

**DYSFUNCTIONAL EATING PATTERN AND THE RISK OF
OBESITY AMONG YOUNG WOMEN**

By

ANJITHA .K

(16PFD002)

**A THESIS SUBMITTED TO THE
AVINASHILINGAM INSTITUTE FOR HOME SEIENCE AND HIGHER
EDUCATION FOR WOMEN,
COIMBATORE - 641 043**

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE

IN

FOOD SERVICE MANAGEMENT AND DIETETICS

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Certified as a Bonafide Research Work


Signature of the

Head of the Department



Signature of the Guide

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CONTENTS

Chapter No	Title	Page No
	LIST OF TABLES	
	LIST OF FIGURES	
	LIST OF PLATES	
	LIST OF APPENDICES	
1.	INTRODUCTION	1-5
2.	REVIEW OF LITERATURE	6-22
	A. Transition in eating behaviour among population especially young-Across the globe	
	B. Impact of health on changes in dietary pattern and lifestyle practices	
	C. Intervention strategies to combat the risk of obesity and lifestyle disorders	
3.	METHODOLOGY	23-34
	A. Selection of area and study participants	
	B. Elicit dietary pattern and lifestyle pattern of the young women	
	C. Study the dysfunctional eating pattern of the young women	
	D. Designing Health Education modules for the dysfunctional eaters	
	E. Impact of intervention and statistical interpretation of data	
4.	RESULTS AND DISCUSSION	35-64
	A. Profile and Health status of the young women	

Chapter No	Title	Page No
5.	B. Dietary and Lifestyle pattern of the dysfunctional eaters C. Dysfunctional eating pattern among young women D. Health education to the women with dysfunctional eating and its impact at pre and post intervention SUMMARY AND CONCLUSION BIBLIOGRAPHY APPENDICES	65-70

LIST OF TABLES

Chapter No	Title	Page No.
I.	EDUCATIONAL STATUS OF WOMEN	36
II	INCOME LEVELS OF WORKING WOMEN	36
III	OCCUPATIONAL DETAILS OF THE WORKING WOMEN	37
IV	EDUCATIONAL DETAILS OF THE FATHER OF THE YOUNG WOMEN	38
V	OCCUPATIONAL DETAILS OF THE FATHER OF THE YOUNG WOMEN	39
VI	DETAILS OF THE HEALTH DISORDERS OF THE YOUNG WOMEN	39
VII	FAMILY HISTORY OF THE HEALTH DISORDERS OF THE YOUNG WOMEN	40
VIII	BODY MASS INDEX OF THE YOUNG WOMEN	41
IX	WAIST TO HIP RATIO OF THE YOUNG WOMEN	42
X	MEAN SCORES OF LIPID FRACTIONS	43
XI	MEAL PATTERN OF THE YOUNG WOMEN	44
XII	PERSONAL HABITS OF YOUNG WOMEN	45
XIII	TYPE OF DAIRY PRODUCTS CONSUMED BY THE YOUNG WOMEN	46
XIV	FREQUENCY OF CONSUMPTION OF MEAT PRODUCTS	46
XV	TYPE OF FAT/OIL USED IN COOKING	47
XVI	TYPE OF BEVERAGES CONSUMED	48
XVII	HABIT OF DINNING OUT	48
XVIII	PREFERENCE OF READY TO EAT FOODS	49
XXI	TYPE OF DIETARY MODIFICATION	51
XX	TYPE OF PERSONALITY	52
XXI	REGULAR WORK HOURS	53
XXII	SLEEPING PATTERN	54

Chapter No	Title	Page No.
XXIII	DETAILS OF EXERCISE PATTERN	55
XXIV	TYPE OF STRESS PATTERN	55
XXV	SKIPPING MEALS REGULATLY	56
XXVI	FASTING PATTERN	57
XXVII	FEEL WORSE AFTER EATING	58
XXVIII	AFRAID OF CERTAIN FOODS	59
XXXI	OCCASIONALLY GO ON A DIET	60
XXX	HABIT OF BINGE EATING	61
XXXI	TURN TO FOOD TO RELIEVE STRESS OR ANXIETY	62
XXXII	IMPACT OF HEALTH EDUCATION AMONG THE YOUNG WOMEN	62
XXXIII	MEAN NUTRIENT INTAKE OF YOUNG WOMEN	63

LIST OF FIGURES

Chapter No	Title	Page No.
1.	RESEARCH DESIGN	34
2.	AGE WISE DISTRIBUTION OF THE YOUNG WOMEN	35
3.	PREFERENCE OF READY TO EAT FOODS	50
4.	TYPE OF PERSONALITY	53
5.	SKIPPING MEALS REGULARLY	57
6.	FASTING PATTERN	58
7.	HABIT OF BINGE EATING	61

LIST OF PLATES

Chapter No	Title	Page No.
1.	ANTHROPOMETRIC MEASUREMENTS	26
2.	HEALTHY EATING PLATE	30
3.	LECTURE TO THE YOUNG WOMEN	32
4.	INTERACTION WITH THE YOUNG WOMEN	32
5.	POWER POINT PRESENTATION	33
6.	ONE - ONE COUNSELLING	33

LIST OF APPENDICES

Chapter No	Title
I	INSTITUTIONAL ETHICS CLEARANCE FORM
II	QUESTIONNAIRE TO ELICIT THE DYSFUNCTIONAL EATING PATTERN
III	QUESTIONNAIRE TO ASSESS THE RISK OF OBESITY AMONG YOUNG WOMEN
IV	HEALTH EDUCATION MODULES
IV A	NORMAL EATING PATTERN
IVB	HEALTHY SNACKING PATTERN
IVC	OVERCOMING DYSFUNCTIONAL EATING PATTERN
IV D	FOOD AND MOOD
IVE	RELIEF FROM EATING DISORDERS
IVF	HEALTH FOODS OVER JUNK FOODS
V	CHECKLIST TO ELICIT DETAILS ON HEALTH CONCEPTS FROM YOUNG WOMEN

1. INTRODUCTION

Changing environment and lifestyle have tremendous impact on the restless world of human life. Lack of proper knowledge, faulty eating habits and reluctance to practice are all to blame for lifestyle diseases. Young women tend to bounce from normal eating to dysfunctional eating and back to normal. Since 86 percent of victims report the onset of their illness at younger ages by the age 20 and thereby result in a wide spectrum of illness and health disorders (Berg, 2001).

According to demographic profile of India, the current Population is 1.34 billion people, among which more than 50 percentage of India's current population is below the age of 25 and over 65 percentage below the age of 35 (www.indiaonlinepages.com › Population of India).

According to the Global Nutrition Report 2017, India is experiencing a rapid health transition, with large and rising burden of chronic diseases. Moreover, 51 percent of the women of reproductive age suffer from anemia and more than 22 percent of adult women are overweight (Global Nutrition Report, 2017).

Adolescence and young adulthood is recognized as a period of heightened risk for the development of eating disorders. International epidemiological studies estimate 75 percentage of anorexia nervosa (AN) and bulimia nervosa (BN) cases and 50 percentage of binge eating disorder (BED) and eating disorder not otherwise specified (EDNOS) cases onset before the age of 22 (Hudson et al., 2007).

A recent meta-analysis showed mortality rates to be twice as high in those with BN and EDNOS and close to six times higher in people with AN when compared to expected population mortality rates (Arcelus et al., 2011).

Adolescence is a crucial life stage characterised by dramatic modifications in lifestyle patterns. These modifications include more unhealthy food choices, eating outside the home especially at fast food restaurants, sedentary behaviors, and physical inactivity. Adolescents and young adults form the main consumers for fast food meals compared with older people. As taste, time considerations, convenience, and cost are major factors that contribute to an adolescent's or young adult's food choices, fast food restaurants serve as popular sites for their meals eaten outside the home (ALFaris et al., 2015).

Eating habits refers to what food we eat, how we eat it and why we eat it. Eating habits are influenced by varied factors such as social, cultural, religious, economic and environmental factors. Basically, all people eat to stay alive, but they also eat to show belongingness to family or other social groups. Economic factors such as the availability of food and its cost also affect food choices. The food price and availability, in turn, are related to political factors including trade agreements and food laws. Food labeling also influences the food we choose. Eating out is no longer just for special occasions. It appears that modern living is causing people to eat out more and more and the energy and nutrient intake of individuals who frequently eat out (at restaurants, canteens, cafeterias, fast food outlets and similar establishments) may differ from that of individuals who generally eat at home (Srividhya, 2014).

Eating behaviour is strongly influenced by social context. Compare with eating alone we eat differently when we are with other people. Our dietary choices tends to coverage with those of our close social connections. Norms of appropriate eating are set by the behaviour of other people but also shared cultural expectations and environmental cues. We are more likely to follow an eating norm if it is perceived to be relevant based on social comparison. There is an emerging evidence that social norms have an important role in the developement and maintenance of the obesity (Higgs and Thomas, 2016).

Normal eating means having a healthy relationship with food. Dysfunctional eating is chaotic and comprises dieting, fasting, bingeing, skipping meals or it may be consistently eating much less or much more than your body wants or needs. It is a physiological disorder characterised by abnormal eating and dysfunctional relationship with food.

Disturbed eating patterns are more prevalent among women. It is seen in people who try not to eat, or they eat too much with no awareness of body signals of hunger or satiety. To relieve anxiety, anger, loneliness, boredom, to numb pain, for comfort, or to gain pleasure they alternately eat and binge the food. After eating food instead of feeling better, it is likely to make them feel worse. There may be a sense of loss of control and the inability to stop eating. It is called dysfunctional eating. This kind of eating going on in homes these days (Berg, 2001).

Dysfunctional eating patterns can be operationalised as emotional eating (EE), uncontrolled eating (UE), and cognitive restraint (CR). Emotional eating refers to eating in

response to emotional rather than hunger cues, Uncontrolled eating refers to eating in the absence of hunger as well as sense of losing control over eating, and Cognitive restraint consists of consciously restricting the intake of foods to lose or maintain weight (Cepero et al., 2017).

Young adults experience the fastest rates of weight gain across the life course and the prevalence of overweight and obesity in young adults is growing faster than in older adults (Farinelli et al, 2007). A high prevalence of overweight and obesity in young adults can be seen across the globe in both low (OECD Directorate for Employment, Labour and Social Affairs, 2014) and high-income (Norman et al., 2003).

According to the 2016 Global Nutrition Report, shows that 44 percent of countries with data available (57 out of 129 countries) now experience very serious levels of both undernutrition and adult overweight and obesity, and that, despite good progress in some countries, the world is off track to reduce and reverse this trend. Rates of obesity and overweight are rising in every region of the world and in nearly every country .

Fast food culture is a vigorously uprising trend among the youngsters. Although, its impact exists on whole society, whether belong to lower middle class and/or elite class. But beside this thing till today there is no proper definition of the fast food. According to leading websites, fast food is the term given to food that can be prepared and served very quickly while described fast food as quickly prepared, reasonably priced and readily available alternatives to home cooked food (Kumar et al.,2013).

According to Think India Foundation (2011) India has seen a massive rise in fast food consumption over the recent few years. Various factors have influenced by the India market to lean towards fast food culture involving improved living standard, rapid citification and westernization of Indian culture to the vigorous growth. Other factors include increasing economy and appetite for the western food from customers throughout the country will hike the industry growth to reach a CAGR of around 34 percent during 2011-2014.

Eating Disorders are complex disorders, influenced by a facet of factors. Disorders eating can leads to a eating disorder. Though the exact cause of eating disorders is unknown, it is generally believed that a combination of biological, psychological, and/or environmental abnormalities contribute to the development of these illnesses.

Eating disorders can develop during any stage in life but typically appear during the teen years or young adulthood. Classified as a medical illness, appropriate treatment can be highly effectual for many of the specific types of eating disorders. Although these conditions are treatable, the symptoms and consequences can be detrimental and deadly if not addressed. Eating disorders commonly coexist with other conditions, such as anxiety disorders, substance abuse, or depression.

Eating disorders is a disturbed type of eating behavior that is seen today, especially among girls and women. Eating disorders are not a function of will but are rather, unhealthy eating pattern that take on a life of their own. Voluntary eating of smaller or larger portions of food is common among people but for some people this develops a compulsion and eating behaviours become extreme.

People has to be aware that ordinary dieting and, is considered a major risk factor for the development of an eating disorder. Irregular eating patterns in the eating disorders have been observed across various laboratory based and clinical studies. Nutritional counselling and nutritional management programme, seem to produce a positive outcomes in improving eating disorders. Health risk of eating disorders among young women is associated with obesity, its complications such as heart disease, hypertension and stroke. To prevent the dysfunctional eating pattern is to restore or maintain Normal Eating in your own life and to promote it for others.

To alter the food environment such that healthy choices are the easier choices, and to alter the physical activity environment to facilitate higher levels of physical activities and to reduce sedentary lifestyle, are the key targets of obesity prevention policies. There are a wide range of policy areas that could influence the food environments. These areas include fiscal food policies, mandatory nutrition panels on the formulation and reformulation of manufactured foods, implementation of food and nutrition labeling, and restricting marketing and advertising bans of unhealthy foods (Chan and Woo, 2010).

Eating disorders are rampant in our society, yet few states in the nation have adequate programs or services to combat anorexia nervosa, bulimia and compulsive eating. Small number of schools and colleges have programs to educate our youth about the dangers of eating disorders. Adult people need a wide range of nutrients which perform various functions

in the body. During adulthood nutrients are required for energy replacement of worn –out tissues and maintenance of body functions.

Diet has a large impact on the prevalence and burden of preventable disease and poor diet is associated with premature death. Research has demonstrated that changes in diet can help prevent hypertension and reduce blood cholesterol level.

In response to this public health issue, the WHO included a target for halting the rise in adolescent and adult obesity in the global action plan for the prevention and control of non-communicable diseases (World Health Organisation, 2013).

The majority of eating disorders develop during adolescence and young adulthood, making screening during this period particularly critical for early intervention. Much research has focused on college students; college campuses are an ideal avenue to maximize prevention and treatment approaches, as they are an environment conducive to spreading information quickly through a surplus of channels. The typical onset period for eating disorders coincides with early college ages, and studies have identified a wide treatment gap on college campuses: 80 percent of students with clinically significant symptoms do not receive care (Eisenberg et al., 2011).

Given the severity and burden associated with eating disorders, and the particular vulnerability across the adolescent and young adult period, there is pressing need to both develop, and encourage the uptake of, evidence-based prevention and intervention strategies with this population. Despite the need, and consistent with mental health research generally evidence-based interventions are far from universally delivered in the clinical management of eating disorders (Bailey et al., 2014). Hence the study “**Dysfunctional Eating Pattern and the Risk of Obesity among Young Women**” was undertaken with the objectives to

- a. Study the dysfunctional eating pattern among young women.
- b. Create awareness on the consequences of dysfunctional eating pattern among young women .
- c. Compile ways to protect young women with normal eating pattern and
- d. Educate women on behavioral modifications with healthy eating practices

2 .REVIEW OF LITERATURE

The review of literature pertaining to the study entitled “**Dysfunctional Eating Pattern and the Risk of Obesity among Young Women**” is discussed under the following headings.

- A. Transition in eating behaviour among population especially young-Across the globe
- B. Impact of health on changes in dietary patterns and lifestyle practices
- C. Intervention strategies to combat the risk of obesity and lifestyle disorders

A. Transition in eating behaviour among population especially young-Across the globe

The Concepts, relationships, lifestyles are metamorphosed to accommodate the new jet age and eating habits too is no exception. Healthy nutritious foods have been replaced by the new food mantra - JUNK FOOD. In the context of world economy, junk food is a global phenomenon. The availability of junk food and snacks at low prices and marketing strategies adapted by manufacturers of such foods has triggered an evolution wherein, consumption of foods that require neither the structure nor the preparation of a formal meal (Ashakiran and Deepthi, 2012).

Disordered eating represent an over focus on body shape and weight reflecting in conditions marked by abnormal and disrupted attitudes to food and patterns of eating, that might involve periods of both excessive intake of food or significantly insufficient intake of food and may involve the use of medications or emetics to maintain body weight (Power, 2016).

The possible reasons for this are the stigma attaching to disordered eating suggest that perhaps 90 percentage of disordered eating occurs in individuals up to 25 years of age (Darling et al., 2007). Studies from a number of countries have suggested an interesting variation in the range of disordered eating that possibly 13.5 percentage of female college students and 3.6 percentage of the male college students reflected eating disorder symptoms (DeHart et al., 2009).

Young adults are a highly desirable target population for energy-dense, nutrient-poor (EDNP) food and beverage marketing. But little research, resources, advocacy and policy action have been directed at this age group, despite the fact that young adults are gaining weight faster than previous generations and other population groups. Factors such as identity

development and shifting interpersonal influences differentiate young adulthood from other life stages and influence the adoption of both healthy and unhealthy eating behaviours (Freeman et al., 2015).

As society becomes increasingly competitive, the resulting stress may contribute to excessive eating as some people turn to food for comfort (Block et al., 2009).

Poor eating habits is a major public health concern among young adults who experienced transition into university life (Nelson et al., 2008) during which, they are exposed to stress and lack of time (Rubina et al., 2009).

In a population-based sample of young Australian women, a third reported overeating or binge eating, 16 percentage reported binge eating, ten percentage reported compensatory behaviours and almost four percentage reported symptoms consistent with Bulimia Nervosa. Among women followed over four years, there were five percentage of women with persistent overeating and six percentage of women with persistent binge eating. Disordered eating in different forms and of various degrees of severity are common, especially among adolescent girls and young women (Hautala et al., 2008).

Eating behaviour (next to physical activity and sedentary behaviour) is an important factor influencing students weight. According to studies conducted in US students were not eating recommended amount of fruits and vegetables and were consuming increasing amount of high fat foods. Furthermore Butler et al., 2004 reported significant decreases in amount of bread and vegetables consumed during the first year of university and increase in percentage fat intake and alcohol consumption in US students. Unhealthy eating and excessive alcohol consumption may contribute significantly to energy intake and may therefore facilitate student weight gain (Delines et al., 2014).

Research suggests that young adults engage in poor eating behaviours, such as low fruit and vegetable consumption, high consumption of energy-dense snack foods, and frequently fail to consume regular meals. Meal skipping is the omission or lack of consumption of one or more of the traditional main meals (breakfast, lunch or dinner) throughout the day. This study highlights the perceived lack of time to be an important correlate of meal skipping. The sex of an individual was also reported to be an important correlate of meal skipping, with males more likely to skip breakfast and females more likely to skip lunch or dinner (Pendergast et al., 2016).

In recent years, several studies have reported on the habit of skipping meals as part of a contemporary lifestyle and the rate of skipping meals has increased worldwide. The habit of skipping breakfast, in particular, has become widespread in the United States with the rate of breakfast skipped in adults increasing from 14 percentage to 25 percentage during the 25 years from 1965 to 1991. In the Netherlands, the frequency of skipping breakfast was increased in adolescents, the estimated rate of skipping breakfast in female adults was 22 percentage in Japan (Kuroda et al., 2013).

Environmental factors also contribute to the adoption of unhealthy eating habits among university students. The mushrooming of shopping malls, convenience stores, vending machines and fast food outlets have created an alarming situation for young adults to practice unhealthy eating habits (Ganasegeran et al., 2012).

University students tend to make their own food choices based on cost of food and availability of fast food. They lack knowledge of healthy food choices that may affect eating habits and nutritional status negatively. In 2011, Gan et al., highlighted the presence of unhealthy eating behaviours and inadequate nutrient intake among university students. The study concluded that there was a need to promote healthy eating habits among young adults to achieve a healthy nutritional status (Gan et al., 2011).

Previous studies revealed that university students failed to meet the recommended intakes of fruits and vegetables. University students had frequent snacking habits and had a higher frequency of fast food consumption (Alizadeh et al., 2008).

Consumption of take away and fast food by young adolescents is no longer confined to the developed countries; it has spread to the developing countries as well. The culture of fast food consumption has replaced the traditional meal among university students and is a great public health concern. Excessive consumption of fast food is responsible for obesity epidemics and the cause of a dramatic increase of obesity-related diseases.

A cross-sectional study was carried out among students attending in four established private universities of Bangladesh. The prevalence of fast food consumption among those students was found to be 98.5 percentage and 43.3 percentage of their pocket money was spent on its purchase. The important factors for the preference of fast food include good taste, easy accessibility, increased convenience, and pocket friendly in nature. Approximately 22 percentage of the respondents mentioned that they consumed fast food four days per week and more than one-fifth had the meal every day.

Fifty four percent of the respondents skipped their breakfast due to a variety of reasons including class pressure and had fast food after finishing their classes, either from varsity canteens or other fast-food outlets. Though 98 percentage of the students were well informed about the negative effects associated with excessive fast food consumption, they were still profoundly addicted to it. Specific health education programs, dietary guidelines and effective public awareness campaigns could be initiated to address the unhealthy lifestyle of university students and improve their health (Bipasha and Goon, 2013) .

Dietary restraint refers to the tendency to restrict food intake in order to control body weight. Dietary restraint can also be associated with ‘disinhibition’ and loss of control over eating resulting in binge eating. Zellner et al., 2006 reported that 71 percentage of those woman who reported increasing their food intake when stressed were categorised as restrained eaters compared to only 35 percentage of those who did not alter their eating behaviour, or reduced their food intake, in response to stress. This study was based on a self-report questionnaire of eating behaviour when stressed and, as such, it is not possible to conclude what manner of stressor people were considering when responding (Zellner et al, 2006).

Studies performed among the Brazilian population have reported the prevalence of recurrent binge eating episodes to range from 12.8 percentage in the general population over 18 years, 24.6 percentage in teenagers, with girls presenting a higher prevalence than boys (31 percentage) and up to 39.3 percentage in overweight adults.

A study performed by Hood et al., 2013 found a prevalence of recurrent binge eating episodes of 33 percentage among obese adults, which was similar to the Brazilian studies.

A study on the relationship between recurrent binge eating episodes and nutritional and food profiles and lifestyle in the Brazilian Longitudinal Study of Adult Health cohort. It was found that among the 15,074 participants (99.9 percentage of the ELSA-Brazil) who answered the question regarding compulsion, 980 (6.5percentage;95 percentage CI 6.1–6.9 percentage) participants reported binge eating episodes twice or more than twice a week, and comprised the sample of participants with recurrent binge eating episodes in this study.

Of those with recurrent binge eating episodes 66.6 percentage were women, 68.2 percentage were in the younger age category, 18.7 percentage were of black and 30.4 percentage of brown race/colour and 52.9 percentage did not have university education.

Participants with recurrent binge eating episodes were much more likely to be obese (45.9 percentage), to be less active (64.6 percentage) and to have patterns of high alcohol ingestion over short periods of time, once or twice a week (8.9 percentage) (Silva et al., 2016).

