IRREGULAR MENSTRUATION IN COLLEGE GOING STUDENTS

ST.TERESAS COLLEGE
(AUTONOMOUS)

PROJECT SUBMITTED

In Partial Fulfilment of the Requirement for the Award of the degree of

B.Sc NUTRITION AND DIETETICS

BY
BHAGYA SHAJI, FATHIMA ZAMEEN, RIYA THANKACHAN

(Register No: SB21ND011, SD21ND019, SB21ND036)

DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS
ST. TERESA 'S COLLEGE (AUTONOMOUS)

ERNAKULAM

APRIL 2024

CERTIFIED AS BONAFIDE RESEARCH WORK

Signature of Internal Examiner **Signature of External Examiner**

DECLARATION

We hereby declare that the project entitled **‘”IRREGULAR MENSTRUATION IN COLLEGE GOING STUDENTS”** submitted in partial fulfilment of the requirement for the award of the degree of B.Sc Nutrition and Dietetics is a record of original research work done by me under the supervision and guidance of **Ms. Surya M Kottaram** , Assistant Professor and HOD, Department of Clinical Nutrition and Dietetics, Women’s Study Centre, St. Teresa's College (Autonomous), Ernakulam and has not been submitted in part or full of any other degree/diploma/fellowship or the similar titles to any candidate of any other university.

Place:

Date:

BHAGYA SHAJI
FATHIMA ZAMEEN
RIYA THANKACHAN

CERTIFICATE

I here certify that the project entitled **"IRREGULAR MENSTRUATION IN COLLEGE GOING STUDENTS"** submitted in partial fulfilment of the requirement for the award of the degree of B.Sc Nutrition and Dietetics is a record of original work done by Ms. Bhagya Shaji, Ms. Fathima Zameen, Ms. Riya Thankachan during the period of the study under my guidance and supervision.

Signature of the HOD

Ms. Surya M Kottaram
Head of Department
Department of Clinical Nutrition and Dietetics
St. Teresas College (Autonomous)
Ernakulam

Signature of Research Guide with Designation

Ms . Surya M Kottaram
Head of Department
Department of Clinical Nutrition and Dietetics
St. Teresas College (Autonomous)
Ernakulam

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CHAPTER 1
INTRODUCTION

Menstruation, also known as women's monthly period or bleeding, commences at puberty and ceases temporarily during pregnancy, but permanently at menopause. Typically, a regular menstrual cycle spans 28 days, with a variation of plus or minus seven days. It is common and normal to experience irregular periods during puberty and pre-menopause, with at least 30 percent of women encountering such irregularities during their childbearing years. Menstrual irregularities encompass various conditions, including irregular, heavy, painful, or absent menstruation. Common types of irregularities comprise amenorrhea, dysmenorrhea, menorrhagia, oligomenorrhea, and polymenorrhea. These conditions may arise due to chronic medical conditions or changing medical and emotional circumstances. In most instances, the underlying cause of irregular periods can be addressed or treated. This review explores diverse aspects of women's health issues related to menstrual irregularities, encompassing causes, symptoms, diagnosis, and preventive measures such as yoga, Ayurveda, and nutritional supplements. Yoga serves as an effective natural remedy for curing irregular periods. Maintaining a healthy diet and engaging in adequate exercise are essential practices to mitigate irregular menstruation. (Sachin B Somwanshi et al. 2017)

In the study by Md Abu Bakar Siddique Jami et al. (2023), menstruation is described as a natural process involving the monthly discharge of blood from the uterine wall through the vagina, a regular occurrence during a woman's reproductive years. While some women may only experience mild discomfort during menstruation, others face significant physical and emotional symptoms such as heavy bleeding, missed periods, mood swings, and painful menstruation, impacting their quality of life. These menstrual disturbances can commence as early as menarche and persist into adolescence, exacerbated by additional stressors like academic pressures and relationship issues

Research indicates that women of reproductive age frequently experience health issues related to their menstrual cycles, presenting in various forms such as dysmenorrhea, oligomenorrhea, premenstrual syndrome (PMS), and polymenorrhea. Symptoms such as menorrhagia, amenorrhea, and irregular menstruation are indicative of abnormal vaginal bleeding.

There are numerous types of menstrual disorders, ranging from heavy and painful periods to absent menstruation. Concern arises when cycles are less than 21 days long, spaced more than 3 months apart, or lasting over 10 days, potentially signaling underlying menstrual issues or other health conditions. Dysmenorrhea, characterized by intense and persistent menstrual cramps, can be primary or secondary, often accompanied by menorrhagia, which involves prolonged and heavy bleeding. Amenorrhea refers to the absence of menstruation, categorized as primary or secondary.

Oligomenorrhea, marked by infrequent and light menstrual cycles spaced more than 35 days apart, is common during early puberty and typically not indicative of a health problem. Premenstrual syndrome (PMS) encompasses a range of symptoms occurring in the week preceding menstruation, commonly observed in women between the ages of 20 and 40.
Apart from pathological factors affecting menstrual cycles, environmental influences such as depression, smoking, changes in body weight, and stress can also impact menstrual patterns. These disturbances can significantly affect the physical and psychological health of students, leading to adolescent challenges and issues for their families, contributing to school absences

Although menstrual problems are often considered a normal aspect of women's health, severe symptoms may prompt individuals to self-medicate due to a lack of access to proper medical assistance or awareness of available treatments. This highlights the importance of seeking medical attention when symptoms become unbearable, ensuring proper management and understanding of the risks and benefits associated with self-medication.

According to research conducted by E. Deligoroglou (2001), dysmenorrhea manifests as painful menstrual periods typically emerging two to three years after menarche. The discomfort usually initiates with the onset of bleeding and persists for approximately 48–72 hours. Primary dysmenorrhea's root cause lies in prostaglandin production, leading to menstrual cramps and associated symptoms. Conversely, secondary dysmenorrhea is linked to identifiable pelvic pathology, necessitating treatment targeting the underlying cause. Treatment options for primary dysmenorrhea, such as NSAIDs, oral combined contraceptives, β-blockers, psychotherapeutic approaches, and cervical dilatation, are extensively discussed

Oligomenorrhea, characterized by infrequent or irregular menstrual periods, can be indicative of various endocrine dysfunctions. These include conditions such as polycystic ovary

syndrome (PCOS), Cushing's disease, premature ovarian failure, adrenal hyperplasia, ovarian and adrenal tumors, and prolactinomas, as noted by (Emans. et. al ,1980.)

According to LS Timmerick et al (2003) Polymenorrhea is a problem that occurs in teenagers. Polymenorrhea can occur due to an imbalance in the hormonal system in the hypothalamic axis which can result in disturbances in the ovulation process (release of egg cells).

Rehan Naqvi (2024) conducted a study shows that Amenorrhea, the absence of menstrual periods in women of reproductive age, is a multifaceted and clinically significant gynecological condition that can have various underlying causes and far-reaching implications for a woman's overall health and well-being. Amenorrhea can be categorized into two primary types: Primary and secondary. Primary amenorrhea refers to the absence of menstruation by the age of 16 years in the presence of normal secondary sexual characteristics, or by the age of 14 years with no signs of puberty. Secondary amenorrhea, on the other hand, is characterized by the cessation of regular menstruation for at least three cycles or six months in women with a history of regular menstruation.

According to Tejaswi Chillara et al. (2023) Hypomenorrhea also known as scanty menstruation is a medical condition that is characterized by extremely light flow of blood during menstruation and the duration of menstruation may be shortened also.
In adult women the definition of hypomenorrhea is based mainly on the duration of menstrual flow which lasts 2 days or less .

In the investigation led by GM Attia et al. (2023), it was revealed that irregular menstruation can be triggered by fluctuations in progesterone and estrogen levels, disrupting the typical menstrual cycle pattern. Various factors contribute to this phenomenon: Polycystic Ovary Syndrome (PCOS): This hormonal disorder prevalent among women of reproductive age can lead to irregular periods, ovarian cysts, and hormonal imbalances. Birth Control Pills: Some hormonal contraceptives may influence menstrual regularity by regulating or altering natural hormone fluctuations. Breastfeeding: Hormonal changes associated with lactation can impact menstrual cycles, resulting in irregular periods for some women. Excessive Exercise: Intense physical activity can disturb hormonal balance and affect menstrual regularity, particularly in athletes or those engaging in rigorous training. Intrauterine Devices (IUDs): While effective contraceptives, certain women may experience changes in menstrual patterns as a

consequence of using IUDs. Thyroid Disorders: Both hyperthyroidism and hypothyroidism can disrupt hormonal balance, contributing to irregular menstruation. Furthermore, the study identified several modifiable risk factors exacerbating irregular menstruation: Obesity: Excess body weight can disrupt hormonal balance and menstrual regularity, leading to irregular periods. Stress: Prolonged stress can impact the hypothalamic-pituitary-adrenal (HPA) axis, disrupting hormonal regulation and potentially causing irregular menstrual cycles. Smoking: Tobacco use has been linked to hormonal disturbances and menstrual irregularities in women, likely due to its effects on hormone production and circulation.

According to Takanobu Anai et al. (2001) strive for a well-rounded lifestyle by incorporating moderate exercise and a balanced diet rich in nutritious foods. If your goal involves shedding pounds, opt for a gradual approach rather than resorting to extreme dieting that severely limits calorie and food intake. Ensure you get enough rest, practice stress-relief techniques, and consider scaling back on the duration or intensity of your workouts. Follow the recommended usage guidelines for birth control pills or other contraceptive methods. Change tampons or sanitary pads every four to six hours to minimize the risk of toxic shock syndrome and infections. Regularly visit both your gynaecologist and primary care provider for routine health check-ups.)

SIGNIFICANCE OF THE STUDY

Menstrual irregularity can occur at any age, but it is most common among women under the age of 25 years. Menstrual irregularity is a foremost gynaecological problem and a cause of anxiety to students and those close to them. These students experience monthly absenteeism, premenstrual symptoms, and a lack of concentration due to menstrual problems, all of which interfere with their education. Therefore, this study aimed to assess the magnitude of menstrual irregularity and associated factors among college students. This study aimed to examine the association between different body composition measures, menstrual cycle characteristics, and hormonal factors in a population-based sample of young women. A descriptive cross-sectional study by (A. Singh et al. 2008) surveyed 107 female medical students, assessing their menstrual patterns, dysmenorrhea history and severity, premenstrual symptoms, and college/class absenteeism through a questionnaire.

AIM

To study the menstrual irregularities among college students.

OBJECTIVES

- To assess the anthropometric measurements of the selected subjects
- To determine the prevalence of irregular menstruation among the subjects
- To categorise different menstrual irregularities present among the subjects
- To analyse lifestyle and dietary patterns of the subjects

CHAPTRE 2
REVIEW OF LITERATURE

The review of the study entitled "**Irregular Menstruation in College Going Students "** is discussed under the following headings:

2.1 Prevalence of irregular menstruation

2.2 Menstrual irregularities

2.3 Types of Menstrual Irregularities

2.4 Causes of Irregular Menstruation

2.5 Preventive methods for Menstrual Irregularities

Prevalence of irregular menstruation

Ahmed M Nooh et al. (2016) conducted a study to investigate the types and frequency of menstrual disorders among adolescent girls. They analyzed responses from 285 questionnaires. The average age at first menstruation was 12.3 years. Oligomenorrhea, where periods occur infrequently, was reported by 6.3% of participants, while 1.8% mentioned having polymenorrhea, where periods occur too frequently. Additionally, 8.8% experienced hypomenorrhea (light periods), and 4.2% had hypermenorrhea (heavy periods). About 8.4% reported irregular periods. Dysmenorrhea (painful periods) was prevalent, with 66.0% of participants affected. Of those, 28.4% described their pain as mild, 24.2% as moderate, and 13.3% as severe. Premenstrual syndrome was mentioned by 56.1% of girls. Only 12.6% of students sought help for their menstrual problems. These findings align with similar studies worldwide, highlighting the need for improved management of menstrual disorders within reproductive healthcare programs. Further research into their prevalence, risk factors, and impact on health is eagerly anticipated.

.N. Karout et al. (2012),conducted a study on Prevalence and pattern of menstrual disorders among Lebanese nursing students it was revealed that menstrual disorders significantly impact the quality of life of adolescents and young women, potentially signaling underlying health issues. The study aimed to ascertain the prevalence and characteristics of menstrual symptoms among nursing students in Beirut, Lebanon. Out of 352 participants who completed a questionnaire, the most prevalent menstrual disorders included irregular menstruation frequency (80.7%), premenstrual syndrome (54.0%), irregular menstruation

duration (43.8%), dysmenorrhea (38.1%), polymenorrhea (37.5%), and oligomenorrhea (19.3%). Analysis demonstrated significant associations between various menstrual disorders and factors such as marital status, residency, and age at menarche. Notably, dysmenorrhea and premenstrual syndrome were found to significantly impact daily activities or academic attendance in many instances, raising concerns for policymakers.

Anamika Sharma et al (2008) to study the prevalence and the effect of menstrual disorders on daily routine among unmarried undergraduate medical students and their treatment-seeking behavior Menstrual issues are prevalent among young girls, warranting thorough evaluation due to their potential to disrupt daily routines and diminish quality of life. The study's main aim was to investigate the frequency of menstrual disorders and their impact on the daily routines of unmarried undergraduate medical students, as well as their treatment-seeking behavior. Out of 276 undergraduate female students, 112 were selected using stratified random sampling. These participants completed a pretested questionnaire through personal interviews. Analysis of the collected data revealed that premenstrual syndrome (67%) and dysmenorrhea (33%) were identified as the most troublesome issues associated with menstruation. The primary effects of menstrual problems on daily routines reported by participants were prolonged resting hours (54%) and difficulty in studying (50%). Over half of the subjects (52%) confided in their mothers about their issues, and 60% opted for allopathic treatment.

