for kneading

For The Gobi Stuffing

- Finely grated cauliflower - 3 cups
- Cumin seeds -1 tsp
- Carom seeds -1 tsp
- Finely chopped green chillies - 2 tsp
- Finely chopped coriander - ½ cup
- Salt to taste
- Oil -4 tsp

Method:

Making the dough:-

1. In a mixing bowl add wheat flour, oil and salt and make a smooth dough by adding enough water slowly.

2. At the end add little bit of oil, cover and keep it aside.

Preparing the gobi/cauliflower stuffing:-

1. Grate the gobi/cauliflower finely. Squeeze the cauliflower take out as much water as possible.
2. Then add some finely chopped green chilies, carom seeds, cumin seeds, chopped coriander, salt and mix well.
3. Add salt while making only if you add before then it will ooze out water and stuffing will become moist and it will be difficult to make paratha.
4. Make small balls out of that mixture.

Making Paratha :-

1. Knead the dough again and divide the dough into equal portions.
2. Roll one part of the dough into a three inch circle. Place one part of the filling in the center.
3. To wrap, pull the edges of the rolled dough together to cover the filling.
4. Allow each ball to settle for a minute before rolling.
5. Press the filled ball lightly on both sides on a surface and dust with wheat flour.
6. Roll the ball with a light hand into 6" circles, dust with dry wheat flour if required.
7. Place rolled paratha on the hot tava. Once cooked, Flip the paratha and cook again
8. Finally spread a teaspoon of oil over both the sides of paratha. Repeat with the remaining dough and stuffing to make more parathas.
9. Serve hot gobi paratha with yogurt, pickle or butter.

21. Cabbage Paratha

Ingredients:

- Wheat flour - 1 cup
- Grated / Chopped cabbage - 1/2
- Turmeric - 1/2 tsp
- Red chili powder - 1/2 tsp
- Garam masala - 1/2 tsp
- Ginger garlic paste - 1/2tsp
- Chopped cilantro - 2 tsp
- Oil- 2 tsp
- Salt As needed

Method:

1. Take a large bowl, mix wheat flour, cabbage, red chili powder, garam Masala, ginger garlic paste, cilantro, turmeric, oil and required salt.
2. Knead and make soft yet pliable dough by adding little amount of water. Keep aside for 10 minutes.
3. Divide dough into equal size of balls. Roll it out using rolling pin, dust flour when needed.
4. Heat tawa / pan on medium flame. Roast them on both sides till golden brown in color, apply oil on both sides.
5. Serve hot with curd or pickle

APPENDIX IV B
WORKING SIMPLE AND HEALTHY COOKING

- They have to prepare simple recipes.
- And this recipes are to be nutritious and also they children to eat properly.
- The recipes to be more attractive to the child
- And also the food to be innovative and also the tasty
- To Encourage the children to involved for the physical activity and other health benefits
- Simple recipes are should be prepared. And also in these recipes are good for health
- To be avoided for the fat and oil items
- More fruits and vegetables are should be included
- A avoid fast and street food items.

APPENDIX V
HEALTH EDUCATION MODULES FOR TEACHERS

S.No	Name of the module	Duration in minutes	Aids
1.	Food and Health	30	Power point
2.	Personal hygiene and health	30	Lecture
3.	Physical activity	30	Lecture

APPENDIX V A

FOOD CHOICES AND HEALTH

Benefits of healthy eating and active living

- Helps you learn and teach children
- Promotes healthy weight

Think for a minute about the food:

- In grocery stores
- In corner stores
- In movie theatres
- At fast food restaurants
- At sports events
- At school in class rooms

Change is happening at many levels

Teachers are a healthy role model for children as whatever is told in class rooms for younger children are as precious as gold and follow it regularly.

- Foods served or sold in school should make a positive contribution to students' eating habits
- Teachers in schools teach about healthy eating. They should also be model for healthy eating.
- Guidelines include 3 categories of food:
 - Serve Moderately
 - Foods Not Included

Serve Moderately

- Fruits and vegetables
- Milk and milk products
- Meat and alternatives

Foods not to be Included

- Junk foods such as fast foods and carbonated beverages.

Encouraging Active Living

- Active Transportation
- Intramurals & Informal activities
- Access to school/community resources after school hours
- Physical Education
- Activities in other classes
- Healthy eating & active living matters
- It's not always easy to eat healthy in today's world
- There are opportunities to increase physical activity within our school community
- We can all be agents of change

To all Teachers
Let's all work together to make the healthy choice the easy choice for students!