In Western societies, psychologic traits could be explanation for the individual-level differences in susceptibility to an environment characterized by food abundance and promoting intake of food with high energy density and therefore weight gain. In particular, the theory of emotional eating EmE) implies that overeating can occur in response to negative emotions. In experimental studies, emotional eaters were found to consume more high-fat snack foods and more sweet-and-fatty foods in response to stress compared with those not classified as emotional eaters (Camilleri et al, 2014).

Connor et al, (2008) examined the effect of hassles and stressors in the workplace on eating behaviour in a large sample (N=422) of workers from one organisation. Daily food diaries recorded food intake between meals, and each stressor experienced was also recorded along with a rating of how 'stressful' the particular event had been. Results revealed that increased daily hassles were associated with increased snacking on high energy, high-fat sugar snacks. In particular the increased snacking occurred in response to ego-threatening, interpersonal and work-related hassles only.

There is evidence to suggest that the majority of people tend to change their eating behaviour when they believe themselves to be stressed, with an estimated 80 percentage of people altering their caloric intake either by increasing or decreasing their consumption (Dallman , 2010).

Snacking has become ubiquitous in the American society. The percentage of adults consuming snacks increased from 71 percentage in 1977-1978 to 97 percentage in 2003-2006 (Piernas and Popkin, 2010).

Raspopow et al, 2010 reported that emotional eating could serve as a coping mechanism for many individuals. Emotional eaters are regarded to be more likely to overeat under both general and specific stress than non-emotional eaters. Among emotional eaters, food cravings and consumption of food high in carbohydrates and fats increase in response to stressors .

Self-report measures of perceived stress and questionnaire based assessment of eating behaviour revealed that emotional eaters were more likely to report overeating than non-

emotional eaters who more likely to report under eating. Specifically, the foods that were reported to be over consumed were snack foods, including crisps, chocolate and biscuits, in response to specific stressor (Wallis et al., 2009).

India is passing through a transitional phase in dietary pattern due to the influence of economic changes, rapid urbanization, women's participation in workforce, and globalization. Increase in women's participation in workforce on a large scale restrained working mothers from spending sufficient time with their families. To make up for this gap, they sometimes purchase prepared foods and packet foods from restaurants or grocery stores, which can also change the pattern of food consumption among the children. Changes in the dietary pattern might lead to a shift from cereal based diet towards high fat and high sugar rich food items that might lead to obesity and other metabolic disorders (Vaida, 2013) .

B.Impact of health on changes in dietary patterns and lifestyle practices

The food we eat gives our bodies the “information” and the materials they need to function properly. If we don't get the right food and right information, at proper time our metabolic processes suffer and our health declines. If we get too much food, or excess food or food that gives our bodies the wrong instructions, we can become overweight, or else undernourished, and could be at risk for the development of diseases and conditions, such as arthritis, diabetes, and heart disease. In short, what we eat is central to our health.

A single meal won't wreck the diet, eating fast foods on a regular basis cause adverse health effects. It starts with putting on additional pounds due to excess and over consumption of fat and/or sugar. Excess sodium intake, from highly salted foods, can cause disease over time as well (Siddiqui and Anusha, 2012).

The foods we eat every day contribute to our well-being. Foods provide us with the required amount of nutrients we need for healthy bodies and the calories we need for energy (Ranieri et al., 2010). If we eat too much, or in excess amounts, the extra food turns to fat and is stored in our bodies (Mrudula et al., 2011). Over eating or excess eating regularly leads to gain weight, if we overeat regularly, we gain weight, and if we continue to gain weight, we may become obese.

Unfortunately, today's world has been adapted to a system of consumption of foods which has several adverse effects on human health. Lifestyle changes has compelled us so much that one has so little time to really think what we are eating is a healthy diet!

Globalization has seriously affected one's eating habits and enforced many people to consume fancy and high calorie fast foods, popularly known as Junk foods. Research into the possible health hazards on consumption of such high calorie foods has given an insight to avoid them, but unfortunately measures taken are not as effective as they need to be. Ailments like Obesity, food poisoning, dehydration, cardiac problems diabetes mellitus, and arthritis have seen a profound rise in developing countries and such unhealthy junk food, processed food, high fat calorie consumption are the notable factors to its contribution (Shridhar et al., 2015).

The youth of India have readily embraced new “Western” models of eating and fashion. Educated young people including adolescents have high levels of use of internet which brings exposure to an entirely different culture of living and thinking about one's choices and decisions. It also raises issues about control over one's life, a fact that was hitherto often determined by families rather than individuals. Littlewood has also discussed the ways in which modernization in any society (including South Asian society) may influence ideas of autonomy, individualism among young women, contributing to issues such as agency and control and consequently to eating disorders (Chandra et al., 2012).

Eating frequent fast food meals causes teens and young adults to gain more weight and face an increased risk of developing insulin resistance according to the results of a study funded by the National Heart, Lung, and Blood Institute (NHLBI). Obesity and diabetes are on the rise in people who take fast foods like roasted food, fried food etc, frequently.

According to WHO (2003), frequent fast food consumption is also a health concern because most fast foods are rich in saturated fats, trans fats, simple carbohydrates and sodium—all of which are nutrients associated with hypertension, cardiovascular disease, and type 2 diabetes. The early stages in the juvenility of teens represent a crucial stage in the later stages of a human life as the former stage is the one where a particular's lifestyles are formed and become established (Al-Hazzaa et al., 2011).

Dietary changes are compounded by lifestyle changes that reflect reduced physical activity at work and during leisure time. Several studies have shown that insufficient physical activity is one of the important risk factors of obesity (Brock et al., 2009), and work-related activity has declined over recent decades in industrialized countries whereas leisure time

dominated by television viewing and other physically inactive pastimes has increased (Poskitt, 2009).

A study on the prevalence of unhealthy eating, exercise, and coping pattern traits among a large sample of overweight and obese adults. They analyzed responses to a 53-item lifestyle pattern questionnaire posted on a commercial weight loss program Web site collected from 2004 through 2008. Subjects included 446,608 healthy weight, overweight, and obese adults, 18–65 years old, average age 31.9, average BMI 30.5kg/m². Categorically, 25.5 percent were healthy weight, 29.0 percentage were overweight, 33.7 percentage were class I and class II obesity, and 11.8 percentage class III obesity. A stratified random sample was used to estimate the prevalence of the 21 lifestyle patterns (seven eating, seven exercise, and seven coping) in the general population, and the prevalence of pattern in the complete data set was further analyzed by gender, age, and BMI. They found that unhealthy lifestyle patterns in diet, exercise, and coping were highly prevalent among this population. In general, the prevalence of these patterns rose with increasing BMI and is correlated with advancing age. Gender differences were seen with many of the patterns, most noticeably among the coping patterns. The odds ratio for 18 of the 21 patterns was >1.0 and steadily increased with higher BMI categories. They conclude that unhealthy lifestyle patterns in diet, exercise, and coping are highly prevalent among the overweight and obese population. Pattern recognition represents a new method to analyze the cluster of behaviors, attitudes, and traits seen among this population (Kushner and Choi, 2010).

Among the reasons for weight gain for 18–25 year olds are dietary pattern changes (breakfast skipping, eating outside home) and increased social activities contributing to lifestyle change. Although they have positive attitudes towards dietary advice, these are not usually reflected in their behaviour. Once obese, young people not only suffer from premature medical consequences but also face discrimination in employment settings, health care facilities and educational institution (Poobalan et al., 2014).

Consumption of sugar-sweetened beverages (SSBs), particularly carbonated soft drinks, may be a key contributor to the epidemic of overweight and obesity, by virtue of these beverages' high added sugar content, low satiety, and incomplete compensation for total energy. Whether an association exists between SSB intake and weight gain is unclear (Malik et al., 2006).

The psychology of eating behaviour – e.g. the cognitive, behavioural and emotional aspects of eating habits – call for more attention given the increasing prevalence of obesity and other eating related problems (Angle et al., 2009).

There are other outcomes of food choice and nutrition that also have an independent effect on health including some types of cancer, cardiovascular disease, and diabetes. For these reasons, food selection is an important consumer behavior with many long-term consequences to the individual in the form of health and longevity and to society in the form of health costs (Deshpande, 2009).

While poor diets and physical inactivity are recognised as key behaviours implicated in the aetiology of obesity, the determinants of the increased risk of obesity and its determinant behaviours amongst socioeconomically disadvantaged groups remain poorly understood (Mouchacca et al., 2013).

Stress has been associated with poor eating behaviors and diet quality, as well as high body mass index (BMI). Low-socioeconomic women are a particularly vulnerable population that is also disproportionately burdened by severe obesity (Wang and Beydoun, 2007).

A pathway from stress to severe obesity may operate through eating behaviors if people turn to less healthy and obesogenic dietary behaviors as a means of coping with stress. High perceived stress (upper quartile), versus normal stress, has been associated with worse diet quality, greater intake of snack foods and lower intake of fruit, increased disinhibition, and binge eating (Richardson et al., 2015).

Eating disorders (ED), anorexia nervosa (AN), bulimia nervosa (BN) and related disorders are one of the leading causes of disease burden in terms of years of life lost through death or disability in young women.

A study done on social patterning of overeating and symptoms of disordered eating in a general population. Seventeen per cent of women reported episodes of overeating, 16 percentage reported binge eating and ten percentage reported compensatory behaviours. Almost four percentage of women reported symptoms consistent with bulimia nervosa (Koupil et al., 2016).

Eating disorders (EDs) are severe and enduring psychiatric disorders of eating behavior, including extreme, unhealthy decreases in food intake as well as severe overeating, accompanied by feelings of distress or excessive concern about body shape or weight. Three

types of eating disorders are recognized by the text revision of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR): anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified (EDNOS) (Matsumoto et al., 2015).

A disturbed body image is an important criterion of eating disorders, such as anorexia and bulimia nervosa. There are increasing hints that people who suffer from binge eating disorder might have a disturbed body image as well. Binge eating disorder (BED) is characterized by recurring episodes of binge eating during which a large amount of food is consumed in a certain time frame with a co-occurring feeling of loss of control over the amount or type of food consumed. These binge-eating episodes are accompanied for example by the individual feeling ashamed while eating, eating fast and being disgusted by themselves.

A study by Lewer et al., 2017 they tested the changeability of a disturbed body image in binge eating disorder. It was shown that the cognitive-emotional component, that is, the way one thinks and feels about one's body, as well as factors such as depression and self-esteem improved significantly during a group program which was designed to change body image disturbance in persons with binge eating disorder (Lewer et al., 2017).

The eating disorders have specific diagnoses, including anorexia nervosa (AN), bulimia nervosa (BN) and binge eating disorder (BED). Binge eating disorder is more common than AN and BN, and due to its specific clinical manifestation and strong association with obesity, it is classified as a diagnostic category in fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V). The prevalence of BED in the United States within the period of 12 months is 1.6 percentage for women and 0.8 percentage for men. The prevalence between genders in BED is more similar than AN or BN, which predominate in young females. The 12-month prevalence of AN in these women is approximately 0.4 percentage, and of BN varies from 1 to 1.5 percentage. AN is characterized by restriction of energy intake relative to requirements, leading to a significantly low body weight; intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain; disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.

BN is characterized by repetitive episodes of binge eating (eating an amount of food that is definitely larger than what most individuals would eat in a similar period of time under similar circumstances with a sense of lack of control), followed by compensatory behaviors (vomiting, laxative use, and excessive physical activity) in an attempt to undo the excessive intake of food, as well as a disturbance in the perception of shape and weight, like in AN. These episodes occur at least twice a week for a minimum period of 3 months. In BED, the same episodes occur with similar frequency and duration, but patients do not generally have regular compensatory behaviors to combat excessive consumption of food and often present with overweight or obesity (American Psychological Association, 2013).

Eating disorders do occur all around the world. Many important factors influence the increase in eating disorders worldwide. Some experts suggested that globalization and internationalization have brought the beauty ideal and pursuit of thinness, as well as the value of beauty and social norms of Western cultures to Non-Western cultures, societies, and people, which, in turn, may lead to an increase in the occurrence of eating disorders (Ko et al., 2015).

Eating disorders are mental illnesses that cause serious disturbances in a person's everyday diet. It can manifest as eating extremely small amounts of food or severely overeating. The condition may begin as just eating too little or too much but obsession with eating and food over takes over the life of a person leading to severe changes. Disordered eating may lead to dysfunctional eating pattern that can cause medical consequence and health problem. Eating disorders when manifested at a young age can cause severe impairment in growth, development, fertility and overall mental and social well-being. In addition, they also raise the risk of an early death. People with anorexia nervosa are 18 times more likely to die early compared with people of similar age in the general population.

It has been well established that EDs are associated with high levels of psychiatric comorbidities including depression, anxiety and personality disorders. In contrast, research has generally found that levels of general psychopathology, such as depression and anxiety are no different for people who are obese compared to those who are not obese, in the community (Darby et al., 2007).

Bulimia nervosa (BN) is a disorder involving frequent binge eating episodes, compensatory behaviors such as vomiting and laxative use to avoid weight gain, as well as

self-concept dominated by shape and weight. The health consequences of this disorder can be severe and include cardiovascular problems, electrolyte disturbances, and gastrointestinal disorders (Selby et al., 2012).

Adolescence is a critical period for onset of eating disorders approximately 90 percent of cases of anorexia nervosa and bulimia nervosa begin before the age of 20 years, although onset of binge eating typically occurs during late adolescence (Hudson et al., 2007).

In the National Longitudinal Study of Adolescent Health, nine percentage of adolescents reported moderate to severe depressive symptoms. An additional 16 percentage were classified as at risk for developing depression (Youssef et al., 2008).

Females who engaged in overeating or binge eating were more likely to develop high levels of depressive symptoms. After adjustment for age, early age at menarche, BMI, and follow-up time, the risk developing high-depressive symptoms during follow-up was almost twice as high among individuals who were over eaters compared with non over eaters (Skinner et al., 2012).

Obesity is a global epidemic affecting all levels of society. Unhealthy eating habits and sedentary life style are crucial etiological factors. Medical and nursing students by virtue of their imparted education are believed to be more aware of it.

A study conducted on 242 students of Medical and Nursing stream in a tertiary care institution in Vadodara, Gujarat, where the students are lived in hostel and had food from the central mess. Data were collected through self-reported questionnaire. Anthropometric measurements (height and weight) were measured by examiners, and their BMI was calculated. Descriptive and Univariate analysis were calculated. The mean age of students was 19.71 ± 1.23 . The mean BMI was 23.00 ± 4.4 . A total of 25.6 percentage of the students were obese and 17.4 percentage were overweight. Non nutritious food, lack of physical exercise and irregularity in breakfast were prominent drivers of obesity, in addition to other lifestyle behaviour. The rates of overweight and obesity are high among students due to unhealthy eating habits. There is a need felt to reinforce awareness of healthy eating habits (Chhaya and Jadav, 2012).

Obesity has become a worldwide epidemic and its prevalence continues to increase at a rapid rate in various populations and across all age-group. The effect of meal skipping, both behaviorally and physiologically, may have an impact on the outcome of weight-loss efforts.

A study was to examine the prevalence of breakfast skipping and obesity in subjects. One hundred and eighty-six eligible subjects were included for the study. Overweight is generally higher in females than males. The prevalence of overweight was higher among those who consumed more than recommended calories than those who were taking recommended or fewer calories per day. The average intake of fat and protein by the study subjects was quite different than the recommended intake of these food items. There was positive association between fat (oil) intake and overweight status and a negative association between protein intake and overweight status which was statistically significant. The higher prevalence of overweight and obesity in the present study could be because of imbalance in the diet and faulty food habits prevalent in the region (Goyal and Julka, 2014) .

Obesity has been recognized as a risk factor for chronic diseases, including cardiovascular diseases and type 2 diabetes (Marinou et al, 2010). In addition to physical-related health effects, obesity may be associated with mental and psychological distress which can affect quality of life, social activities, and work productivity (Jagielski, 2014) .

Both obesity and eating disorders (EDs) are significant health problems in the Australian society. It has been shown that levels of obesity are currently increasing, with the recent 2001 Australian National Health Survey finding approximately 14 percentage of Australians over the age of 15 are obese 1. The lifetime community prevalence of EDs has remained relatively stable with the lifetime prevalence of anorexia nervosa (AN) estimated to be approximately 0.5 percentage and bulimia nervosa (BN) one to two percentage. However, the prevalence of EDs not meeting the formal criteria for AN or BN, such as ‘eating disorders not otherwise specified’ (EDNOS) that includes binge eating disorder (BED), is considerably higher (up to five percentage) and these disorders are associated with marked impairment in functioning. While often regarded as distinct problems, EDs and weight disorders have many common characteristics, including dieting behaviour, binge eating, poor body image and psychosocial difficulties (Darby, 2007).

It is well known that obesity and sedentary behavior coexist and that both are associated with cardiovascular disease (CVD) in women. Data from the Centers for Disease Control (CDC) show that in areas of the United States where rates of obesity are higher than 30 percentage, the prevalence of adults who report no leisure time physical activity is also higher than 30 percentage. Likewise, the prevalence of obesity and physical inactivity predicts the presence of CVD death (Barnes, 2012) .

Studies have suggested that several characteristics of dietary behavior such as eating frequency or snacking may influence body weight. The Booth Hypothesis stated that “grazing” or multiple eating episodes between meals, rather than the traditional pattern of three meals per day, was a major factor that contributed to obesity (Nicklas et al., 2014).

In recent decades, life style as an important factor of health is more interested by researchers. According to WHO, 60 percentage of related factors to individual health and quality of life are correlated to lifestyle. Millions of people follow an unhealthy lifestyle. Hence, they encounter illness, disability and even death. Problems like metabolic diseases, joint and skeletal problems, cardio-vascular diseases, hypertension, overweight, violence and so on, can be caused by an unhealthy lifestyle. The relationship of lifestyle and health should be highly considered (Farhud, 2015).

Cognitive Dietary Restraint (CDR) is defined as the conscious attempt to limit and monitor food intake to achieve or maintain a desired weight. CDR is associated with eating behavior that is governed by cognitive processes rather than by physiologic mechanisms such as hunger and satiety. This CDR behavior may lead to impairment of the psycho physiologic regulation of food intake, which could result in alternating periods of restricted eating and overeating and in weight fluctuations. Other characteristics associated with CDR include heightened anxiety and greater physical activity levels (Waugh et al., 2007).

C. Intervention strategies to combat the risk of obesity and lifestyle disorders

Eating disorders are serious health problem for adolescents. Recent research has yielded important new knowledge with respect to revisions to the diagnostic criteria, assessment of malnutrition, indications for hospitalization, approaches to weight restoration, determination of treatment goal weight, initiation of FBT, and the management of low BMD. As the medical provider plays a critical role in the diagnosis, assessment, and management of the adolescent with an eating disorder, awareness of these advances is the first step to being able to provide evidence-based treatment for adolescent with eating disorders (Golden et al., 2015).

Eating disorders are complex and multi-factoral. People need to be aware that ordinary dieting, of itself, is considered a major risk factor for the development of an eating disorder. Therefore, future research should be directed to understanding present eating behaviours and body weight concerns, health risk, and associated factors among adolescent girls in India. Such studies would play an important role in the assessment of current nutritional status of

adolescent girls and may help develop meaningful/effective nutritional intervention program by the government.

A public health approach to develop population-based strategies for the prevention of excess weight gain is of great importance and has been advocated in recent years. The development and implementation of obesity prevention strategies should target factors contributing to obesity, should target barriers to lifestyle change at personal, environmental and socioeconomic levels, and actively involve different levels of stakeholders and other major parties.

A proposed framework by Sacks (2009) suggests that policy actions to the development and implementation of effective public health strategies to obesity prevention should target the food environments, the physical activity environments and the broader socioeconomic environments; directly influence behaviour, aiming at improving eating and physical activity behaviors; and support health services and clinical interventions .

A study by Thorndike, 2011 says that the work site is ideal for implementing interventions to reduce obesity and cardio metabolic risk factors. Although work site health promotion is not new, employer-sponsored wellness programs have become more widespread due to the rising prevalence and high cost of obesity. Over the past two decades, employers and researchers focused efforts on individual-based programs to change employees' nutrition and exercise behaviours, but more recently, the work site environment has been targeted.

Overall, there is good evidence that individual-based work site programs can produce modest weight loss, but the evidence for effects on other risk factors and on long-term health outcomes and costs is inconsistent. There is less evidence for the benefit of environmental based interventions, and more data will be needed to establish conclusions about the benefits of these types of interventions. A major challenge for employers and researchers in the future will be to find the balance between effectiveness and economic viability of work site wellness programs (Thorndike, 2011)

A recent study by Goodpaster et al., 2010 was the first to examine the effectiveness of an intensive lifestyle intervention on weight loss, abdominal fat, hepatic steatosis, and other CVD risk factors in a severely obese population. Study participants with a BMI >40 kg/m² lost 10 percentage of their initial body weight at one year and experienced favorable changes in CVD risk factors. In addition, severely obese participants lost significantly more weight than class II obese participants (BMI 35 to <40 kg/m²); however, the sample size was

small (class II: N = 17; severely obese: N = 50) and individuals with diabetes were excluded. The study reported that an intensive lifestyle intervention for severely obese individuals resulted in a 12.1-kg weight loss and significant improvements in numerous cardiovascular disease risk factors at one year.

To alter the food environment such that healthy choices are the easier choices, and to alter the physical activity environment to facilitate higher levels of physical activities and to reduce sedentary lifestyle, are the key targets of obesity prevention policies. There are a wide range of policy areas that could influence the food environments. These areas include fiscal food policies, mandatory nutrition panels on the formulation and reformulation of manufactured foods, implementation of food and nutrition labeling, and restricting marketing and advertising bans of unhealthy foods (Dietz et al., 2009).

Exercise is the key component of every lifestyle intervention. Especially aerobic exercise is the best mode to reduce fat mass. Moreover, an increase in physical activity reduces intra abdominal fat, increases lean mass, decreases depression, and improves glucose tolerance, insulin sensitivity, and physical fitness. Thus, it is not surprising that all scientific guidelines recommend at least 150 min/week of moderate aerobic exercise combined with three weekly sessions of resistance training to increase muscle strength (Geliebter et al., 2014).

A wide variety of obesity treatments are available, including diet, exercise, behavioral modification, pharmacological treatment and surgery. Among several strategies, lifestyle intervention has been documented to lead safely to improvements in metabolic abnormalities such as increased body weight, dyslipidemia, elevated blood pressure, glucose control, pro-coagulant and pro-inflammatory activity that are linked to the development of obesity, diabetes, metabolic syndrome and cardiovascular disease.

Lifestyle programs are multi-factorial interventions that are designed for each patient or group of patients according to their risk factor status and the needs of the subjects. These include promoting healthy lifestyle habits, dietary counseling, physical exercise training, and behavioral change targets. Individuals at risk for obesity, diabetes and cardiovascular disease may be influenced through learning process to allow the lifestyle changes to control risk factors such as body weight, blood pressure, blood cholesterol and blood glucose levels. Several individual lifestyle interventions proved to be efficacious in the prevention of diabetes (Galani and Schneider, 2007).