According to a study conducted by K. J. Jeevitha et al. (2019), menstrual irregularity emerges as the prevailing gynecological issue across all age groups. Adolescence, a phase bridging childhood and adulthood, brings about profound physical, biological, and psychosexual transformations, notably marked by hormonal fluctuations. The study aimed to assess the prevalence of menstrual abnormalities among college girls in Madurai and their correlation with Body Mass Index (BMI). A cross-sectional examination was undertaken, involving 200 girls aged 18-22 years from a Madurai college, with consent obtained from both college authorities and students. Detailed data on age of menarche, menstrual disorder types, BMI, and stress factors were gathered. Statistical analysis employing chi-square tests revealed insights into the relationship between menstrual irregularities, BMI, and stress. The study found an average menarche age of 13.38 years, with 47.5% reporting irregular menstrual cycles and dysmenorrhea being the most prevalent disorder, affecting 26% of students who required medical intervention. Notably, underweight students exhibited a higher propensity

for irregular cycles compared to other BMI categories. Furthermore, stress demonstrated a significant association with menstrual irregularity. A concerning observation was the prevalence of obesity among many students, highlighting the necessity for lifestyle modifications such as regular exercise, avoidance of unhealthy dietary habits, and promotion of nutritious eating practices to foster overall well-being. Moreover, it underscores the importance of educating students about menstruation, its physiological effects , and its significance in maintaining optimal health.

Vitasta Muskan et al. (2021) conducted a study to understand how common menstrual problems are among undergraduate female students at the BP Koirila Institute of Health Science. They looked at how these problems affect the students' lives and whether they seek help for them. The study lasted for 30 days and included 137 female students over 18 years old who had started menstruating. Data was collected online using Google Forms, and the analysis was done using SPSS 23. They found that out of the 137 participants, 94.89% experienced menstrual problems. Most of these students (75.38%) sought treatment for their issues. The most common problems were dysmenorrhea (painful periods) and premenstrual syndrome. These menstrual problems affected the students' lives in various ways. Many reported difficulty concentrating on their studies (91.54%), missed out on social activities (95.39%), couldn't exercise (82.31%), spent extra time in bed due to discomfort (38.46%), and even missed lectures (30%). The study concluded that menstrual problems are quite common among these students, and they significantly affect their quality of life. However, only a few of them seek professional help for these issues.

Menstrual Irregularities

A study conducted by A Sharma et al.(2008) reveals that Menstrual problems are common among young girls. These deserve careful evaluation as uncorrected menstrual problems may adversely affect the daily routine and quality of life. The aim of this article is to study the prevalence and the effect of menstrual disorders on daily routine among unmarried undergraduate medical students and their treatment-seeking behaviour. Of 276 undergraduate girl students, 112 were sampled by stratified random sampling. All the consenting participants were given a pretested semi structured questionnaire to collect their responses by personal interviews. The data collected were analysed. Premenstrual syndrome (67%) and dysmenorrhea (33%) were perceived by the study subjects as the most distressing problems associated with menstruation.

According to a study conducted by Hetal Rathod et al.(2023) it is found out that One-third to one-half of females with primary dysmenorrhea are missing school or work at least once per cycle, and more frequently 5% to 14% of them. Dysmenorrhea is one of the most common gynecologic disorders among young girls and is the major cause of activity restriction and college absence. A direct link between primary menstrual abnormalities and chronic conditions such as obesity has been established, though the exact pathology behind it is yet unknown.

Types of Menstrual Irregularities

Dysmenorrhea

Dysmenorrhea is often accompanied by a range of additional symptoms, including sweating, headaches, nausea, vomiting, diarrhea, and tremulousness, typically occurring just before or during menstruation. There are two distinct types of dysmenorrhea: Primary dysmenorrhea, characterized by pain without any obvious pelvic pathology, typically emerges in women aged 20 or younger once their ovulatory cycles are established. On the other hand, secondary dysmenorrhea is attributable to underlying pelvic conditions or pathology and tends to be more prevalent in women older than 20 years. Dysmenorrhea is widely regarded as the most prevalent symptom among all menstrual complaints.

Various risk factors associated with dysmenorrhea have been identified in the literature, although findings are mixed for many of these factors. Generally, increased severity of dysmenorrhea has been linked to factors such as age, smoking, higher body mass index, earlier age at menarche, nulliparity, longer and heavier menstrual flow, and a family history of dysmenorrhea. Additionally, depression and stress have been demonstrated to elevate the risk of dysmenorrhea. However, factors like education, marital status, employment, alcohol consumption, and physical activity often yield inconclusive or negative results in relation to dysmenorrhea risk. (A Sharma et.al -2014)

According to Hong Ju et al. (2013) Dysmenorrhea is a common menstrual complaint with a major impact on women's quality of life, work productivity, and health-care utilization. A comprehensive review was performed on longitudinal or case-control or cross-sectional studies with large community-based samples to accurately determine the prevalence and/or incidence and risk factors of dysmenorrhea. Fifteen primary studies, published between 2002 and 2011, met the inclusion criteria. The prevalence of dysmenorrhea varies between 16% and 91% in women of reproductive age, with severe pain in 2%–29% of the women studied. Women's age, parity, and use of oral contraceptives were inversely associated with

dysmenorrhea, and high stress increased the risk of dysmenorrhea. The effect sizes were generally modest to moderate, with odds ratios varying between 1 and 4. Family history of dysmenorrhea strongly increased its risk, with odds ratios between 3.8 and 20.7. Inconclusive evidence was found for modifiable factors such as cigarette smoking, diet, obesity, depression, and abuse. Dysmenorrhea is a significant symptom for a large proportion of women of reproductive age; however, severe pain limiting daily activities is less common. This review confirms that dysmenorrhea improves with increased age, parity, and use of oral contraceptives and is positively associated with stress and family history of dysmenorrhea.

Oligomenorrhea

In young girls, oligomenorrhea has been associated with essential hyperandrogenism, particularly PCOS, as highlighted by (Wiksten-Almströmer .et. al. 2008). Additionally, it's worth noting that eating disorders of the bulimic type are often prevalent among girls experiencing oligomenorrhea.

Polymenorrhea

Polymenorrhea is a problem that occurs in teenagers. Polymenorrhea can occur due to an imbalance in the hormonal system in the hypothalamic axis which can result in disturbances in the ovulation process (release of egg cells) by (RH Reindollar et al.2003)

Amenorrhea

T Master-Hunter et al.(2003) Study shows that the etiology of amenorrhea is diverse and may be attributed to various factors including hormonal imbalances, structural abnormalities in the reproductive tract, excessive exercise, stress, and eating disorders. Polycystic ovary syndrome (PCOS) and hypothalamic amenorrhea are common hormonal causes, while Asherman's syndrome and structural abnormalities in the uterus are anatomical factors contributing to amenorrhea. The clinical presentation of amenorrhea varies depending on its underlying cause but often includes symptoms such as changes in weight, hair growth patterns, and breast development. An accurate diagnosis requires a comprehensive evaluation, which may involve hormonal assays, imaging studies, and sometimes a biopsy. The management strategies for amenorrhea depend on this cause. Hormone therapy, lifestyle modifications, and surgical interventions are recommended to address hormonal imbalances, structural abnormalities, or other contributing factors. Psychosocial support and counseling play crucial

roles in the management of amenorrhea, especially when related to eating disorders or psychological stress.

Study by DA Klein et al.(2013) says that amenorrhea may result from a number of different conditions, a systematic evaluation including a detailed history, physical examination, and laboratory assessment of selected serum hormone levels can usually identify the underlying cause. Primary amenorrhea, which by definition is failure to reach menarche, is often the result of chromosomal irregularities leading to primary ovarian insufficiency (e.g., Turner syndrome) or anatomic abnormalities (e.g., Müllerian agenesis). Secondary amenorrhea is defined as the cessation of regular menses for three months or the cessation of irregular menses for six months. Most cases of secondary amenorrhea can be attributed to polycystic ovary syndrome, hypothalamic amenorrhea, hyperprolactinemia, or primary ovarian insufficiency. Pregnancy should be excluded in all cases. Initial workup of primary and secondary amenorrhea includes a pregnancy test and serum levels of luteinizing hormone, follicle-stimulating hormone, prolactin, and thyroid-stimulating hormone. Patients with primary ovarian insufficiency can maintain unpredictable ovarian function and should not be presumed infertile. Patients with hypothalamic amenorrhea should be evaluated for eating disorders and are at risk for decreased bone density. Patients with polycystic ovary syndrome are at risk for glucose intolerance, dyslipidemia, and other aspects of metabolic syndrome. Patients with Turner syndrome (or variant) should be treated by a physician familiar with the appropriate screening and treatment measures. Treatment goals for patients with amenorrhea may vary considerably, and depend on the patient and the specific diagnosis.

Hypomenorrhea

Hypomenorrhea may be divided into functional (hormonal insufficiency or overstimulation) and organic types. This study concerns 23 consecutive cases of organic hypomenorrhea. Their chief complaints were sterility, habitual abortion, and hypomenorrhea. The diagnosis of hypomenorrhea is based on the history, study of ovarian function, hysterography, laparoscopy, and diagnostic curettage. Three forms of organic hypomenorrhea are described: (1) Endometrial tuberculosis was found in 8 cases in which the diagnosis was based on tubercular changes in the endometrium or tubes and characteristic hysterographic changes including lymphatic intravasation. In all these cases the hypomenorrhea was primary. (2) Intrauterine adhesions were found in 6 cases. In all of these the hypomenorrhea was secondary to curettage in the puerperium or after abortion. Following the lysis of intrauterine adhesions, the menstrual pattern returned to normal. (3) Endometrial insufficiency (sclerosis)

was found in 10 cases in which the secondary hypomenorrhea, which followed curettage in the puerperium or following abortion, was characterized by absence of intrauterine adhesions, normal ovarian function, absence of response to hormone therapy, scanty endometrial tissue on curettage, and a clinical picture of sterility or recurrent abortions. (H Yaffe, M Ron, WZ Polishuk, 1978)

Causes of irregular menstruation

A study by Sachin B. Somwanshi et al. (2017) suggests that irregular periods in women aged 4 onwards are primarily due to hormone fluctuations, especially as menopause approaches. Factors such as having an intrauterine device (IUD), taking birth control pills, thyroid disorders, other illnesses like diabetes or endometriosis, age, stress, extreme exercise or dieting, and Polycystic Ovarian Syndrome (PCOS) can also cause irregular menstrual cycles. PCOS, a genetic condition, can lead to irregular or absent periods due to abnormal hormone levels. While there's no cure for PCOS, its symptoms can be managed.

Preventive methods for Menstrual Irregularities

Management of Stress

Nazish Rafique and Mona H Al Sheikh (2018) conducted a study to find out how common menstrual problems are among young females studying health sciences, and if there's a connection with academic stress. The study took place at the health colleges of Imam Abdulrahman Bin Faisal University in Dammam, Saudi Arabia, between February 2015 and February 2016. They surveyed 738 female students aged 18-25 anonymously, using questionnaires about menstrual problems and stress levels. The data was analyzed using Statistical Package for Social Sciences version 16.0. The results showed that 91% of the students experienced some kind of menstrual problem. These problems included irregular periods (27%), abnormal bleeding (9.3%), missing periods (9.2%), heavy periods (3.4%), painful periods (89.7%), and premenstrual symptoms (46.7%). They also found that 39% of the students had high perceived stress. The study revealed a strong positive link between high stress levels and menstrual problems. Students with high stress were four times more likely to experience missing periods, twice as likely to have painful periods, and 2.8 times more likely to have premenstrual symptoms. The study concluded that the most common menstrual

problems (painful periods and premenstrual symptoms) were closely connected to stress. They recommended that health science students should receive early psychological and gynaecological counselling to prevent future complications.

In a cross-sectional study conducted by Shahida Nagma et al. (2015), 100 female undergraduate students from a medical college participated. They were given a questionnaire, along with the Perceived Stress Scale (PSS) and Pictorial Blood Assessment Chart (PBAC). The researchers correlated the students' menstrual patterns with their PSS scores using statistical tests like the chi-square test and Fisher's Exact test. Results showed that out of the 100 students, 30 had a PSS score greater than 20, while 70 had a score of 20 or lower. The study found a connection between high stress levels (PSS> 20) and menstrual irregularities. However, no association was observed between high stress levels and hypomenorrhea, menorrhagia, dysmenorrhea, long cycle length, or short cycle length. The conclusion drawn from the study was that while high stress levels were linked to menstrual irregularities, they were not associated with the duration, amount of flow, or dysmenorrhea. Therefore, other potential causes should be investigated in young women experiencing menstrual problems before assuming stress as the sole cause.

Fildzah Hashifah Taufiq et al. (2019) conducted a study to investigate the link between stress levels and menstrual cycle disturbances among female students in the Medical Faculty of Sriwijaya University. Menstruation typically occurs every month, forming a menstrual cycle, with the normal range being 21-35 days. However, many women experience disruptions in their menstrual cycles, often attributed to factors such as stress. The study utilized an analytical cross-sectional approach, gathering primary data from menstrual cycle records, stress assessments using the ISMA questionnaire, and personality type evaluations using DSM V questionnaires. Among the 503 participants meeting the inclusion criteria, 11.7% experienced polymenorrhea, 77.7% had normal menstrual cycles, and 10.6% experienced oligomenorrhea. Statistical analysis using the Chi-Square test revealed a significant association between stress levels and menstrual cycle disturbances among female students in the Medical Faculty of Sriwijaya University.

