

CORRELATION BETWEEN PREVALENCE OF OBESITY, OLIGOMENORRHEA AND SKIPPING BREAKFAST AMONG HOSTEL GIRLS

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Science degree in Clinical Nutrition and Dietetics

by
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**DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS
SCHOOL OF ALLIED HEALTH SCIENCES**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of Vayigandla Lakshmi Mrudula (40736009) who carried out the project entitled "Correlation between prevalence of obesity, oligomenorrhea and skipping breakfast among hostel girls " under my supervision from JUNE 2022 to MAY 2023.

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CORRELATION BETWEEN PREVALENCE OF OBESITY, OLIGOMENORRHEA AND SKIPPING BREAKFAST AMONG HOSTEL GIRLS.

ABSTRACT :

Globally, increasing rates of obesity are one of the most important health issues. It has been suggested that there is a link between skipping breakfast & obesity and oligomenorrhea. Although increasing attention has been paid to the adverse effects of skipping breakfast on quality of life, there are very few reports concerning the relationship between skipping breakfast and reproductive function. Therefore, we examined this issue by conducting a questionnaire survey of female hostel girls aged from 18 to 23 years old. This correlation can be assessed through using excel, one hot encoding, google collab, python software. In our findings we found that 34% are skipping breakfast regularly. In this study we will find whether skipping breakfast is related with obesity and oligomenorrhea..

STUDY METHOD:

Breakfast intake demonstrated a protective effect against fat and overweight Breakfast is crucial since it was taken after a long period of fasting. Among this 18-23 age group skipping breakfast might lead to lack of concentration, premenstrual symptoms and other adverse effects. In this study we mainly focused on prevalence of obesity ,oligomenorrhea among hostel girls. A correlational study method was adopted. Around 214 hostel girls belonging to 18 to 23 years who were willing to participate in the survey questionnaire where randomly selected from Sathyabama Institute of Science and Technology, Chennai. The data were collected by a questionnaire which includes age, height, weight, BMI(Body Mass Index),skipping breakfast, flow, rhythm, pain, dietary habits. The statistical analysis were conducted using excel, one hot encoding, google collab, python software among association between skipping of breakfast & obesity and association between skipping breakfast & oligomenorrhea.

RESULT & DISCUSSION:

As the study was conducted with 214 samples, among them, only 73 were skipping breakfast. So, among 73 samples, the prevalence of obesity and oligomenorrhea was overlooked. After analysing the data 13.6% were suffering from oligomenorrhoea and 1.8% were obese. and among that samples who were skipping breakfast was suffering with oligomenorrhea But obesity rates are less with skipping breakfast.

CONCLUSION:

The statistical analysis confirmed that skipping breakfast is not correlated with obesity but there is a high correlation found between skipping breakfast and prevalence of oligomenorrhoea.

Key words: Obesity, oligomenorrhea, skipping breakfast

LIST OF ABBREVIATIONS

ACRONYM	ABBREVIATION
BMI	Body Mass Index
cm	Centimetre
kg	Kilogram
Kg/m ²	Kilogram per meter square
PMS	Premenstrual syndrome symptoms

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CHAPTER-1

INTRODUCTION

MENSTRUAL CYCLE:

Periodic variations in hormone levels that cause the uterus and ovaries to physically alter to prepare the female body for conception is known as the menstrual cycle. The menstrual cycle lasts 28 days on average in adult women, however it can last anywhere from 21 and 40 days. The cycle repeats until menopause, or approximately age 50, at which point ovarian function stops and the woman's reproductive life ceases. The two occurrences of ovulation and menstruation make up the menstrual cycle.(Stanley George Clayton,2023)

MENSTRUATION:

Menstruation is the monthly shedding of the lining of uterus. Menstruation is also known by the terms menses, menstrual cycle or period. Menstrual blood which is partly blood and partly tissue from the inside of your uterus flows from uterus through cervix and out of body through vagina.

Menstruation is driven by hormones. Hormones are chemical messengers in a body. pituitary gland (in brain) and ovaries (part of reproductive system) make and release certain hormones at certain times during menstrual cycle.(Van der Heijden, A.A.,2017)

These hormones cause the lining of your uterus to thicken. This happens so that if a pregnancy would occur, an egg can implant into uterine lining. Hormones also cause ovaries to release an egg (ovulation). The egg moves down fallopian tubes, where it waits for sperm. If a sperm doesn't fertilize that egg, pregnancy doesn't occur. The lining of the uterus breaks down and sheds. This process known as menstruation.(Fujiwara T.,)

PHASES OF MENSTRUAL CYCLE:

The rise and fall of hormones trigger the steps in menstrual cycle. Hormones cause the organs of your reproductive tract to respond in certain ways. The specific events that occur during menstrual cycle are:

- **The menses phase:** This phase, which typically lasts from day one to day five, is the time when the lining of your uterus sheds through vagina if pregnancy hasn't occurred. Most people bleed for three to five days, period lasting only three days to as many as seven days is normal.
- **The follicular phase:** This phase typically takes place from six to fourteen days. During this time, the level of the hormone estrogen rises, which causes the lining of your uterus (the endometrium) to grow and thicken. In addition, another hormone follicle stimulating hormone (FSH) causes follicles to grow in ovaries . During days 10 to 14, one of the developing follicles will form a fully mature egg (ovum).
- **Ovulation:** This phase occurs roughly at about day 14 in a 28-day menstrual cycle. A sudden increase in another hormone luteinizing hormone (LH) causes ovary to release its egg. This event is called ovulation.
- **The luteal phase:** This phase lasts from about day 15 to day 28. Where egg leaves ovary and begins to travel through fallopian tubes to uterus. The level of the hormone progesterone rises to help prepare uterine lining for pregnancy. If the egg becomes fertilized by sperm and attaches itself to uterine wall (implantation), becomes pregnant. If pregnancy doesn't occur, estrogen and progesterone levels drop and the thick lining of uterus sheds during the period.(Colella M,2020)

MENSTRUAL DISORDERS:

Oligomenorrhea:

- This condition refers to a reduced frequency of menstrual cycles or light bleeding.

- When the period cycle extends 35 days, it could be oligomenorrhea.

Amenorrhea: Lack of bleeding during the monthly cycle is known as amenorrhea.

- This is common in individuals whose BMI is less than 18.5 kg/m² or having the eating disorder anorexia nervosa.
- It is of two types — primary amenorrhea (menstrual periods have never begun) and secondary amenorrhea (absence of menstrual periods for three consecutive cycles)
- Symptoms include nipple discharge, hair loss, and headache.

Dysmenorrhea (painful menstrual periods):

- This condition is characterized by extremely painful periods seen as menstrual cramps.
- This occurs due to strong uterus contractions that affect oxygen supply in nearby blood vessels. (Kostopoulou E,2020)

Menorrhagia:

- Prolonged and heavy menstrual periods.
- Periods last for more 7 days that involve excessive bleeding with 'flooding' or clot.
- Causes of menorrhagia include hormonal imbalances and bleeding disorders.

Premenstrual dysphoric disorder (PMDD):

This is a more extreme version of PMS and involves more severe mood swings, anxiety, depression, and impaired sleep and appetite. Cramps, constipation and bloating are also common.

Fibroids:

This refers to benign tumors in the uterus that lead to prolonged bleeding, severe cramps, frequent urination, and anemia.(Deltsidou A, et.al.,2010)

Blood Tests:

- FSH Levels; if increased, they show primary ovarian insufficiency.(Siristatidis,2020)
- TSH levels; if decreased, then it shows hyperthyroidism.(Colella et.al., 2020)
- Prolactin levels; if increased, then prolactinoma may be the cause.(Kalsi AK,2019)
- LH levels; the ratio of FSH/LH is useful in diagnosing polycystic ovarian disease.
- Free testosterone levels; increased in congenital adrenal hyperplasia and polycystic ovarian disease.(Kostopoulou E,2020)
- 17 –OH levels; these are useful to diagnose congenital adrenal hyperplasia as a cause of oligomenorrhea.
- Overnight dexamethasone suppression test; is done to diagnose Cushing syndrome as a cause of oligomenorrhea, especially if the patient presents with signs of this condition.
- HbA1C (Deltsidou A, et.al.,2010)

OLIGOMENORRHEA

Oligomenorrhea is the medical term for a woman's menstrual blood flow that is inconsistent and out of control. After menarche, after childbirth, or during the perimenopausal stage, a change in menstrual flow is typical. Nevertheless, oligomenorrhea is the term used when a woman reports a menstrual cycle that lasts longer than 35 days or four to nine cycles per year.