At the community level, obesity prevention should be based on nutrition education and the enhancement of physical activity in different settings, such as schools and work places, and should enlist the involvement of families as well. The support of governmental administrations, the mass media, catering services, and the food industry is crucial in order to achieve and sustain environmental changes, so that healthier options are also easy options (Lang et al., 2007).

Promotion of physical activity is one anti-obesity strategy. The American College of Sports Medicine Position Stand) recommends a minimum of 150 min/week of moderate-intensity physical activity to prevent significant weight gain and reduce associated chronic disease risk factors. According to the position stand, cross-sectional and prospective studies have indicated that weight maintenance after weight loss has improved with a reported physical activity level of >250 min/week; however, no evidence from well-designed randomized controlled trials (RCTs) exists to judge the effectiveness of physical activity for the prevention of weight regain after weight loss (Nakata and Sasai, 2015).

3.METHODOLOGY

The methodology pertaining to the study entitled **“Dysfunctional Eating Pattern and the Risk of Obesity among Young Women”** is discussed under the following headings.

- A. Selection of Area and Study Participants
- B. Elicit Dietary Pattern and Lifestyle Pattern of the Young Women
- C. Study the Dysfunctional Eating pattern of the Young Women
- D. Designing Health Education modules for the Dysfunctional Eaters
- E. Impact of Intervention and Statistical Interpretation of data

A.SELECTION OF AREA AND STUDY PARTICIPANTS

In order to facilitate the collection of data from young women aged 20 to 25 years, studying in colleges, universities and working women from Textile Industries, Information Technology, Professionals, Teachers and Health Professionals from Coimbatore were identified for the conduct of the study. The inclusion criteria for the study were young women who volunteered to contribute to the present study. Women with any medications or complications and congenital disorders were excluded from the study. The study proposal was approved by the Institutional Human Ethics Committee of Avinashilingham Institute for Home Science and Higher Education for Women, Coimbatore (Appendix I).

A total of 200 young women between 20 and 25 years were administered with the standard questionnaire used to test the dysfunctional eating pattern. The questionnaire comprised details on restriction in food intake, skipping of meals regularly, occasionally go on a diet, weigh or measure the food consumed, afraid of certain foods, turn to food to relieve stress or anxiety, deny being hungry or claim to feel full after eating very little, avoid eating with others, feel worse after eating, think about food, eating and weigh more were the questions asked by the study participants

Out of the 200 young women administered with the questionnaire to elicit the dysfunctional eating pattern, with the tool developed by (Berg,2001) a total of 126 women were found to be dysfunctional eaters and hence they were involved for the research further to understand the dysfunctional eating pattern among young women (Appendix II).

A total of 125 dysfunctional eaters were selected as the study participants. In this type of sampling, items for the sample are selected deliberately by the researcher; his choice concerning the items remains supreme (Kothari, 2004) .

B. ELICIT DIETARY PATTERN AND LIFESTYLE PATTERN OF THE WOMEN

A questionnaire was formulated to elicit information regarding personal details, biochemical estimation, food habits including meal pattern, types of food preferred, avoided, food consumption pattern outside home at eateries and lifestyle pattern comprising types of personality, regular working hour, sleeping pattern, exercise pattern and types of stress pattern. A questionnaire is a data collection instrument consist of a series of questions and others that prompt for the purpose of gathering from respondents (Abawi, 2013).

HEALTH STATUS OF YOUNG WOMEN

Assessment of the health status were done by using anthropometric measurements, biochemical estimation, dietary pattern and lifestyle pattern. The easiest method of assessing health status of a young women is by measuring individual height and weight calculating the Body Mass Index (BMI). In the present study height and weight of all the selected 126 study participants were recorded using standardized procedures.

1)Anthropometric Measurements

Anthropometry is the study of the measurement of the human body in terms of the dimensions of bone, muscle, and adipose (fat) tissue.

a) Measurement of Height

The study participants were asked to stand without shoes on a flat floor against a non-stretchable measuring tape fixed on a wall. Height was measured by using a height scale nearest to 0.1 cm (Sharma and Singh, 2017).

b) Measurement of Weight

The study participants were asked to stand bare footed in the centre of platform. A portable personal weighing scale was used to measure the weight in kilograms nearest to 0.1 kg, with ordinary casual clothing and without shoes (Sharma and Singh, 2017) .

c) Body Mass Index

Body Mass Index is a simple numeric measure to assess fatness or thinness of an individual which is widely used to determine health status in a population group. Body mass index is calculated to find out the obesity grade (Begum, 2008). It was calculated from the recorded measurement of weight (kg) and height (cm) using the formula.

$$\text{Body Mass Index (BMI)} = \frac{\text{Weight (kgs)}}{\text{Height (m)}^2}$$

Body Mass Index was classified as

Underweight	-	<18.5
Normal	-	18.5–22.9
Overweight	-	23.0–24.9
Obese class I	-	25.0–29.9
Obese class II	-	30.0–39.9
Obese class III	-	>40.0

(Reference :WHO, 2004)

II)Assessment of waist to hip ratio

Waist to Hip Ratio or waist-to-hip ratio (WHR) is the ratio of the circumference of the waist to that of the hips. This is then calculated as waist measurement divided by hip measurement. The Waist to Hip Ratio has been used as an indicator or measure of health, and the risk of developing serious health conditions. Waist circumference is measured by using fibre reinforced plastic tape. The tape should pass mid away between the lower rib margin and iliac crest. Adult women with ≥ 88 considered as having abdominal obesity. Hip circumference measured with tape passing over maximum protuberance on buttocks (Bamji et al., 2009) .

0.7	-	Below normal
0.7-0.85	-	Normal
>0.85	-	Abdominal obesity

(SOURCE : WHO,2008)

Anthropometric Measurements



Measurement of Height in cms



Measurement of Weight in kgs



Waist circumference in cms



Hip circumference in cms

Plate 1:Anthropometric Measurements

III) Biochemical Estimation

Biochemical analysis or laboratory test helps to determine what is happening to the body internally. Details of lipid profile comprising Total cholesterol, Triglycerides, HDL-cholesterol and LDL-cholesterol were elicited. Out of the total 126 study participants, 12 women were taken as subsample for Biochemical Assessment and estimation for the lipid parameters were done with standard procedures. Blood samples were taken from the vein in the antecubital fossa and followed the methodology of estimations.

TESTNAME	REFERENCE VALUE
Total Cholesterol (mg/dL)	Desirable - <200 mg/dl Borderline -200-239 mg/dl High - >240mg/dl
Triglycerides (mg/dL)	Normal - < 150mg/dL Borderline risk - 150-199 mg/dL High - 200- 499 mg/dL
HDL – Cholesterol (mg/dL)	Low - <40 mg/dL High - >35mg/ dL
LDL – Cholesterol (mg/dL)	Low risk - <100 mg/d Near optimal - 100-129 mg/dL Borderline high - 130-159 mg/dL High - 160 -189 Very high - > 190

(SOURCE : REFERENCE RANGES AS PER NCEP ATP III GUIDELINES)

IV)Dietary pattern

A dietary history is perhaps the best means of obtaining dietary intake information, and refers to a review of an individual's usual patterns of food intake and the food selection variables that dictate the food intake (Mahan and Stump, 2008). The value of nutritional assessment is greatly enhanced when it is supplemented by an assessment of food consumption. To study the dietary pattern among the young women the details on food habits including meal pattern, personal habits, frequency of consumption of meat products, type of dietary pattern, type of fat used for cooking, types of dairy products consumed, types of beverages consumed, types of foods preferred, avoided, food consumption pattern outside home at eateries, preference for the vegetables and fruits, type of dietary modification followed by the study participants and 24 hour recall was recorded for the three consecutive days to assess the dietary intake.

V)Lifestyle pattern

The way in which the person lives is said to be lifestyle. The lifestyle pattern are mainly including the eating pattern and exercise pattern. Lifestyle pattern was elicited with

the details of types of personality which include type A ,type B ,type AB and type D and also activity pattern like exercise, meditation practices, entertainment pattern, sleep hours were also assessed. As stress may also have an important role in the lifestyle of the people. Young women were also assessed for various stresses such as familial stress, occupational stress, neighbourhood stress and environmental stress .

C.STUDY THE DYSFUNCTIONAL EATING PATTERN OF THE YOUNG WOMEN

Dysfunctional eating is chaotic and comprising dieting, fasting, bingeing, skipping meals or it may be consistently eating much less or much more than your body wants or needs (Berg, 2001).

To study the dysfunctional eating pattern among young women the details on regular skipping meals like breakfast, lunch and dinner were elicited. In addition, details on fear inducing foods caffeine, starchy foods, wheat, saturated fat, soy and sugar. To study the details of habit of taking fasting, dieting followed by young women, types of foods used in binge eating, foods for stress relief and also list of changes like chest pain, heart palpitations, light headedness and feeling full and indigestion were assessed .

D. DESIGNING HEALTH EDUCATION MODULES FOR YOUNG WOMEN

Nutrition and health education can be defined as a planned effort to improve nutrition and health status by bringing about changes in the behaviour of people. It is a process by which people gain knowledge and develop confidence and skills needed for establishing good dietary and health practices (Srilakshmi, 2012). It was aimed to make individuals aware of the negative consequences of health. Health Education was given to the 126 women based on the results obtained from the dietary pattern and health status of the young women. Health Education modules were framed based on the results obtained. The modules included the healthy normal eating pattern, healthy snacking pattern, dysfunctional eating pattern, food and mood, eating disorders, and health foods over junk foods were designed for education to women to improve their eating pattern thereby achieve healthy behavioural changes in women.

MODULE NO	MODULE	Duration in Session	AIDS used
1	Normal eating pattern	45 minutes	Lecture+poster
2	Healthy snacking pattern	45 minutes	Lecture +booklet
3	Overcoming Dysfunctional eating pattern	45 minutes	Powerpoint
4	Food and Mood	45 minutes	Lecture +poster
5	Relief from eating disorders	30 minutes	Brochure
6	Health foods over junk foods	45 minutes	Lecture +quiz

Module 1:Normal Eating Pattern

This module comprised need for normal eating, rules to be followed by normal eaters that make the young women lead a normal healthy life. Healthy eating habits eliciting information about making schedule for a full day diet by giving details about food selection, regular meals, fluid intake and keep good eating habits. The key elements of healthy eating pattern also was on information about healthy eating pattern through healthy eating plate. Healthy eating pattern includes variety of vegetables and fruits, whole grains fat free foods and protein rich content food. A healthy eating plate consist of healthy oil, water, healthy protein, whole grains fruits and vegetables and this was demonstrated to the samples with the help of a poster and also lecture notes are given for the further study. This session was given in the duration of 45 minutes (Appendix IV A).

HEALTHY EATING PLATE

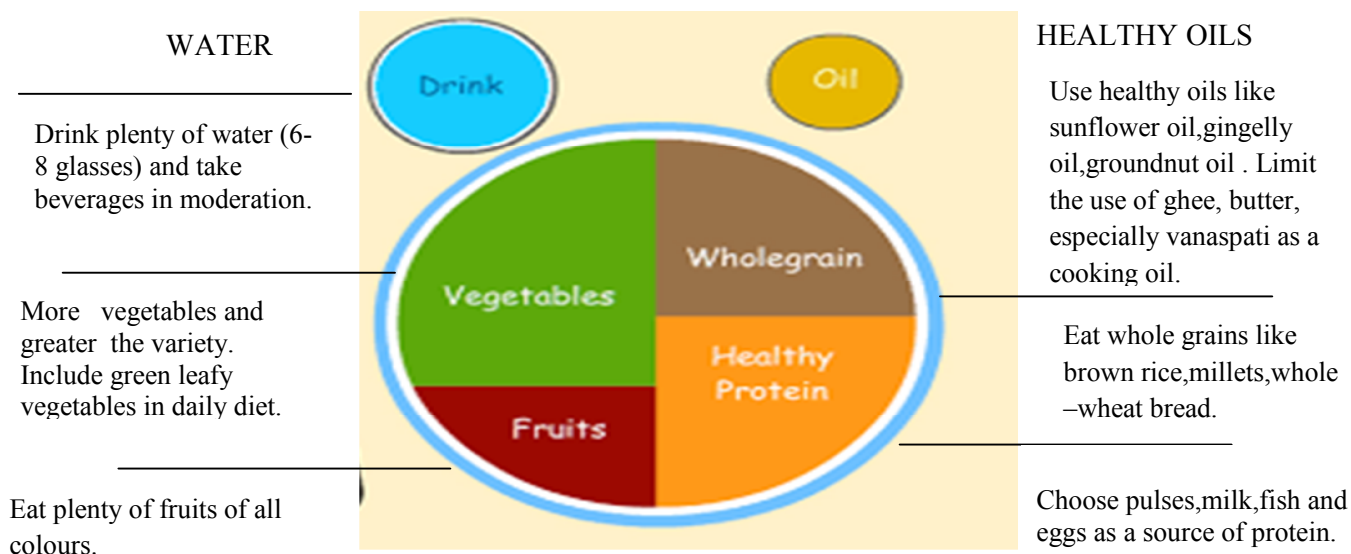


Plate 2 : Healthy eating plate

Module 2: Healthy Snacking Pattern

This module elicited information regarding snacking, importance of healthy snacking pattern, benefits of healthy snacks, importance of healthy snacks, reasons for smart snacking, healthy snack recipes and effects of unhealthy snacking. The importance of healthy snacks brings out the knowledge about nutrients and normal blood glucose level. The details regarding benefits of healthy snacks explains how the healthy snacks may improve the quality of life. Smart snacking makes us to prevent overeating, reducing overall calorie intake, and to maintain balanced physical and mental energy level. Green gram adai, black gram dhal sundal, green gram sprouts, millet energy bites with almonds, dates and coconut recipe and sathumaavu kozhukattai are the healthy snacks are to be taken by the young women. The healthy snacks were compiled as booklet and distributed to all 126 women (Appendix IV B). This module was taken in a time period of 45 minutes.

Module 3: Overcoming Dysfunctional Eating Pattern

This module compiled the information regarding the ways to overcome dysfunctional eating pattern, emotional eating, uncontrolled eating and cognitive restraints. Emotional

eating is a dysfunctional pattern that the food is used to satisfy for the emotional needs. Mainly the causes of emotional eating is are stress, childhood habits and social influence and this dysfunctional eating pattern can be stopped by giving good rest and pleasure. Uncontrolled eating pattern is the consumption of large quantites of food in a short period of time, which may be caused by depression, anxiety, anger boredom and loneliness. It can be controlled by finding ways to feel full. Cognitive restraint is an eating pattern as the intent to limits the intake of food to prevent weight gain. These dysfunctional eating pattern can be controlled by giving instructions to the young women on the need and awareness on the healthy eating. This module was presented with the help of power point presentation for a duration of 45 minutes per session (Appendix IV C).

Module 4: Food and Mood

This module comprised the informations regarding food and mood, red foods and green foods, how food affects the mood, the mood in food ,the relationship between neurotransmitters, nutrients and mood ,types of foods that will boost our mood and nutrition and strategies for mood maintenance. Tryptophan, B-vitamins, omega 3 fatty acids, magnesium and zinc rich foods that helps to achieve the desired moods. Positive and negative inducing foods which may makes our mood happy and sad this was demonstrated to the women study participants with the help of a desired poster. And also there is an important connection between the food we eat and the neurotransmitters the brain produces. There are some best foods like protein rich, fiber rich, vitamin rich that makes us stay healthy and happy. By giving nutrition strategies for mood maintenance which may lead a healthy habit for eating practices (Appendix IV D).

Module 5: Relief from Eating Disorders

This module was presented through a brochure covered the information regarding role of diet, types of eating disorders like anorexia nervosa, bulmia nervosa and binge eating disorders. Causes of eating disorders include the biological factors, psychological factors and environmental factor. Details of signs and symptoms of eating disorders, complications of eating disoredrs and treatment for eating disorders among young women were included (Appendix IV E).

Module6: Health Foods Over Junk Foods

This module used a lecture method for an hour for the session and comprised explanation with differences between junk foods and healthy foods, advantages of eating healthy foods and disadvantages of junk foods, list of junk foods and healthy foods and complications of obesity. Health foods are the foods having functional health benefits. The benefits of healthy foods as it controls weight, improves mood, decreases the risk of heart disease, decrease the risk of cancer and boosts energy. Whole grains, fish, nuts, raisins, yogurt, beans , pomegranate are the healthy foods. Food that is low in nutritional value, often highly processed or ready to prepared, and eaten instead of or in addition to well-balanced meals is called Junk foods.

Soft drinks, Burger, Sandwich, French fries, Pizza, Pasta, Crisps and Chocolates are the junk foods. Eating too much of such junk food might cause gastrointestinal problems, obesity and cardiovascular diseases, memory and learning problems, increases the risk of dementia, it can cause chemical changes that can lead to depression, it makes impatient and can cause uncontrollable cravings, excess energy and weight, increase the risk of digestive problems and cause skin, joint and bone problems.

Coronary heart disease, High blood pressure, Stroke, Type 2 diabetes, Cancer, Gallstones, Osteoarthritis, Infertility or irregular periods are the complications of obesity which increases the risk of developing a number of serious health conditions. Competition in the form of quiz was conducted for their knowledge based on the foods. This module took about an hour (Appendix IV F).



Plate 3: Lecture to the young women



Plate 4: Interaction with the young women



Plate 5:Powerpoint presentation



Plate 6: One - one counselling

All the 126 women were imparted with health education with the modules comprising a total of six interactive sessions. Young women were enthusiastic during the sessions was executed for a period of one month.

E. IMPACT OF HEALTH EDUCATION AND STATISTICAL INTERPRETATION OF DATA

Check list was designed with aspects on knowledge, attitude and practice questions to be distributed to the women before and after intervention. The impact of health education at pre and post intervention was assessed using checklist that evaluate knowledge, attitude, practice of the young women participants. Questions such as the type of foods harmful to the health, type of foods that cause negative moods, type of foods abundant in tryptophan, type of foods are high in protein are questions posed to assess their knowledge, skipping meals, consumption of fruits and vegetables as snacks, consumption of fried and fast foods, type of food use for stress are the questions given to assess the attitude and consumption servings of meat products, amount of consumption of milk, drinking practices of water, type of foods give more alert and active are the questions for the assesment of practice of study participants (Appendix V).

The data were stastically analyzed in order to correlate the pattern of food intake, lifestyle practices and preference of food choices with dysfunctional eating pattern among young women. '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 significance difference between dysfunctional eating pattern of young women and their risk in obesity. The methodology of the present study is schematically presented in Figure 1.

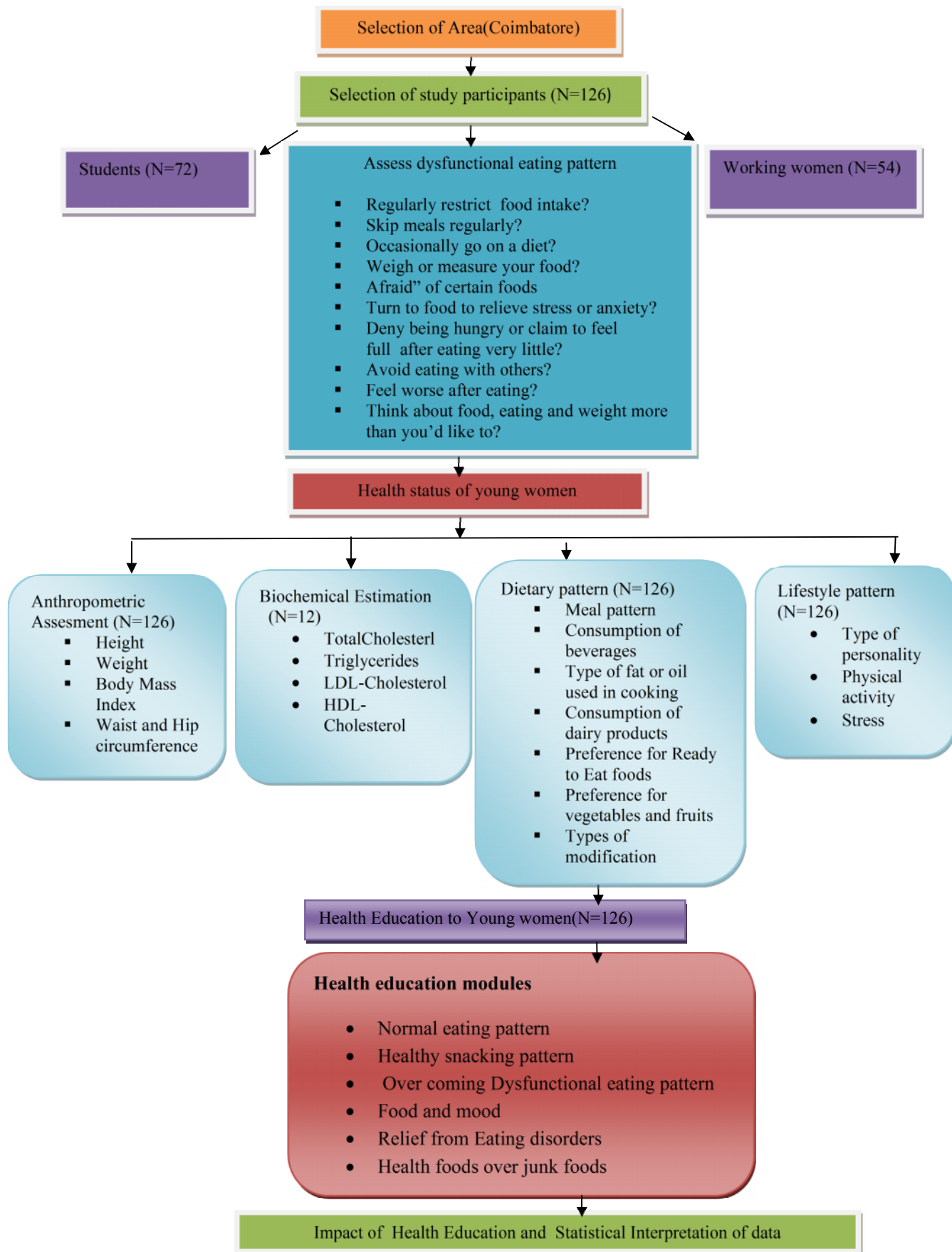


FIGURE 1
RESEARCH DESIGN

4. RESULTS AND DISCUSSION

The results of the study titled “**Dysfunctional Eating Pattern and the Risk of Obesity among Young Women**” is discussed under the following headings

- A. Profile and Health status of the young women
- B. Dietary and Lifestyle pattern of the dysfunctional eaters
- C. Dysfunctional eating pattern among young women
- D. Health education to the women with dysfunctional eating and its impact at pre and post intervention

A. Profile and Health status of the young women

Profile of the young women was compiled with the details of age wise distribution, educational status, income levels, family history for health disorders and details of the health problems are discussed in the following headings.

i) Age wise distribution of the young women

The age wise distribution of the young women was showed in Figure 2.