Zohra Parveen et al. (2022) conducted a cross-sectional study at the Shaikha Fatima Institute of Nursing and Health Sciences in Lahore from February 1st to July 1st, 2021. The study aimed to explore menstrual cycle patterns among student and staff nurses, compare perceived

stress levels, and determine their association with menstrual cycle patterns. A total of 150 participants aged 18 years were included, providing information on menstrual cycle patterns and related issues, along with completing the Perceived Stress Scale questionnaire. The results showed that the most common premenstrual symptom was generalized pain, reported by 26.0% of student nurses and 16.0% of staff nurses. Mood swings were the most frequently reported negative effect of the menstrual cycle, with 52.0% of students and 46.7% of staff nurses reporting them. There was no statistically significant difference in perceived stress scores between student and staff nurses. However, 27.3% of participants with high perceived stress scores also experienced irregular menstrual cycles. The study found a strong association between irregular menstrual cycles and high perceived stress scores ($p < 0.0001$). In conclusion, irregular menstrual cycles among student and staff nurses were significantly linked to perceived stress levels. The study recommends counselling by psychologists and gynaecologists for student and staff nurses to prevent future complications.

Proper Exercise

According to Vijaya M. Gaikwad et al. (2017), irregular periods are common in women, but yoga proves effective in naturally treating them. Regular yoga practice can lead to a more regular menstrual cycle, easier periods, improved sleep, and better relationships. Yoga alleviates stress, abdominal disorders, relaxes the body, regulates bodily functions, relieves menstrual pain, and enhances the function of abdominal organs

In a study conducted by Nikitha Mathur (2020), menstruation was identified as a natural indicator of female fertility, occurring approximately once a month as the body prepares for potential pregnancy. During menstruation, the thickened lining of the uterus is shed, resulting in bleeding, along with various accompanying symptoms such as lower back pain, joint pain, abdominal discomfort, fatigue, and mood changes. Exercise has been recognized as a method to alleviate the severity of these symptoms. The study aimed to assess the impact of an eight-week exercise program, incorporating aerobics, stretching, and cardio exercises, on the severity of menstruation symptoms. The research utilized a pre-experimental one-group pretest-posttest design with a sample of 40 female students aged 17-20 years from IBB College of Physiotherapy, Kota. Simple random sampling was employed, and participants were divided into two groups: an experimental group (n=20) performing daily exercises for eight weeks, and a control group (n=20) maintaining their regular routine without exercise. Pre-test data were collected using a menstrual symptom assessment questionnaire over five

days of menstruation. From the seventh day of menstruation, participants in the experimental group engaged in various exercises for 30 minutes per day for eight weeks. Post-test data were collected after four and eight weeks of intervention.Significant improvements were observed in menstrual symptoms pre- and post-intervention, with a notable reduction in symptom severity after eight weeks of exercise (30 minutes per day) at a significance level of $p<0.05$. The study concluded that exercise effectively reduced menstruation symptoms among female participants.

In a study conducted by Mindy Hightower (1998), the relationship between exercise participation and menstrual pain, physical symptoms, and negative mood was investigated using prospective daily reporting. A total of 41 women, comprising 21 sedentary individuals and 20 regular exercisers, completed a modified version of the Prospective Record of the Impact and Severity of Menstrual Symptoms (PRISM) calendar for two complete menstrual cycles. Analysis of the data revealed that menstrual pain was consistently greater during menses compared to the follicular and luteal phases for all participants. Furthermore, the study found that exercise status interacted with the menstrual cycle phase in predicting pain. Specifically, women who participated in exercise reported experiencing less pain than sedentary women during menses, while no differences were observed between the two groups during the follicular and luteal phases. Additionally, exercise participation was associated with greater reports of anxiety during menses, although it did not influence reports of symptoms or negative mood throughout the menstrual cycle. These findings suggest that even moderate levels of exercise can impact the experience of menstrual pain in women.

Z Abbaspour et al. (2006) conducted a study on the impact of exercise on primary dysmenorrhea, a painful syndrome associated with menstrual cycles. Despite the common belief that exercise can alleviate dysmenorrhea, the scientific literature presents conflicting evidence. The primary aim of this research was to assess the effects of exercise on primary dysmenorrhea. The study involved a randomized clinical trial with 150 high school female students from Masged Solayman city experiencing severe dysmenorrhea. The students were divided into two groups: an "exercise" group and a "non-exercise" group. The exercise group was assigned specific exercises, and the results were recorded for two menstrual cycles following the exercise intervention. Descriptive statistics and repeated measures design were used for statistical analysis. The findings revealed that in the exercise group, the intensity of

pain decreased from 8.59 to 4.63 in the third period and to 2.84 in the fourth period ($P < 0.01$). The average duration of pain decreased from 7.15 to 4.22 in the third period and to 2.23 in the fourth period ($P < 0.01$). Additionally, the average use of sedative tablets decreased from 1.13 to 0.35 tablets in the third period and to 0.0 tablets in the fourth period ($P < 0.01$).Exercise was found to reduce the severity and duration of dysmenorrhea, as well as the use of sedative tablets, among high school girls.

Balanced Diet

Ali Heidarian Pour et al. (2016) conducted a study to explore the benefits of moderate-intensity aerobic exercise on menstrual cycle disorders and hormone levels. Twenty women with menstrual disorders were randomly assigned to either an experimental or control group. The experimental group underwent eight weeks of moderate-intensity aerobic exercise, while the control group did not engage in regular physical training. Blood samples were collected from all subjects 24 hours before and after the exercise period to measure hormonal variables, and they also completed questionnaires to assess levels of menstrual disorders. The findings indicated a significant reduction in pain scores on the Visual Analogue Scale among the experimental group after the eight-week training period ($p<0.05$). Moreover, there was a significant increase in plasma levels of FSH and a decrease in LH levels in the experimental group ($p<0.05$). These results suggest that regular moderate-intensity aerobic exercise may effectively alleviate dysmenorrhea and menstrual disorders, offering a potential preventive or therapeutic approach for managing these conditions.

In a study conducted by Friday E. Okonofua et al. (1990), the aim was to determine the prevalence of menstrual disorders among female university athletes in Nigeria. A questionnaire was developed to collect information on the athletes' age at menarche, menstrual and pregnancy histories, as well as contraceptive usage. One hundred and thirty-three athletes from various Nigerian universities participated by completing the questionnaire. The athletes were divided into two main groups based on their sporting activities: contact sport athletes (CSA) and non-contact sport athletes (NCSA). Analysis of the data showed that NCSA were notably younger, lighter, and leaner compared to CSA, with comparable heights, duration of sporting involvement, menstrual regularity, and incidences of dysmenorrhea and menorrhagia. None of the athletes reported experiencing oligomenorrhea or amenorrhea. The overall prevalence of dysmenorrhea and menorrhagia among the athletes was 35% and 41%,

respectively. When compared to previous findings from sedentary Nigerian university women, it seems that regular exercise may have a positive impact on dysmenorrhea, but does not significantly influence the occurrence of other menstrual disorders.

Tomoko Fujiwara et.al (2007) conducted a study to investigate the adverse effects of dietary habits on menstrual disorders in young women. It is widely acknowledged that dietary practices are closely linked to the well-being of women in their reproductive years. These practices are believed to not only impact current lifestyles but also contribute to gynecological issues like dysmenorrhea and irregular menstruation. Despite the absence of a consistent definition for regular or normal menstruation, there is a growing focus on epidemiological assessments of the menstrual cycle. Furthermore, concerns arise about the potential development of organic diseases, such as endometriosis, associated with dysmenorrhea, within the current nutritional environment for young women. Consequently, there is a significant need to assess the current dietary habits of young women and understand their potential impact on reproductive functions. As part of this review, recent articles addressing these concerns have been re-examined.

A study was conducted by Hayam Fathy A. Eittah (2014) on Effect of breakfast skipping on young females' menstruation. This study aimed to investigate the impact of skipping breakfast on the menstrual cycle among young females. Menstrual disorders commonly impact the well-being of adolescents and young women, with nutritional deficiencies recognized as a significant contributor to hypothalamic-pituitary-ovarian dysfunction. Breakfast, as an integral component of a healthy diet and lifestyle, can positively influence the health and overall well-being of children and young adults. Daily eating habits play a crucial role in influencing the menstrual function in young women.

A cross-sectional descriptive design was employed, involving 300 female students from the Faculty of Nursing at Menoufiya University, Egypt. Data were collected through an interview-based questionnaire developed after a comprehensive literature review. Statistical analysis was conducted using SPSS software version 17. The group that included breakfast in their routine (89.1%) showed a higher percentage of menstrual regularity compared to the breakfast-skipping group (83.9%, p=0.206). Statistical significance was observed in premenstrual symptoms such as abdominal pain, anorexia, and cramps (P=0.035, 0.016, and 0.035, respectively), indicating a decrease in group one compared to group two. Dysmenorrhea was notably more prevalent in girls who skipped breakfast compared to those

who had it (P=0.035).it was concluded that Skipping breakfast is associated with irregular menstrual cycles and an increased incidence of dysmenorrhea, oligomenorrhea, premenstrual pain, anorexia, and premenstrual cramps. However, no significant effect was observed on other aspects of premenstrual syndromes.

The study by Dr. PVS Smruth et.al (2023) on Impact of lifestyle and dietary habits on menstrual cycle among female medical students. Menstrual patterns are subject to a range of influences, and among the factors contributing to menstrual disorders, lifestyle and dietary habits play a pivotal role. Therefore, this study aims to explore the impact of lifestyle and dietary habits on the menstrual cycle in female medical college students, providing recommendations for adopting a healthy lifestyle and dietary choices.A cross-sectional study was undertaken among 200 students across all semesters in a tertiary care institute, utilizing a simple random sampling method. Data collection involved a pre-tested, pre-designed, semi-structured, and self-administered questionnaire. The collected data were analyzed using SPSS version 24, and the chi-square test was employed where applicable.
The study revealed that 29.1% of participants experienced irregular menstrual cycles. Additionally, 79.4% of respondents consumed sugary foods more than three days a week, 43% did not achieve a sleep duration exceeding seven hours per day, and 52% did not engage in regular exercise exceeding five times per week.The findings indicate a significant association between the consumption of junk food, physical activity, and sleep habits with the menstrual cycle of the participants. Maintaining a healthy and regular menstrual cycle is linked to factors such as regular exercise, a diet rich in healthy foods, sufficient sleep, and reduced stress.

Jasjit Kaur Randhawa et .al(2016) conducted a study on Effect of Dietary Habits and Socio-economic Status on Menstrual Disorders among Young Females. Menstruation represents a crucial phase in the reproductive cycle characterized by significant hormonal changes, and it is well-established that diet plays a role in influencing hormone production. Inadequate nutrition in the female diet has the potential to disrupt the menstrual cycle, leading to menstrual disorders and premenstrual syndrome (PMS). This cross-sectional study aimed to investigate the connection between dietary habits, socio-economic status, and menstrual disorders among college-going and young working females in Amritsar, Punjab, India, conducted from January to March 2013. Excluding those who hadn't reached menarche, had chronic health conditions, or were using long-term medications, a total of 100 females out of

300 surveyed were selected for this study. Each participant completed a questionnaire. The majority (87%) belonged to a middle socio-economic status, with a higher prevalence of menstrual disorders attributed to sedentary lifestyles and Western dietary habits. Vegetarian women exhibited a greater prevalence of menstrual disorders, excluding dysmenorrhea, compared to non-vegetarian women. Women not consuming daily salads showed a higher prevalence of menorrhagia (56.25% vs. 32.69%), while those not consuming fruits daily had higher percentages of menorrhagia (44.68% vs. 43.40%) and oligomenorrhea (46.81% vs. 45.28%). A significant 93% of respondents consumed junk food, and a positive association was identified between junk food consumption and menstrual disorders.

V Talekar (2022) conducted a study based on Role of dietary habits in menstrual disorders among adolescent girls in Western Maharashtra Navi Mumbai. To evaluate menstrual disorders among adolescent girls in selected schools of Navi Mumbai. To assess the dietary habits of adolescent girls in selected schools of Navi Mumbai. To examine the association between dietary habits and menstrual disorders among adolescent girls. This descriptive study was conducted at MGM School in Navi Mumbai, India, spanning from October 2021 to December 2021, aiming to explore the correlation between dietary habits and menstrual disorders among adolescent girls. Data were collected from 100 participants using a numerical pain scale, a modified women's health questionnaire, and a daily diary. Non-probability purposive sampling was employed to select adolescent girls. The mean age of menarche was found to be 12.9±2.7 years. The study revealed that 54% of girls experienced moderate menstrual pain, 21% severe menstrual pain, and 36% exhibited premenstrual symptoms. More than 42% of participants reported consuming fast food, and a significant number had a habit of skipping meals in the afternoon. The analysis indicated a noteworthy association between dietary habits and menstrual problems ($p < 0.0001$). The correlation coefficient between dietary habits and menstrual disorders was identified as $r=0.7$ with $p < 0.05$. It was concluded that Menstrual disorders pose emerging challenges among adolescent girls in Navi Mumbai schools. Ensuring the daily intake of an appropriate amount of protein, carbohydrates, fat, vitamins, and minerals can potentially contribute to alleviating menstrual problems experienced by adolescent girls.

CHAPTER 3
METHODOLOGY

The methodology adopted for the present study entitled **"Irregular Menstruation in College Going Students"** is discussed under the following headings:

3.1Selection of subjects

Menstrual irregularity encompasses variations in the frequency, onset irregularity, duration of flow, or blood volume compared to a typical menstrual cycle. It poses a significant medical concern affecting numerous students, as stated by Maisam H Alhammadi et al (2022). Therefore, in this study college students within the age group of "18 – 24" were selected . A total of 150 students participated in this study.

3.2 Selection of area

The present study was carried out in St. Teresas College (Autonomous) Ernakulam. The convenience and availability of the required subjects within age limits led to the selection of this area for the study.

3.3 Selection of tool

The tool selected for the study was Google Form consisting of a set of questions which were submitted by the subjects. The Google form consisted of questions like general profile, anthropometric measurement, medication, Food Frequency Questions, clinical symptoms, lifestyle habits and details of existing diseases.