Living Healthy

BENEFITS OF HEALTHY EATING AND ACTIVE LIVING

- Helps you learn
- Promotes healthy weight
- Sports performance
- Keeps you healthy
- Prevents diseases
- Sleep better
- Increase self-esteem & self-confidence
- Decrease depression & anxiety

ENVIRONMENT

Think for a minute about the food

- ❖ Grocery Stores
- ❖ Corner Stores
- ❖ Movie Theatres
- ❖ Fast Food Restaurants
- ❖ Sports Events
- ❖ School

Knowledge on portion size and serving size

PORTION SIZES

Year	Item	Calories
2004	Wendy's	218
2004	Wendy's	333
2005	McDonald's	218
2005	McDonald's	410
2005	Hershey's Kisses	218
2005	Hershey's Kisses	1,074
2010	Coca-Cola	140
2010	Coca-Cola	218
2010	Wendy's	218
2010	Wendy's	1,760

CHANGE IS HAPPENING AT MANY LEVELS

You can help create a school environment that supports healthy eating!

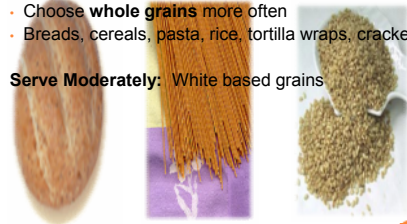


SCHOOL FOOD GUIDELINES

- Foods served or sold in school should make a positive contribution to students' eating habits
- Schools teach about healthy eating. They should also model healthy eating.
- Guidelines include 3 categories of food:
 - *Serve Most*
 - *Serve Moderately*
 - *Foods Not Included*

GRAIN PRODUCTS

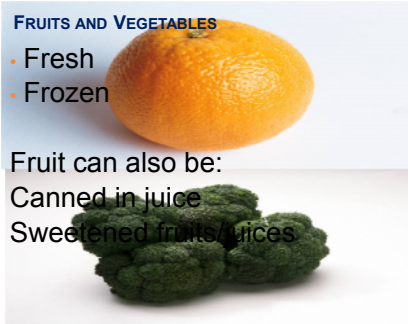
- Choose **whole grains** more often
 - Breads, cereals, pasta, rice, tortilla wraps, crackers
- Serve Moderately:** White based grains



FRUITS AND VEGETABLES

- Fresh
- Frozen

Fruit can also be:
Canned in juice
Sweetened fruits/juices



MILK PRODUCTS

Choose lower fat & unsweetened products

- White milk
- Lower fat cheese
- Yogurt

Serve Moderately

- Chocolate milk
- Yogurt drinks
- Ice cream (once a week)



MEAT AND ALTERNATIVES

- Choose lean cuts of meat, fish, poultry and dried beans and peas
- Use lower fat cooking methods
- Use in moderation any added fats such as oil, gravy, cream sauces

Serve Moderately:

- chicken wings, or fried meats (once a week)

FOODS NOT INCLUDED

- Some foods provide very few nutrients
- Students can fill up on these foods and will not have room for healthier foods

Examples:

- Cookies, cakes, pies, donuts, chocolate bars
- Potato chips
- Pop, fruit drinks, sports drinks, energy drinks
- Battered & fried products – nuggets, battered & fried chicken pieces, onion rings

ACTIVE LIVING

Do 60 minutes of physical activity every day



ENCOURAGING ACTIVE LIVING

- Active Transportation
- Intramurals & Informal activities
- Access to school/community resources after school hours
- Physical Education
- Activities in other classes

APPENDIX V B

PERSONAL HYGIENE AND HEALTH

Personal hygiene is the key to good health. So the preteens must be encouraged to keep themselves clean and tidy to ensure healthy environment.

Personal hygiene requires the cleaning of all parts of the body (face, hair, body, legs and hands). The face and hair have to be cleaned because they accumulate grime, emit bad odors and make one self dull. Skin diseases such as ringworm, scabies, sweat fungi, etc., can also occur.

The hands and finger nails have to be cleaned because the germs in between the fingers and finger nails cause contagious diseases such as diarrhea, worms, etc., and epidermophytosis.

The teeth and mouth have to be cleaned because they emit bad odors, cause mouth and dental diseases such as cavities, gingivitis, etc., and stomach disorders due to indigestion.

Thus, one's face hair, body, legs and hands should be cleaned thoroughly, and the teeth brushed properly. Ears, an important part of the human body, should be kept clean and carefully protected from injury.

Practice of personal hygiene should be carried out as daily, weekly, and monthly activities. In addition to one's personal hygiene and cleanliness of one's home and its surroundings, the classrooms and the school surroundings should also be clean. Drinking impure water can cause cholera, diarrhea, dysentery, typhoid and hepatitis. Therefore, pure drinking water free from germs and dirt should be used.

Improper sewage and garbage disposal can lead to the spreading of contagious diseases through rats, mosquitoes, flies, cockroaches and stray dogs. Only fly proof latrines should be used and garbage disposed of properly.

- Brush the teeth
- Take a bath
- Shampoo the hair

Teacher should demonstrate all the students

- The face should be washed with water and soap.
- Shampoo should be used to wash the hair.