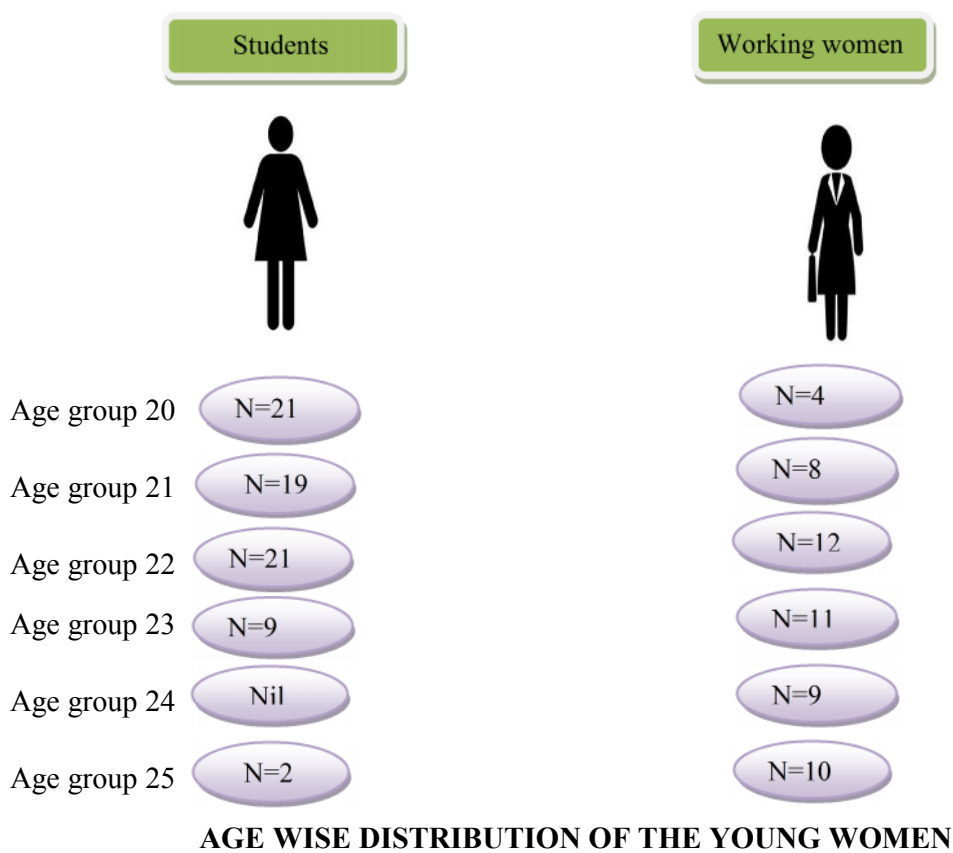


FIGURE 2

ii) Educational status of women

The educational status of women is given as TABLE I.

TABLE I
EDUCATIONAL STATUS OF WOMEN

N=126

Educational status	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Illiterate	NA	NA	NA	NA	NA	NA
Primary	NA	NA	NA	NA	NA	NA
Secondary	NA	NA	8	15	8	6
Higher secondary	NA	NA	8	15	8	6
Graduate	72	100	38	70	110	87

NA-Not Applicable

Among the total 126 women, 72 women were students who were doing their under graduation in Information technology, Designing, Para Medical Fields and Post Graduation in Engineering and Management. The educational details of working women showed that 70 percent women had graduation and eight percent each finished high school and higher secondary education respectively, indicating higher percentage of women with good education.

iii) Income levels of working women

The income levels of working women is given as TABLE II.

TABLE II
INCOME LEVELS OF WORKING WOMEN

N=54

Income range in (Rupees)	Working women (N=54)		Total	
	Number	Percentage	Number	Percentage
Economically weaker ≤3300	9	17	9	17
Low income 3301-7300	15	28	15	28
Middle income 7301-14500	20	37	20	37
High income >14501	10	19	10	19

(Source: HUDCO Classification, 2009)

The details on income status of the women showed that 37 percentage were in the middle income category with income range of 7301 to 14500 rupees per month. The source of income comprised occupation from software industries, health care professionals and accountants. While 28 percentage of working women were found to be in low income category with income range from 3301 to 7301 rupees and worked at textile industry, small scale business as the source of income. The monthly income of working women is categorized based on the government and private jobs. Those who are working in government jobs earn salary of rupees 15000 and above (Sharma et al., 2010).

iv) Occupational details of the working women

The occupational details of the working women is given as TABLE III.

TABLE III
OCCUPATIONAL DETAILS OF THE WORKING WOMEN

N=54

Occupation	Number=54	Percentage
Teacher	3	6
Health professionals	2	4
IT sector	15	28
Texile workers	28	52
Entrepreneurs	3	6
Wage earners	3	6

Out of the total 54 working women study participants, a mix of occupation comprising teaching, health care industries, Information Technology sector, textile industries, small scale entrepreneurs and daily wage labourers. Fifty two percentage of the women worked in the textile industry as tailors, sales girl and weavers, followed by 28 percentage in the Information Technology sector, graphical designing, accountants, and insurance related jobs. It was also encouraging to note that women has entered entrepreneurship in small scale production of foods such as selling of green peas, homemade snacks and sweets to the market and supported the family with their income.

The status of women in India has been changing due to growing industrialisation, globalisation, and social legislation. With the spread of education and awareness, women have shifted from kitchen to higher levels of professional activities. Now-a-days women enter not only in selected professions but also in professions like trade, industry and engineering.

Women are also willing to take up business and contribute to the Nation's growth. The role is also being recognised and steps are being taken to promote women entrepreneurship (Vijayakumar and Jayachitra, 2013).

v) Educational details of the father of the young women

The educational details of the father of the young women is given as TABLE IV.

TABLE IV
EDUCATIONAL DETAILS OF THE FATHER OF THE YOUNG WOMEN

N=126

Educational status	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Illiterate	1	1	13	24	14	11
Primary school	1	1	3	6	4	3
Secondary	13	18	21	39	34	27
Higher secondary	11	15	7	13	18	14
Graduate	46	64	10	19	56	44

Researches evince the fact that educational status of the parents were on an average scale. The studies argue that educated parents are capable of providing appropriate family environments that enable their children to acquire better education (Borkotoky et al., 2015). Hence details of the father of the young women on the educational details of the young women, depicted that 44 percentage of the father were graduate, either in the field of law, engineering and other arts domains. It was also alarming to note that 11 percentage of the fathers of the young women were illiterates.

vi) Occupational details of the father of the young women

The occupational details of the father of the young women is given as TABLE V.

TABLE V
OCCUPATIONAL DETAILS OF THE FATHER OF THE YOUNG WOMEN

N=126

Occupation	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Teacher	5	7	0	0	5	4
Labour	3	4	3	6	6	5
Professional	16	22	5	9	21	17
Business	26	36	9	17	35	28
Others	22	31	37	69	59	47

The occupational details of the fathers of the young women participants showed that 47 percentage of the fathers were involved with occupation such as welding, farming, weaving, driving and ironing. Twenty eight percentage of them were found to be engaged in different business fields.

vii) Details of health disorders of the young women

The details of health disorders of the young women is discussed in TABLE VI.

TABLE VI
DETAILS OF HEALTH DISORDERS OF THE YOUNG WOMEN

N=126

Health problem	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	18	25	10	19	28	22
No	54	75	44	81	98	78

The details of the health problems when studied among the students and working women participants it was observed that about 22 percent of the women had health problems such as anemia, sinus, thyroid disorders, migraine and asthma at this younger ages. Hence forth diagnosis and preventive treatments at the earlier ages will help in improving the health of the women. Available evidence indicate that young people are prone to a number of health problems impacting conditions due to personal choices, environmental influences and lifestyle changes including both communicable and non-communicable disorders and injuries (Sunitha and Gururaj, 2014).

viii) Family history of the health disorders of the young women

The family history of the health disorders of the young women is given as TABLE VII.

TABLE VII

FAMILY HISTORY OF THE HEALTH DISORDERS OF THE YOUNG WOMEN

N=63

Family history	Students (N=43)		Working women (N=20)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Diabetes	25	58	15	75	40	63
CVD	5	12	0	0	5	8
Stroke	7	16	0	0	7	11
Obesity	15	35	11	55	26	41
Hypertension	10	23	10	50	20	32

*Multiple Response

Table VII shows that 63 percentage of the young women have the family history of diabetes mellitus either the first degree from single parent or both the parents or the second degree from the grandparents. An alarming note that 41 percentage have the family history of obesity. It says that those who have first degree have more risk for the lifestyle disorders such as hypertension, stroke, obesity were also reported as family history of women. A study by Fernandez et al., 2014 showed that the family history of obesity was significantly associated with overweight and obesity.

xi) Body Mass Index of the young women

The Body Mass Index of the young women is given as TABLE VIII .

TABLE VIII
BODY MASS INDEX OF THE YOUNG WOMEN

N=126

BMI	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Underweight < 18.5	12	17	11	20	23	18
Normal 18.5-22.9	33	46	26	48	59	47
Overweight 23.0-24.9	10	14	8	15	18	14
Obese class I 25.0-29.9	15	21	8	15	23	18
Obese class II 30.0-39.9	1	1	1	2	2	2
Obese class III >40.0	1	1	0	0	1	1
Chi ² value	18.6** (p=0.0018)					

**Significant at 1 % level

(Source: WHO, 2004)

Table VIII on the details of the Body Mass Index revealed that only 47 percent of the women with normal BMI and it was observed that there exist a dual burden of underweight and overweight. Both of which would have adverse health effects in the future lifespan of the women and break the good cycle for health. The revised guidelines categorize overweight as a BMI of 23.0 to 24.9 and obesity as a BMI ≥ 25 using values lower than the ethnic specific BMI previously advocated for Asian Indians (Aziz et al., 2014).

When the data was statistically analysed with the chi square test it showed that it was significant at one percent level. Indicating that higher the Body Mass Index, higher the risk for health disorders especially obesity.

x) Waist to Hip Ratio of the young women

The Waist to Hip Ratio of the young women is given as TABLE IX.

TABLE IX
WAIST TO HIP RATIO OF THE YOUNG WOMEN

N=126

WHR	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Below normal 0.7	14	19	12	22	26	21
Normal 0.7-0.85	36	50	21	39	57	45
Abdominal obesity >0.85	22	31	21	39	43	34
Chi ² value	3.819 NS					

*Not Significant

(Source: WHO, 2008)

Obesity is one of the most neglected and pervasive health problems worldwide affecting all ages, socioeconomic classes and ethnicities. It is rightly referred as “Globesity”, as it has emerged as a global non-communicable epidemic. Obesity is defined as an abnormal and excessive deposition of adipose tissue to the extent that the health may be adversely affected. It is the fifth leading cause of one, two death all over the world (Al-rethiaa et al., 2010).

The waist to hip ratio of the young women represented that 31 percentage of the students and 39 percentage of the working women with a mean percentage of 34 were found to have higher Waist to Hip Ratio that indicate abdominal obesity. Waist-to-hip ratio of >0.85 in Women is the diagnosis of abdominal obesity by World Health Organisation (Shankar et al., 2017).

When the data was statistically tested with chi square, it interpreted that the Waist Hip Ratio did not reflect the increase in Waist Hip Ratio and may be attributed to the younger age of the study participants.

xi) Mean scores of lipid fractions

The mean scores of lipid fractions is given as TABLE X.

TABLE X

MEAN SCORES OF LIPID FRACTIONS

N=12

Biochemical estimation	Desirable values	Students (N=6)	Working women (N=6)	Total
Total Cholesterol	125-200(mg/dl)	159 ± 16	162 ± 21	161
LDL Cholesterol	85-130(mg/dl)	94 ± 15	90 ± 22	93
HDL Cholesterol	35-80(mg/dl)	48 ± 6	56 ± 5	52
Triglycerides	25-200(mg/dl)	91 ± 31	97 ± 31	94

(Source : Reference range as per NCEP ATP guidelines)

The details on biochemical estimation for lipid fractions of the young women reported the lipid fractions were within the desirable limits but it was also noticed that the mean Total Cholesterol values were higher with a mean of 161 mg/dl which is more than the minimum value prescribed as desirable value which is 125 mg/dl. It is an eye opener for the women at younger ages to keep control on the diet and lifestyle practices so as to prevent themselves with the lifestyle disorders in the future and ensure quality of life.

B.Dietary and Lifestyle pattern of the young women

Dietary pattern of the young women were complied with the details of meal pattern, personal habits, type of dairy products consumed, frequency of consumption of meat products, type of fat/oil used, type of beverages consumed, habit of dining out, preference of ready to eat foods and type of dietary modification are discussed under the following headings.

Lifestyle pattern of young women were comprised with the details of types of personality, regular work hours, sleeping pattern, exercise pattern and type of stress pattern are discussed under the following headings.

(1) DIETARY PATTERN

The dietary pattern is discussed with the details of meal pattern, personal habits, type of dairy products consumed, frequency of consumption of meat products, type of fat/oil used, type of beverages consumed, habit of dining out, preference of Ready to Eat foods and type of dietary modification in the following tables .

xii) Meal pattern of the young women

The meal pattern of the young women is given as TABLE XI.

TABLE XI
MEAL PATTERN OF THE YOUNG WOMEN

N=126

Dietary pattern	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Vegetarian	4	6	5	9	9	7
Ova-vegetarian	1	1	0	0	1	1
Non-vegetarian	67	93	49	91	116	92

Dietary pattern of the young women participants reported that 92 percent of the women were non vegetarians indicating that non vegetarianism predominated in the society and especially among the younger generations. It was also noted that only seven percent were vegetarians.

xii) Personal habits of the young women

The personal habits of the young women is given as TABLE XII.

TABLE XII
PERSONAL HABITS OF THE YOUNG WOMEN

N=126

Personal habits	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Overeating	30	42	21	29	51	40
Nibbling while cooking	17	24	14	26	31	25
Eating fast food	57	79	34	63	91	72
Drinking coffee	49	68	40	74	89	71
Drinking tea	42	58	41	76	83	66
Eating fleshy foods	67	93	49	91	116	92
Skipping breakfast	27	38	36	67	63	50
Eating too fast /Not chewing	12	17	17	31	29	23

*Multiple Response

The details on the personal habits of the young women showed that they have the personal habits like overeating, nibbling while cooking, eating fast food, drinking coffee, drinking tea, eating meat, skipping breakfast and eating too fast. Personal habits like these when continued would result in dysfunctional eating pattern among young women. Eating fleshy foods frequently was observed among 72 percent young women. This cautions for a change in dietary pattern with healthy choices.

xiv) Type of diary products consumed by the young women

The type of diary products consumed by the young women is given as TABLE XIII.

TABLE XIII**TYPE OF DAIRY PRODUCTS CONSUMED BY THE YOUNG WOMEN**

N=126

Type of dairy products	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Cow's milk	42	58	38	70	80	63
Buffalo's milk	3	4	0	0	3	2
Toned milk	0	0	0	0	0	0
Double toned milk	0	0	0	0	0	0
Homogenised milk	23	32	7	13	30	24
Paneer	8	11	5	9	13	10
Cheese	5	7	8	15	13	10
Curd	36	50	33	61	69	55
Butter milk	21	29	12	22	33	26

* Multiple Response

Details on the dairy products consumed by the women pointed out that 63 percent women used milk that was supplied by the milk vendors which is a common practice followed in the community. The processed milk in the form of homogenised milk was consumed by 24 percent young women. In addition, 10 percent each consume paneer and cheese in the form of sandwich, gravy and fry. Consumption of curd and buttermilk in the menu were noted among 55 percent and 26 percent women respectively in their daily menu.

xv) Frequency of consumption of meat products

The frequency of consumption of meat products is given as TABLE XIV.

TABLE XIV**FREQUENCY OF CONSUMPTION OF MEAT PRODUCTS**

N=116

Frequency	Students (N= 67)		Working women (N=49)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Daily	1	1	3	6	4	3
Weekly	48	72	36	73	84	72
Monthly	11	16	5	10	16	13
Occasionally	7	10	5	10	12	10

The details of frequency of consumption of meat products by the 116 young women who were non vegetarians showed that 72 percent consumed meat and its products once in a week with higher consumption of chicken and mutton in the form and curry and fry. It was also observed that three percentage of the women like christians and muslims had meat products more than 50 grams in their daily menu in the form of curry or either in the form of fry.

xvi) Type of fat /oil used in cooking

The type of fat /oil used in cooking is given as TABLE XV

TABLE XV
TYPE OF FAT/OIL USED IN COOKING

N=126

Type of fat/oil	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
SFA	34	47	10	19	44	35
MUFA	25	35	20	37	45	36
PUFA	48	67	38	70	86	68

*Multiple Response

Consumption on the fats and oils used in cooking reported that the women at home and hostels used combination of oils such as refined sunflower oil, refined groundnut oil and gingelly oil. In addition to this the refined palmoline oil from the public distribution outlets used a source of fat for cooking. More awareness and emphasize on the combination of ground nut oil, rice bran oil, olive oil and canola oil and gingelly oil, sunflower oil, corn oil must be encouraged in the food production at home. It was also noted that 35 percent women used saturated fat such as palm oil, coconut oil, ghee and butter for cooking which is also essential from the diet. The study participants used saturated fat more than one teaspoon of oil for cooking per day and hence needs caution on the quantity of oil and combination of oils in cooking with proper proportion from SFA, MUFA and PUFA.

xvii) Type of beverages consumed

The type of beverages consumed is given as TABLE XVI.

TABLE XVI
TYPE OF BEVERAGES CONSUMED

N=126

Type of beverage	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Coffee	49	68	40	74	89	71
Tea	42	58	41	76	83	66
Soup	12	17	14	26	26	21
Health mix	6	8	6	11	12	10
Porridge	4	6	11	20	15	12

* Multiple Response

The consumption pattern of beverages among the women participants revealed women preferred coffee and tea as their frequently consumed beverage in the mid-morning and evening and were considered as a energizer for tiredness and stress relief. It was a healthy practice that was observed among the young women that 21 percent had soup such as green leafy soups, vegetable soup, chicken soups from the work place or when eaten outside .The commercially available health mix such as boost, horlicks and porridges such as ragi porridge and rice porridge were used as beverage by 10 percent and 12 percent women respectively consumed weekly once.

xviii) Habit of dining out

The habit of dining out is given as TABLE XVII.

TABLE XVII
HABIT OF DINING OUT

N=126

Habit of dining out	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	63	88	40	74	103	82
No	9	13	14	26	23	18

The trends in dining out pattern at kiosks, fast food outlet, restaurant, cafeteria, coffee shop and other eateries have increased over years and the frequency of habit of dining out may mostly seen weekly once or either monthly once. There was an alarming note that most of the study participants preferred to have continental foods, chinese food items during their leisure time. This was also observed among the study participants of the present study and cautions the need for adoption of healthy choices while eating out.

xix) Preference of Ready to Eat foods

The preference of Ready to Eat foods is given as TABLE XVIII.

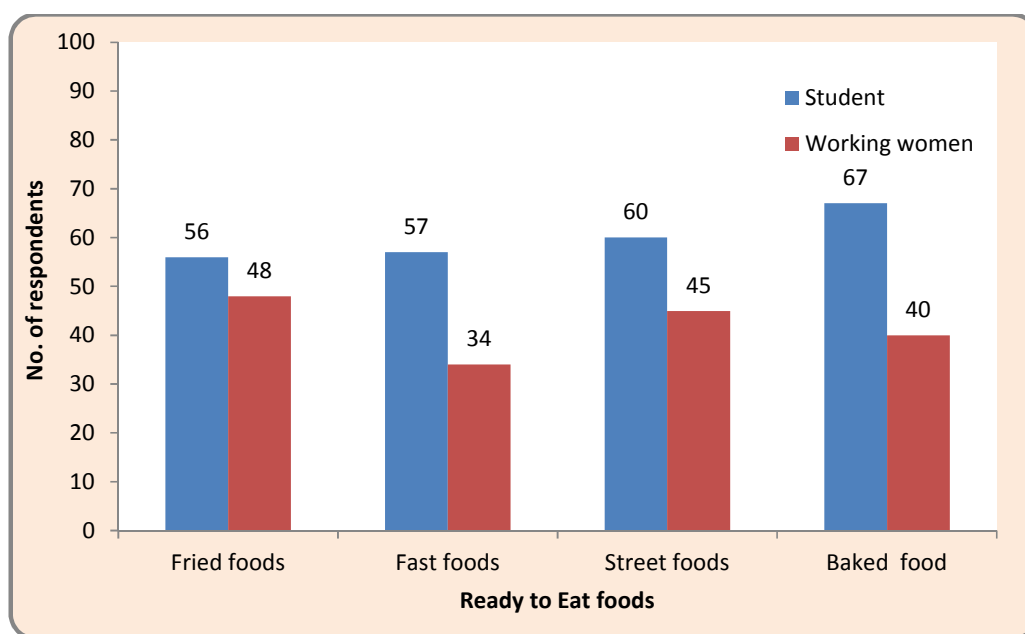
TABLE XVIII
PREFERNCE OF READY TO EAT FOODS

N=126

Food items	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Fried foods	56	78	48	89	104	83
Fast foods	57	79	34	63	91	72
Street foods	60	83	45	83	105	83
Baked foods	67	93	40	74	107	85

* Multiple Response

As the young prefers new and innovative food choices, the consumption of ready to eat processed foods such as fried foods, fast foods, street foods and baked foods were common among almost all women signifying the move towards processed and ready to eat foods such as snacks like baji, bonda, cutlet and samosa especially during leisure time, parties, functions, get together and other family functions.



PREFERNCE OF READY TO EAT FOODS

FIGURE 3

xx) Type of dietary modification

The type of dietary modification is given as TABLE XIX.

TABLE XIX
TYPE OF DIETARY MODIFICATION

N=32

Type of dietary modification	Students (N=26)		Working women (N=6)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Reduce salt in cooking	3	12	1	17	4	13
Avoid salt in table	2	8	0	0	2	6
Reduce use of butter /ghee	10	38	2	33	12	38
Avoid deep fried foods	12	46	5	83	17	53
Avoid energy dense foods	6	23	0	0	6	19
Consume more fresh vegetables and fruits	15	58	5	83	20	63
Consume fish in moderation	7	27	1	17	8	25
Use less oil in cooking	17	65	4	67	21	66
Avoid preserved foods	13	50	4	67	17	53

* Multiple Response

The consumption pattern for healthy foods when elicited among young women revealed that practice of healthier choice was observed in marginal numbers of 66 percent indicating the need for behavioral modifications that leads to practice. Availability of the resources in large on healthy dietary pattern, the lacunae arises in adopting and practice of simple healthy choices such as reduce salt in cooking, avoid salt in table reduce use of butter /ghee, avoid deep fried foods, avoid energy dense foods, consume more fresh vegetables and fruits, consume fish in moderation, use less oil in cooking and avoid preserved foods. This opens the arena for health care aspirants to encourage the adoption and practice through mass education and follow ups in the community especially young generation.