3.4 Collection of data

The data was collected from 150 college going students through Google form . The details collected from the subjects were their general profile , anthropometric measurements, clinical symptoms, physical activity and dietary pattern, lifestyle habits and lifestyle diseases.

3.4.1 General profile

The general profile included basic information about the subject like name, age, phone number.

3.4.2 Anthropometric measurement

Anthropometric measurements of the subjects (height and weight) were used to calculate BMI using formula:

BMI = Weight (kgs)/ Height (m2)

3.4.3 Clinical symptoms

The presence of clinical signs and symptoms of irregular menstruation were used to categorize the irregularities of menstruation in the subjects.It includes pain during menstruation, bowel problems,and other accompanying problems.

3.4.4 Physical Activity

Exercise is one of the important steps to control menstrual irregularities . The type of exercise, frequency and duration were asked through the questionnaire.

3.4.5 Dietary Pattern

It includes the type of food pattern(vegetarian, non-vegetarian and ovo-vegetarian), frequency of fruits and vegetables, frequency of meal, frequency of sugar consumption (daily, weekly, once in a week),consumption of fast food, skipping meals,consumption of processed food and frequency(daily, weekly, twice a week)

3.5.6 Diseases

Details of existing diseases like Diabetes, hypertension ,PCOS, thyroid problems, anemia or any other medical condition were collected .

3.4.7 Menstrual profile

Menstrual profile is mean to be the details related to the subjects menstrual period . It included the age of first menstruation (8-10,10-15,16-18), number of pads use in a day, prevalence of pain , usage of painkillers, dictation of irregular menstruation and treatment taken for the irregularities,flow of blood during menstruation (light,moderate,heavy),number of days between start of one period and start of next period(less than 21 days,22-24 days,25-28 days,29-32 days,33-35 days,more than 36 days, too irregular),Menstrual Irregularities present among subjects, absence of period in first two years of mensuration, number of days bleeding occur(7 days,<3 days,>35 days,<21 days).

3.5 Analysis and interpretation of data

Data collected from the subjects were tabulated and interpreted. Percentage analysis was used to analyse the data.

CHAPTER 4

RESULT AND DISCUSSION

The results and discussions of the study entitled "**Irregular Menstruation in College Going Students**" are presented under the following headings:

4.1 Anthropometric Measurements of the Subjects
- 4.1.1 Weight
- 4.1.2 Height
- 4.1.3 BMI

4.2 Menstrual Profile of the Subject
- 4.2.1 Menarcheal age
- 4.2.2 Number of pads used per day
- 4.2.3 Prevalence of pain
- 4.2.4 Menstruation Related problems
- 4.2.5 Usage of painkillers
- 4.2.6 Menstrual flow
- 4.2.7 Intermenstrual gap
- 4.2.8 Post menarche irregularities
- 4.2.9 Duration of bleeding days
- 4.2.10 Mental stress
- 4.2.11 Prevalence of anaemia
- 4.2.12 Menstrual irregularities present among subjects

4.3 Medical Conditions of the subjects
- 4.3.1 PCOS
- 4.3.2 Thyroid problems
- 4.3.3 Diabetes
- 4.3.4 Hypertension

4.4 Physical Activity Pattern of the Subjects

4.5 Dietary Pattern of the Subjects
- 4.5.1 Food consumption pattern
- 4.5.2 Meal skipping pattern
- 4.5.3 Fruits consumption pattern

4.5.4 Consumption of sugar

4.5.5 Consumption of fast foods

4.5.6 Consumption of processed foods

4.6 Medical Management followed

4.1 ANTHROPOMETRIC MEASUREMENTS OF THE SUBJECTS

4.1.1 Weight

Weight	Percentage
35-45	26%
45-55	40.40%
55-65	22%
65-75	10%
75-80	2%

Table 1:- Weight

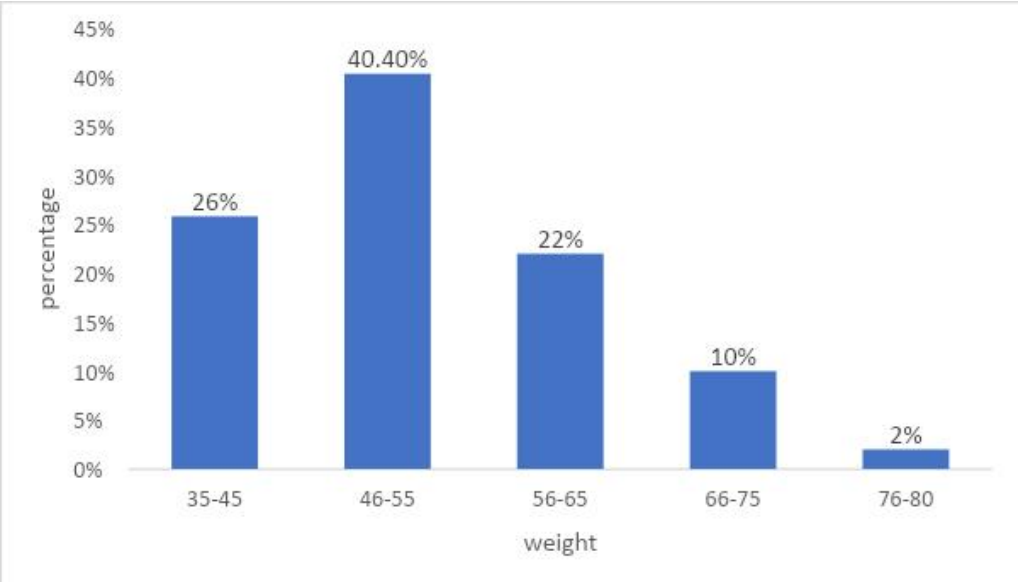

Figure1 :- Weight of the subjects

From this chart, it was shown that the majority of the subjects, comprising 40.40%, had a weight between 46 and 55. Furthermore, 26% of the subjects had a weight between 35 and 45, while 22% had a weight of 22%. Additionally, 10% of the subjects had a weight between 66 and 75, and only 2% had a weight between 76 and 80

4.1.2 Height

Height	Percentage
130-140	2%
140-150	13%
150-160	50%
160-170	31%
170-180	3%

Table 2:-Height

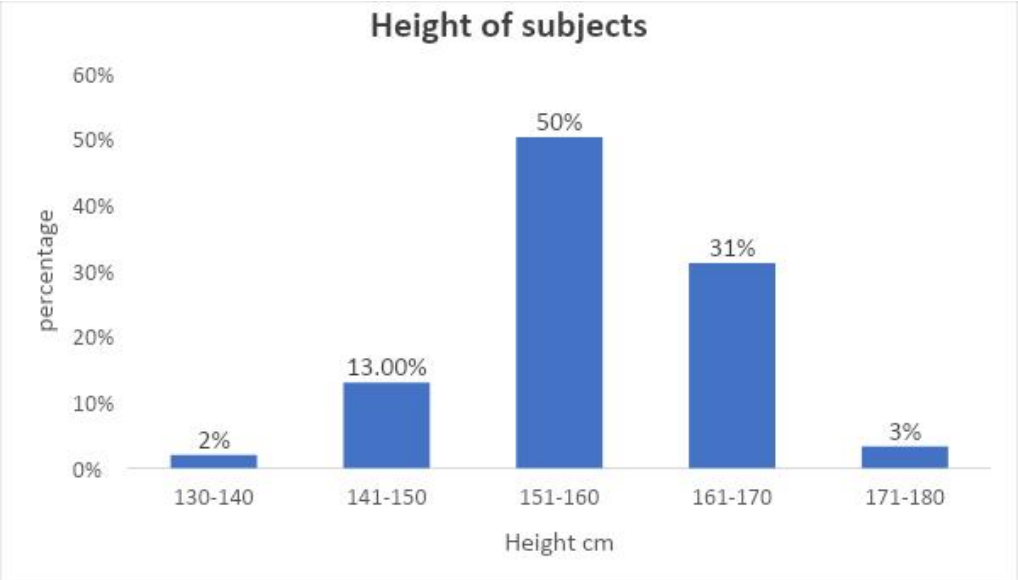

Figure 2:- Height

It is given that majority of the subject that is 50% of the subjects had the weight of 151-160 cm,31% of the subjects had 161-170 cm of height,13% of subjects had 141-150 cm of height,3% of the subjects had 171-181 cm and 2% of the subjects had 130-140 cm of height.

4.1.3 BMI

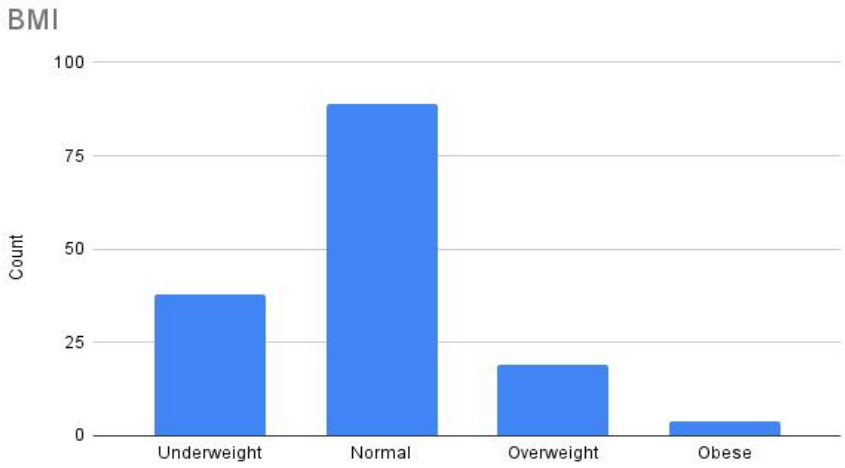

Figure 3:-BMI of the subjects

The Body Mass Index (BMI) of the participants was determined based on the provided height and weight measurements. A majority of the subjects, comprising 59.3%, fell within the normal BMI category. Among women, 25.3% were classified as underweight, while 12% were deemed overweight. The remaining 2.7% were identified as obese.

Anthropometric Parameters	**Mean**	**SD (Standard Deviation)**
Weight (in Kg)	52.95	9.93
Height (in cm)	157.50	7.32
BMI (Kg/m^2)	21.35	3.75

Table 3 : Anthropometric Measurements

The anthropometric data collected here was height and weight which was then used to calculate the Body Mass Index. From the above table, it is clear that the mean height obtained is 157.50 and the standard deviation obtained for height is 9.93. The mean and standard deviation calculated for weight is 52.95 and 9.93 respectively. Finally, the mean value obtained for BMI is 21.35 and the standard deviation is 3.75.

4.2 MENSTRUAL PROFILE OF THE SUBJECTS

4.2.1 Menarcheal age

Age of first menstruation	
Age	Percentage
Between 8-10	6%
Between 10-15	88.6%
Between 16-18	5.4%

Table 4 :- Age of first menstruation

From this table, it was evident that the majority of the subjects, accounting for 88.6%, had their first menstruation between the ages of 10 and 15. Additionally, 6% of the subjects experienced their first menstruation between the ages of 8 and 10, while 5.5% had their first menstruation between the ages of 16 and 18.

In the study "Age at Menarche and Menstrual Cycle Pattern among School Adolescent Girls in Central India" conducted by DG Dhambare et al. (2012), it was found that the mean ages of menarche were 13.51 years with a standard deviation of 1.04 years for urban areas and 13.67 years with a standard deviation of 0.8 years for rural areas

4.2.2 Number of Pads used per day

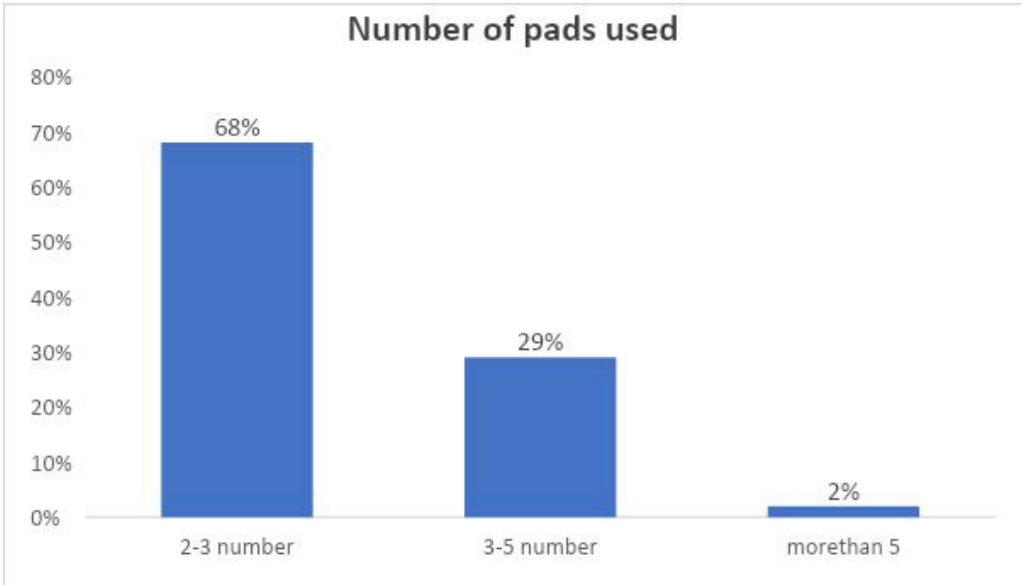

Figure 4:- Number of pads used per day

In the given study, the majority of them used 2-3 numbers of pads per day (68.5 %) , 29.5 % used 3-5 numbers of pads per day and 2.0 % only used more than 5 days per day.

Usage of pads for each person varies depending upon their menstrual flow, some girls have heavier bleeding with their periods and others have lighter bleeding.