In the general population, oligomenorrhea affects 13.5% of women. For 4 to 10% of women of reproductive age who experience oligomenorrhea, the cause is a polycystic ovarian condition (from puberty to menopause). 6 to 60% of sportsmen and 11 to 44 percent of dancers, respectively, report experiencing oligomenorrhea at some point in their lives.(Hennegan J,2020)

CAUSES OF OLIGOMENORRHEA:

A condition known as oligomenorrhea causes sporadic or mild menstrual periods in women. There are numerous major categories into which the causes of oligomenorrhea can be divided:

PCOS, also known as polycystic ovarian syndrome. Together with the development of fluid-filled ovarian cysts and increased levels of the male hormones known as androgens, PCOS leads to an imbalance in the levels of female hormones. PCOS may affect up to 10% of American females.

In Cushing syndrome, body either produces too much cortisol on its own or receives too much cortisol from certain drugs.

In Prolactinoma, Pituitary gland, a little gland near the base of the brain, produces excessive amounts of prolactin as a result of prolactinoma, a noncancerous growth. The hormone called prolactin is required for lactation following pregnancy. Infertility can result from prolactinomas, which can account for 40% of all pituitary gland tumours.

Congenital adrenal hyperplasia, This hereditary condition causes adrenal glands to produce insufficient levels of the enzymes necessary to produce particular adrenal hormones.

Pelvic inflammatory disease , PID is typically observed when a sexually transmitted disease is left untreated.

Asherman's syndrome, Scar tissue in the uterus or cervix of women with Asherman's syndrome can interfere with conception.

Primary ovarian syndrome, Earlier, this illness was known as premature ovarian failure or premature menopause. Ovaries start to function differently in this circumstance. They might not release an egg or make the proper amounts of estrogen and progesterone.

Hyperthyroidism, The condition known as hyperthyroidism occurs when the thyroid produces excessive amounts of thyroid hormones, which enter the bloodstream and alter the menstrual cycle.

Eating Disorders including bulimia, anorexia, binge eating, and others can impair body, particularly reproductive organs.(Yumna, R., 2021)

Adolescent females are more prone to developing bulimia nervosa, which is marked by binge eating and incorrect compensatory behaviours to avoid weight gain. (BC, 2015)

RISKS FACTORS OF OLIGOMENORRHEA:

Oligomenorrhea can cause a number of health difficulties if left untreated, including endometrial cancer, osteoporosis, acne, cardiovascular problems, neurological diseases, infertility, and endometrial hyperplasia (when too many cells accumulate in the uterine lining).

- **Infertility:** Untreated oligomenorrhea can lead to infertility in polycystic ovarian disease and primary ovarian insufficiency due to anovulation, impaired endometrium required for implantation in Asherman syndrome, fibrosis that occur as a result of pelvic inflammatory disease and metabolic derangement that occur in uncontrolled diabetes that makes pregnancy difficult.
- **Endometrial Hyperplasia:** Oligomenorrhea that goes untreated for years can lead to endometrium proliferation and thus resulting in endometrial hyperplasia.
- **Endometrial Cancer:** Endometrial hyperplasia is a precursor for endometrial cancer. Oral contraceptive pills that contain estrogen and progesterone are protective against endometrial cancer.
- **Osteoporosis:** The main source of estrogen in the body is developing ovarian follicle that is lost due to anovulation in oligomenorrhea. This decrease in estrogen leads to osteoporosis.

- **Cardiovascular Problems:** Estrogen is cardioprotective. Lack of estrogen due to anovulation leads to increase risk of myocardial ischemia.
- **Neuropsychiatric Complications:** Anxiety, hallucination, delusion are psychiatric problems. Neurologic symptoms are involuntary movements in face and lips, anorexia, and asthenia. (Melinda Ratini. MD.DO. 2021)

SYMPTOMS OF OLIGOMENORRHEA:

Missing a period or a menstrual cycle that occasionally behaves strangely is not unusual and does not always indicate a problem. A person's menstrual cycle will fluctuate slightly throughout the course of their lifetime.

Several variables may have a short-term impact on the hormones that affect the menstrual cycle. But if a person's menstrual cycles change drastically overnight and don't go back to how they've been for the majority of their menstrual life, it's critical to identify the alteration's root cause.

- Having lesser than nine periods per year
- Irregular menstrual cycles
- Lower frequent periods than usual(Rebar R.,2022)

OBESITY:

Obesity is a condition where a person has accumulated abnormal or excessive body fat that causes negative effects on health. For an individual, obesity is usually the result of an imbalance between calories consumed and calories expended. An increased consumption of high calorie foods, without an equal increase in physical activity leads to an increase in weight. Decreased levels of physical activity will also result in an energy imbalance and lead to weight gain.

World Health Organization (WHO) defines overweight and obesity as abnormal or excessive fat accumulation that presents a risk to health. A simple measure commonly used to classify overweight and obesity in adults is body mass index (BMI). BMI is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2). WHO identifies overweight when BMI is greater than or equal to 25; and obesity when BMI is greater or equal to 30.(WHO,2016)

CAUSES:

Overweight and obesity kills more people than underweight and act as a predisposing factor for non-communicable diseases such as cardiovascular diseases (heart attack and stroke), diabetes, musculoskeletal disorders (osteoarthritis), some cancers (including breast, ovarian, prostate, liver, gallbladder, kidney, and colon).

Obesity during childhood also causes breathing difficulties, increased risk of fractures, hypertension, and psychological effects. In later life with high chances of obesity, cardiovascular diseases, diabetes can lead to disability and premature death.(WHO,2016).

One certain risk factor for becoming obese is having obese parents. (Birbilis, 2013)

Gaining and maintaining extra weight can be attributed to numerous factors. They include heredity, food, inactivity, environmental influences, and environmental factors.

Food and activity: People gain weight when they eat more calories than they burn through activity. This imbalance is the greatest contributor to weight gain.

Environment:

- It is challenging for people to be physically active without nearby parks, sidewalks, and affordable gyms.
- When Americans consume more calories as a result of eating larger meals, maintaining a healthy weight requires even more exercise.
- Some people lack access to stores that sell reasonably priced nutritious items, like fresh fruits and vegetables.
- Food advertising encourages people to buy unhealthy foods, such as high-fat snacks and sugary drinks.(Wang S,2017)

Genetics:

Genes can directly cause obesity in such disorders as Prader-villi syndrome. A person's predisposition to weight gain may also be influenced by their genes.

Health conditions and medications:

Some hormone problems may cause overweight and obesity, such as underactive thyroid, cushing syndrome and polycystic ovary syndrome.

Moreover, several corticosteroids, antidepressants, and epileptic medications may result in weight gain.

Stress, Emotional factors and Poor sleep:

Also, studies have shown that people are more likely to be overweight or obese the less sleep they get. This is partially due to the fact that hormones generated when people sleep help to regulate overall appetite and how much energy that body uses. (<https://www.nichd.nih.gov/>,2021)

GRADES OF OBESITY:

Three distinct stages of obesity, each dependent on a variety of factors, have been identified by the World Health Organization (WHO). The purpose of determining these levels is to evaluate the risk of any secondary diseases brought on by obesity.

Grade 1 obesity:

When the BMI is between 30 and 34, health professionals define grade 1 obesity (mild obesity) as present. The most likely complications are:

- High blood pressure
- Diabetes mellitus type 2
- Myocardial infarction
- Stroke

Grade 2 obesity:

When the BMI is between 35 and 39.9, health professionals define grade 2 obesity (moderate obesity) as present. Hence, there is a greater chance of secondary illnesses. Heart attacks and strokes in particular are substantially more common than usual.