(2) LIFESTYLE PATTERN

The lifestyle pattern is discussed with details types of personality, regular work hours, sleeping pattern, exercise pattern and type of stress pattern in the following tables.

xxi) Type of personality

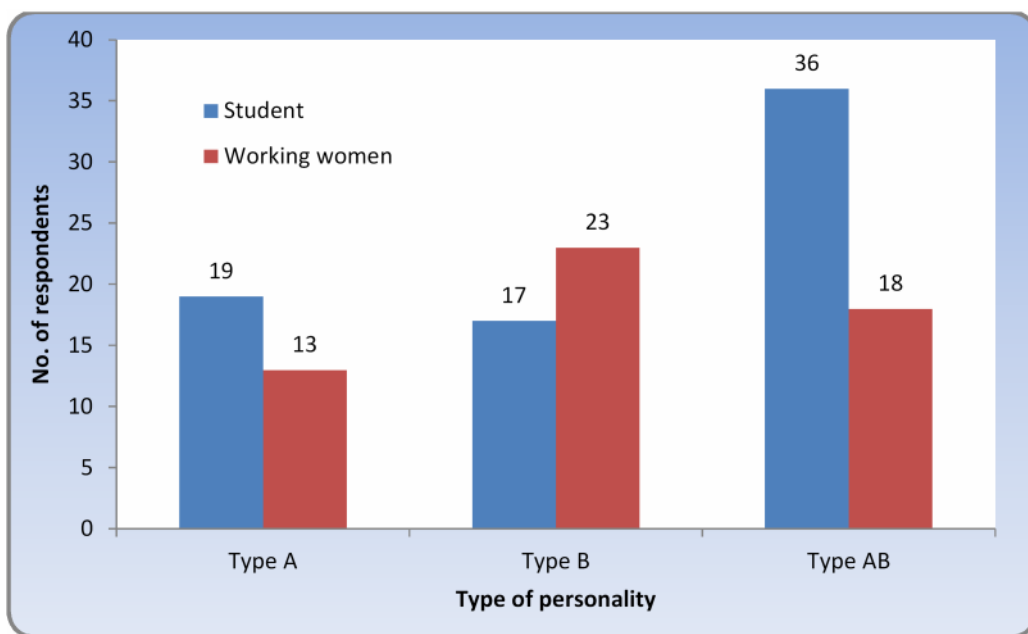
The type of personality is given as TABLE XX.

TABLE XX
TYPE OF PERSONALITY

N=126

Type of personality	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Type A	19	26	13	24	32	25
Type B	17	24	23	43	40	32
Type AB	36	50	18	33	54	43

It was noted that most of the study participants have Type AB personality with both characteristics of Type A and Type B, which is predominated followed by Type A then by Type B. Type A have the characteristics of competitiveness being ambitious, impatient, aggressive and fast talking. Whereas Type B have the characteristics such as relaxed, patient and easy going. Each personality has its own characteristics, which is given by the combination of certain features. It was noted that the AB personality traits dominated among 43 percent young women According to these features it is possible to divide the different types of personalities (McLeod, 2017) .



TYPE OF PERSONALITY

FIGURE 4

xxii) Regular work hours

The regular work hours is given as TABLE XXI.

TABLE XXI

REGULAR WORK HOURS

N=54

Regular work	Working women (N=54)	
	Number	Percentage
Less than 8 hours	2	4
8 hours	49	91
More than 8 hours	3	6

It was noted that as the women were accustomed for regular activities as health care professional, IT employees, textile workers, teachers had eight hours of regular work and only six percent women were demanded with heavy work load more than eight includes work at night shift and had heavy work pressure among women and reflected an occupational stress.

xxiii) Sleeping pattern of the young women

The sleeping pattern of the young women is given as Table XXII.

TABLE XXII
SLEEPING PATTERN OF THE YOUNG WOMEN

N=126

Sleep pattern	Students (N=72)		Working women (N=54)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
5-6 hours	5	7	3	6	8	6
6-8 hours	66	92	48	89	114	90
8-10 hours	1	1	2	4	3	2
Chi ² value	37.218** (p=0.002)					

** Significant at 1% level

Details on the sleeping pattern of study participants shows that six percent women reported with five to six hours of sleep and seven percent students reasoned out that they were engaged in the mobile and television for their leisure as the reasons for their less sleep hours and six percent working women reported that work load and habit of late night sleeping are the reasons for less sleep hours. Almost 92 percent women had adequate sleep pattern. The data analysed with the chi square test revealed an one percent significance indicating the sleep hours were adequate among young women.

This was also reported in a research study by Hysing et al., 2015 that the high rate of media use in adolescence may be one factor that is related to the short sleep duration and late bedtimes (Hysing et al., 2015).

xxiv) Details of exercise pattern

The details of exercise pattern is given as TABLE XXIII.

TABLE XXIII
DETAILS OF EXERCISE PATTERN

N=40

Education al status	Students (N=31)		Working women (N=9)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Walking	22	31	6	11	28	22
jogging	3	4	2	4	5	4
Aerobics	6	8	1	2	7	6

*Multiple Response

The details of exercise pattern followed by the young women study participants showed that only 40 women had the habit of doing exercise daily or weekly basis with the duration of 30 minutes to more than one hours such as walking and jogging. It was noticated that most of the study participants have the habit of walking regularly and that was noticed among 22 percent women.

xxv) Type of stress pattern

The type of stress pattern is given as TABLE XXIV.

TABLE XXIV
TYPE OF STRESS PATTERN

N=90

Educational status	Students (N=50)		Working women (N=40)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Familial stress	20	40	16	40	36	40
Occupational stress	NA	NA	33	83	33	37
Neighbourhood stress	2	4	2	5	4	4
Environmental stress	45	90	13	33	58	64

*Multiple Response

Details on the type of stress pattern shows that 83 percent of working women had occupational stress due to the work load. On the other hand we can say that most of the students staying in the hostels have the environment stress because of the prevailing new environmental changes everyday. Family stress by the members of the family was also

reported as their stress by 40 percent women. Also it was noted that 83 percent working women suffered occupational stress.

C. Dysfunctional eating pattern among young women

The dysfunctional eating pattern studied among the young women is complied as details of skipping meals regularly, fasting pattern of young women, feel worse after eating, afraid of certaing foods, occasionally go on a diet, habit of binge eating, turn to food to relieve stress or anxiety and is discussed in the following tables.

xxvi) Skipping meals regularly

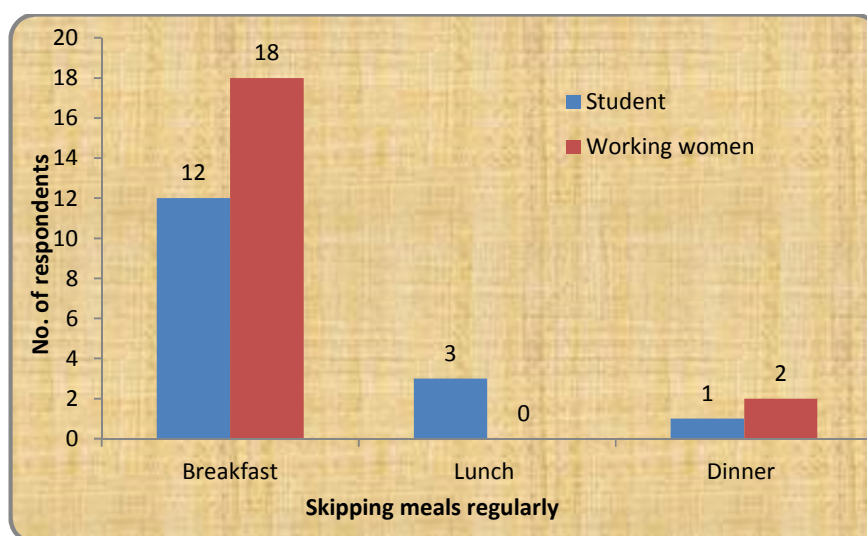
The skipping meals regularly by the young women is discussed in TABLE XXV.

TABLE XXV
SKIPPING MEALS REGULARLY

N=36

Skipping meals	Students (N=16)		Working women (N=20)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Breakfast	12	75	18	90	30	83
Lunch	3	19	0	0	3	8
Dinner	1	6	2	10	3	8

It was observed that 16 students and 20 working women skipped meals regularly and was also noted that 83 percentage women skipped breakfast. The reasons for skipping meals was reported as heavy work load ,too busy schedule and lack for food. It was alarming that 36 women out of the total 126 women representing nearly 25 percent skipped meals and need interventions to adopt regular meal pattern among women especially break.



SKIPPING MEALS REGULARLY

FIGURE 5

xxvii) Fasting pattern

The fasting pattern is given as TABLE XXVI.

TABLE XXVI

FASTING PATTERN

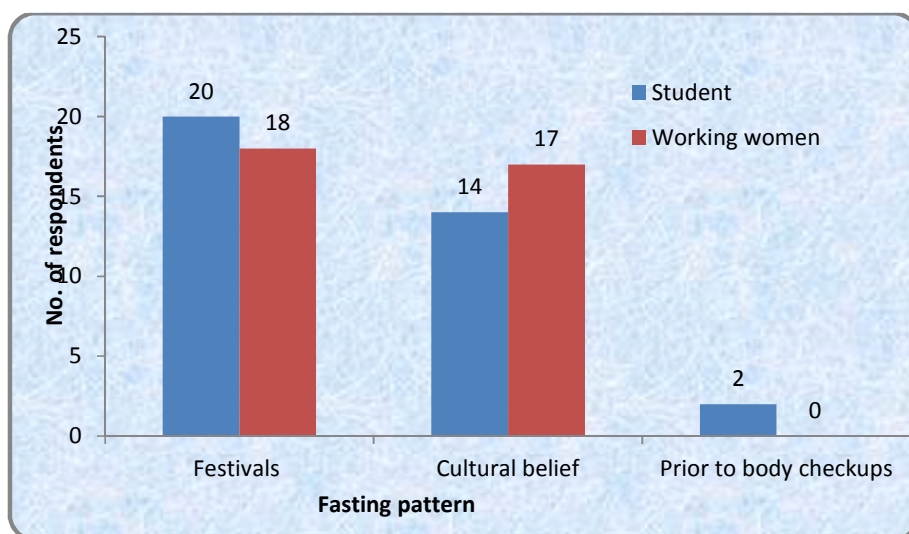
N=55

Habit of fasting	Students (N=32)		Working women (N=23)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Festivals	20	63	18	79	38	69
Cultural belief	14	44	17	74	31	56
Prior to body checkups	2	6	0	0	2	4

* Multiple Response

The fasting behavior of the women showed that young women 55 women out of the total 126 had the practices of fasting fifty six percent women practiced fasting due to the cultural belief 69 percent of young women fasted during the festivals occasionally and that may be linked to the cultural belief. This may be mainly done for their personal belief, religious thoughts for their better future. Diet plays an integral role in the religious customs of a variety of faiths. For many religions, the role is manifested in the form of

specialized fasting periods. Although religious fasting is often a time of great spiritual growth, it can also be a time of great improvement to one's physical health (Trepanowski and Bloomer,2010).



FASTING PATTERN

FIGURE 6

xxviii) Feel worse after eating

The feel worse after eating is given as TABLE XXVII.

TABLE XXVII

FEEL WORSE AFTER EATING

N=89

Feel worse after eating	Students (N=50)		Working women (N=39)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Chest pain	7	14	9	23	16	18
Heart palpitation	0	0	0	0	0	0
Light headedness and feeling full	23	46	16	41	39	44
Indigestion	30	60	24	62	54	61

* Multiple Response

Table XXVII presents that 61 percent of the study participants have the problem of indigestion after eating meals very little. It shows they feel worse after eating the meals other problems like, chest pain, heart palpitations, light headedness and feeling full are other health problems that arises after the consumption of foods. This may arise due to the heaviness of food and may be attributed to the reasons of skipping meals, irregular food habits and fasting by women.

xxxi) Afraid of certain foods

The afraid of certain foods is give as TABLE XXVIII.

TABLE XXVIII
AFRAID OF CERTAIN FOODS

N=98

Fear inducing foods	Students (N=56)		Working women (N=42)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Caffeine	15	27	11	26	26	27
Starchy foods	15	27	8	19	23	23
Wheat	1	2	1	2	2	2
Saturated fat	29	52	21	50	50	51
Soy	3	5	0	0	3	3
Sugar	10	18	5	12	15	15

* Multiple Response

According to study conducted in Virginia Tech College of Agriculture and Life Sciences the list of foods such as intake for caffeine, Starchy foods, Wheat, Saturated fat, Soy and sugar makes depression and anxiety. It was opined in their study that consumption of this type of food was observed at a higher level without an awareness that these foods might induces fear. Starchy foods such as potato, white bread, pasta and also saturated fat foods like fatty cuts of meat, butter, egg yolks makes depression for the study participants.

xxxii) Occasionally go on a diet

The occasionally go on a diet by young women is discussed in TABLE XXXI

TABLE XXXI
OCCASIONALLY GO ON A DIET

N=82

Type of diet	Students		Working women		Total	
	Number =53	Percentage	Number=29	Percentage	Number	Percentage
Vegetarian diet	25	47	20	69	45	55
Raw food diet	10	19	4	14	14	17
Zone diet	14	26	3	10	17	21
Paleo diet	4	8	2	7	6	7

In addition occasional dietary practices like practice of vegetarian diet, raw food diet, zone diet and paleo diet were studied as these formed the pattern of practicing diets as strategy for weight loss and physique maintenance and was common among women as means of dieting. It was observed that 55 percent women followed vegetarian diet. Raw food diet, zone diet and paleo diet were also common among young women.

Raw food diet is said to be the diet that involves consumption of foods and drinks that are not processed, are completely plant-based, and ideally organic. Paleo diet is the types of foods presumed to have been eaten by early humans, consist of meat, fish, vegetables, and fruit and excluding dairy or cereal products and processed food. The Zone diet is a high protein, low carbohydrate diet. It is based on the concept that if people eat an ideal balance of carbohydrates, proteins, and fats at every meal and snack, they will achieve hormonal balance. This will control insulin levels and result in weight loss and health benefits.

xxxi) Habit of binge eating

The habit of binge eating among young women is given as TABLE XXX.

TABLE XXX
HABIT OF BINGE EATING

N=51

Type of food	Students (N=30)		Working women (N=21)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Junk foods	24	80	13	62	37	73
Snacks	18	60	10	48	28	55
Carbonated drinks	3	10	1	5	4	8

*Multiple Response

Binge eating was a common eating behavior associated with dysfunctional eating pattern. This study showed that most of the study participants have the habit of binge eating with more consumption of junk food such as Pizza, Burger, Fried chicken, Sausages, Noodles and snacks such as chips, fried foods and carbonated beverages such as mirinda, pepsi and sprite. Studies shows that the binge eating behavior is largely associated with obesity and defines a subgroup of individuals with excessive eating that shows significant differences. (Ural et al, 2017)

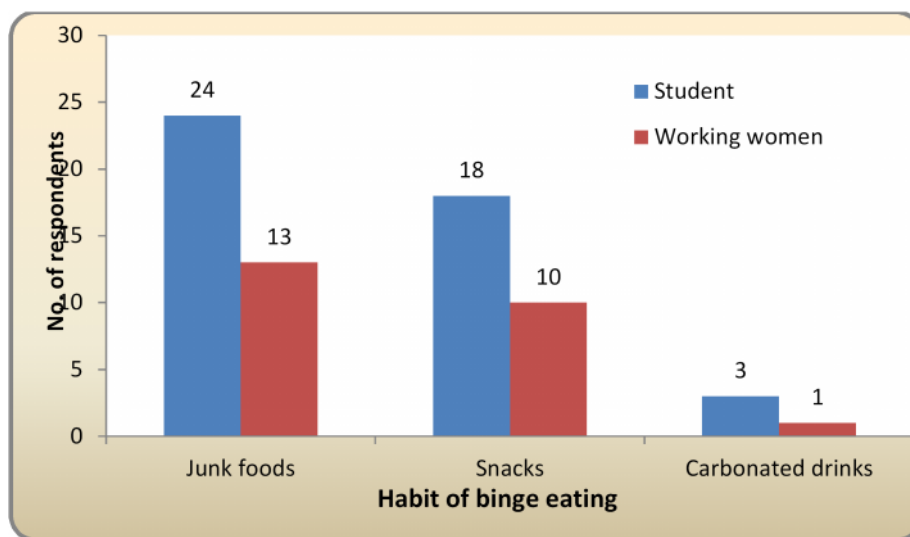


FIGURE 7
HABIT OF BINGE EATING

TABLE XXXI
TURN TO FOOD TO RELIEVE STRESS OR ANXIETY

N=90

Kind of food	Students (N=50)		Working women (N=40)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Ice cream	15	30	5	13	20	22
Chocolate	22	44	25	63	47	52
Snacks	30	60	28	70	58	64

*Multiple Response

Table XXXI shows that the kind of foods like icecream, chocolate, snacks are the foods that used more for the stress relief. Here it illustrates that consumption of snacks was noted among the one third of the women. And also some of the study participants consume even chocolates or snacks for their stress relief.

xxxiii) Impact of Health Education among the young women

The impact of health education among the young women is discussed in the TABLE XXXII.

TABLE XXXII
D.IMPACT OF HEALTH EDUCATION AMONG THE YOUNG WOMEN

KAP	Students (N=72) Mean scores			Working women (N=54) Mean scores		
	Before	After	t value	Before	After	t value
Knowledge (Max scores:12)	6	12	** 9.76	6	12	** 7.17
Attitude (Max scores:12)	6	9	** 3.45	3	6	** 2.97
Practice (Max scores:12)	3	9	** 5.63	3	12	** 17.25
F value	2.97 ^{ns} (p=0.148)			4.667** (p=0.002)		

**Significant at 1% level

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

The health education section taken for to the young women was more useful and effective and all the study participants were more curious to know about the health, concepts of normal eating habits, healthy eating plate, consequences of skipping meals, importance of healthy foods, consequences of dysfunctional eating pattern, and relationship between food and mood. There was a significant increase in their knowledge, attitude and practice after the health education. The post health education scores were higher in students than working women. It was convincing to note that most of the study participants gained knowledge on healthy lifestyle after the health intervention. It would be of greater benefits when such awareness programmes are followed in the community in a long term approach so as to observe the behavioural modifications, the need of the hour .

When the results were statistically interpreted, ANOVA and t test had significance at one percent level revealing the positive impact of intervention with education modules and an effective way in the community based education strategies

TABLE XXXIII

E.MEAN NUTRIENT INTAKE OF STUDY PARTICIPANTS

Mean nutrient intake	Students (N=72)				Working women (N=54)			Total	
	RDA	Mean	Excess /deficit	t value	Mean	Excess /deficit	t value	Mean	Excess /deficit
Energy	1900kcal/d	1934±163	+34	ns -1.77	1921±118	+21	ns -1	1928	+28
Carbohydrate	375g	394±63	+19	** -2.59	388±60	+13	ns -1.63	391	+16
Protein	55g/d	57±4	+2	** -3.063	56±3	+1	** -3.37	57	+2
Fat	20g/d	43±14	+23	** -13.32	39±11	+19	** 12.7	41	+21
Calcium	600mg/d	549±44	-51	** 9.9	556±24	-44	** 13.25	553	-47
Iron	21mg/d	19±6	-2	** 2.63	22±27	-1	ns -153	20	-1
Carotene	4800µg/d	784±834	-4016	** 40.82	817±709	-3983	ns 41.2	801	-3999
Vitamic C	40mg/d	36±6	-4	** 6.65	34±7	-6	** 5.9	35	-5
Folic acid	200µg/d	172±36	-28	** 6.49	156±29	-44	** 11.005	164	-36

Source :ICMR 2010

** Significant at 1% level; NS-Not Significant

The details on the mean nutrient intake of study participants shows that the consumption of unhealthy eating practices leads the imbalance in the nutrients depicting excess Energy, Protein, Carbohydrate, Fat and deficit of micronutrients such as Calcium, Iron, Carotene, Vitamin C and Folic acid. Thus from the nutrient intake we can manifest that unhealthy eating habits may lead to the increasing risk of obesity among young women and leads to complications.

When the data was analysed with the t test it showed that the mean nutrient intake of the dysfunctional eaters were significant at one percent level indicating the closer relationship with nutrients and Recommended Dietary Allowance.

5. SUMMARY AND CONCLUSION

Eating habits refers to what food we eat, how we eat it and why we eat it. Dietary pattern and lifestyle pattern have an important role in the health status of young women. Changing the eating behaviours of young women which leads to the increasing the rise of lifestyle disorders. Hence the study titled **“Dysfunctional Eating Pattern and the Risk of Obesity among Young Women”** was undertaken with the objective to Study the dysfunctional eating pattern among young women and to create awareness on the consequences of dysfunctional eating pattern among young women.

The methodology comprised of the 200 young women who were administered with the questionnaire to elicit the dysfunctional eating pattern using the questionnaire by the author (Berg, 2001). A total of 126 women were found to be dysfunctional eaters and hence they were involved for the research further to understand the dysfunctional eating pattern among young women. In order to facilitate the collection of data from the young women studying in colleges, universities and working women in Textile workers, Information Technology Professionals, Teachers, Health Professionals from Coimbatore were identified for the study.

Health profile of the women comprised the anthropometric measurements, biochemical estimation, dietary pattern and lifestyle practices. Anthropometric measurements comprised height, weight, Body Mass Index, Waist to Hip Ratio. Biochemical estimation were done for the lipid profile such as Total cholesterol, LDL-cholesterol, HDL-cholesterol and triglycerides. Dietary pattern of the young women were complied with the details of meal pattern, personal habits, type of dairy products consumed, frequency of consumption of meat products, type of fat/oil used, type of beverages consumed, habit of dining out, preference of ready to eat foods and type of dietary modification. Lifestyle pattern of young women was consisted details on types of personality, regular work hours, sleeping pattern, exercise pattern and type of stress pattern. In addition the details on dysfunctional eating pattern was elicited with details of skipping meals regularly, fasting pattern of young women, feel worse after eating, afraid of certain foods, occasionally go on a diet, habit of binge eating, turn to food to relieve stress or anxiety.