4.2.3 Prevalence of Pain

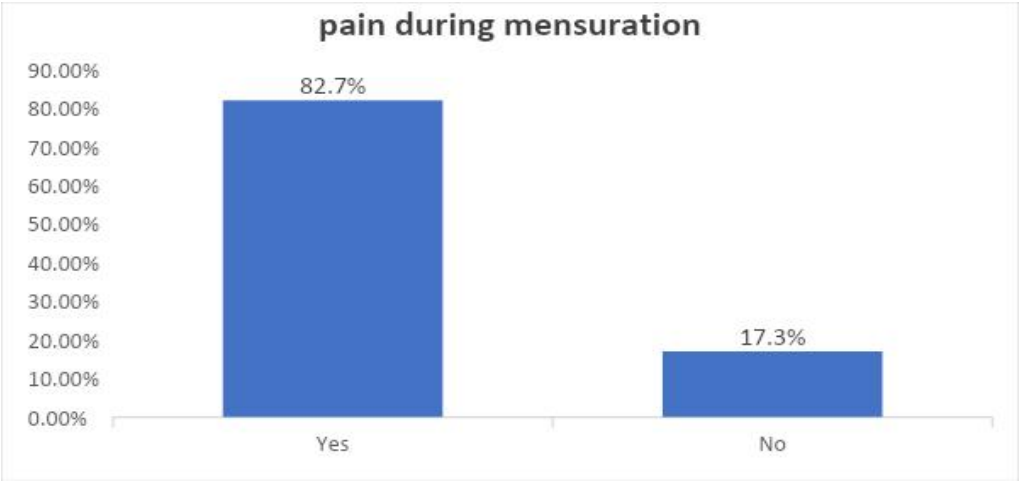

Figure 5:- Prevalence of pain during menstruation

It was observed that the majority of the respondents, 82.7%, experienced pain during their menstruation, while only 17.3% did not experience any pain during their menstruation. Period pain was noted to vary from mild to severe.

A study conducted by G Grandhi et al.(2012) the result was obtained as Menstrual pain was reported by 84.1% of women, with 43.1% reporting that pain occurred during every period, and 41% reporting that pain occurred during some periods. Women with menstrual pain had an earlier menarche (P = 0.0002) and a longer menstrual flow (P = 0.006).

4.2.4 Menstruation Related problems

Related problems	percentage
No other problems	52%
Pain	38%
Bowel problems	10%

Table 5:- Related problems of menstruation

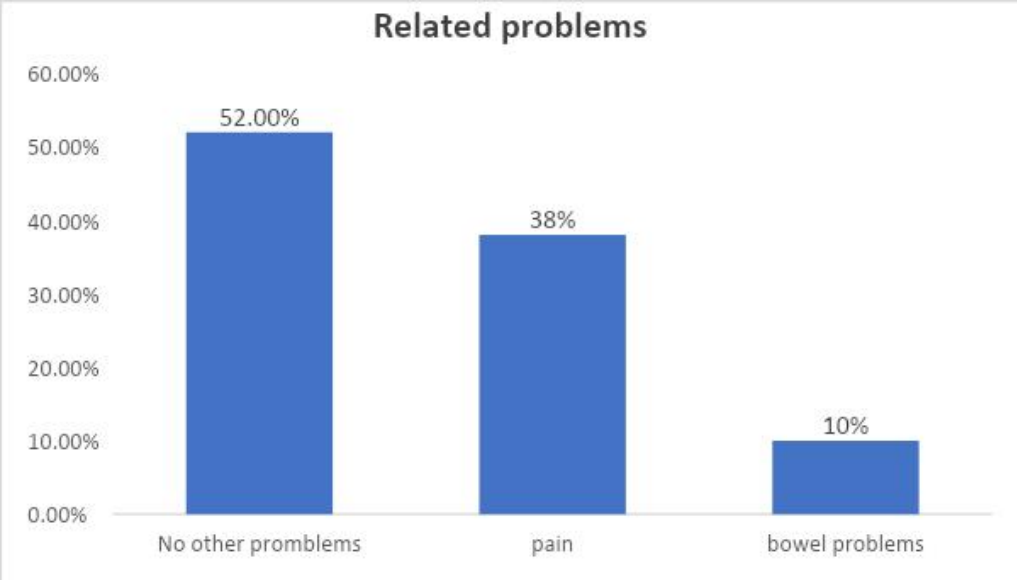

Figure 6:- Related problems during menstruation

The survey reveals that a majority, accounting for 52% of the respondents, reported no additional health concerns. However, 38% reported experiencing pain, while a smaller percentage, only 10%, cited other issues such as bowel problems.

4..2.5 Usage of Painkillers

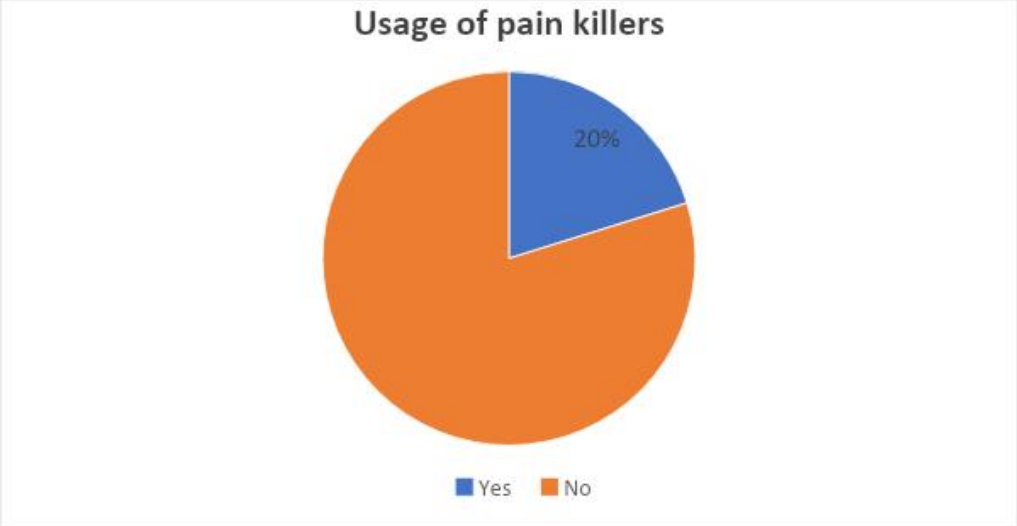

Figure 7:- Usage of painkillers

From the above figure it is clear that, Majority 80% of the respondents did not use any type of painkillers during their periods and only 20% of the respondents used painkillers during their periods. Usage of painkillers provides relieves from menstrual cramps

4.2.6 Menstrual flow

Menstrual flow	percentage
Light	11.4%
Moderate	81.20%
Heavy	7.4%

Table 6 :- menstrual flow of the subjects

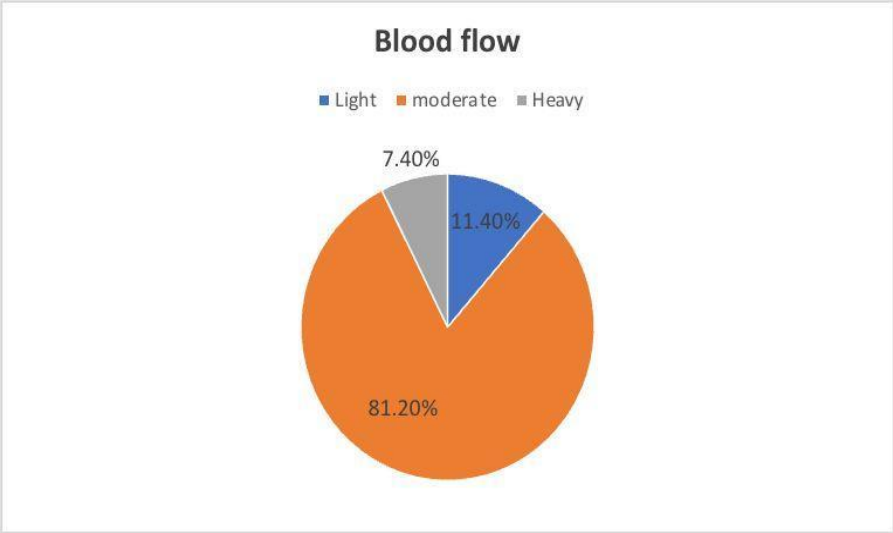

Figure 8 :- Menstrual flow

This chart showed that 81% of the subjects had moderate blood flow, 11.4% of the subjects had light blood flow during menstruation, and only 7.4% of the subjects had heavy blood flow during menstruation. A study conducted by D Flug et al.(1984) titled Menstrual patterns in adolescent Swiss girls: a longitudinal study it was found that the intensity of menstrual flow was mild in 11–16%, moderate in 62–78% and severe in 11–25% of the girls. The frequency of these three categories remained essentially unchanged during the first five post-menarcheal years.

4.2.7 Intermenstrual Gap

No . of days	Percentage
Less than 21 days	6.7 %
22 – 24 days	35 .3 %
25 – 28 days	13.3 %

29 – 32 days	26 %
33 – 35 days	5.4 %
Too irregular to say	13.3 %

Table 7:- Intermenstrual Gap

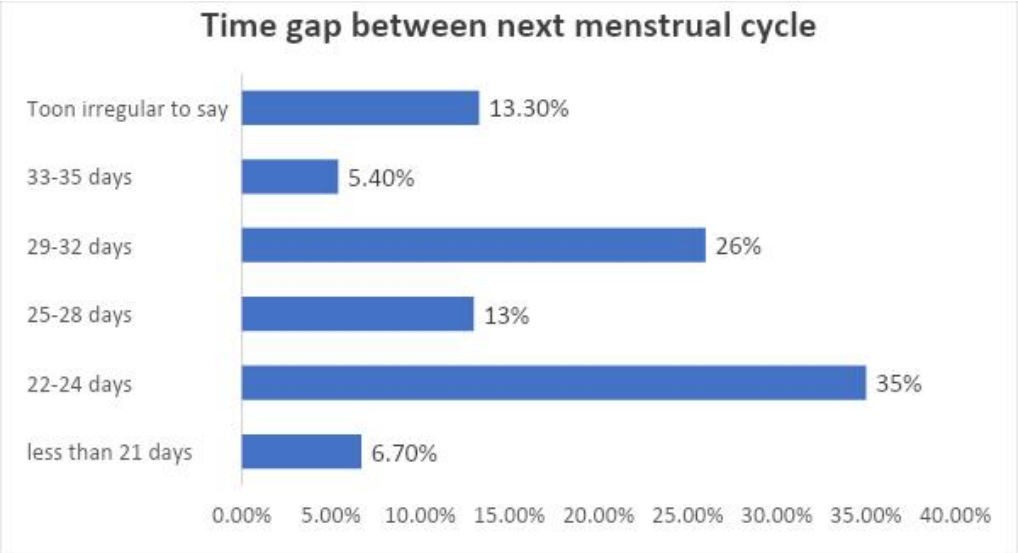

Figure 9:-Time gap between next menstrual cycle

From the above figure, it was clear that most of the participants had a 22-24 day intermenstrual period, with 26% having 29-32 days. Additionally, 13.30% were not sure about their intermenstrual gap due to their irregular menstrual cycle. Moreover, 13% had 25-28 days, a small group of subjects (6.70%) had less than 21 days, and 5.40% had 33-35 days

4.2.8 Post menarche irregularities

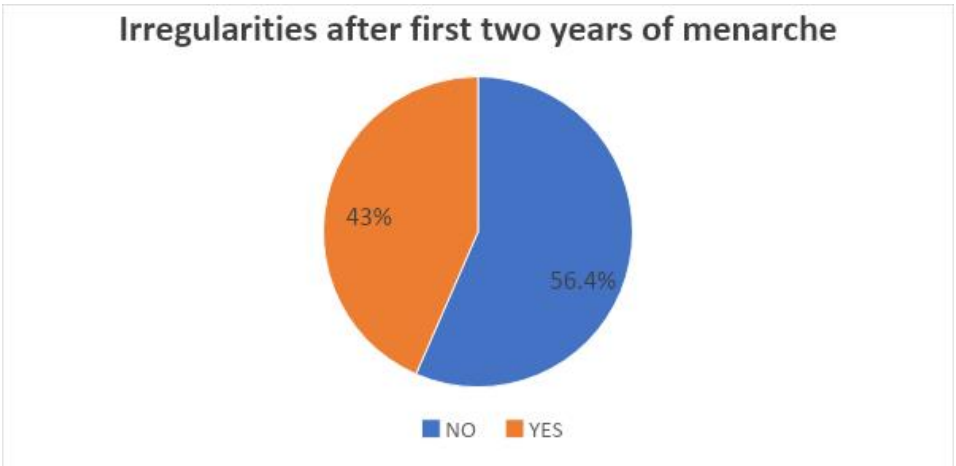

Figure 10 :- Irregularities after first two of menarche

From this chart, it was indicated that 56.4% of the subjects reported having irregular menstruation in the first two years after their initial menstruation. On the other hand, 43% of the subjects reported having no irregularities in their first two years after their first menstruation

4.2.9 Duration of bleeding days

Number of days	Percentage
< 21 days	0.7%
< 3days	7.4%
5-7 days	91%

Table 8 :- Duration of bleeding days

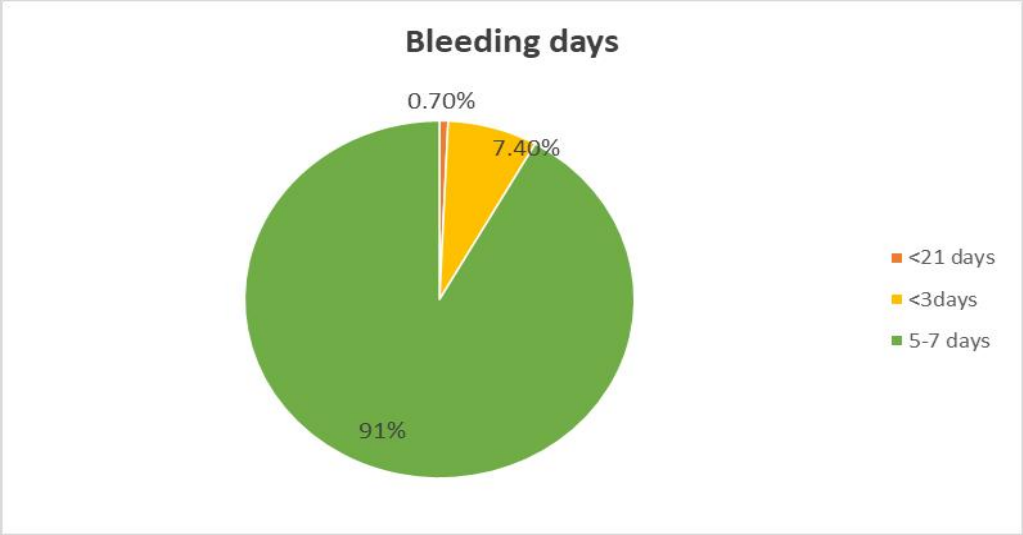

Figure 11:- Duration of bleeding days

The vast majority of participants, comprising 91.3%, reported experiencing normal menstrual cycles characterized by bleeding lasting 5 to 7 days. A smaller proportion, accounting for 7.4% of respondents, indicated shorter menstrual periods, specifically less than 3 days, a condition known as hypomenorrhea. An even smaller fraction, just 0.7%, reported menstrual cycles shorter than 21 days, termed polymenorrhea. These findings underscore the diversity in menstrual patterns among individuals surveyed, highlighting variations in cycle length and duration of bleeding.