Grade 3 obesity:

Obesity grade 3 (the most severe kind of obesity) begins to develop when the BMI score rises above 40.(biomes.world) (A., 2017)

COMPLICATIONS OF OBESITY:

Several issues have been connected to obesity. If left untreated, it could result in:

- Type 2 diabetes: In order to regulate blood sugar levels, the body requires insulin, which can be impaired by obesity. Insulin resistance and diabetes are more likely to occur as a result.
- High blood pressure(Hypertension)
- Heart disease, Stroke: High blood pressure and abnormal cholesterol levels, which are risk factors for heart disease and strokes, are more likely to occur in obese people.
- Certain cancers: The chance of developing cancers of the uterus, cervix, endometrial, ovary, breast, colon, rectum, oesophagus, liver, gallbladder, pancreas, kidney, and prostate may rise as a result of obesity.
- Digestive problems: Heartburn, gallbladder illness, and liver issues are all more likely to occur in obese people.
- High cholesterol
- Sleep apnoea and other breathing problems: Obesity increases the risk of sleep apnea, a potentially dangerous condition where breathing regularly stops and starts while you sleep.

- Osteoarthritis(particularly of the knees): Obesity increases the pressure on weight-bearing joints and stimulates inflammatory processes in the body. These components might result in issues like osteoarthritis.(Rani.R 2021)

BREAKFAST:

Breakfast is sometimes referred to as the most significant meal of the day, and new research has linked it to improved weight management, reduced cardio-metabolic risk factors, and improved cognitive function.

From a physiological perspective, breakfast is unique among our meals in that it is eaten after the longest of our postprandial fasts, in this instance an overnight fast. (Andersen.B., 2013)

In the majority of countries, milk and dairy products used to make up the bulk of morning meals as well as serve as a significant source of vitamins and minerals like calcium, vitamin D, magnesium, or phosphorous. (Górska-Warsewicz, 2019)

From a gastronomic point of view, breakfast has historically been the simplest of our meals in terms of preparation, dating back to Greek and Roman breakfasts (ariston and lentaculum, respectively). This is because it has typically consisted for centuries of a simple meal of bread, cheese, honey, oil, and possibly wine.

Thomas Cogan, an English school master in Manchester, in describing the skipping of breakfast, argued that to “suffer hunger long filled the stomach with ill humours”. While breakfast meant simple foods for the peoples, including gruels based on oats, rice and other cereals, began to include eggs and meat as a component of breakfast. (Engs, 1991)

A breakfast quality index (BQI) has been created by German studies that simply assesses how well morning food and nutrient intakes conform to some predefined standard of consumption of particular nutrients. (Monteagudo C., 2013).

IMPORTANCE OF BREAKFAST:

Breakfast intake demonstrated a protective effect against fat and overweight. (Monzani, 2019). Breakfast is crucial since it has a negative correlation with body fat, which makes it important. (Gilardini, 2015).

Additionally, some research found that eating breakfast has a beneficial impact on cognitive function in both kids and teenagers. (Rampersaud, 2009).

Furthermore, current findings from several randomised controlled trials do not generally show a positive impact of breakfast consumption on weight loss. (LeCheminant, 2017)

Daily breakfast consumption has been shown to have a variety of positive effects on psychosocial and health behaviours, including increased levels of physical activity and memory recall as well as enhanced cognitive function. (Rani R, 2021)

Carbohydrate intake is especially helpful for the brain after night fasting since it diminishes the production of cortisol levels, thereby reducing the “stress” signal. (Lee SA, 2017)

SIDE EFFECTS OF SKIPPING BREAKFAST:

A worldwide survey in 2010 found that between 1.7% and 30% of persons skipped breakfast. (BA, 2010)

Skipping breakfast is associated with mental health issues such stress, depression, lower happiness scores, suicidal behaviour, shorter sleep duration, nocturnal sleeping issues, and poor sleep quality. (HJ, 2019).

Teenagers and emerging adults who skip breakfast are also more likely to engage in sedentary behaviour, inactivity, and substance use, such as drinking and smoking. (Wang M, 2016)

Breakfast skipping increased the relative risk of overweight, obesity, gain of weight, BMI, or WC, respectively. (Kito, 2019), Additionally, the study by van der Heijden et al.

men who skipped breakfast showed a 15% increased risk of ≥ 5 kg weight gain compared to men who did eat breakfast. (Van der Heijden, 2007)

Although persons who routinely skip breakfast tend to have higher body weights than those who don't, research shows that there is little evidence that skipping breakfast actually causes this difference. (Sievert, 2019)

Beyond this, research has shown that eating habits, such as missing breakfast, are linked to insulin resistance and the risk of type 2 diabetes in addition to weight gain and obesity. (RA, 2013)

There is growing evidence, while it is still limited, that skipping breakfast increases the risk of being overweight or obese, dyslipidemia, hypertension, type 2 diabetes, metabolic syndrome, coronary heart disease, and cerebrovascular illness. (Ballon, 2019)

Regular meals helps the body maintain a stable rhythm throughout the long history of human evolution, while irregular breakfast has been implicated as a major factor altering the biological clock (E, 2019)

Skipping breakfast can also affect the regulation of hypothalamic-pituitary-adrenal axis on blood pressure, further causing hypertension in the morning. (TS, 2016)

A lot of studies have shown that skipping breakfast can dramatically reduce satiety, which encourages people to eat more at lunch and further boosts the release of hunger-related hormones linked to increased glucose responses and obesity. (JA, 2018)

Musse et al find out that within 30 days after hospital discharge, the relation between skipping breakfast and late-night dinner increased the risk of death, reinfarction, and postinfarction angina four to five times. (GN, 2020)

CHAPTER-2

LITERATURE REVIEW

Stating the obvious, we typically eat different foods at different times of day. While much of this variation is likely down to cultural factors, the dietitians also have plenty to say on the matter of *what* we should be eating and drinking *when*, in order, for instance, to lose weight, or else to help enhance our cognitive performance during the course of the day. In this review, I want to take a closer look at the psychological science behind the first meal of the day. Finally, I summarize a number of the current trends in the kinds of breakfast items that are becoming more/less popular, and consider what may be driving them. Energy intake of 15-30% is recommended per day for breakfast consumption (Spence, 2017)

Wadolowska et al. (2019) in their study among teenagers found that meal & diet skipping rates are reported to be higher in young adults. The sample consisted of 1566 fourth and fifth grade elementary school students (11-13 years). The study was designed as a cross-sectional study. Data related to the consumption of selected food items and meals, physical activity, screen time, sociodemographic factors, and nutrition knowledge (all self-reported) were collected (in 2015-2016) with a short form of a food frequency questionnaire. A total of 17.4% of teenagers frequently skipped breakfast (4-7 days/week), 12.9% frequently skipped a meal at school (3-5 school days/week), while 43.6% skipped both of these meals a few times a week. In comparison to "never-skippers," "frequent breakfast skippers" were more likely to be overweight/obese (odds ratio, OR 1.89; 95% confidence interval, 95%CI 1.38, 2.58) and centrally obese (OR 1.63; 95%CI 1.09, 2.44), while skippers a few times a week of both of these meals were more likely to be overweight/obese. The study shows that skipping both of these meals a few times a week was associated with general adiposity and also strengthens previous evidence showing the association of frequent skipping breakfast with general and central adiposity.