The salient findings of the study are ;

- The educational details of the young women showed that among the total 126 women, 72 women were students doing their under graduation and graduation. It was also noted that educational details of working women shows 70 percent women had graduation and eight percent each finished high school and higher secondary education respectively.
- The details on income status of the working women showed that 37 percentage were in the middle income category with income range of 7301 to 14500 rupees per month from software industries, health care professionals and accountants and also 28 percentage of working women were found to be in low income category with income range from 3301 to 7301 rupees and worked at textile industry, small scale business as the source of income.
- Occupational details of young women depicted that out of the total 54 working women study participants, 52 percentage of the women worked in the textile industry as tailors, sales girl and weavers, followed by 28 percentage in the Information Technology sector, graphical designing, accountants and insurance related jobs.
- Educational details of the father of young women showed that 44 percentage of the father were graduate, either in the field of law, engineering and other arts domains. It was also alarming to note that 11 percentage of the fathers of the young women were illiterates.
- Occupational details of fathers of young women showed that 47 percentage of the fathers were involved with occupation such as welding, farming, weaving driving and ironing. It was also noted that twenty eight percentage of them were found to be engaged in different business fields.
- The details of the health problems when studied among the students and working women participants , it was observed that about 22 percent of the women had health problems such as anemia, sinus, thyroid disorders, migraine and asthma at this younger ages.
- The details on the family history of the health disorders of young women manifests that 31 percentage of the young women have the family history of diabetes mellitus either the first degree from single parent or both the parents or the second degree from

the grandparents. It also evinced that 21 percentage of the young women has the family history of obesity either the first degree or the second degree.

- Details of the Body Mass Index revealed that only 47 percent of the women with normal Body Mass Index and it was observed that there exist a dual burden of underweight and overweight. It was also noted that 18 percent of young women have obesity grade I.
- Details on the Waist to Hip Ratio of the young women represented that 31 percentage of the students and 39 percentage of the working women with a mean percentage of 34 were found to have higher Waist to Hip Ratio that indicate abdominal obesity.
- The details on biochemical estimation for lipid fractions of the young women reported the lipid fractions were within the desirable limits but it was also noticed that the mean Total Cholesterol values were higher with a mean of 161 mg/dl which is more than the minimum value prescribed as desirable value for which is 125 mg.
- Dietary pattern of the young women participants reported that 92 percent of the women were non vegetarians indicating that non vegetarianism predominated in the society and especially among the younger generations.
- The details on the personal habits of the young women showed that they have the personal habits like overeating, nibbling while cooking, eating fast food, drinking coffee, drinking tea, eating meat, skipping breakfast and eating too fast. Personal habits like these when continued would result in dysfunctional eating pattern among young women. Eating fleshy foods frequently was observed among 72 percent young women.
- Details on the dairy products consumed by the women pointed out that 63 percent women used milk that was supplied by the milk vendors. In addition 24 percent young women was consumed homogenised milk was consumed and 10 percent each consume paneer and cheese in the form of sandwich, gravy and fry. Consumption of curd and buttermilk in the menu were noted among 55 percent and 26 percent women respectively.
- The details of frequency of consumption of meat products by the young women depicted that 72 percent consumed meat and its products once in a week with higher consumption of chicken and mutton in the form and curry and fry. It was also

observed that three percent of the young women consume the meat products daily in their menu.

- Details on the consumption on the fats and oils used in cooking reported that 35 percent women used saturated fat such as palm oil, coconut oil, ghee, butter and vanaspathi for cooking.
- The consumption pattern of beverages among the women participants revealed women preferred coffee and tea as their frequently consumed beverage. It was a healthy practice that was observed among the young women that 21 percent had soup such as green leafy soups, vegetable soups and chicken soups. The commercially available health mix such as boost, horlicks and porridges such as ragi porridge and rice porridge were used as beverage by 10 percent and 12 percent women respectively.
- Details on the habit of dining out of the young women showed that they have higher trends in dining out pattern at kiosks, fast food outlets, restaurants, cafeterias, coffee shops and other eateries and the frequency of habit of dining out was mostly seen weekly once or either monthly once. There was a alarming note that most of the study participants preferred to have continental foods, chinese food items during their leisure time. This was also observed among the study participants of the present study and cautions the need for adoption of healthy choices while eating out.
- The consumption of ready to eat processed foods such as fried foods, fast foods, street foods and baked foods were common among almost all women it was noted that the young womens were move towards processed and ready to eat foods such as snacks like baji, bonda, cutlet and samosa especially during leisure time, parties, functions, get together and other family functions.
- The consumption pattern for healthy foods when elicited among young women revealed that practice of healthier choice was observed in marginal numbers of 66 percent indicating the need for behavioral modifications that leads to practice.
- Details on the lifestyle pattern of young women showed the personality behaviour of study participants. It was noted that the AB personality traits dominated among 43 percent young women.
- The details of regular working hours of women it was noted that the women were accustomed for regular activites as health care professional, IT employees, textile

workers, teachers had eight hours of regular work and only six percent women were demanded with heavy work load more than eight includes work at night shift and had heavy work pressure among women and reflected an occupational stress.

- The sleeping pattern of the young women showed that six percent women reported with five to six hours of sleep and seven percent students reasoned out that they were engaged in the mobile and television for their leisure as the reasons for their less sleep hours and six percent working women reported that work load and habit of late night sleeping are the reasons for less sleep hours. It was also alarming to note that 92 percent had adequate sleeping pattern.
- The details of exercise pattern followed by the young women study participants showed that only 40 women had the habit of doing exercise on daily and weekly base with the duration of 30 minutes to more than one hours such as walking and jogging. It was noticated that most of the study participants have the habit of walking regularly and was noticed among 22 percent women.
- Details on the type of stress pattern showed that 83 percent of working women had occupational stress due to the work load it was also noted that was also reported 40 percent women had family stress.
- Skipping meals regularly was an important dysfunctional eating pattern seen in young generations. It was observed that 16 students and 20 working women skipped meals regularly and was also noted that 83 percentage women skipped breakfast. The reasons for skipping meals was reported as heavy work load, too busy schedule and lack for food. It was alarming that 36 women out of the total 126 women representing nearly 25 percent skipped meals.
- The fasting behavior of the women revealed that young women 55 women out of the total 126 had the practices of fasting, fifty six percent women practiced fasting due to the cultural belief 69 percent of young women fasted during the festivals occasionally mainly done for their personal belief, religious thoughts for their better future.
- Sixty one percent of the study participants have the problem of indigestion after eating meals. It shows they feel worse after eating the meals other problems like, chest pain, heart palpitations, light headedness and feeling full are other health problems that arises after the consumption of foods.

- The fear inducing foods like starchy foods such as potato, white bread, pasta and also saturated fat foods like fatty cuts of meat, butter, egg yolks makes depression for the study participants.
- Details on the diet followed by the study participants on occasionally it shows that 55 percent women followed vegetarian diet and also it was observed that raw food diet, zone diet and paleo diet were also common among the young women.
- Binge eating was a common eating behavior associated with dysfunctional eating pattern. This study showed that most of the study participants have the habit of binge eating with more consumption of junk food such as Pizza, Burger, Fried chicken, Sausages, Noodles and snacks such as chips, fried foods and carbonated beverages such as mirinda, pepsi and sprite.
- The foods like icecream, chocolate, snacks are the foods that were used as a stress relief. Here in the study it shows that consumption of snacks was noted among the one third of the women. And also 52 percent and 64 percent of the study participants consume even chocolates or snacks for their stress relief.
- The nutrient intake of the young women was found imbalanced as their consumption of Carotene, Vitamin C, Calcium, iron and Folic acid were below Recommended Dietary Allowance and on the other hand Energy, Carbohydrate, Protein and Fat are above Recommended Dietary Allowance. It shows the unhealthy eating habits among young women.

Conclusion

Healthy food choices and balanced lifestyle practices are the need of the hour among the population especially younger generation. The transition in the dietary habits from traditional food practices to fast food culture along with sedentary lifestyle has resulted in the health disorders at the earlier ages. Health care professionals should focus and map on primordial prevention of diseases through a healthy blend of diet and lifestyle pattern along with simple behavioural modifications.

Scope for Future Research Work

- Long term studies need to be taken up to examine the impact of diet on health profile.
- Relate the Dysfunctional Eating behaviour on health risks among women.
- Design IT enabled Personalised Education modules for the Young Women.

BIBLIOGRAPHY

- Abawi, K. (2013). Data Collection Instruments (Questionnaire & Interview). Training in Sexual and Reproductive Health Research Geneva, 3
- ALFaris N.A, Jozaa Z. Al-Tamimi , Moneera O. Al-Jobair and Naseem M. Al-Shwaiyat(2015);Trends of fast food consumption among adolescent and young adult Saudi girls living in Riyadh;Citation: Food & Nutrition Research
- Al-Hazzaa, H.M., N.A. Abahussain, H.I. Al-Sobayel, D.M. Qahwaji and A.O. Musaiger, 2011. Physical activity, sedentary behaviors and dietary habits among Saudi adolescents relative to age, gender and region. International Journal of Behavioural Nutrition and Physical Activity, Vol 8, 10.1186/1479-5868-8-140
- Alizadeh M, Ghabili K(2008) Health related lifestyle among the Iranian medical students. Research Journal Biological Science, 3(1)Pp:4–9.
- Al-Rethiaa AS, Fahmy AE, Al-Shwaiyat NM. Obesity and eating habits among college students in Saudi Arabia: a cross sectional study. Nutrition Journal. 2010;9(39):1-10.
- American Psychological Association (APA), editor. Diagnostic and statistical manual of mental disorders. 5th ed. Washington, DC: American Psychological Association; 2013
- Anglé S, Janne E, Tiina E, Susanna K, Marja-Terttu .S, Pirjo .L, Matti .L and Arja.R (2009);Three factor eating questionnaire-R18 as a measure of cognitive restraint, uncontrolled eating and emotional eating in a sample of young Finnish females; International Journal of Behavioral Nutrition and Physical Activity, 6:41;Pp:1-7
- Arcelus J, Mitchell AJ, Wales J, Nielsen S(2011), Mortality rates in patients with anorexia nervosa and other eating disorders: a meta-analysis of 36 studies,Archives of General Psychiatry ,68(7),Pp:724–731
- Ashakiran & Deepthi R (2012) ,Fast Foods and their Impact on Health; Journal of Krishna Institute of Medical Sciences University,Vol. 1, No. 2,Pp:1-14,ISSN 2231-4261
- Australian Institute of Health and Welfare [AIHW], 2013; Norman et al., 2003
- Aziz .N,,Sailaja D Kallur,and Praveen.K.N,(2014);Implications of the Revised Consensus Body Mass Indices for Asian Indians on Clinical Obstetric Practice;Journal of Clinical Diagnosis Research, 8(5),Pp: OC01–OC03
- Bailey A.P, Alexandra G P, Lauren A C, Laura M H, Ping L, and Sarah E H,(2014); Mapping the evidence for the prevention and treatment of eating disorders in young people; Journal of Eating Disorders, 2:5;Pp:1-12
- BamjiM.S,Kamala.K,G,N.V.Brahmam (2009);Textbook of Human Nutrition;3rd Edition;Oxford and IBH publishing company Pvt.Ltd,Pp:151;ISBN:978-81-204-1742-7
- Barnes A.S,(2012), Obesity and Sedentary LifestylesRisk for Cardiovascular Disease in Women; Texas Heart Institute Journal; Volume 39, Number 2, Pp:224-226
- Beegum M.R ,(2008);The Text book of Food ,Nutrition and Dietetics(Third Revised edition);Sterling Publishers Pvt .Ltd,Pp:234
- Berg.F.M.,(2001);WomenAfraid to Eat;Healthy Weight NetworkHettinger, ND; www.healthyweight.net
- Bipasha M.S and Goon.S (2013);Fast food preferences and food habits among students of private universities in Bangladesh;South East Asia Journal of Public Health ;3(1): Pp :61-64

- Block, J.P.; He, Y.; Zaslavsky, A.M.; Ding, L.; Ayanian, J.Z.(2009), Psychosocial stress and change in weight among US adults. *American Journal of Epidemiology*, 170,Pp: 181-192.
- Borkotoky. K,Sayed.U, and Ashish.K.G,(2015)Intergenerational Transmission of Education in India: Evidence from a Nationwide Survey; *International Journal of Population Research*;Pp;1-11
- Boudewijn Klop, Jan Willem F. Elte, and Manuel Castro Cabezas(2013), Dyslipidemia in Obesity: Mechanisms and Potential Targets, *journal of nutrients*,5(4),Pp: 1218–1240, . doi: 10.3390/nu5041218.
- Brock, D.W; Thomas,O; Cowan, C.D.; Allison, D.B.; Gaesser, G.A.; Hunter, G.R.(Health 2009) Association between insufficiently physically active and the prevalence of obesity in the United States. *Journal of Physical Activity and health*,(6),Pp: 1-5.
- Butler SM, Black DR, Blue CL, Gretebeck RJ(2004),Change in diet, physical activity, and body weight in female college freshman. *American Journal of Health Behaviour*,28 (1): 24-32. 10.5993/AJHB.28.1.3
- Camilleri G.M.,Caroline M , Emmanuelle K.G, Valentina A. Andreeva, France B, Serge H,and Sandrine P(2014); The Associations between Emotional Eating and Consumption of Energy-Dense Snack Foods Are Modified by Sex and Depressive Symptomatology; *The Journal of Nutrition* ; 144,Pp: 1264–1273
- CeperoA.L,ChristineF.FrisardStephenieC.LemonMilagrosC.RosalPh(2017);Association of Dysfunctional Eating Patterns and Metabolic Risk Factors for Cardiovascular Diseaseamong Latinos;*Journal of the academy of nutrition and dietetics* ;<http://dx.doi.org/10.1016/j.jand.2017.06.007>
- Chan R.S.M and Woo. J, (2010);Prevention of Overweight and Obesity: How Effective is the Current Public Health Approach ;*International Journal of Environmental. Research Public Health* , 7,Pp: 765-783; doi:10.3390/ijerph7030765
- ChandraP.S., Sarvath A,Robert P (2012); Are Eating Disorders a Significant Clinical Issue in Urban India? A Survey Among Psychiatrists in Bangalore; *International Journal of Eating Disorders* 45:3, Pp443–446
- Chhaya S, Jadav P(2012); Dietary and lifestyle pattern in relation to overweight and obesity among the medical and nursing students; *International Journal of Research RMS* ;2(3);Pp:9-12
- Connor.O. DB, Jones F, Conner M, McMillan B, Ferguson E: Effects of daily hassles and eating style on eating behavior. *Journal of Health Psychology*, 27,Pp:S20–S31.
- Dallman MF;Stress-induced obesity and the emotional nervous system(2010); *Trends in Endocrinology and Metabolism*; 21,Pp:159–165.
- DarbyA, P Hay, J Mond, B Rodgers and C Owen(2007); Disordered eating behaviours and cognitions in young women with obesity: relationship with psychological status; *International Journal of Obesity*, 31,Pp: 876–882
- Darling CA, McWey LM, Howard SN, Spencer OB (2007) College student stress: the influence of interpersonal relationships on sense of coherence, *Stress and Health* ,23, Pp: 215-229
- DeHart T, Tennen H, Armeli S, Todd M, Mohr C (2009) A diary study of implicit self esteem, interpersonal interactions and alcohol consumption in college students. *Journal of Experimental Social Psychology*, 45 ,Pp: 720-730,2015, 59: 26488 - <http://dx.doi.org/10.3402/fnr.v59.26488>
- Deliens.T, Peter.C, Ilse D.B and Benedicte D(2014); Determinants of eating behaviour in university students: a qualitative study using focus group discussions; *BMC Public Health*; 14:53;Pp:2-12

- Deshpande.S, Michael D. Basil, and Debraz. B(2009) Factors Influencing Healthy Eating Habits Among College Students: An Application of the Health Belief Model, *Health Marketing Quarterly*, 26(2), Pp:145-164,
- Dietz, W.H.; Benken, D.E(. 2009).; Hunter, A.S. Public health law and the prevention and control of obesity. *Milbank Quart*,87, Pp:215-227.
- Eisenberg. D,Emily J. N, Ms Kathryn R, and Nina E. K,(2011) Eating Disorder Symptoms Among College Students: Prevalence, Persistence, Correlates, and Treatment-Seeking;*Journal of American College Health*; 59(8): Pp:700–707.
- Farhud D. D. (2015);Impact of Lifestyle on Health;*Iran Journal of Public Health*, Vol. 44, No.11, Nov, Pp.1442-1444
- Farinelli –A.M. A., Chey T., Bauman A. E., Gill T., James W. P. T, (2007) Age, period and birth cohort effects on prevalence of overweight and obesity in Australian adults from 1990 to 2000. *European Journal of Clinical Nutrition*, 62, Pp: 898–907
- Fernandez K, Samir A. S, Maya .K, YasmeenP; Study regarding overweight/obesity among medical students of a teaching hospital in Pune,India; *Medical Journal of Dr. D.Y. Patil University*; 2014 ;Vol 7 ; Issue 3;Pp:279-283
- Freeman .B, Bridget.K., Stefanie V, and Louise B,(2015); Young adults: beloved by food and drink marketers and forgotten by public health?;Pp:954-961
- Galani.C, Schneider.H (2007); Prevention and treatment of obesity with lifestyle interventions:review and meta-analysis; *International Journal of Public Health* ,52,Pp: 348–359
- Gan WY, Mohd NM, Zalilah MS, Hazizi AS(2011), Differences in eating behaviours,dietary intake and body weight status between male and female Malaysian university students. *Malaysian Journal of Nutrition* , 17(2):Pp213–228.
- GanasegeranK,SamiAR Al-Dubai,Ahmad.M.Q.,Al-abed AA Al abed,,Rizal AM andSyed M. A(2012);Social and psychological factors affecting eating habits among university students in a Malaysian medical school: a cross-sectional study;*Nutrition Journal*;**11**:48;Pp:1-7
- Geliebter A, Ochner CN, Dambkowski CL, Hashim SA(2014): Obesity-related hormones and metabolic risk factors: a randomized trial of diet plus either strength or aerobic training versus diet alone in overweight participants. *Journal of Diabetes and Obesity*; 1: Pp:1–7.
- Global Nutrition Report 2017: India Carries a Serious Burden of Anemia, Obesity and Malnutrition
- Global Nutrition Report: Malnutrition Becoming the “New Normal” Across the GlobeJUN 14, 2016
- Golden N.H., , Debra K. K , , Susan M. S, , Rollyn M. O, Ellen S. R, Andrea K. Garber M K,and Richard E. K,(2015);Update on the Medical Management of Eating Disorders in Adolescents;*Journal of Adolescent Health* ,56 ,Pp:370-375
- Goodpaster BH, Delany JP, Otto AD, et al. Effects of diet and physical activity interventions on weight loss and cardiometabolic risk factors in severely obese adults: a randomized trial. *Journal of American Medical Association*;304(16),Pp: 1795-1802
- Goyal and Julka(2014); Impact of breakfast skipping on the health status of the population; *Indian Journal of Endocrinology and Metabolism* , Vol 18 , Issue 5; ,Pp:683-687
- Hautala LA, Junnila J, Helenius H, Väänänen A-M, Liuksila P-R, Rähä H, Välimäki M, Saarijärvi S(2008); Towards understanding gender differences in disordered eating among adolescents. *Journal of Clinical Nursing*, 17,Pp:1803-1813.

- Higgs S and Thomas J,(2016);Social influences on eating;Current opinion in behavioral sciences,9,Pp:1-6
- Hood MM, Grupski AE, Hall BJ, Ivan I, Corsica J. (2013),Factor structure and predictive utility of the Binge Eating Scale in bariatric surgery candidates.Surgery for Obesity Related Diseases -Journal. ;9(6)Pp:942–948. doi: 10.1016/j.soard.2012.06.013
- Hudson JI, Hiripi E, Pope HG Jr, Kessler RC(2007),The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. Journal of Biological Psychiatry;61,Pp:348–58.
- Hudson JI, Hiripi E, Pope HG Jr, Kessler RC(2007),The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. Biological Psychiatry;61(3),Pp:348-58
- Hysing. M,Ståle.P, KjellM.S,Reidar.J, Astri J .L, Børge .S;Sleep and use of electronic devices in adolescence: results from a large population-based study; BMJ Open 2015;5: e006748. doi:10.1136/ bmjopen-2014-006748.India; Medical Journal of Dr. D.Y. Patil University; 2014 ;Vol 7 ; Issue 3;Pp;279 -283ISSN :1471-2458
- Jagielski AC, Brown A, Hosseini-Araghi M, Thomas GN, Taheri S,(2014), The association between adiposity, mental well-being, and quality of life in extreme obesity. PLoS One.,9(3) , e92859.
- Ko.N,Duong.M T, Nguyen K V, Peter Scheib, Michael Wirsching, and Almut Zeeck.(2015); Disordered eating behaviors in university students in Hanoi, Vietnam;Journal of Eating Disorder 3: 18
- Kothari C.R, (2004);Research Methodology Methods and Techniques(Second Revised Edition; New Age International (P) Limited, Publishers; Pp:59 ;ISBN (13) : 978-81-224-2488-1
- Kothari C.R,(2009),Research methodology,second revised edition,New age international publishers(India),P.196.
- Koupill, Leigh T , Amy H and Gita M(2016); Social patterning of overeating, binge eating, compensatory behaviours and symptoms of bulimia nervosa in young adult women: results from the Australian Longitudinal Study on Women’s Health; Public Health Nutrition: 19(17),Pp: 3158–3168.
- Kumar.H, Rajdeep P and Amandeep K, (2013). Study of Consumption, Behavior and Awareness of Fast Food among University Hostlers. Asian Journal of Clinical Nutrition, 5,Pp: 1-7
- Kuroda T , Yoshiko O, Remi Y , Hiroaki. O(2013) Relationship between skipping breakfast and bone mineral density in young Japanese women;Asia Pacific Journal of Clinical Nutrition; 22(4)Pp:583-589
- Kushner R.N and Choi S.W, (2010). Prevalence of Unhealthy Lifestyle Patterns among Overweight and Obese Adults. Obesity, 18(6),Pp:1160-1167.
- Lang T, R G(2007),Overcoming policy cacophony on obesity: an ecological public health framework for policymakers. Obesity Reviews;8,Pp:S165–S181.
- Lewer.M, Joachim K, Johannes M, Dorothea S, Nadia. N and Silja V,(2017); Effects of a cognitive-behavioral exposurebased body image therapy for overweight females with binge eating disorder: a pilotstudy; Journal of Eating Disorders ; 5:43;Pp:1-12
- Mahan K.L and Stump S.E,Krause’s Food and Nutrition Therapy,International edition 12 e, ,Pp:395, ISBN:978-0-8089-2378-7