4.2.10 Mental Stress

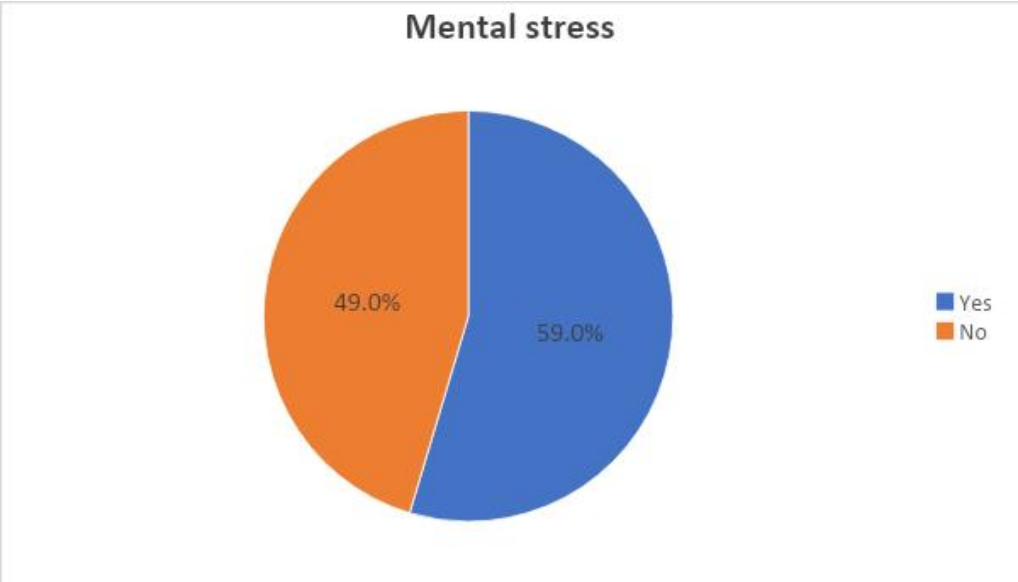

Figure 12:- Effect of Mental stress on menstruation

In this study it is clear that 59.1 % of the participants said that their mental stress affects their periods and 40.9 % of remaining participants' mental stress did not affect their periods.

N Ozimeck et al.(2022) study shows that out of the 210 respondents, more than half (54%) reported changes in their menstrual cycles. These included changes in menstrual cycle length (50%), the duration of menses (34%), and changes in premenstrual symptoms (50%). Respondents with high perceived stress scale (PSS) scores during Covid were more likely to experience a longer duration of menses ($p < 0.001$) and heavier bleeding during menses ($p = 0.028$) compared with those with moderate Covid PSS scores.

4.2.11 Prevalence of Anaemia

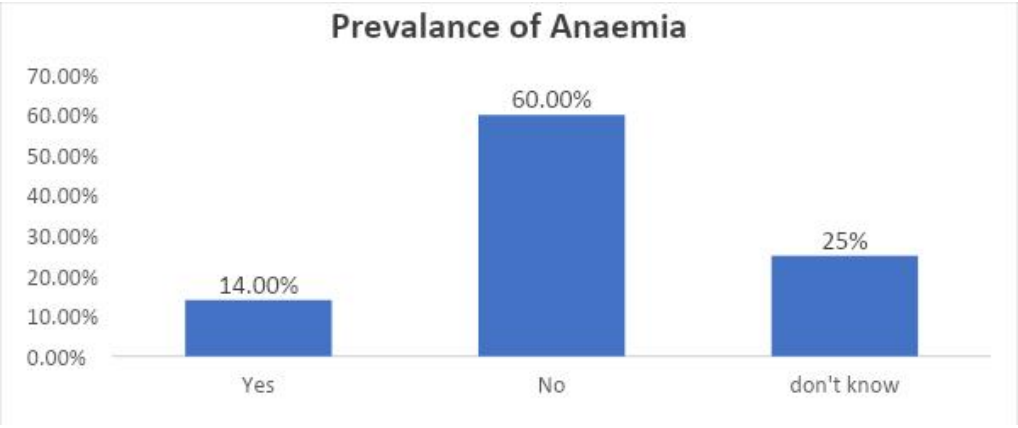

Figure 13:- Prevalence of Anaemia

According to the provided data, it's evident that 60% of the respondents did not exhibit any signs of anaemia currently, while 14.7% currently had anaemia. However, 25.3% of the respondents were uncertain about their anaemia status.

Heavy menstrual bleeding is a common issue among women of reproductive age and is often linked to iron deficiency anaemia.

4.2.11 Menstrual Irregularities present among subjects

Type of Irregularity	Percentage
Dysmenorrhea	82 %
Oligomenorrhea	10 %
Polymenorrhea	6.5 %
Menorrhagia	1.2 %
Amenorrhea	0.3 %

Table 9 :- menstrual irregularities present among subjects

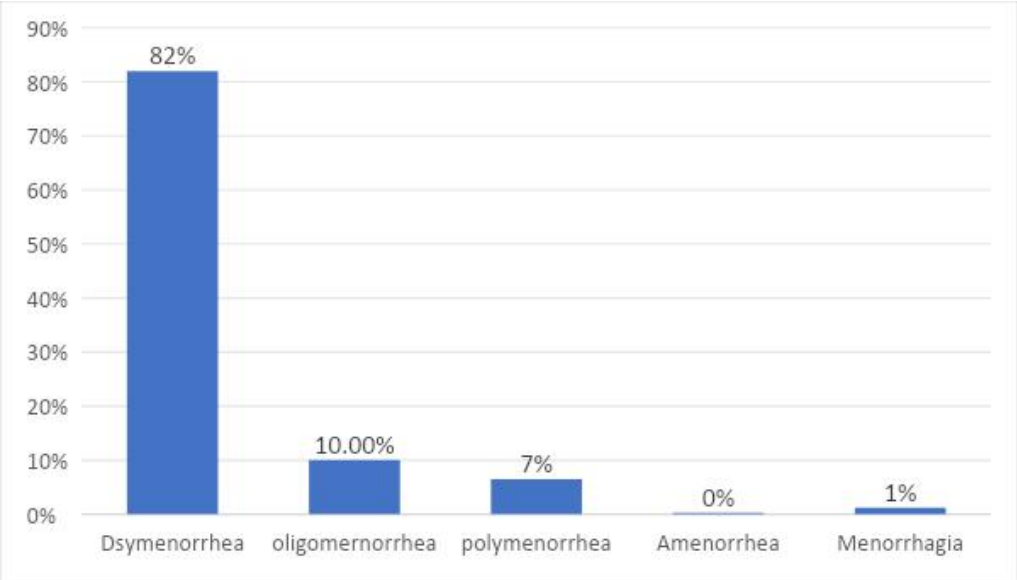

Figure 14 :- prevalence of menstrual irregularities

The survey results indicate that the majority of subjects, approximately 82%, reported experiencing dysmenorrhea. In the same time, 10% of subjects exhibited oligomenorrhea, while 6.5% experienced polymenorrhea. Menorrhagia and amenorrhea were less common, with only 1.2% and 0.3% of subjects experiencing them, respectively.

S. Kulshrestha et al. (2019) conducted a study on the prevalence of menstrual disorders and their relationship with physical activity among adolescent girls in Aligarh city. The findings revealed an overall prevalence of menstrual disorders of 76.9%. The most common disorder reported was premenstrual syndrome (PMS), affecting 71.3% of participants. Dysmenorrhea was prevalent in 46.3% of girls, while amenorrhea, oligomenorrhea, polymenorrhea, menorrhagia, and hypomenorrhea were reported at rates of 21.3%, 12.8%, 22.2%, 15.9%, and 15%, respectively. Most adolescents reached menarche at an appropriate age. Dysmenorrhea and PMS showed a significant inverse correlation ($p > 0.01$), while amenorrhea and menorrhagia exhibited a mild inverse correlation ($p > 0.05$)

4.3 MEDICAL CONDITIONS OF THE SUBJECT

4.3.1 PCOS

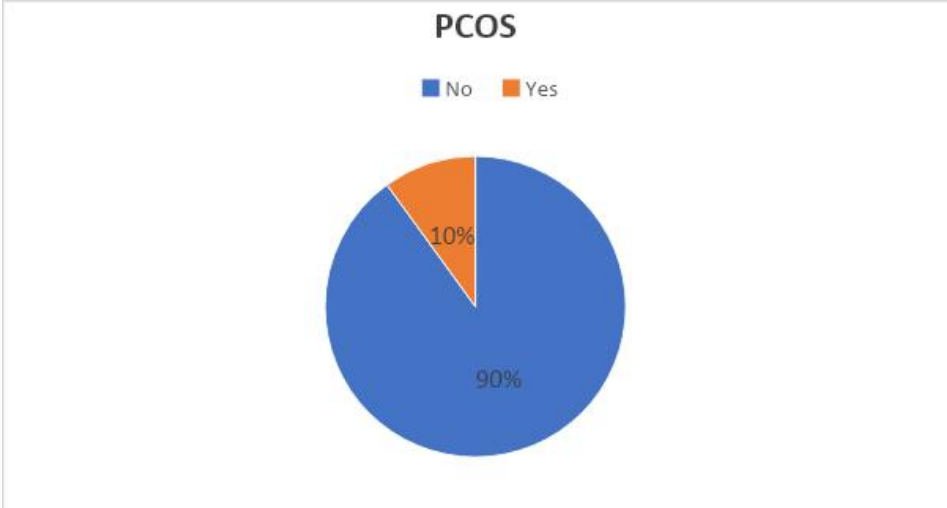

Figure15 :- Prevalence of PCOS

In this study 90 % of the subjects are not affected with PCOS and 10 % out of the total subjects is affected with PCOS.

The long and irregular menstrual cycles that accompany polycystic ovary syndrome (PCOS) indicate altered hormone levels. In a study conducted by MHA Van Hoof et al. (2000), it was observed that the prevalence of PCOS significantly rose in correlation with irregularities in the menstrual cycle pattern. Specifically, PCOS was found in 9% of girls with regular menstrual cycles, 28% of those with irregular menstrual cycles, and 45% of oligomenorrhea girls, as highlighted in the study's findings.

4.3.2 Thyroid issues

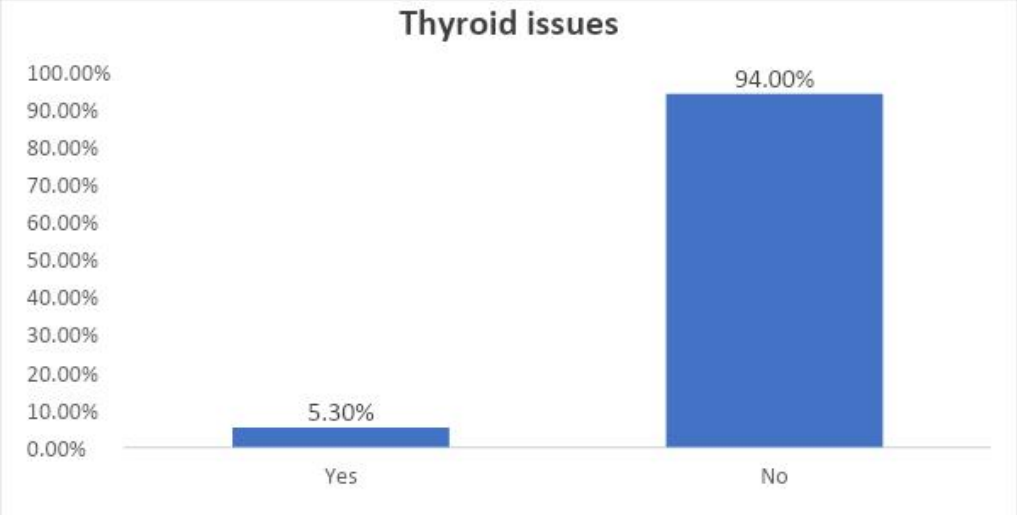

Figure 16:- Thyroid issues on the subjects

The provided data indicates that the majority 94.7 % of participants did not exhibit any thyroid dysfunction. Specifically, only 5.3% of the total participants reported being affected by thyroid issues.

GE Krassas (2000) conducted a study titled Thyroid Disease and Female Reproduction in which the result was obtained as both hyperthyroidism and hypothyroidism may result in menstrual disturbances. In the recent study, they found that only 21.5% of 214 thyrotoxic patients had some type of menstrual disturbance, compared to 50 to 60% in some older series. The most common manifestations are hypomenorrhea and oligomenorrhea.