Obesity is the excessive or abnormal accumulation of fat or adipose tissue in the body, which can affect health (WHO.int, 2016)

In a study by Horikawa et al. (2011), spotted that people in the lowest category were reported to be 75% more likely to be overweight / obese than those in the highest

category. In Western countries, skipping breakfast is associated with a high prevalence of overweight and obesity. This meta-analysis aimed to determine if the same relationship exists in Asian and Pacific regions. Nineteen studies (93,108 total participants and 19,270 overweight or obese cases) were included. The pooled OR [95% confidence intervals (CI)] of overweight or obesity for the lowest vs. highest category of breakfast frequency was 1.75 [1.57 to 1.95] ($P < 0.001$)

Fujiwara and Nakata, (2010) in their study among post-adolescent female college students, absorbed a higher incidence of menstrual irregularity in the breakfast skipping group. Therefore, they examined this issue by conducting a questionnaire survey of female college students aged from 18 to 20 years old. The 5 annual surveys of questionnaire demonstrated that the severity of dysmenorrhea was significantly higher in the population that skipped breakfast. The incidence of irregular menses was also higher in the population that skipped breakfast, although there was no difference in the incidence of premenstrual symptoms. The group that skipped breakfast showed a tendency to suffer from constipation. In addition, despite no difference in body mass index, there was a significantly higher incidence of a self-perception of poor general health among the group that skipped breakfast

Rong S reported that skipping breakfast increases the risk of obesity, hypertension, hypercholesterolemia, type 2 diabetes, metabolic syndrome, coronary heart disease, and cardiovascular death. Among the 6,550 participants (mean age 53.2 years; 48.0% male) in this study, 5.1% never consumed breakfast, 10.9% rarely consumed breakfast, 25.0% consumed breakfast some days, and 59.0% consumed breakfast every day. During 112,148 person-years of follow-up, 2,318 deaths occurred including 619 deaths from cardiovascular disease. After adjustment for age, sex, race/ethnicity, socioeconomic status, dietary and lifestyle factors, body mass index, and cardiovascular risk factors, participants who never consumed breakfast compared with those consuming breakfast everyday had hazard ratios of 1.87 (95% confidence interval: 1.14 to 3.04) for cardiovascular mortality and 1.19 (95% confidence interval: 0.99 to 1.42) for all-cause mortality. (S, 2019)

Fujiwara T(2007),stated that young women who are currently dieting have more irregular periods and that dieting during adolescence has long-lasting negative effects on young women's reproductive health. Considering that reproductive organs

extensively develop, grow, and mature during adolescence and young adulthood, these periods are critical for establishment of the female reproductive function. Consequently, breakfast skipping during these stages may impair functional development and maturation of the reproductive organs, inducing the latent progression of obstetrics and gynecologic disorders.

Rampersaud GC (2005), summarized the results of 47 studies examining the association of breakfast consumption with nutritional adequacy (nine studies), body weight (16 studies), and academic performance (22 studies) in children and adolescents stated that Adults in American health research studies have revealed that those who skip breakfast are five times more likely to become obese than those who eat breakfast. Although the quality of breakfast was variable within and between studies, children who reported eating breakfast on a consistent basis tended to have superior nutritional profiles than their breakfast-skipping peers.

Hirao(2010),A suggested that eating breakfast is more crucial for resetting the body's biological clock than the time at which dinner is consumed; skipping breakfast results in a shift in the clock gene's phase of expression, leading to a nocturnal lifestyle pattern that may be linked to obesity. In conclusion, the present results clearly demonstrate that food-induced entrainment of the liver clock is dependent on both food volume and the starvation interval between two meals. Therefore, normal feeding habits may help to maintain normal clock function in the liver organ.

Vanitallie(2006), TB has been demonstrated that irregular eating habits, such as skipping breakfast and eating dinner at a late hour, can result in an abnormal metabolism and possibly lead to obesity. Yet, the evidence is increasingly strong that the neurophysiologic and metabolic mechanisms responsible for the control of food-seeking behavior and the control of sleep and wakefulness are coordinated so that hunger and vigilance are paired during the daylight hours, and satiety and sleep are paired during darkness. The hypothalamic neuronal system that links these mechanisms is predominantly, but not exclusively, hypocretinergic, and is responsive to the suprachiasmatic nucleus circadian pacemaker and to certain metabolic signals of depletion and repletion.

Esquirol *et al*.(2009), reported that people who skip breakfast have a 3.4-fold greater risk of developing metabolic syndrome compared with those who eat dinner less than

three hours before bedtime and that people who eat snacks at night have 2.6 times the risk of having metabolic syndrome compared with those who do not eat snacks at night.

Tee ES(2018), mentioned that in comparison to boys, girls pay more attention to their weight and body form at a younger age. When someone skips breakfast, they typically have poorer food quality and lower levels of physical activity.(Tee ES,2018)

In the twenty-first century, childhood obesity and overweight are major public health concerns. Children and adolescents are becoming more and more obese, and this trend is concerning. According to a World Health Organisation (WHO) research, the number of people under the age of 18 who were obese increased significantly from 11 million in 1975 to 124 million in 2016.(WHO,2018)

Fujiwara T et.al.(2020) hypothesised that dysmenorrhea caused by skipping breakfast may be related to the central clock system since skipping breakfast delays the onset of the active phase of the circadian cycle. They found that female college students who skipped breakfast had higher incidences of dysmenorrhea and irregular menstruation, suggesting that meal skipping affects ovarian and uterine functions. They hypothesize that circadian rhythm disorders due to breakfast skipping disrupts the hypothalamic-pituitary-ovarian axis, impairs the reproductive rhythm, and leads to ovarian and uterine dysfunction.

Rickenlund A(2005),However, women with oligomenorrhea may have experienced issues with hormones and glucose metabolism since a young age, which may have contributed to their greater weight gain. Age- and body mass index-matched groups of young endurance athletes with amenorrhea (n = 14), oligomenorrhea (n = 9), and regular cycles (n = 12) and sedentary controls (n = 12) were compared with respect to endothelial function, lipid profile, markers of inflammation, and endocrine status. We found a significantly decreased FMD in the amenorrheic athletes, compared with all other groups. Amenorrheic athletes also had the most unfavorable lipid profile with significantly higher total cholesterol and low-density lipoprotein, compared with the other athlete groups. The oligomenorrheic athletes had the lowest levels of total cholesterol, low-density lipoprotein, and apolipoprotein B of all groups and significantly lower in comparison with the amenorrheic group.

Dashti HS(2019),stated Through a Mendelian randomization research, it was recently discovered that there may be a genetically determined causal relationship between skipping breakfast and having a higher BMI.They observed causal links between genetically determined breakfast skipping and higher body mass index, more depressive symptoms, and smoking. In bidirectional MR, we demonstrated a causal link between being an evening person and skipping breakfast, but not vice versa.

Sievert K,(2019) mentioned that although persons who routinely skip breakfast tend to have higher body weights than those who don't, research shows that there is little evidence that skipping breakfast actually causes this difference.

Thompson-McCormick JJet.al, (2010),found that although a number of research linked skipping breakfast to obesity, others found no conclusive evidence of such a link. We observed a high prevalence of both overweight (41%, including 15% who were obese) and breakfast skipping (68%). In addition, in multivariable analyses unadjusted for eating pathology, we found that more frequent breakfast skipping was associated with greater odds of overweight (odds ratio (OR)=1.15, confidence interval (CI)=1.06, 1.26, $p<0.01$) and obesity (OR=1.18, CI=1.05, 1.33, $p<0.01$).

Rani.R (2021) ,spotted that daily breakfast consumption has been shown to have a variety of positive effects on psychosocial and health behaviours, including increased levels of physical activity and memory recall as well as enhanced cognitive function. Still people skip breakfast throughout the world due to several reasons like lack of time, family environment, single-parent family, not feeling hunger in morning or having several misconceptions like thinking of being obese. Skipping morning meal has an adverse effect on health.

Furthermore, the study by Kent et al.(2010), demonstrates that men's BMI decreases when breakfast portion size increases. Compared to their non-vegetarian counterparts, the observed association was significantly more pronounced in vegetarian men. They hypothesized that a consumption of a substantial breakfast compared with skipping or small breakfasts would be associated with lower BMI. Three independent, cross-sectional, screening surveys were conducted by Sydney Adventist Hospital in 1976, 1986, and 2005 in the surrounding community. The archived survey forms of 384 men and 338 women in 1976, 244 men and 229 women in 1986, and

270 men and 62 women in 2005 were randomly selected. Body mass index was determined from height and weight measured by hospital staff. The reported amount consumed at breakfast was one of several eating habits that predicted BMI for men but not women. The consumption of relatively large breakfasts may influence BMI in men, and its promotion may help reduce the prevalence of obesity

Kito, K et.al. (2019), mentioned about breakfast skipping increased the relative risk of overweight, obesity, gain of weight, BMI, or WC, respectively. They conducted a retrospective cohort study using health check-up data provided from several health insurance societies in Japan. Participants comprised 45 524 men employees aged 20–49 years who were followed up for 3 years. The primary outcome investigated was body mass index (BMI) $\geq 25 \text{ kg m}^{-2}$. Of the participants, 17 706 (38.8%) skipped breakfast and 25 987 (57.1%) had a late dinner. At the 3-year follow-up, 5093 (11.2%) had a BMI $\geq 25 \text{ kg m}^{-2}$. The odds ratios of men skipping breakfast were 1.18 (95% confidence interval = 1.04–1.33). They suggest that skipping breakfast among men aged 20–49 years was one predictor of being overweight

Additionally, the study by van der Heijden et al.(2007) men who skipped breakfast showed a 15% increased risk of $\geq 5 \text{ kg}$ weight gain compared to men who did eat breakfast. Overall, 5857 men had a weight gain of 5 kg or greater during 10 years of follow-up. Breakfast consumption was inversely associated with the risk of 5-kg weight gain after adjustment for age [hazard ratio (HR) = 0.77 (95% confidence interval [CI], 0.72 to 0.82)], and this association was independent of lifestyle and BMI at baseline [HR = 0.87 (95% CI, 0.82 to 0.93)].