- Malik.V S, Matthias B S, and Frank B H(2006); Intake of sugar-sweetened beverages and weight gain:a systematic review; *The American Journal of Clinical Nutrition* 2006;84:274–288
- Marinou K, T D, Antonopoulos AS, Stefanadi E, Stefanadis C,(2010), Obesity and cardiovascular disease: from pathophysiology to risk stratification. *International Journal of Cardiology*.;138:3-8.
- Matsumoto.J, Yoshiyuki H, Noriko N, Daisuke M, Shunichi M,Koutaro Y, Masaomi I, Eiji .S, and Michiko N,(2015);Comparison in decision-making between bulimia nervosa, anorexia nervosa, and healthy women:influence of mood status and pathological eating concerns; *Journal of Eating Disorders*;3:14;Pp:1-10
- McLeod,S.A.(2017);TypeAPersonality;Retrievedfromwww.simplypsychology.org/personality-a.html
- Mouchacca J, Gavin R A and Kylie B,(2013); Associations between psychological stress, eating, physical activity, sedentary behaviours and body weight among women: a longitudinal study; *BMC Public Health* , 13:828Pp1-11
- Mrudula T, Ghafoorunissa, Saravanan N, Reddy GB (2011) Effects of Prenatal and Postnatal Dietary Polyunsaturated Fatty Acids on Retinal Fatty AcidComposition and Gene Expression in Adult Rat. *Journal of Nutrition and Food Science* 1: 102.
- Nakata.Y and Sasai.H (2015); Current review of intervention studies on obesity and the role of physical activity in weight control; *Journal of Physical Fitness Sports Medicine*, 4(4): Pp:321-329
- Nelson MC, Story M, Larson NI, Neumark-Sztainer D, Lytle LA(2008),Emerging adulthood and college-aged youth: An overlooked age for weight-related behavior change. *Obesity reviews*,16(10),Pp:2205–2211
- Nicklas .T A, Carol E O’Neil and Victor L Fulgoni(2014) Snacking patterns, diet quality, and cardiovascular risk factors in adults; *BMC Public Health* ;14:388;Pp:1-6
- Norman GR, Sloan JA, Wyrwich KW,(2003);Interpretation of changes in health-related quality of life: the remarkable universality of half a standard deviation;*Medical Care*.41(5),Pp:582-92.
- Pendergast F.J, Katherine M. Livingstone, Anthony Worsley and Sarah A. McNaughton(2016); Correlates of meal skipping in young adults: a systematic review; *International Journal of Behavioral Nutrition and Physical Activity*; 13:125;Pp:1-15
- Piernas C, Popkin B(2010): Snacking increased among U.S. adults between 1977 and 2006. *Journal of Nutrition* , 140(2):Pp :325–332
- Poobalana AS, Lorna S. A, Amanda Cand William C.S.S(2014) Diet behaviour among young people in transition to adulthood (18–25 yearolds): a mixed method study; *Health Psychology & Behavioural Medicine*; Vol. 2, No. 1, Pp:909–928,
- Poskitt, E.M(2009), Countries in transition: underweight to obesity non-stop? *Ann. Journal of Tropical Paediatrics.*, 29,Pp:1-11.
- Power JJ (2016); Disordered Eating Patterns in University Students and Links with StressCoping; a Literature Review and Discussion; *Journal of Advanced Practices in Nursing*;2:1; doi: 10.4172/2573-0347.1000108
- Ranieri SC, Fusco S, Panieri E, Labate V, Mele M, et al. (2010) Mammalian lifespan determinant p66shcA mediates obesity-induced insulin resistance. *Proceedings of the National Academy of Science USA* 107,Pp: 13420-13425.
- Raspopow K, Abizaid A, Matheson K, Anisman H: Psychosocial stressor effects on cortisol and ghrelin in emotional and non-emotional eaters: influence of anger and shame. *Hormones and Behaviour Journal*, 58,Pp: 677–684.
- Richardson AS, Joanne E. A, Sheryl C. Cand Mary K..M,(2015); Perceived stress, unhealthy eating behaviors, and severe obesity in low-income women; *Nutrition Journal* 14:122;Pp:2-10

- Rubina A, Shoukat S, Raza R, Shiekh MM, Rashid Q, Siddique MS, Panju S, Raza H, Chaudhry S, Kadir M(2009), Knowledge and practice of healthy lifestyle and dietary habits in medical and non-medical students of Karachi,Pakistan. Journal of Pakistan Medical Association , 59(9)Pp:650–655.
- Sacks G, Swinburn B, Lawrence M.(2009); Obesity Policy Action framework and analysis grids for a comprehensive policy approach to reducing obesity;Obesity Reviews.;10(1),Pp:76-86.
- SelbyE .A. , Peter Doyle , Ross D. Crosby , Stephen A. Wonderlich , Scott G. Engel , James D. Mitchell , Daniel Le Grange(2012); Momentary emotion surrounding bulimic behaviors in women with bulimia nervosa and borderline personality disorder; Journal of Psychiatric Research ,46 ,Pp:1492-1500
- ShankarS.Pand GolepuK(2017);Abdominal obesity in primary care;International Journal of Advances in Medicine; 4(4) Pp:915-918
- Sharma V, Singh V (2017) Impact Assessment of Nutrition Education Programme on Nutritional Status of Adolescent Girls. Journal of Nutrition and Food Sciences 7:3,Pp: 1-5,ISSN: 2155-9600,doi: 10.4172/2155-9600.1000597
- Sharma, Manjusha P, Garima (2010) Socio-economic status of working women in Haryana;European Journal of Management ,Publisher: International Academy of Business and Economics; Source Volume: 10 Source Issue: 3;ISSN: 1555-4015
- Shridhar G, Rajendra N, Murigendra H, Shridevi P, Prasad M, et al. (2015) Modern Diet and its Impact on Human Health. Journal of Nutrition and Food Science, 5: 1000430. doi:10.4172/2155-9600.1000430
- Siddiqui A and Anusha N (2012) ; Deleterious Effects of Food Habits in Present Era; Journal of Allergy & Therapy;3:1;Pp:1-7; ISSN:2155-6121
- Silva,T.S, Maria D.C.B.M, Maria A.A.N,Carolina P.F and Nagela. V Cade(2016); Binge eating, sociodemographic and lifestyle factors in participants of the ELSA-Brazil; Journal of Eating Disorders;4:25;Pp:1-6
- Skinner H.H., Jess H, S. Bryn A, and Alison E. F,(2012);. A Prospective Study of Overeating, Binge Eating, and Depressive Symptoms Among Adolescent and Young Adult Women; Journal of Adolescent Health ,50,Pp:478–483
- Srilakshmi B,(2012);Nutrition Science(Fourth Revised Edition); New Age International (P) Limited; Pp:439 ;ISBN: 9788122432237
- Srividhya. N,(2014),“Eating Out Habit of Individuals – An Analytical Study” (With Special Reference to Puducherry City),International Journal of Business and Management Invention ISSN (Online): 2319 – 8028, ISSN (Print): 2319 – 801X www.ijbmi.org ,Volume 3, Issue 6,Pp:38-44
- Sunitha S &Gururaj G; Health behaviours & problems among young people in India: Cause for concern & call for action;Indian Journal of Medical Research, 140,2014, Pp:185-208
- Think India Foundation,(2011),Indian fast food market showcasing high growth potential.Think Indian Foundation, <http://www.thinkindia.net.in/2011/08/indian-fast-food-market-showcasing-high-growth-potential.html>
- Thorndike AN (2011), Workplace Interventions to Reduce Obesity and Cardiometabolic Risk. Current Cardiovascular Risk Report ; 5(1),Pp:79-85. PMID: 22708000.
- TrepanowskiJ. F and Bloomer Richard J;The impact of religious fasting on human health;Nutrition Journal 2010, 9:57,pp-2 -9

- Ural C, Hasan B, Mahir A, Ali S, Zuhail D B, and Fatih C,(2017), Relation of binge eating disorder with impulsiveness in obese individuals,World Journal of Psychiatry,22; 7(2),Pp:114–120.
- Vaida N., “Prevalence of fast food intake among urban adolescent students,” The International Journal of Engineering and Science, vol. 2, Pp. 353–359, 2013
- Vijayakumar, A. and Jayachitra, S(2013); Women entrepreneurs in india - emerging issues and challenges; International Journal of Development Research Vol. 3, Issue, 04, pp.012-017, ISSN: 2230-9926
- Wallis DJ, Hetherington MM(2010): Emotions and eating. Self-reported and experimentally induced changes in food intake under stress. *Appetite* 2009; 52,Pp:355–362.
- Wang Y, Beydoun MA (2007), The obesity epidemic in the United States–gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review and meta-regression analysis. *Epidemiologic Reviews*.;29 Pp:6–28.
- Waugh E. J, Janet P, Rowena R, and Gillian A H,(2007); A prospective investigation of the relations among cognitive dietary restraint, subclinical ovulatory disturbances, physical activity, and bone mass in healthy young women; *American Journal of Clinical Nutrition*;86:Pp :1791–1801.
- World Health Organisation, 2013
- www.indiaonlinepages.com › Population of India
- Youssef NN, Atienza K, Langseder AL, Strauss RS (2008),Chronic abdominal pain and depressive symptoms: Analysis of the national longitudinal study of adolescent health. *Journal of Clinical Gastroenterology and Hepatology*;6,Pp:329 –32
- Zellner DA, Loaiza S, Gonzalez Z, Pita J, Morales J, Pecora D, Wolf A(2006), Food selection changes under stress. *Physiology and Behavioural Journal*; 87:Pp 789–793

APPENDIX I

INSTITUTIONAL ETHICS 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. S. Uma Mageshwari
Associate Professor,
Department of Food Service
Management & Dietetics

Members

Dr. S. Kowsalya
Dr. P.R. Padma
Mr. K. Arulmoli (Legal Expert)
Dr. N.S. Rohini
Dr. A. Saraswathy
Mrs. V. Mangayarkarasi
Dr. Subhashini K. Sripathi
Mrs. S. Radha Devi
Dr. G. Victoria Naomi
Dr. Judith Justin
Dr. Anitha Subash

19th March 2018

To

Ms. Anjitha.K

Department of Food Service Management and Dietetics
Avinashilingam Institute for Home Science and
Higher Education for Women
Coimbatore – 641 043

Dear Anjitha,

Ref: Your proposal No. IHEC/17-18/FSMD/02 entitled
“Dysfunctional eating pattern and the risk of obesity among
young women” submitted for approval of the IHEC on 14th
December.

The Institutional Human Ethics Committee of our University hereby
grants approval to your research proposal No. IHEC/17-18/FSMD/02
entitled “Dysfunctional eating pattern and the risk of obesity among
young women” submitted by you. The Approval number for the
same is AUW/ IHEC/ FSMD -17-18/XPD/02.

We wish you all the best in your research endeavours.

Regards,

Dr. S. Uma Mageshwari
Dr. S. Uma Mageshwari
Member Secretary



APPENDIX II

QUESTIONNAIRE TO ELICIT THE DYSFUNCTIONAL EATING PATTERN

1. Do you regularly restrict your food intake? Yes ☐ No ☐
2. Do you skip meals regularly? Yes ☐ No ☐
3. Do you occasionally go on a diet? Yes ☐ No ☐
4. Do you count calories, fat grams, weigh or measure your food? Yes ☐ No ☐
5. Are you “afraid” of certain foods? Yes ☐ No ☐
6. Do you turn to food to relieve stress or anxiety? Yes ☐ No ☐
7. Do you deny being hungry or claim to feel full after eating very little? Yes ☐ No ☐
8. Do you avoid eating with others? Yes ☐ No ☐
9. Do you feel worse (anxious, guilty, overfull) after eating? Yes ☐ No ☐
10. Do you think about food, eating and weight more than you'd like to? Yes ☐ No ☐

APPENDIX III

QUESTIONNAIRE TO ASSESS THE RISK OF OBESITY AMONG YOUNG WOMEN

I) PERSONAL DETAILS

1. Name :
2. Age :
3. Address :
Telephone :
Email Id :
4. Educational status
Illiterate ☐ Primary school ☐ Secondary ☐ Higher secondary ☐ Graduate ☐
5. Occupation :
6. Monthly Income

7. Family Details

:

S.No	Name of the member	Age (years)	Relationship to the subject	Education	Occupation

8. Do you have a family history of Obesity?

Yes ☐ No ☐

If yes , indicate

FIRST DEGREE

MATERNAL

Both parent ☐

Uncle and Aunt ☐

Single parent ☐

Uncle/ Aunt ☐

SECOND DEGREE

PATERNAL

Both grand parents ☐

Uncle and Aunt ☐

Single grand parent ☐

Uncle/Aunt ☐

THIRD DEGREE

Both great grand parents ☐

Single great grand parent ☐

9. Do you suffer from any health problems : YES ☐ NO ☐

If yes , indicate whether

Anaemia ☐

Any other / specify

II) HEALTH STATUS

I. ANTHROPOMETRIC MEASUREMENTS

Height (cms) : _____

Waist Circumference (cms) : _____

Weight (Kgs) : _____

Hip Circumference (cms) : _____

BODY MASS INDEX :

WAIST HIP RATIO :

II. BIOCHEMICAL ESTIMATIONS

TESTNAME	RESULT	REFERENCE VALUE
Total Cholesterol (mg/dL)		Desirable - <200 mg/dl Borderline -200-239 mg/dl High - >240mg/dl
Triglycerides (mg/dL)		Normal - < 150mg/dL Borderline risk - 150-199 mg/dL High - 200- 499 mg/dL
HDL – Cholesterol (mg/dL)		Low - <40 mg/dL High - >35mg/ dL
LDL – Cholesterol (mg/dL)		Low risk - <100 mg/d Near optimal - 100-129 mg/dL Borderline high - 130-159 mg/dL High - 160 -189 Very high - > 190

III) FAMILY HISTORY

Family history	Mother	Father	Grand parents	Uncle	Aunty	Siblings
Diabetes						
CVD						
Stroke						
Obesity						
Hypertension						
Heart attack						
Dyslipidemia						
Any other						

IV) PERSONAL HABITS

Personal habits	Yes	No	Still continuing	Frequency
Over eating				
Nibbling while cooking				
Eating fast food				
Drinking coffee				
Drinking tea				
Eating fleshy foods				
Skipping Breakfast				
Eating too fast /Not chewing				
Any other				

V) . DIETARY PATTERN

A] Indicate whether you are a :

Vegetarian ☐ Ova vegetarian ☐ Non Vegetarian ☐

Furnish the details on frequency of consumption

S.No	Food	Frequency	Quantity Consumed per serving	Form in which consumed
1	Fish			
2	Mutton			
3	Chicken			
4	Egg			
5	Any other / specify			

B].TYPE OF FAT / OIL USED IN COOKING

S.No.	Fat /Oil	Quantity consumed per day
1	Coconut oil	
2	Gingelly oil	
3	Groundnut oil	
4	Sunflower oil	
5	Corn oil	
6	Rice bran oil	
7	Palm oil	
8	Butter	
9	Ghee	
10	Vanaspathi	

C]. TYPE OF DAIRY PRODUCTS CONSUMED

S.No.	Dairy product	Quantity Consumed per serving	Frequency
1	Cow's milk		
2	Buffalo's milk		
3	Toned milk		
4	Double toned milk		
5	Homogenised milk		
6	Paneer		
7	Cheese		
8	Curd		
9	Butter milk		

D].TYPE OF BEVERAGES CONSUMED

S.No.	Beverage	Quantity Consumed per serving	Frequency
-------	----------	-------------------------------	-----------

1	Coffee		
2	Tea		
3	Soup		
4	Health mix		
5	Porridge		
6	Nil		

E] DO YOU HAVE THE HABIT OF DINING OUT ?

Yes ☐ No ☐

If yes, Give details

Type of food service outlet	Type of food chosen	Frequency

F] INDICATE THE PREFERENCE FOR FOLLOWING FOODS

S.No.	Food Items	Frequency	Consumption Home / Hotel
1	Bajji		
2	Bonda		
3	Cutlet		
4	Puff		
5	Samosa		
6	Pizza/ Pastries		
7	Burger		
8	Panipoori		
9	Bhelpoori		
10	Chilly gobi		
11	Chilly mushroom		
11	Sandwich		
12	Carbonated beverages		
13	cheese		
14	Cakes &biscuits		
15	Bread		
16	Corn Flakes		

G] INDICATE THE PREFERENCE FOR VEGETABLES AND FRUITS

S.No.	Food Item	Amount consumed per serving	Number of servings / day	Frequency
1	Green leaves			

	Drumstick leaves			
	Manathakali			
	Spinach			
	Amaranth			
	Agathi			
	Coriander leaves			
	Curry leaves			
	Mint leaves			
	Cabbage			
2	Roots and Tubers			
	Beetroot			
	Carrot			
	Yam			
	Potato			
	Onion			
	Sweet potato			
	Tapioca			
3	Other Vegetables			
	Brinjal			
	Beans			
	Cluster beans			
	Double beans			
	Bottle gourd			
	Snake gourd			
	Bitter gourd			
	Cucumber			
	Pumpkin			
	Drumstick			
	Cauliflower			
	Ash gourd			
4	Fruits			
	Apple			
	Orange			
	Grapes			
	Watermelon			
	Mango			
	Muskmelon			
	Sweet lemon			
	Pomegranate			
	Amla			
	Guava			
	Sapota			
	Strawberry			
	Banana			
	Papaya			

	Pineapple			
	Tomato			

H] Do you skip meals regularly?

Yes ☐ No ☐

If Yes , Indicate

Breakfast ☐ Lunch ☐ Dinner ☐

I] Are you “afraid” of certain foods?

Yes ☐ No ☐

If Yes , Indicate the fear-inducing foods

S.No.	Fear-inducing foods	Yes	No
1	Caffeine		
2	Starchy foods(rice, potato ,breads ,pasta)		
3	Wheat		
4	Saturated fat(fatty cuts of meat ,butter, egg yolks, bacon)		
5	Soy		
6	Sugar		

J] Do you feel worse (anxious, guilty, overfull) after eating?

Yes ☐ No ☐

If Yes , Indicate

Chest Pains ☐ Heart Palpitations ☐

Lightheadedness and Feeling Full ☐ Indigestion ☐

K] Do you have the habit of taking fasting?

Yes ☐ No ☐

If Yes , Indicate

Festivals ☐ Cultural Belif ☐ Prior to body checkups ☐

L] Do you occasionally go on a diet?

Yes ☐ No ☐

If Yes , Indicate

Vegetarian diet ☐ Raw food diet ☐ Zone diet ☐ Paleo diet ☐

M] Do you have the habit of a period of excessive indulgence in an activity (especially eating)?.

Yes ☐ No ☐

If Yes , Indicate the type of food

Junk foods ☐ snacks ☐ carbonated drinks ☐

N] Do you turn to food to relieve stress or anxiety?

Yes ☐ No ☐

If Yes , Indicate what kind of food?

Ice cream ☐ chocolate ☐ snacks ☐

O] Do You follow any dietary modifications ?

Yes ☐ No ☐

If Yes , Indicate the type of modification

S.No.	Type of modification	Yes	No
1	Reduce salt in cooking		
2	Avoid salt in table		
3	Reduce use of butter / ghee		
4	Avoid deep fried foods		
5	Avoid energy dense foods		
6	Consume more fresh vegetables and fruits		
7	Consume fish in moderation		
8	Use less oil in cooking		
9	Avoid preserved foods		

P] Indicate your actual food intake during the previous 24 hours for 3 days

Day 1	Menu	Quantity
Breakfast		
Mid Morning		
Lunch		
Evening		
Dinner		
Bed time		
Day 2		
Breakfast		
Mid Morning		
Lunch		
Evening		
Dinner		
Bed time		
Day 3		
Breakfast		
Mid Morning		
Lunch		
Evening		

Dinner		
Bed time		

VI) .LIFESTYLE PATTERN

A] Type of personality

Type A ☐ Type B ☐ Type AB ☐ Type D ☐

B] Indicate the activity pattern for the day

Activity	Hours / day
For regular work	
Exercise	
Meditation	
Sleep	
Rest / Entertainment	

If you exercise , furnish details

Type of exercise	Duration	Frequency
Walking		
Jogging		
Aerobics		
Any other / specify		

If you meditate, furnish details

Duration	Frequency

C] Are you under any stress?

Yes ☐ No ☐

If yes, indicate

Familial stress ☐ Occupational stress ☐

Neighbourhood stress ☐ Environmental stress ☐

APPENDIX IV A

NORMAL EATING PATTERN

AID USED:LECTURE NOTES

Normal eating is giving yourself permission to eat sometimes because you are happy, sad or bored, or just because it feels good.

Rules to be followed by a normal eater

- Eat when you are hungry or have a craving
- You must choose the food that you believe which will fullfill you.
- You must enjoy the food with awareness while eating
- You must stop eating when you are full.

HEALTHY EATING HABITS

- Basically a healthy eating habits should be started by making a schedule .
- Before starting any plan, it is important to evaluate your body first.
- Don't skip your meals.
- Do not skip breakfast. It is the time your body will absorb all sorts of nutrients.
- Check the menu and that consists a lots of colourful vegetables
- Do not keep consuming packaged drinks which may look harmles.
- Adopt fruits and vegetables as snacks.
- Take small and frequent meals, give time to your body to digest.
- Be aware of food item that you purchase in supermarket.
- Drink minimum two litres of water everyday.
- Eat at regular intervals.

KEY ELEMENTS OF HEALTHY EATING PATTERNS

A .Healthy eating pattern includes:

- A variety of vegetables from all of the subgroups—dark green, red and orange, legumes (beans and peas), starchy, and other
- Fruits, especially whole fruits
- Grains, at least half of which are whole grains
- Fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products

Healthy eating plate includes whole grains, fruits and vegetables, water, healthy protein and healthy oils

- Eat a variety of whole grains like whole wheat bread, brown rice and limit refined grains like white rice and white bread

- Choose fish, poultry, beans, pulses and nuts, limit red meat and cheese, avoid bacon, cold cuts and other processed meats
- Eat plenty of fruits with all colours.
- Eat more colourful vegetables.
- Use healthy oils like olive oil, sunflower oil and canola oil. Limit Butter, avoid trans fat
- Drink water 6-8 glass per day.

APPENDIX IV B

HEALTHY SNACKING PATTERN

AID USED: LECTURE+BOOKLET

- A snack is a portion of food, smaller than a regular meal, generally eaten between meals
- Snacking helps you to keep you from getting overly hungry in between meals and then reduce overeating at your next meal. Eat a small healthy snack which includes carbohydrate-rich food like whole grains, fruits or vegetables with protein foods like nuts or dairy products for the most filling snacks.