4.3.3 Diabetes

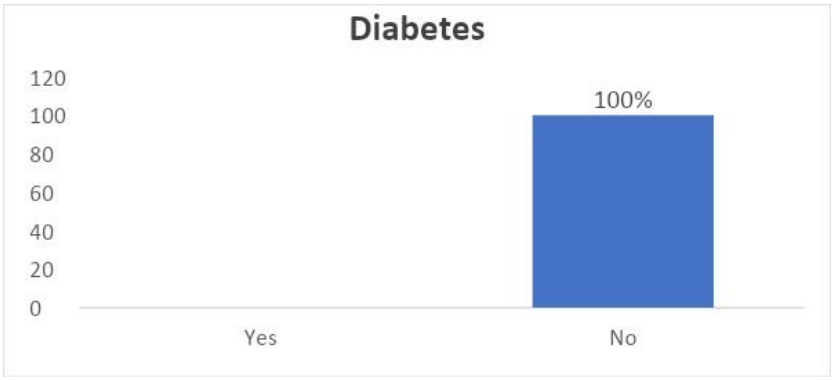

Figure 17:- Prevalence of Diabetes

The provided data indicated that diabetes was not currently present among any of the respondents. This suggests that diabetes was absent within the surveyed population.

4.3.4 Hypertension

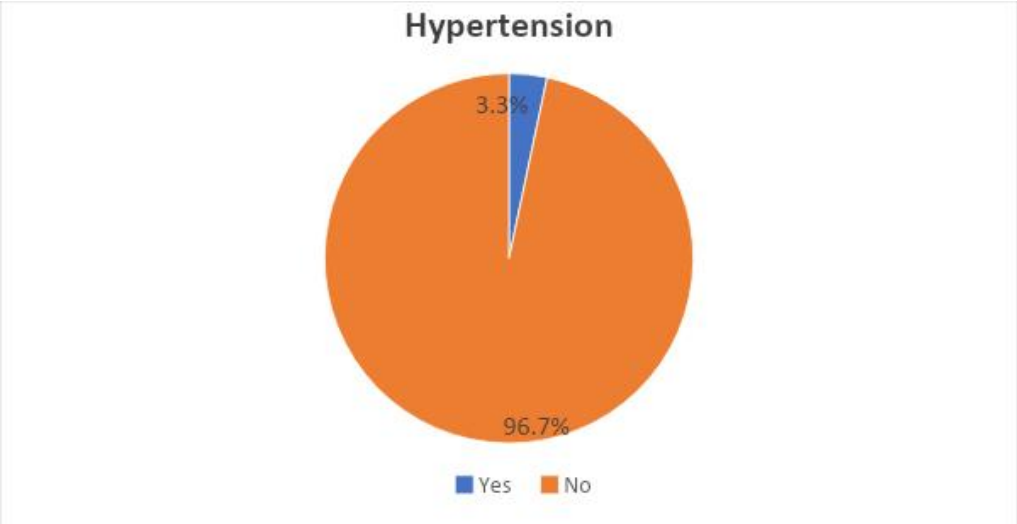

Figure 18 :- Prevalence of Hypertension

According to the survey findings, the vast majority of respondents, accounting for 96.7%, do not experience hypertension, with only 3.3% diagnosed with this condition. This suggests that hypertension is not much prevalent among the surveyed group.

4.4 PHYSICAL ACTIVITY PATTERN

Frequency of physical activity	percentage
Regular	6.7%
Irregular	63%
Never	30%

Table 10:- Physical activity pattern of the subjects

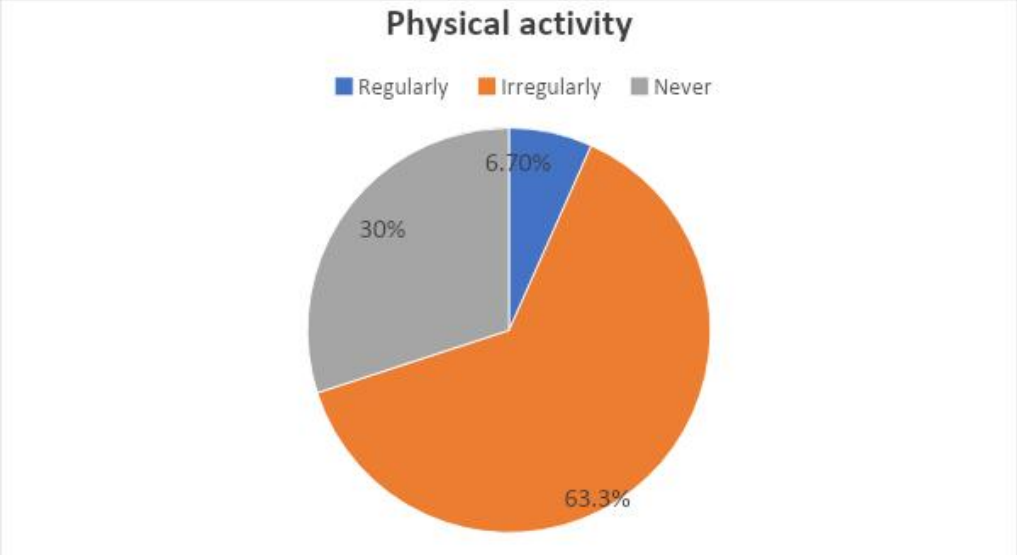

Figure 19 :- Physical activity pattern of the subjects

It was noted that the physical activity pattern greatly varied among the subjects. Majority (63.1%) of the subjects were not regular with their exercise. About 6.7% of students exercised regularly every week. While only 30.2% of subjects never participated in any type of exercise.

Some women may experience no changes in their menstrual cycle with increased activity, while others may notice significant disruptions. Factors such as genetics, overall health, and nutritional status can also play a role in how physical activity influences menstrual patterns.

4.5 DIETARY PATTERN OF THE SUBJECTS

4.5.1 Food consumption pattern

Food pattern	percentage
Non-vegetarian	87%
Vegetarian	6.7%
Ovo-vegetarian	4.7 %

Table 11 :- Food consumption pattern of the subjects

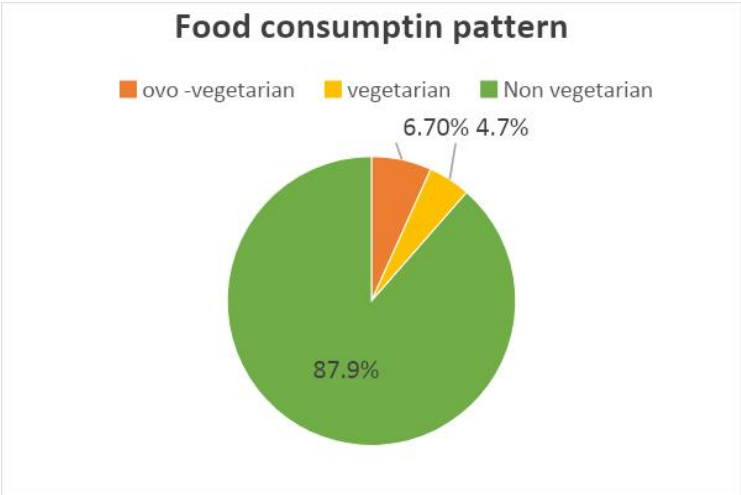

Figure 20:- Food consumption pattern of the subjects

From the above figure, it was clear that the majority (87.9%) of the respondents followed a non-vegetarian diet, 4.7% of the respondents followed a vegetarian diet and 6.7% of the respondents were ovo-vegetarians.

4.5.2 Meal Skipping Pattern

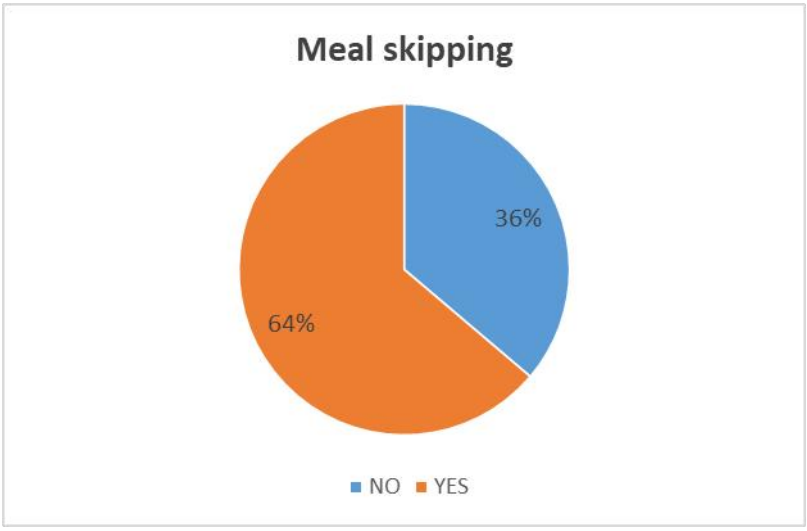

Figure 21:- Meal skipping pattern of the subjects

From the above figure it is clear that 64% of subjects skip meals in a day and 36% of the subjects were not skipping meals in a day.

Meal skipping can disrupt the regularity of menstrual cycles, primarily due to the impact it has on hormone levels and overall body function

4.5.3 Meal skipped in a day

Type of meal	Percentage
Breakfast	66.7%
Lunch	22.2%
Dinner	11.1%

Table 12 :- Type of meal skipped by the subjects

From this table it showed that the majority skip breakfast 66.7% , 22.2% of subjects skip lunch and 11.1% dinner.

4.5.4 Fruits consumption pattern

Frequency	Percentage
Rarely	2.7%
Daily	20%
Weekly	43.3%
Twice a week	32.70%

Table 13:- Frequency of fruits consumption by the subjects

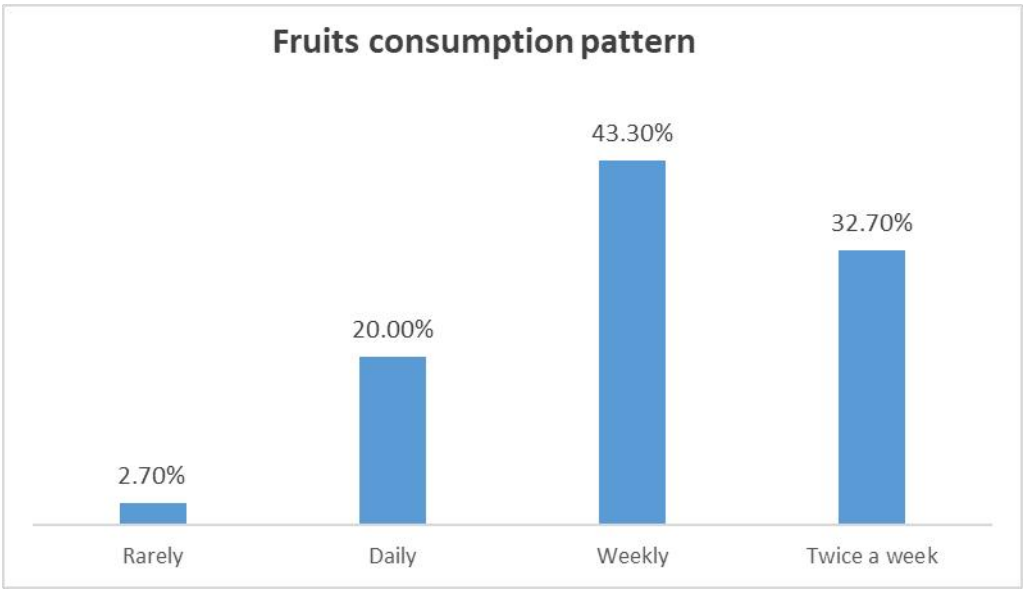

Figure 22:- Fruits consumption pattern of the subjects

From this bar graph it shows that 20% of the subjects consumed fruits daily, 43.30% of the subjects consumed fruits weekly and 37.70% of subjects consumed fruits twice in a week. only 2.70% of subjects consumed fruits rarely.

Consuming fruits as part of a balanced diet can have positive effects on menstrual regularity, primarily due to their nutrient content and impact on overall health.

4.5.6 Sugar consumption pattern

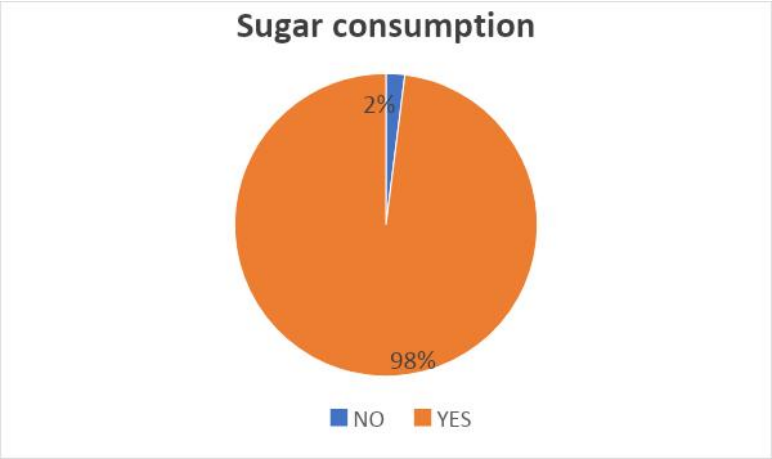

Figure 23 :- Sugar consumption pattern

From this chart it shows that 98% of subjects consumed sugar and only 2% of subjects did not consume sugar.

High levels of sugar intake can result in menstrual problems like cramps, bloating, and mood swing.