Smith et al.(2017) reported an increase in body weight when breakfast was skipped. In their study included one thousand one hundred and fifty-five Australian participants (43% men, 26-36 years) completed questionnaires and wore a pedometer at baseline (2004-06) and follow-up (2009-11). Weight was measured or self-reported, with a correction factor applied. Mean 5-year weight gain was 2.0 kg (SD:6.3). Compared to the reference group, additional weight (mean, 95% CI) was gained among those who did not meet the guideline at follow-up, or consistently did not meet the guideline, for breakfast (1.8 kg, 0.7-2.9; 1.5 kg, 0.1-2.8); takeaway food (2.2 kg, 0.7-3.6; 1.9 kg, 0.7-3.1); watching television (1.9 kg, 0.9-2.9; 1.4 kg, 0.4-2.3); and daily steps (2.6 kg, 1.1-4.04; 1.6 kg, 0.5-2.7). Those who met ≤ 1 guideline at follow-up gained 3.8 kg (95% CI

2.3-5.3) more than those meeting all guidelines. Individuals who adopted healthier behaviours between baseline and follow-up had similar weight gain to those who met the guidelines at both time points.

Fayet-Moore et.al. (2019) mentioned that breakfast skippers are more likely to be physically inactive than breakfast eaters. Breakfast skipping decreased with age ($p < 0.001$), while breakfast cereal consumption increased with age ($p < 0.001$). Breakfast skippers were more likely to be male, had a lower socio-economic status, and lower physical activity levels ($p < 0.001$). Breakfast skippers had the highest mean body mass index (BMI) and waist circumference ($p < 0.001$), the lowest intake of wholegrain foods, fruits and vegetables, and the highest intake of discretionary foods ($p < 0.001$). Breakfast cereal consumers had the lowest mean BMI and waist circumference ($p < 0.001$) and had healthier diets at both breakfast and throughout the rest of the day.

Gwin J.A.(2018) mentioned about the scope of breakfast skipping, negative effects on the circadian rhythm such as the irregularizing of metabolism with consequences related to weight management, are possible. The evidence within this review shows positive to neutral support for the inclusion of breakfast for improvements in appetite control, satiety, and postprandial energy expenditure. The protein content, energy content, and form of the meal (i.e., beverages compared with foods) are key modulating factors for ingestive behaviour and energy expenditure mechanisms. Specifically, breakfast meals containing a larger amount of protein (≥ 30 g protein/meal) and energy (≥ 350 kcal/meal) and provided as solid foods increased the magnitude of the appetite and satiety response compared with breakfast skipping.

Mansouri M.(2018),told that Moreover, breakfast skipping is correlated to a worse quality of sleep., breakfast skippers are more likely to be physically inactive than breakfast eaters. Mean age of participants was 21.50 ± 4.01 . After controlling for potential confounders, participants who ate breakfast > 4 days/week had 15% lower risk of overweight compared with those who ate < 1 day/week (OR: 0.85, 95% CI 0.78–0.92). Such significant association was also seen in female students (OR: 0.82, 95% CI 0.72–0.93); however, it was marginally significant in male ones (OR: 0.89, 95% CI 0.79–1.00). In addition, a significant inverse association was found between breakfast consumption and obesity (OR: 0.74, 95% CI 0.64–0.85) such that after adjusting for potential confounders, students who consumed breakfast > 4 days/week were 33%

less likely to be obese compared with those who consumed it < 1 day/week (OR: 0.67, 95% CI 0.57–0.78)

Azadbakht L., et.al(2019) mentioned about several cross-sectional studies reported that skipping dinner was associated with low physical activity, which predicted weight gain and overweight/obesity The present study was conducted on 5642 adolescents aged 10-18 years old in 27 provinces in Iran. The subjects were included applying by multistage random cluster sampling. Participants who ate ≥ 5 dinners during a week were considered as a dinner consumer. Among 5642 subjects, 1412 (25%) did not consume dinner. Dinner consumers were less likely to be overweight or obese ($P < 0.001$) and abdominally obese ($P < 0.001$) as well as to have an abnormal level of HDL-C ($P = 0.02$). Dinner skipper youths had a higher risk for overweight or obesity (odds ratio [OR]: 1.62; 95% CI: 1.39-1.89) and abdominal obesity (OR: 1.59; 95% CI: 1.36-1.85) which remained significant after adjusting confounding factors ($P < 0.001$).

Ma X. et.al (2020) told about a systematic review including 36 cross-sectional and 9 cohort studies verified that skipping breakfast increased the risk of overweight/obesity .In recent years, many original studies have shown that skipping breakfast has been associated with overweight and obesity. This meta-analysis confirmed that skipping breakfast is associated with overweight/obesity, and skipping breakfast increases the risk of overweight/obesity. The results of cohort studies and cross-sectional studies are consistent.

Smith KJ et.al(2010) reported that,in adolescence, unhealthy eating habits, such as skipping breakfast, can compromise growth, development, and long-term health. Skipping this meal is also associated with cardiometabolic risk factors in adolescents, such as increased central and total adiposity, insulin resistance, and dyslipidemia.

Wang et al.(2017) and Cayres et al.(2018) showed that breakfast skipping is associated with weight gain, since adolescents who skipped this meal spent a longer period fasting (night and morning), with increased ghrelin release consequently, increased appetite, increasing the probability of hyperphagia and body fat accumulation.

Goldstone A.P(2009),stated about his study included Twenty non-obese healthy adults [body mass index $22.1 \pm 0.5 \text{ kg/m}^2$ (mean $\pm$ SEM), age range 19-35 years, 10 male] were scanned on two separate mornings between 11:00 and 12:00 h, once after eating a filling breakfast ('fed': $1.6 \pm 0.1 \text{ h}$ since breakfast), and once after an overnight fast but skipping breakfast ('fasted': $15.9 \pm 0.3 \text{ h}$ since supper) in a randomized cross-over design. people who skipped breakfast are more likely to crave for high caloric food than low caloric food is also reason for obesity.

Gunter et al.(2020) described that compared to women who reported eating breakfast 3 to 4 days/week (irregular breakfast eaters), women who ate breakfast 7 days/week were between 11% to 17% less likely to be obese as measured by WHR (prevalence ratio (PR): 0.89; 95%CI: 0.85, 0.94), WC (PR: 0.85; 95%CI: 0.82, 0.88), and BMI (PR: 0.83; 95%CI: 0.79, 0.87) after multivariable adjustment. Women who never ate breakfast were between 11% to 22% less likely to be obese as measured by WHR (PR: 0.89; 95%CI: 0.83, 0.96), WC (PR: 0.82; 95%CI: 0.78, 0.87), and BMI (PR: 0.78; 95%CI: 0.72, 0.84) compared to irregular breakfast eaters. He concluded that eating breakfast rarely (i.e., 0 or 1–2 d/wk) and eating breakfast often (i.e., 5–6 or 7 d/wk) decreased the risk for a 5-year incident of weight gain, compared to having an inconsistent breakfast eating frequency (i.e., eating breakfast on 3–4 d/wk).

Jo J., Gavrilova O., et al.(2009) mentioned that the underlying pathological process of obesity is represented by the increase in both the total number and size of fat cells, which leads to a heightened accumulation of fat cells in relation to one's body size. Where as Jungermann K.,(2014),mentioned that being overweight is defined as elevated body fat accumulation, while obesity defines a situation characterized by an excess body fat mass.