BENEFITS OF HEALTHY SNACKS

- Increase Nutrient Intake.
- Sustain Energy Levels.
- Recovery from Exercise.
- Healthy snacks can help you avoid eating unhealthy foods

IMPORTANCE OF HEALTHY SNACKS

- Prevents overeating
- Keeps blood sugar level steady
- Provide nutrients

FIVE REASONS WHY SMART SNACKING CAN BE A HEALTHY HABIT

- Smart snacking may prevent you from overeating at meal time
- Smart snacking can help you reduce your overall calorie intake for the day
- Smart snacking can help you to work more healthy foods into your day.
- Snacks can help you maintain your physical and mental energy
- A substantial afternoon snack can help control portions at dinner

HEALTHY SNACKS



GREEN GRAM (MOONG) ADAI

CATEGORY: Snack

COOKING TIME: 50minutes

NO. OF PORTION: 5 portions

INGREDIENTS:

Green Gram (Whole Moong with skin)	-	100g
Wheat flour	-	200g
Red chilli powder	-	1 Teaspoon
Turmeric powder	-	1/4 Teaspoon
Asafoetida powder	-	1/4 Teaspoon
Jeeragam (cumin seeds)	-	1/2 Teaspoon
Salt	-	to taste
Oil	-	as required

METHOD AND PREPARATION:

- Soak whole moong in water for about 4 to 5 hours. After soaking, drain the water and grind it coarsely
- Add wheat flour, red chilli powder, asafoetida powder, turmeric powder, cumin and salt. Mix well. Make it into a soft dough and covered for 30 to 45 minutes
- Heat a Tawa. Grease it with little oil.
- Take an orange size dough and put it on the tawa and spread it with your finger
- Pour little oil around the adai. Keep it on medium heat and press the adai with a flat spoon and cook both sides till it become brown and crispy.
- Serve hot

NUTRITIVE VALUE PER PORTION:

Food Item	Energy (kcal)	CHO (g)	Protein (g)	Fat (g)	Fiber (g)	Iron (mg)	Calcium (mg)
Green gram Adai	206 kcal	39.7g	9.6g	0.92g	0.92g	2.74mg	31mg

BLACK GRAM DAL SUNDAL (KARUPPU ULUNDU)

CATEGORY: Snack

COOKING TIME: 15 minutes

NO. OF PORTION: 2 portions

INGREDIENTS:

Black gram Dal (Karuppu Ulundu)	-	100g
Onion	-	20g (Optional)
Green chillies	-	10g
Red chillies	-	10g
Fresh ginger	-	Small pieces
Coconut gratings	-	2 Table Spoon
Curry leaves	-	few
Oil	-	2 Tea spoon
Mustard	-	1/2 Tea Spoon
Asafoetida powder	-	1/4 Tea Spoon
Salt	-	to taste

METHOD OF PREPARATION:

- Soak Black Gram Dal in water for 6 to 8 hours or over night.
- Clean the dal and drain the water.
- Add 2 cups of fresh water along with a pinch of salt.
- Pressure cook for 5 to 6 whistles. (Ensure to cook soft but not mushy).
- Chop onion, green chillies and ginger finely.
- In a kadai add the oil and when it is hot add mustard. When it pops up add asafoetida and red chillies. Add chopped green chillies and ginger. Fry for few seconds. Then add chopped onion and fry till it become translucent. Add curry leaves. Then add the cooked gram along with salt. Mix thoroughly.
- Finally add the coconut gratings and stir well and remove.

NUTRITIVE VALUE PER PORTION:

Food item	Energy (kcal)	CHO (g)	Protein (g)	Fat (g)	Fiber (g)	Iron (mg)	Calcium (mg)
Black gram dal sundal	192kcal	32.64g	13.06g	1.05g	2.4g	2.3mg	91.25mg

GREEN GRAM SPROUTS



CATEGORY: Snack

COOKING TIME: 15 minutes

NO. OF PORTION: 2 portions

INGREDIENTS:

Green gram sprouts	-	100g (Steam cooked)
Red chilli or green chilli	-	10g
Oil	-	1 Teaspoon
Mustard	-	1/2 Teaspoon
Urad dhal	-	1 Teaspoon
Asafoetida	-	a pinch
Curry leaves	-	few
Lemon juice	-	few drops
Coconut gratings	-	1 Tablespoon (optional)
Salt	-	to taste

METHOD AND PREPARATION:

- Soak a cup of green gram in water for atleast 12 hours. Wash well and put it in a muslin cloth and tie it like a bundle. Hang it for another 10 to 12 hours in a warm place.
- In a kadai put the oil and when it is hot add mustard. When it pops up, add urad dhal and fry till it become light brown.
- Add asafoetida, red chillies (cut into pieces), and curry leaves. Fry for a second. Then add the sprouts and salt. Mix well.
- Before removing add lemon juice and coconut gratings. Mix everything well once again.

NUTRITIVE VALUE PER PORTION

Food item	Energy (kcal)	CHO (g)	Protein (g)	Fat (g)	Fiber (g)	Iron (mg)	Calcium (mg)
Green gram sprouts	187kcal	31.53g	13.04g	0.91g	1.91g	2.06mg	45.5mg

MILLET ENERGY BITES WITH ALMONDS, DATES AND

COCONUT RECIPE



CATEGORY: Snack

COOKING TIME: 40 minutes

NO. OF PORTION: 5 portions

INGREDIENTS:

Ragi Flour (Finger Millet)	-	50g
Bajra Flour (Pearl Millet)	-	50g
Dates	-	100g
Almonds , whole	-	100g
Dessicated Coconut Powder	-	100g
Honey	-	30g

METHOD AND PREPARATION:

- Dry roast the ragi and bajra flour in a wide pan over medium heat.
- After about 3 to 5 minutes, remove from the heat and let it cool completely.
- In a mixer grinder, add the millet flours, dates, almonds and coconut flakes.
- Add honey now, and give it quick pulse until the mixture is crumbly and starts to gather into a dough.
- Remove and mold them into lemon sized balls. They can be stored at room temperature. Chilling it in the fridge will keep it fresh for up to two weeks.
- Serve it.

NUTRITIVE VALUE PER PORTION :

Food item	Energy (kcal)	CHO (g)	Protein (g)	Fat (g)	Fiber (g)	Iron (mg)	Calcium (mg)
Millet energy bites with almonds, dates and coconut recipe	263 kcal	31.22g	6.6g	12.48g	6.92g	1.38 mg	110.2mg

SAMAI MILLET KOZHUKATTAI



CATEGORY: Snack

COOKING TIME: 15 minutes

NO. OF PORTION: 4 portions

INGREDIENTS:

Samai millet	-	100g
Rice flour	-	50g
Jaggery	-	75g
Coconut	-	Few pieces
Moong dhal	-	50g
Cardamom Powder	-	A pinch

METHOD AND PREPARATION:

- Dry roast moong dhal in a pan till it slightly golden brown
- Soak it in water for sometimes.
- Dry roast the sathumaavu/multigrain flour in low flame till aroma arises and keep aside. Dry roast coconut pieces too.
- Boil some water and add jaggery to it. Use water just to immerse the jaggery.
- Keep stirring till it dissolves. If it has impurities filter it before going to the next step.
- Add the flour, soaked dhal, jaggery syrup, cardamom powder and coconut pieces and mix well in a vessel. Do this while the syrup is hot.
- Roll it into small balls or any shape of your choice and steam it in an idly pot for 20 minutes.
- Serve hot.

NUTRITIVE VALUE PER PORTION :

Food item	Energy (kcal)	Cho (g)	Protein (g)	Fat (g)	Fiber (g)	Iron (mg)	Calcium (mg)
Samai millet kozhukattai	244 kcal	51.75g	13.55g	1.41g	2g	3.72mg	29.8mg

APPENDIX - IV C
OVERCOMING DYSFUNCTIONAL EATING PATTERN

AID USED : POWERPOINT



DYSFUNCTIONAL EATING

- Irregular eating
- Eat for body image
- Eat for pleasure, stress, loneliness, anger and Boredom
- Weight may be unstable
- Think a lot about food and weight
- Decreased social contact
- May eat very differently compared to pattern when a child
- May have a poor self-concept

DEFINITION

Dysfunctional eating is chaotic dieting, fasting, bingeing, skipping meals or it may be consistently eating much less or *much more than your body wants or needs.*



EMOTIONAL EATING PATTERN

- **Emotional eating** (or stress eating) is using food to make yourself feel better—eating to satisfy emotional needs, rather than to satisfy physical hunger.
- **Emotional eating** typically results in overeating, it can often lead to poor self-esteem, unwanted weight gain, and obesity.



NORMAL EATING

- 3 meals and snacks
- Eat for hunger
- Eat for pleasure
- Eat at social occasions
- Weight is healthy with only small changes

CAUSES OF EMOTIONAL EATING

- Stress
- Stuffing emotions
- Boredom or feelings of emptiness
- Childhood habits
- Social influences



HOW TO STOP EMOTIONAL EATING

- Pleasure
- Give your body other ways to experience feeling good, aside from eating
- Eat only when you're actually hungry
- Don't abandon yourself.

CAUSES

- Having low self-esteem and a lack of confidence.
- Depression or anxiety.
- Feelings of stress, anger, boredom or loneliness.
- Dissatisfaction with your body and feeling under pressure to be thin.
- Stressful or traumatic events in your past



ARE YOU AN EMOTIONAL EATER?

- Do you eat more when you're feeling stressed?
- Do you eat when you're not hungry or when you're full?
- Do you eat to feel better (to calm and soothe yourself when you're sad, mad, bored, anxious, etc.)?
- Do you reward yourself with food?
- Do you regularly eat until you've stuffed yourself?
- Does food make you feel safe? Do you feel like food is a friend?
- Do you feel powerless or out of control around food

SYMPTOMS

- Eating very fast during a binge
- Eating until you feel uncomfortably full
- Eating when you're not hungry
- Eating alone or secretly
- Feeling depressed, guilty, ashamed or disgusted after binge eating



UNCONTROLLED EATING

- The consumption of large quantities of food in a short period of time, typically as part of an eating disorder
- Binge eating is a pattern of disordered eating which consists of episodes of uncontrollable eating



HOW TO STOP?

- Practice stress reduction
- Practice mindfulness in food choices and while eating
- Keep your blood sugar balanced.
- Sleep well. ...
- Find ways to feel full other than food.
- Eat slowly

ARE YOU A BINGE EATER?

- Do you feel out of control when you're eating?
- Do you think about food all the time?
- Do you eat in secret?
- Do you eat until you feel sick?
- Do you eat to escape from worries, relieve stress, or to comfort yourself?
- Do you feel disgusted or ashamed after eating?
- Do you feel powerless to stop eating, even though you want to?

COGNITIVE RESTRAINT

- Cognitive eating restraint (CER), which is defined as the intent to limit food intake to prevent weight gain or to promote weight loss, is encountered frequently in women overweight and normal weight alike.



APPENDIX IV D

FOOD AND MOOD

AID USED: LECTURE+POSTER

- Any nutritious substance that people or animals eat or drink or that plants absorb in order to maintain life and growth is called **food**.

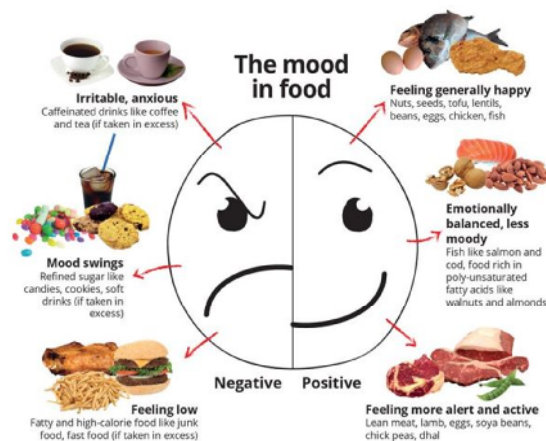
A temporary state of mind or feeling is called **mood**

- The **red foods** are high in solid fats, sugar or caffeine and so may have a negative effect on your mental health
- The **green foods** are high in vitamins, minerals, and omega 3 fatty acids and so may improve your mental health
- Try to drink about 1.2 litres (6 to 8 glasses) a day, and more if you are very active or it is a hot day because dehydration can cause headaches, mood changes, lethargy, poor concentration and slower responses..

What in my food affects my mood?

- Tryptophan is an amino-acid that the body uses to help make serotonin, which is known to modulate mood, emotion, sleep and appetite. It is found in bananas, walnuts, turkey, sunflower seeds, milk, eggs, cheese, brown rice, chicken and fish.
- B-vitamins help your body use to make energy from food. Less consumption of B-vitamins makes you lethargic and depressed. A lack of B6 or B12 can also cause anaemia. Foods that are rich in B-vitamins include whole grains (such as wheat and oats), fish and seafood, poultry and meats, eggs, milk, leafy green vegetables, beans and peas.
- Omega-3 fatty acids are essential fatty acids which are important to your overall health and wellbeing, and notably for nerve and brain function. Good sources of omega-3 are oily fish (such as salmon, mackerel and sardines), omega-3 eggs (check the box), walnuts, flaxseeds and sunflower seeds
- Magnesium and Zinc - can help reduce stress, anxiety and depression. Eat spinach, peppers, broccoli, plain yoghurt, sunflower seeds for magnesium and cheddar cheese, chick peas, baked beans, chicken, mushrooms for zinc.

THE MOOD IN FOOD



TYPES OF EATING DISORDERS

1. Anorexia Nervosa



- Restrict food intake severely;
- May exercise excessively;
- Have excessive weight loss, appear very thin but think they are fat;
- May fast for non-religious reasons;
- Think about food and weight very often;
- May practice rumination (chewing and spitting out food)

2. Bulimia Nervosa

- eat very large amounts very fast;
- may use laxatives in excess;
- may vomit after eating, which may cause dental problems;
- feel worthless;
- may exercise excessively;
- may practice rumination (chewing and spitting out food).
- think about food and weight very often;



3. Binge Eating Disorder

Individuals who suffer from Binge Eating Disorder will frequently lose control over his or her eating



CAUSES OF EATING DISORDERS

Biological factors

- Irregular hormone functions
- Genetics
- Nutritional deficiencies



Psychological factors

- Negative body image
- Poor self-esteem



Environmental factors

- Dysfunctional family dynamic
- Stressful transitions or lifestyle changes
- Cultural and/or peer pressure among friends and co-workers

SIGNS AND SYMPTOMS

- ✓ Constant weight fluctuations
- ✓ Depression
- ✓ Switching between periods of overeating and fasting
- ✓ Engaging in ritualistic eating patterns, such as cutting food into tiny pieces, eating alone, and/or hiding food



RELATIONSHIP BETWEEN NEUROTRANSMITTERS, NUTRIENTS AND MOOD

Brain chemicals, called neurotransmitters, are the front line regulators of our moods. There 's an important connection between the food you eat and the neurotransmitters your brain produces

- **Serotonin** is a neurotransmitter that keeps your mood up-beat. It's made from tryptophan, an essential amino acid abundant in fish, eggs, chicken, turkey and other meats. Iron, zinc, and vitamins B3, B6 and C help facilitate the enzymatic reactions that convert tryptophan to serotonin.
- **GABA** helps the brain filter out extraneous information, enabling you to stay focused and calm. The amino acid glutamine is the principal building block of GABA and is found in halibut, legumes, brown rice and spinach. Vitamins B3, B6 and B12 work in a number of enzyme reactions to help convert glutamine to GABA.
- **Dopamine**, the most powerful of your stimulating neurotransmitters, is responsible for many of the "highs" you feel. The brain converts the amino acid tyrosine – found in protein – to dopamine with the help of folic acid, vitamin B6, magnesium and zinc. You'll find extra tyrosine in almonds, avocados, dairy products, and pumpkin and sesame seeds. A related compound, tyramine, is rich in aged cheeses, such as aged cheddar and Stilton.
- **Norepinephrine** (also known as noradrenaline) is another stimulating neurotransmitter. The brain makes it from dopamine, with the help of the mineral copper and vitamins B6 and C. Like dopamine, norepinephrine is ultimately derived from the amino acid tyrosine

FOODS THAT WILL BOOST YOUR MOOD

Here are some of the best foods to eat to stay healthy and happy:

- Adding protein to your meals can help slow the absorption of carbohydrates in your blood and increase the release of dopamine and norepinephrine, which may improve your mood and energy for several hours after eating. **eg ;,eggs,poultry,seafood and tofu .**
- Vitamins that may be helpful for mood. For example, vitamin D may help relieve mood disorders, such as seasonal affective disorder. Sunlight, before sunscreen application, is often the best source. To get your daily dose of vitamin D, you can also try the following foods;**low fat milk,egg yolks,soymilk**
- The vitamins folate and B-12 may help ease depression. To add folate to your diet, try these foods:**broccoli,lentils,oatmeal,oranges,dark leafy greens**
- Vitamin B-12 can be found in:**cottage cheese,lean beef,salmon**
- Foods, like complex carbohydrates, that contain soluble fiber can slow the absorption of sugar into your bloodstream and increase serotonin, the "feel good" chemical, both of which decrease mood swings. You can find healthy amounts of fiber in:oats,beans ,pears,peas and Brussels sprouts

NUTRITION STRATEGIES FOR MOOD MAINTENANCE

There's more to mood maintenance than eating the right foods. The framework for good mood hygiene begins with implementing some basic nutrition strategies:

- To maintain your mood stable you should eat at regular intervals. Skipping meals makes your body less able to assimilate food, and you are more liable to overeat at the next meal.
- Before you can eat mood-boosting foods, it's important to know which foods to leave off, or limit, on your shopping list. .
- The biggest bad mood culprits are refined carbohydrates, such as sugar. The simple sugars that are in junk foods, such as candy and soda, as well as in everyday foods, such as fruit juice, syrup, and jams, can cause your blood sugar to go up . Refined white starches such as white rice, white bread, and crackers can have the same effect.

APPENDIX IV F

HEALTH FOODS OVER JUNK FOODS

AID USED:LECTURE+QUIZ

Health foods are natural foods without artificial ingredients.

Food that is low in nutritional value, often highly processed or ready-prepared, and eaten instead of or in addition to well balanced meals is called **Junk foods**

HEALTHY FOOD	JUNK FOOD
Rich in nutrients viz. protein, carbohydrate, dietary fibres, fats, vitamins, minerals	Low or no nutrients, but rich in saturated fats, salt, sugars, artificial flavours
Prevents consumers from cancer, diabetes, heart diseases, and obesity	Causes the consumers to have cancer, diabetes, heart diseases, and obesity
Not convenient to access and prepare	Very convenient to access and mostly prepared and ready to eat
Mostly natural	Mostly artificial

LIST OF HEALTHY FOODS

- Whole grains
- Salmon/fish
- Nuts
- Raisins
- Yogurt
- Pomegranate
- Beans

LIST OF JUNK FOODS

- Soft drinks
- Burger
- Sandwich
- French fries
- Pizza
- Crisps
- Chocolates

BENEFITS OF HEALTHY FOODS

- Controls weight
- Improves mood
- Decreased risk of heart disease
- Decreased risk of cancer
- Boosts energy

DISADVANTAGES OF JUNK FOOD

- Stroke risk
- Tooth decay
- Gastrointestinal problems
- It can cause memory and learning problems
- Increases the risk of dementia
- It can cause chemical changes that can lead to depression
- It makes impatient and can cause uncontrollable cravings
- Lessens its ability to control appetite
- Causes excess energy and weight
- Effect insulin and Type 2 Diabetes
- Cause obesity and Cardiovascular diseases
- Increase the risk of digestive problems
- Cause skin,joint and bone problems

COMPLICATIONS OF OBESITY

- Coronary heart disease
- High blood pressure
- Stroke
- Type 2 diabetes
- Cancer
- Gallstones
- Osteoarthritis
- Infertility or irregular periods

QUIZ

1.Carbohydrates provide the major source of our energy intake. Which of the following are rich in carbohydrates?

a) bread and rice b) beef and pork c) eggs and cheese d) chicken and turkey

2. Which of the following counts as a vegetable serving?

a) 1 medium-sized tomato b) 1 cup leafy vegetables c) 7 or 8 baby carrots d) all of the above

3. What do the words “reduced fat” mean on the food label?

a) no calories b) at least 25 percent less fat per serving when compared with a similar food

- c) contains trace amounts of fat
- 4.. Which of the following is considered a healthy fat?
- a). Omega-3 fat b.)Monounsaturated fat c). Trans fat d). Saturated fat e) a and b
5. Carbohydrates also referred to as ‘carbs’ or CHO’s can be broken down into two categories: simple sugars and complex carbohydrates. Example of a simple sugar is
- a) Fruits b) Rice c)Milk d) Pasta
- 6.Excellent sources of complex carbohydrates are
- a)Bread b) Rice c)Potatoes d) All of the above
- 7.Fats are categorized under 2 main groups Saturated fats and UnSaturated fats.The common sources of such fats are from
- a) Vegetables b) Animals c)Fruits d) Whole grains
- 8.Which food is low in fats.
- a)Whole-grain breads b) Donuts and muffins c) Potato chips d)Milk
- 9.Name three types of healthy foods
- a) Fruits ,Vegetables ,Meat b) Sodas ,Milk ,Bread c) Rice ,Hamburger,Milk
- d)Fruits ,Biscuits ,Vegetables
10. Which is the best carbohydrate choice?
- a)White bread b) whole –wheat bread c) White rice d)Fruit juice

APPENDIX V

CHECKLIST TO ELICIT DETAILS ON HEALTH CONCEPT FROM YOUNG WOMEN

** Three scores for each correct answer

** Maximum Score : 36

Name :

Age :

1.Do you know which type of foods are harmful to your health?

Yes ☐ No ☐

If yes ,please tick

Whole grains☐ Salmon/fish ☐ Nuts ☐ Burger☐

2. Which type of foods cause negative moods?

Chicken ,beans,lenrils ☐

Eggs,soybeans ,chickpeas ☐

Coffee ,tea,soft drinks ☐

Salmon ,walnuts,almonds ☐

3. Which type of foods is abundant in tryptophan?

broccoli ,plain yogurt ☐ walnuts,brownrice , egg ☐ meat beans, peas ☐

4. Which type of foods are high in protein?

Whole grains,beans ☐ milk ,egg ☐ carrot,onion ☐

5. Do you skipping meals?

Yes ☐ No ☐

If yes , tick the reasons for skipping?

Relieve stress ☐ Escape from worries ☐ Depression ☐

6.Do you consume fruits and vegetables as snacks?

Yes ☐ No ☐

If yes the form in which consume

Whole ☐ salad ☐ juice ☐

7. Do you consume fried foods and fast foods?

Yes ☐ No ☐

Which type of food you use to reduce stress, anxiety and depression?

Spinach ☐ banana ☐ walnuts ☐ milk ☐

8. How many glasses of water should you drink in each day?

a) 2 b) 4 c) 5 d) 8

9.How many servings of meat products should you consume per day?

1-2 servings ☐ 2-3 servings ☐ 4-5 servings ☐

10.How much amount of milk do you consume per day?

100ml ☐ 250ml ☐ 400ml ☐

11.Which type of foods gives you the feeling of more alert and active?

Soybeans,chickpeas ☐ cookies,candies ☐ tea,coffee ☐