4.5.7 Consumption of fast food

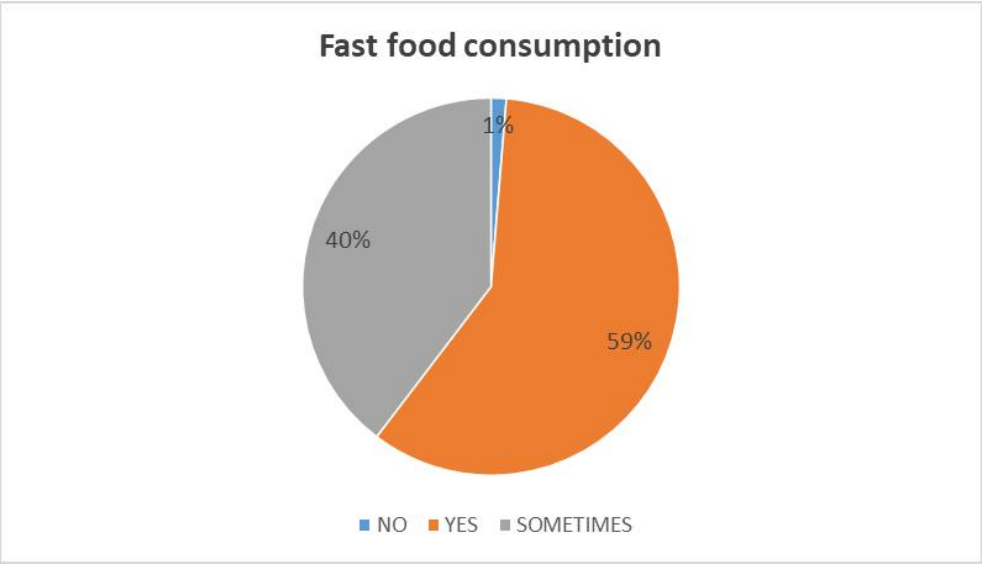

Figure 24:- fast food consumption pattern

The chart shows that 59% of the subjects consumed fast food,40% of the subjects consumed fast food occasionally or sometimes and only 1% of subjects said they were not consuming fast food.

4.5.8 Consumption of processed food

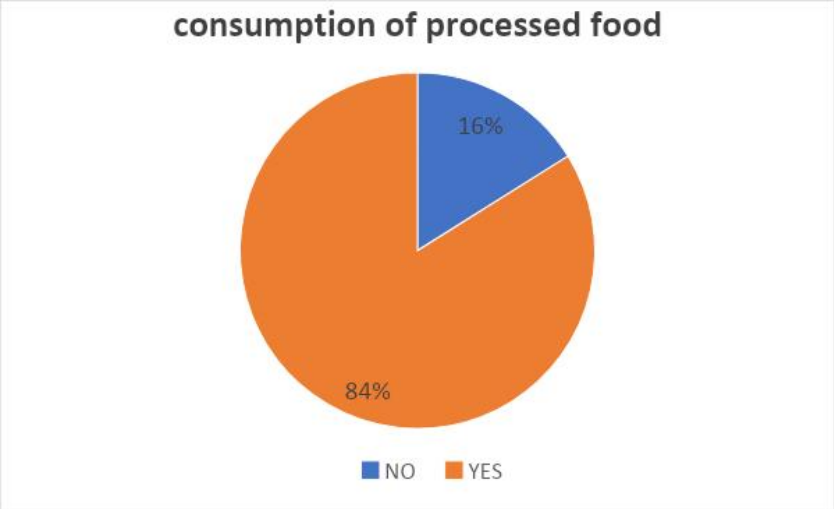

Figure 25 :- Processed food consumption pattern by subjects

It showed that 84%of the subjects consumed processed food and 16% of the subjects did not consume processed food. It might result in nutritional deficiencies, weight gain, insulin resistance etc.

4.6 MEDICAL MANAGEMENT FOLLOWED

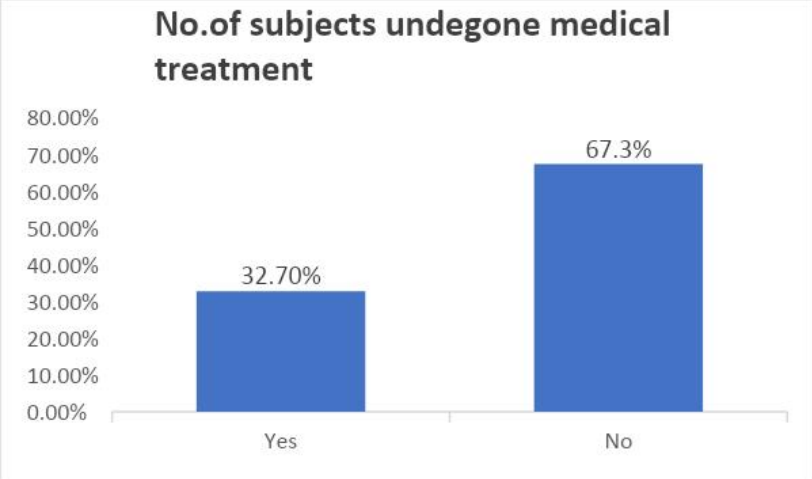

Figure 26:- Number of subjects underwent medical treatment

In the given study it was found out that, about 67.3% did not seek medical treatment for menstrual abnormalities and 32.7 % seeked medical treatment.

Understanding the multifaceted reasons behind women's reluctance to seek healthcare for menstrual irregularities is crucial for developing effective strategies to promote care-seeking behaviours and ensure optimal symptom management

CHAPTER 5

SUMMARY AND CONCLUSION

The study entitled **" Irregular Menstruation in College Going Students"** was undertaken with the objectives to assess the anthropometric measurements, mensural profile, lifestyle diseases, food consumption pattern, physical activity and medical management of the subjects. For the study, 150 college students between the ages of 18 to 25 were randomly selected as samples.

- After analyzing and interpreting the data, it was evident that the majority of the subjects were suffering from the menstrual symptoms such as pain ,bowel problems, nausea and other accompanying problems due to the irregular dietary pattern ,physical activity ,skipping meals.

- With regard to the anthropometric measurements, the majority of the subjects, comprising 59.3%, fell within the normal BMI category. Among women, 25.3% were classified as underweight, while 12% were deemed overweight. The remaining 2.7% were identified as obese. mean height obtained is 157.50 and the standard deviation obtained for height is 9.93. The mean and standard deviation calculated for weight is 52.95 and 9.93 respectively

- By analysing the menstrual profile of the subjects The subjects that is 88.6% of the subject have their first menstruation at the age of 10-15,6% of the subjects had their first menstruation at the age of 8-10 and 5.5% of the subject have their first menstruation at the age of 16-18. It was noted that the majority of the respondents 82.7 % experience pain during their menstruation.But 17.3 % did not experience any pain during their menstruation. Period pain can range from mild to severe.

- Majority accounting for 52% of the respondents, reportedno additional health concerns. However, 38% reported experiencing pain, while a smaller percentage, only 10%, cited other issues such as bowel problems. Majority 79.9% of the respondents did not use any type of painkillers during their periods and only 20% of the respondents used painkillers during their periods. Usage of painkillers provides relief from menstrual cramps. Majority of the subjects, 81% of the subjects had moderate blood flow, 11.4% of the

subjects had light blood flow during menstruation and only 7.4% of the subjects had heavy blood flow during menstruation.

- Majority of the subjects 56.4% of subject said that they had irregular menstruation in first two years after their first time of mensuration.By analysing the bleeding days of the subjects, reported that 91.3%,experiencing normal menstrual cycles characterized by bleeding lasting 5 to 7 days. A smaller proportion, accounting for 7.4% of respondents, indicated shorter menstrual periods, specifically less than 3 days, a condition known as hypomenorrhea. An even smaller fraction, just 0.7%, reported menstrual cycles shorter than 21 days, termed polymenorrhea.
- 59.1 % of the participants said that their mental stress affected their periods and 40.9 % of remaining participants' mental stress didn't affect their periods. 60% of the respondents do not currently exhibit signs of anaemia, while 14.7% were currently experiencing anaemia. However, 25.3% of the respondents were uncertain about their anaemia status.
- After analysing the data of PCOS 90 % of the subjects were not affected with PCOS, and 10 % out of the total subjects was affected with PCOS. The long and irregular menstrual cycles that accompany polycystic ovary syndrome (PCOS) indicate altered hormone levels. Only 3% of the subjects have hypertension .It appeared that most of the subjects did not exhibit any disease conditions such as diabetes and thyroid issues.
- The study showed that 82% of the subjects experiencing dysmenorrhea. But, 10% of subjects exhibited oligomenorrhea, while 6.5% experienced polymenorrhea. Menorrhagia and amenorrhea were less common, with only 1.2% and 0.3% of subjects experiencing them.
- The physical activity patterns showed significant variation among the subjects. The majority (63.1%) were inconsistent with their exercise routines. Approximately 6.7% of students maintained a regular weekly exercise regimen. Conversely, only 30.2% of subjects were identified as never engaging in any form of exercise.
- Majority (87.9%) of the respondents followed a non vegetarian diet, 6.7% of the respondents followed ovo-vegetarian diet and 4.7% of the respondents were found to be vegetarian .Among the subjects, 64% skip meals daily, while 36% do not skip meals.

This practice of meal skipping can disrupt menstrual cycle regularity, mainly because of its effects on hormone levels and overall bodily function.

- The study marked, 20% of the subjects took fruits in their daily diet, while 43.30% consumed fruits weekly, and 37.70% consumed fruits twice a week. Only 2.70% rarely consume fruits. Incorporating fruits into a balanced diet can positively impact menstrual regularity due to their rich nutrient content and overall health benefits.
- Regarding sugar intake, 98% of the subjects consumed sugar, while only 2% did not. High sugar consumption levels can lead to menstrual problems such as cramps, bloating, and mood swings. When it comes to fast food, 59% of the subjects consumed it, with 40% doing so occasionally or sometimes, and only 1% abstaining. Fast food consumption can potentially disrupt menstrual cycles through various mechanisms, including nutritional deficiencies, weight gain, insulin resistance, inflammation, and endocrine disruption.
- Research revealed that approximately 67.3% of individuals sought medical attention for menstrual irregularities, while 32.7% opted not to seek medical support. Understanding the complex factors influencing women's hesitancy to seek healthcare for menstrual abnormalities is essential for devising effective strategies to encourage seeking care and ensuring effective symptom management.

CONCLUSION

The study "**Irregular menstruation in college students**" found that the majority of the subjects were aged between 18 and 21 years. In terms of anthropometric measurements, most subjects fell into the normal weight category. The study revealed that the majority experienced their first menstruation between the ages of 10 and 15. Additionally, a majority reported painful periods and did not use painkillers. Intermenstrual gaps of 22-24 days were common among respondents. Post-menarche irregularities were prevalent, with most experiencing a normal bleeding duration of 5-7 days. Mental stress was acknowledged as impacting menstrual cycles by the majority. Anaemia was found to be uncommon among the subjects. Dysmenorrhea emerged as the most prevalent menstrual irregularity, along with other irregularities such as oligomenorrhea, polymenorrhea . Medical conditions such as PCOS, thyroid issues, and hypertension affected only a small percentage of respondents. Regarding physical activity, irregular exercise patterns were prevalent. In terms of dietary habits, most subjects were non-vegetarians, often skipping meals, with breakfast being the most frequently skipped. Weekly fruit consumption was common, while sugars and fast foods were consumed daily at a higher rate.In conclusion, the study highlights the prevalence of irregular menstruation among college students, influenced by factors such as lifestyle habits and mental stress, underscoring the need for targeted interventions and healthcare support.

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APPENDIX

IRREGULAR MENSTRUATION

1. Name :
2. Age :
3. Weight (in Kg) :
4. Height (in cm) :
5. At what age did you have your first periods ?
    a. Between 8-10 yrs
    b. Between 10-15 yrs
    c. Between 16- 18 yrs

6. How many pads do you use per day during your periods ?
    a. 2 – 3 nos
    b. 3 – 5 nos
    c. More than 5
7. Have you ever had irregular bleeding , if yes have you taken any treatment ?
    a. Yes
    b. No
    c. Yes , treated
8. If you had irregular periods, did you have any other combining problems ?
    a. Pain
    b. No other problems
    c. Other _____
9. Do you have any pain during your period ?
    a. Yes
    b. No

10. Do you experience bowel problems or nausea during your periods ?
    a. Yes
    b. No

11. In the first 2 years after your menarche were your periods irregular ?
    a. Yes
    b. No
12. How heavy is your menstrual flow ?
    a. Light

b. Moderate
c. Heavy

13. How many days are there between the start of one period & start of the next on ?
    a. Less than 21 days
    b. 22 – 24 days
    c. 25 – 28 days
    d. 29 – 32 days
    e. 33 – 35 days
    f. More than 36 days
    g. Too irregular to say
14. Does mental stress affect your periods ?
    a. Yes
    b. No
15. Are you anaemic ?
    a. Yes
    b. No
    c. Don't know
16. Do you have any disease condition ?
    a. Yes
    b. No
    c. If yes _____
17. Do you have PCOS ?
    a. Yes
    b. No
18. Do you have PCOD ?
    a. Yes
    b. No

19. Are you diabetic ?
    a. Yes
    b. No
20. Are you hypertensive (high blood pressure)?
    a. Yes
    b. No

21. Do you have thyroid problem ?

a. Yes
b. No

22. Do you exercise ?

a. Regular
b. Irregular
c. Never

- If yes , duration _____

23. Food consumption pattern

a. Veg
b. Non – veg
c. Eggetarian
d. Vegan

24. Do you consume processed foods /fast foods ?

a. Daily
b. Weekly
c. Once in a week
d. Other

25. Fruits consumption pattern

a. Daily
b. Weekly
c. Twice in a week
d. Other

26. Do you skip meals ?

a. Yes
b. No

- If yes which meal do you skip _____

27. Sugar consumption pattern

a. Daily
b. Weekly
c. Once in a week

d. Other

28. How many days your bleeding occur ?

a. <7 days (menorrhea)

b. < 3days(hypomenorrhea)

c. >35 days (oligomenorrhea)

d. <21 days (polymenorrhea)