Mieda M(2019),told Circadian rhythms are oscillations with approximately 24-h period that appear in most of physiological events in our body. The suprachiasmatic nucleus (SCN) of the hypothalamus functions as the central circadian pacemaker in mammals and entrains to the environmental light/dark cycle. told in contrast,to the present study successfully detected a positive relationship between breakfast skipping and menstrual pain, indicating that this simple screening test is suitable for picking up breakfast skippers who are associated with gynecologic disorders at health service centres.

Assefa N.,(2016) reported that about 40 to 60% of adolescents tried to lose weight and that dieting was closely associated with menstrual irregularity and pain. A total of 440 students participated in this study. The prevalence of PD was 368 (85.4%). Of these, 123 (28.5%) had mild, 164 (38.1%) moderate, and 81 (18.8%) severe primary dysmenorrheal pain. Among students with PD, 88.3% reported that PD had a negative effect on their academic performance.

CHAPTER-3

METHODOLOGY

Research methodology is the specific procedures or techniques used to identify, select, process and analyse information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability.

AIM : In this study we would work on the correlation between skipping of breakfast and obesity, oligomenorrhea among hostel staying girls in Chennai.

3.1 Objective

- To find percentage of hostel girls skipping their breakfast.
- To find out percentage of hostel girls undergo oligomenorrhea.
- To assess percentage of obesity among hostel going girls.
- To find association between skipping of breakfast & obesity.
- To find out association between skipping of breakfast & oligomenorrhea

3.2 Hypothesis

- There is significant correlation between skipping breakfast and obesity among hostel girls
- There is significant correlation between skipping breakfast and oligomenorrhea among hostel girls.

3.3 Study design

The study design of this study are discussed under the following sub topics

3.4 Selection of area

The study was conducted at Sathyabama University, Chennai. Accessibility, approachability, interest and concern of the hostel girls are the main criteria for the selection.

3.5 Selection of sample

The sample consists of 214 subjects, were calculated using rao software. The selection was done using random sampling.

3.6 Data collection

The investigator explained regarding the purpose of the study and explained about the importance of breakfast which is an important aspect to maintain a quality and healthy lifestyle. The questionnaire was explained by the investigator and then response was collected from the subjects. The lifestyle pattern were taken along with the Body mass index(BMI).

3.7 Sample size

The sample size is calculated from Rao soft software with margin of error 5%, confidence level 95%, and population size 100, and response distribution 50% recommended sample size is 214.

3.8 Inclusion criteria

The subjects included in the study are only hostel girls aged 18-23 years in Sathyabama University.

3.9 Exclusion criteria

All the subjects aged below 18 years and above 23 years among hostel girls and outside Sathyabama girls and boys were excluded.

3.10 Sampling technique

The subjects were selected using random sampling technique.

3.11 Data collection tool

Lifestyle pattern questionnaire

Anthropometric data

Height was measured using the values marked on the wall by standing straight against the wall.

Weight was measured by an analog weighing machine.

Then accordingly BMI (Body Mass Index) was calculated through the formula.

BMI, formerly called the Quetelet index, is a measure for indicating nutritional status in adults. It is defined as a person's weight in kilograms divided by the square of the person's height in metres (kg/m²).

(For example, an adult who weighs 80 kg and whose height is 1.85 m will have a BMI of 22.9).

$$\text{BMI} = \frac{80(\text{in kg})}{1.85 \times 1.85 (\text{in m})} = 23.39 \text{ kg/m}^2$$

$$80 \text{ (kg)}/1.85^2 \text{ (m}^2\text{)} = 23.39 \text{ BMI}$$

Note. BMI is derived from a person's weight in kilograms, divided by height (squared) in centimetres. The recommended levels are adapted from the global WHO recommendation of 18.5–24.9 as a normal BMI.



FIG.3.1 PICTURES DURING SAMPLE COLLECTION

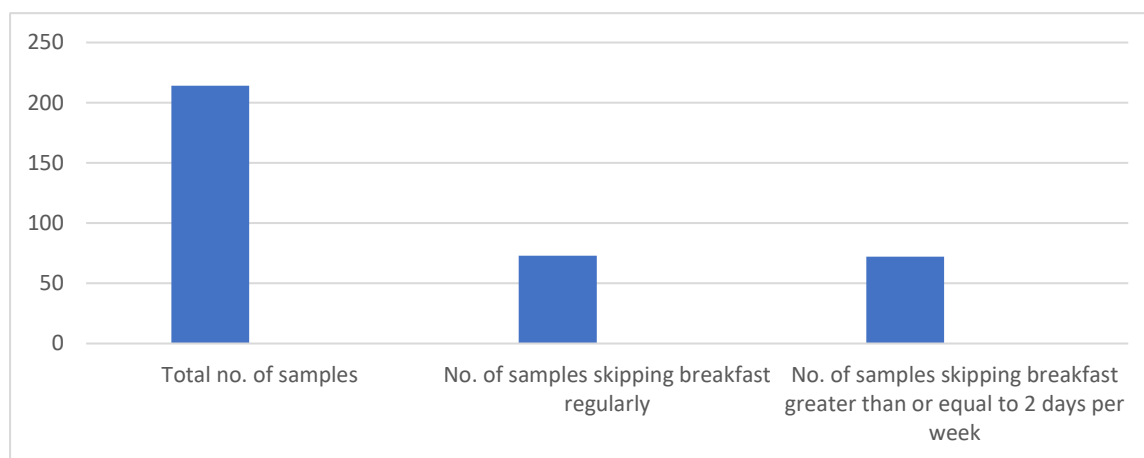
CHAPTER-4

RESULT AND DISCUSSION

Table 4.1 Percentage of samples skipping breakfast regularly and greater than 2 days per week.

S. No	Total no. of samples	No. of samples skipping breakfast regularly	No. of samples skipping breakfast greater than or equal to 2 days per week
1.	214	73	72
Percentage (%)		34.1%	33.6%

Figure4.1 shows the no .of samples skipping breakfast regularly and greater than 2 days per week

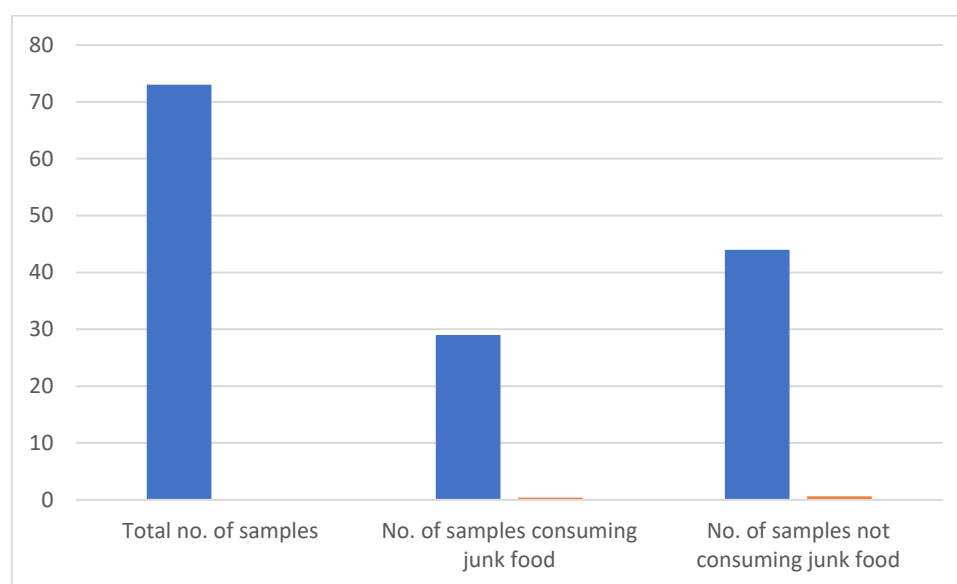


Among 214 samples ,73 samples are skipping breakfast regularly, 72 samples are skipping breakfast greater than or equal to 2 days. From the available data 34.1 % are skipping breakfast regularly and 33.6% are skipping breakfast greater than or equal to 2 days.