Personal hygiene tips:

- Brush teeth in the morning and after food
- Take bath regularly and shampooing hair.
- Trim nails
- Keep shoes and socks washed
- Wear nicely washed and ironed uniforms.
- Wash face, hands and legs thrice a day.
- Keep school and lunch bags clean.

APPENDIX V C

PHYSICAL ACTIVITY

Healthy Eating and Physical Activity in Health Education

- Teach students about healthy eating and physical activity recommendations.
- Encourage students to identify their own healthy behaviors and set personal goals for improvement.
- Incorporate health education into other subjects such as math and science.
- Extend healthy lessons outside of school by assigning homework for families to complete together.

School health advisory council

A school health advisory council can be set up to coordinate and monitor all health promotion efforts in the school including development of health promoting school policies. The members of the advisory council can include the head of the school representatives from parents, teachers, student representatives from school alumni and community leaders.

School canteens:

- Implement quality control measures
- Prohibiting sale of junk foods and soft drinks
- Providing healthier options like fresh fruits, Whole grains and pulses

Health regulations in the display Tobacco free school, cell phone free zone, no smoking or chewing of tobacco inside the premises of school or in school vehicles' by students, teachers, other staff members, visitors.

APPENDIX VI
CHECKLIST TO ASSESS KNOWLEDGE ON FOOD CHOICES FROM
PRETEENS

** Three scores for each correct answer

** Maximum score - 21

Name :

Age :

School:

1. What are the energy giving foods?
a) Carbohydrate b) Protein c) Fat
2. Which is the best food source of whole grains?
a) Tomato b) Yogurt
c) A slice of white bread d) A slice of whole wheat bread
3. What are the nutrients the rich in Eggs and Nuts?
a) Calcium b) Protein c) Starch d) vitamins
4. From which food groups should you eat the maximum servings for each day?
a) Vegetable b) Meat c) Fats d) Grains
5. Which of these is the healthiest choice for an afternoon snack?
a) Chips with a sandwich b) Ice cream
c) Carrot sticks d) Cakes19.
6. Would you use the menu planning plate after education?
a) Yes b) No
7. We should wash fruits and vegetables before we eat them, because
a) To wash off the germs b) Only if they are dirty
c) To keep them fresh d) To make them taste better
8. How many servings of milk and its products should we consume per day?
a) 1 b) 3 c) 5 d) 9
9. How many glasses of water should you drink in each day?
a) 2 b) 4 c) 6 d) 8

APPENDIX VII

CHECKLIST TO ELICIT DETAILS ON HEALTH CONCEPTS FROM PARENTS

Name : Class : Phone no :

1. Do you cook healthy foods at home?
 - a) Yes b) NoIf yes, please tick
Iron rich foods Fat rich foods
Protein rich foods Fiber rich foods
2. Do you prefer healthy meals every day for your children?
 - a) Yes b) NoWhole Grains Cereals and Pulses
Green leafy vegetables Meat and milk product
3. Do you know the concept of food guide pyramid?
 - a) Yes b) No
4. Do you include vegetables in your daily meal?
 - a) Yes b) NoRoots and tubers Green leafy vegetables other vegetables
5. Do you encourage your children to be involved for any physical activity?
 - a) Yes b) NoExercise Swimming Cycling Waking
6. Do you prefer fat rich foods for your children?
 - a) Yes b) NoIf yes, please tick
Vada Bonda and Baji Fried foods Samosa
7. Do you make traditional foods?
 - a) Yes b) NoIf yes, please tick
Ragi Jower Maize Wheat
8. Do you use herbs during cooking?
 - a) Yes b) NoIf yes, mention
Duthuvalai Tulasi Curry leaves Corriander leaves
9. Did you see the television during meal times?
 - a) Yes b) NoIf yes, details on duration
30 minutes one hour two hour above one hour

APPENDIX VIII
CHECKLIST TO ELICIT DETAILS ON HEALTH CONCEPTS FROM
TEACHERS

Name :

Class :

School:

1. Do you teach students in class about food choices?
a)Yes b) No
If yes,
Nutritious foods Balanced foods
2. Do you give any nutrition education for your children?
a)Yes b) No
3. Do you teach the children for personal hygiene?
a)Yes b) No
4. Do you check the children each day for hygienic standards?
a)Yes b) No
Nails School and lunch bag Shoes and socks
5. Do you have clean and safe water available in your school?
a)Yes b) No
6. Do you teach the students in difference between portion and serving size?
a)Yes b) No
7. Do you create students for mindful eating plan?
a)Yes b) No
8. Do you teach students in reading nutrition labels and ingredients information in food pattern?
a)Yes b) No
9. Do you teach about the physical activity for children?
a)Yes b) No

Bond Sheet Black and White 1-14,19-36,39-43 (27 sheets)

Glossy sheet Colour 15-18,37,38 (6 sheets)