Table 4.2 Percentage of samples consuming junk food and not consuming junk food

S. No	Total no. of samples	No. of samples consuming junk food	No. of samples not consuming junk food
1.	73	29	44
Percentage (%)		39.7%	60.2%

Figure 4.2 shows that no. of samples consuming junk food and not consuming junk food

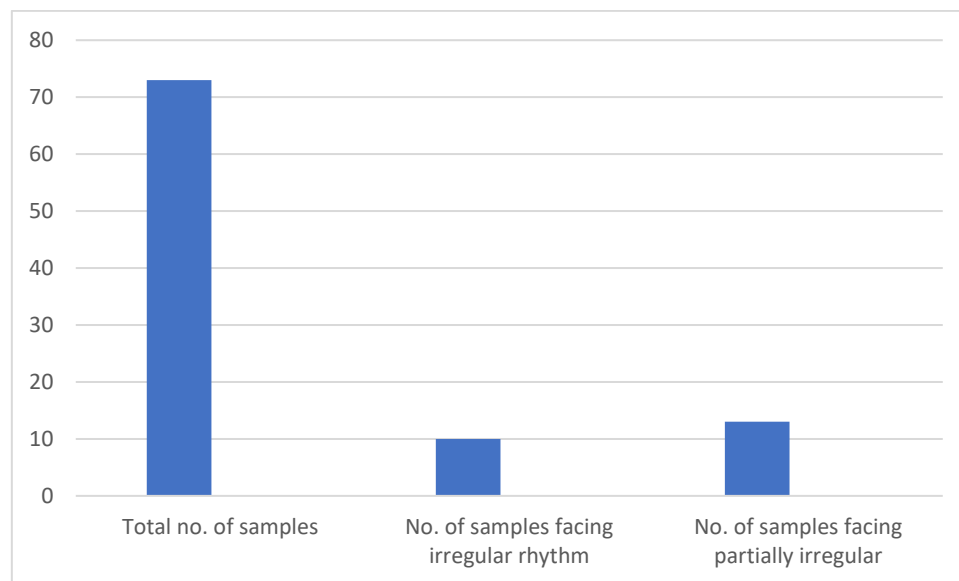


From 73 samples, 29 samples are consuming junk food in a week whereas 44 samples are not consuming junk food in a week. Above data shows that 39.7% are consuming junk food and 60.2% are not consuming junk food.

Table 4.3 Percentage of samples facing irregular rhythm and partially irregular rhythm.

	Total no. of samples	No. of samples facing irregular rhythm	No. of samples facing partially irregular
1.	73	10	13
Percentage (%)		13.6%	17.8%

Figure 4.3 shows No. of samples facing irregular rhythm and partially irregular rhythm

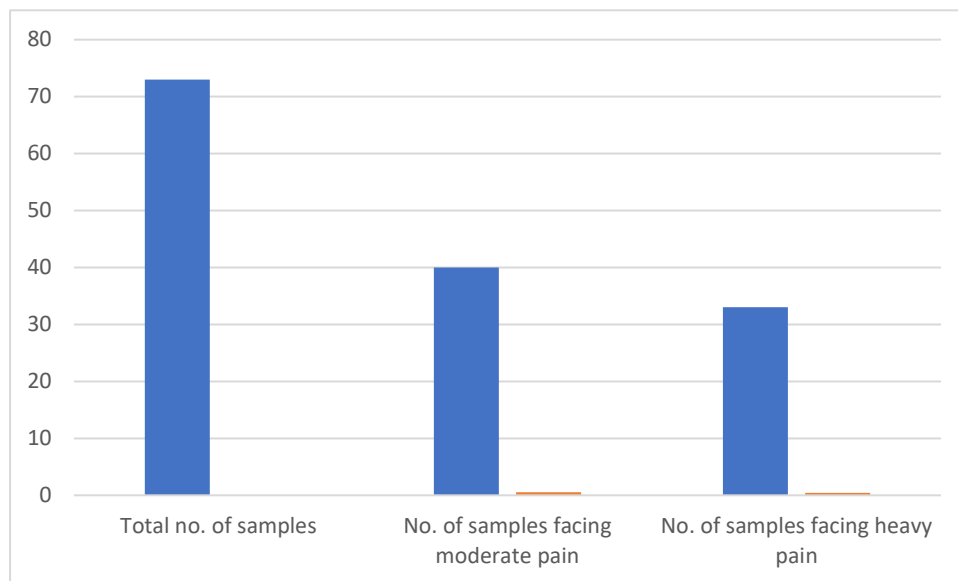


Among 73 samples, 10 samples are facing irregular rhythm, 13 samples are facing partially irregular rhythm. From the above data 13.6% are facing irregular rhythm and 17.8% are facing partially irregular.

Table 4.4 Percentage of samples facing moderate pain and heavy pain.

S. No	Total no. of samples	No. of samples facing moderate pain	No. of samples facing heavy pain
1.	73	40	33
Percentage (%)		54.79%	45.20%

Figure 4.4 shows no .of samples facing moderate pain and heavy pain

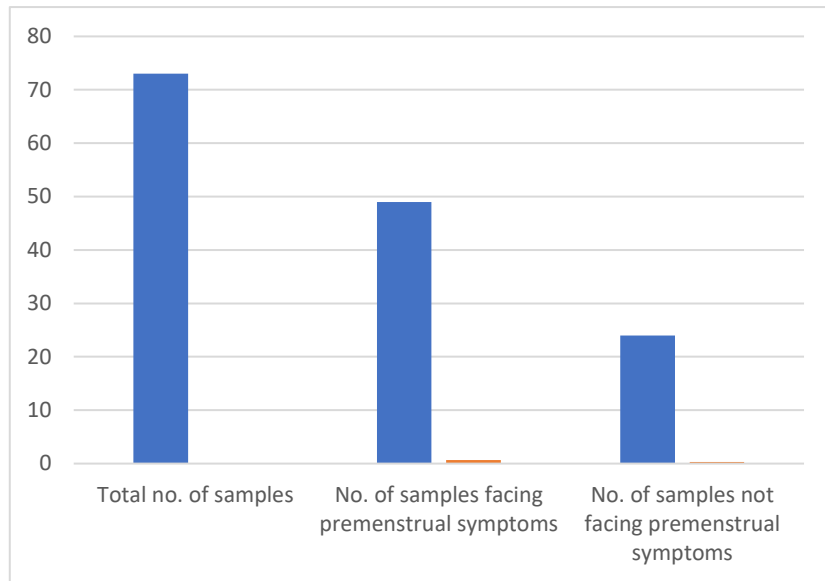


Among 73 samples, 40 samples are facing moderate pain, 33 samples are facing heavy pain. From the above data 54.79% are facing irregular rhythm and 45.20% are facing partially irregular.

Table 4.5 Percentage of samples facing premenstrual symptoms and not facing premenstrual symptoms.

S. No	Total no. of samples	No. of samples facing premenstrual symptoms	No. of samples not facing premenstrual symptoms
1.	73	49	24
Percentage (%)		67.1%	32.8%

Figure 4.5 shows no. of samples facing premenstrual symptoms and not facing premenstrual symptoms.

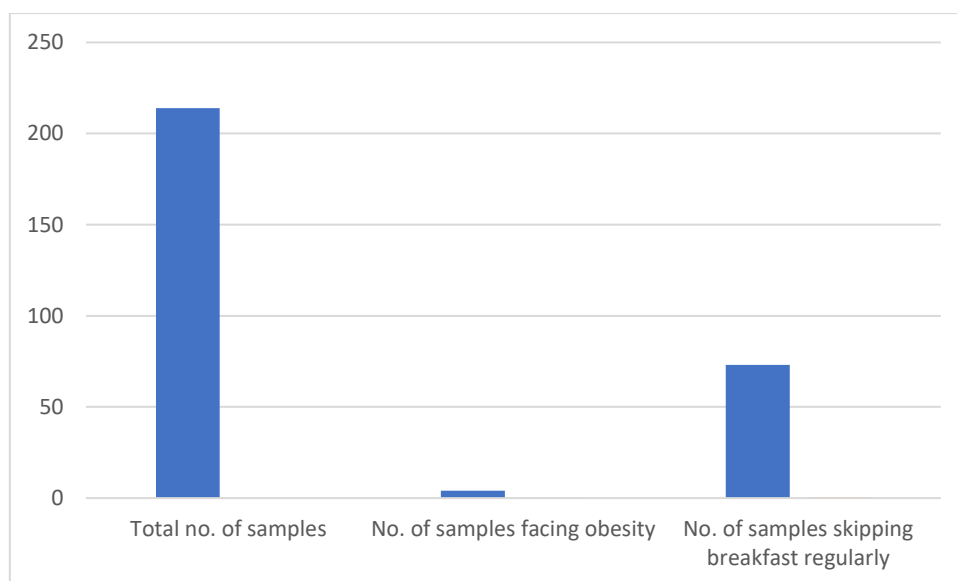


Among 73 samples ,49 samples are facing premenstrual symptoms and 24 samples are not facing pre menstrual symptoms. From the above data,67.1% are facing pre menstrual symptoms and 32.8% are not facing pre menstrual symptoms.

Table 4.6 Percentage of samples facing obesity and percentage of samples skipping breakfast.

	Total no. of samples	No. of samples facing obesity	No. of samples skipping breakfast regularly
1.	214	4	73
	Percentage (%)	1.8%	34.1%

Figure 4.6 shows No. of samples facing obesity and no. of samples skipping breakfast regularly.



Among 214 samples, 4 samples are facing obesity and 73 samples are skipping breakfast regularly. From the above table 1.8% are facing obesity and 34.1 % are skipping breakfast regularly.

Table 4.7 shows statistical analysis between skipping breakfast and oligomenorrhea

Lifestyle pattern	P value
BF_D	0.235180
Pain_C	0.165156
BF_B	0.151564
Pain_A	0.116238
BF_C	0.082075
BF_A	0.071213
Pain_B	0.060925
PMS_A	0.059927
PMS_B	0.057721

This table indicates, Breakfast-D(Daily), Pain- C(Heavy), Breakfast-B(=<1 day/week), Pain-A(Mild), Breakfast-A(=>2 days/week), Pain-B(Moderate),

Premenstrual symptoms-A (yes), Premenstrual symptoms-B(no)

The relationship between skipping breakfast and oligomenorrhoea was found among 73 subjects who were actually skipping breakfast regularly table 6 .

shows that skipping breakfast regularly has a major impact leading to oligomenorrhoea.

Table 4.8 shows statistical analysis between skipping breakfast and obesity.

Lifestyle pattern	P value
P_B	0.173558
P_A	0.168317
M_E	0.118646
B_C	0.102198
B_D	0.056709
P_C	0.056571
B_A	0.055628
B_B	0.055566
M_D	0.050935
M_C	0.040667
M_A	0.035138
J_B	0.0287159
M_B	0.019994
J_C	0.019835
J_A	0.018079

This table indicates Physical activity -B(>=2 times/week), Physical activity-A(<=2 times/week), Meals-E (not at all),Breakfast-C(never),Breakfast-D(Daily), Physical activity-C(never), Breakfast-A(>=2 days/week), Breakfast-B(<=1 day/week), Meals-D (5-6 times in a week), Meals-C(3-4 times in a week),Meals-A(once in a week),Junk food-B(no),Meals-B(regularly in a week), Junk food-C (sometimes), Junk food-A (yes)

Among 73 samples the relationship between skipping breakfast regularly and obesity was shown in table 7 . which shows that there is no significant correlation between skipping breakfast and obesity.

CHAPTER-5

SUMMARY AND CONCLUSION

Oligomenorrhea is defined as irregular and inconsistent menstrual blood flow in a woman is common problem facing now a days. So, I conducted a survey using comprehensive lifestyle pattern questionnaire on skipping breakfast whether correlated to oligomenorrhea and obesity.

In our study we found that skipping breakfast and obesity are not correlated but there is high correlation between skipping breakfast and oligomenorrhea.

Fujiwara and Nakata in the year 2010 in their study among post-adolescent female college students, absorbed a higher incidence of menstrual irregularity in the breakfast skipping group. Therefore, they examined this issue by conducting a questionnaire survey of female college students aged from 18 to 20 years old. The 5 annual surveys of questionnaire demonstrated that the severity of dysmenorrhea was significantly higher in the population that skipped breakfast. The incidence of irregular menses was also higher in the population that skipped breakfast, although there was no difference in the incidence of premenstrual symptoms. In addition, despite no difference in body mass index, there was a significantly higher incidence of a self-perception of poor general health among the group that skipped breakfast.

Furthermore, the study by Kent et al. (2010), demonstrates that men's BMI decreases when breakfast portion size increases. Compared to their non-vegetarian counterparts, the observed association was significantly more pronounced in vegetarian men. They hypothesized that a consumption of a substantial breakfast compared with skipping or small breakfasts would be associated with lower BMI. Body mass index was determined from height and weight measured by hospital staff. The reported amount consumed at breakfast was one of several eating habits that predicted BMI for men but not women. The consumption of relatively large breakfasts may influence BMI in

men, and its promotion may help reduce the prevalence of obesity. In our study half of the samples are skipping breakfast and half is not skipping breakfast regularly. Among 214 samples, 73 samples were skipping breakfast. Comprehensive lifestyle pattern questionnaire was conducted to find out obesity and lifestyle pattern. BMI was calculated to find the correlation between skipping breakfast and obesity. The students' attitude was cool towards skipping of breakfast. But they are facing symptoms like pain, irregular rhythm, premenstrual symptoms, tiredness. And the results are 34.1% hostel girls are skipping breakfast, 12.6% samples are undergoing oligomenorrhea, 1.8% samples are facing obesity.

Among 214 samples, 73 samples were skipping breakfast regularly. Because of this more no. of people are suffering from pre menstrual symptoms. It shows that skipping breakfast has a correlation with oligomenorrhoea, whereas skipping breakfast has no correlation with obesity. To prevent oligomenorrhoea, women have to be educated about health lifestyle patterns. The family should not leave without noticing them. So, since this study has been conducted with small sample size, this might lead to further research with large sample size.

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APPENDIX

QUESTIONNAIRE

- a. NAME: e. HEIGHT (cm):
b. WEIGHT (kg): f. BMI (kg/m²):
c. Father's occupation:
d. Mother's occupation:
1. **HOW OFTEN BREAKFAST SKIPPED?**
A. =>2days/week B. =<1day/week C. Never D. Daily
 2. **IF SKIPPING BREAKFAST, REASONS FOR THAT?**
A. No time B. No interest C. Unavailability D. Having a late dinner
 3. **CONSUMPTION OF JUNK FOOD/PROCESSED FOOD INSTEAD OF BREAKFAST IN A WEEK?**
A.Yes B.No C. Sometimes
 4. **HOW MANY DAYS YOU UNDERGO PHYSICAL ACTIVITY?**
A. =<2times/week B. =>2times/week C. Never
 5. **HOW MUCH TIME YOU SPEND FOR PHYSICAL ACTIVITY?**
A.<15 minutes/day B.15-30 minutes/day C. 30-60 minutes/day D. >60 minutes/day
E. Not at all
 6. **DUE TO SKIPPING BREAKFAST, ANYTIME YOU FELT PHYSICAL WEAKNESS (TIREDNESS, FAINT, DIZZINESS Etc.)?**
A. Yes B. No C. Rarely
 7. **HOW MANY TIMES A WEEK DO YOU EAT THREE MAIN MEALS & TWO SNACKS?**
A. Once in a week B. Regularly in a week C.3 – 4 times in a week D.5 – 6 times in a Week. E. Never
 8. **AT WHICH AGE DID YOU UNDERGO PUBERTY?**
A. 10 – 12 years B. 13-15 years C. >15 years
 9. **RYTHM OF MENSTRUAL CYCLE?**
A. Regular B. Irregular C. Partially regular D. Partially irregular
 10. **SEVERITY OF PAIN DURING MENSTRUAL CYCLE?**
A. Mild B. Moderate C. Heavy
 11. **HOW IS THE MENSTRUAL FLOW?**
A. Normal/mild (3 days) B. Moderate (5-7 days) C. Heavy(>7 days)

12. IS THERE ANY PREMENSTRUAL SYMPTOMS?

A. Yes B. No