Republic of Yemen

Ministry of Education and Scientific Research

Emirates International University

Faculty of Medicine and Health Sciences

Department of Community Medicine

Association Between Quality Of Life And Menstrual Disorders In Women At Reproductive Age In Sana'a City

A Research submitted to the department of community medicine, Faculty of Medicine and Health Sciences as a fulfil mate of obtaining a bachelor degree in Medicine and General Surgery

Researchers

Hadeel Ahmed Alsharaji

Ola'a Khaled Alshaif

Maia Najeb Alawadhi

Doa'a Ahmed Alquffily

Zainab Jamal Abu-sanad

Rawan Ali Almaqaleh

Supervisor

Dr. Nora Ahmed Alawadhi

Faculty of Medicine and Health Sciences

Sana'a University

1446 - 2025

Dedication

It was not a short journey, nor should it have been,

The dream was not close, nor was the road fraught with facilities, but we did it,

Praise be to Allah, love, thanksgiving and gratitude, praise be to Allah, whose grace is righteousness ...

The members of this research are pleased to dedicate this scientific work to:

Our generous families, in appreciation of their constant support and unlimited encouragement during our educational journey and at all stages of preparing this research.

Our esteemed professors, who did not skimp on their knowledge and sound guidance, which had a great impact on our endless achievement;

headed by the research supervisor (Dr. Nora Alawadhi), whose scientific , guidance and constructive comments had a great role in bringing this work to light.

To each other, where the spirit of cooperation and mutual support between us was a source of strength and inspiration throughout the work.

We also dedicate it to all those who deservedly supported us morally or scientifically, and helped us overcome the challenges and successfully complete this academic journey.

With great appreciation and gratitude.

The research team…

CONTENT

TABLE INDEX

TABLE OF ABBREVIAIONS

ABBREVIAIONS	MEANING
ANOVA	Analysis of Variance
B	Beta coefficient
BMI	Body Mass Index
χ^2	Chi-square
FSH	Follicle Stimulating Hormone
GnRH	Gonadotropin Releasing hormone
HRQoL	Health-Related Quality of Life
HPO	Hypothalamic Pituitary Ovarian
IUD	Intrauterine Device
LH	Luteinizing Hormone
NSAIDs	Nonsteroidal Anti-Inflammatory Drugs
OCPs	Oral Contraceptive Pills
P – value	Probability Value

PID	Pelvic Inflammatory Disease
PMDD	Premenstrual Dysphoric Disorder
QOF	Quality Of Life
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization
WHOQOL-BREF	World Health Organization Quality of Life - Brief Version

ABSTRACT

Introduction:

Menstruation is an important biomarker that reflects a woman's physical and psychological health. Its regularity is an indicator of hormonal balance and proper physiological functions, while any disorder (e.g. amenorrhea, dysmenorrhea, oligomenorrhea, menorrhagia) may indicate an imbalance in the hormonal system or an impact on the psychological and neurological state.

In this context, quality of life is defined as the well-being of an individual or society, encompassing both positive and negative factors that affect human existence at a given moment in time, highlighting the importance of looking at menstruation as part of the overall picture of women's health, This highlights the importance of looking at menstruation as part of the overall picture of women's health

Objective:

To determine the impact of quality of life on menstrual disorders in women of reproductive age in Sana'a City.

ABSTRACT

Methodology:

A descriptive cross-sectional study was adopted, including a sample of 402 women of reproductive age, selected using a purposive sampling method from AlThawra Hospital, Al-Gumhouri Hospital, and Emirates University. Data were collected using self-completed questionnaires, which included questions about menstrual disorders and quality of life.

Results:

The data showed that the physical domain of quality of life was the least rated among the four domains, indicating a clear influence of physical and living factors on reproductive health, While the psychological domain came in with relatively higher scores. Logistic regression analysis showed a statistically significant inverse relationship between quality of life and menstrual disorders, where each one-point decrease in quality of life increases the likelihood of having a severe menstrual disorder by 2.9%. The results also showed that age and monthly income are influential factors, as the highest rate of disorders was recorded among women in the age group of 30-39 years, and women whose income is not enough until the end of the month, and a large percentage of participants (72.6%) reported that psychological stress has a direct impact on menstrual disorder, which reflects self-awareness of the relationship between mental health and hormonal function, and supports the statistical results that clearly show this correlation.

Recommendations:

Based on these results , the study recommends integrating quality of life assessment into primary health care programs and providing targeted psychological support programs for the most vulnerable groups, It also recommends providing opportunities for continuing education and community participation, including the topic of menstrual disorders in educational curricula, and encouraging larger-scale future studies to develop a knowledge base that contributes to improving women's reproductive and psychological health.

Chapter 1

INTRODUCTION

Introduction:

The menstrual cycle is an important biomarker that reflects a woman's physical and psychological health. Their regularity is an indication of hormonal balance and healthy physiological functions, while any disruption may indicate an imbalance in the hormonal system or an affected psychological and neurological state [1]

Many studies have shown that menstrual disorders, such as amenorrhea, heavy or irregular periods, are closely related to psychosocial factors, most notably stress, anxiety, lack of sleep, and lifestyle changes [2]

In this context, quality of life is defined as a concept that expresses the well-being of an individual or society, and includes both positive and negative factors that affect human existence at a given moment in time. It includes aspects such as: Physical, mental and spiritual health, social relationships, education, work environment, social status, wealth, safety, security, freedom, independence, social belonging, and the environmental conditions surrounding the individual[3], The literature indicates that low quality of life is associated with increased severity of psychological disorders, which negatively impacts hormonal regulation in women and affects the menstrual cycle.

This is especially important during the reproductive age, when women undergo complex biological and psychological changes that make them more susceptible to hormonal imbalances and menstrual disorder [4]. Understanding this relationship will help develop preventive and therapeutic intervention strategies to improve women's reproductive health and raise awareness of the importance of enhancing quality of life as a key factor in supporting mental health and regulating biological functions.

Therefore, this study aims to shed light on the relationship between quality of life and menstrual cycle disorders, by reviewing previous studies and analyzing the most important psychological and social influencing factors, which contributes to providing scientific recommendations that contribute to enhancing women's overall health and achieving their physical and psychological well-being.

1.1 Research Problem:

In light of the continuous pressures faced by Yemeni women, and the accompanying imbalance in quality of life standards, indicators of menstrual disorders have emerged in a number of women, without clear organic causes explaining these disorders, here the research issue lies in the need for a scientific and systematic study of

The relationship between these influences, with the aim of understanding the psychological and social dimensions affecting them, and providing evidence-based recommendations to improve women's quality of life and support their health.

1.2 Research objectives:

* General objective

To determine the association between quality of life with menstrual disorders in women of reproductive age in Sana'a city

* Specific objectives

1. To establish a relationship between quality of life (psychological, physical, and social) and menstrual disorders in women of reproductive age.
2. To determine the prevalence of menstrual disorders associated with poor quality of life in a sample of women of reproductive age.

3. To compare quality of life levels between women with menstrual disorders and women with normal menstruation.

1.3 Importance of the research:

Menstrual disorders are among the most common health issues affecting women of reproductive age. However, their impact on women's overall quality of life remains under recognized, particularly in Arab societies where menstruation is often considered a sensitive or stigmatized topic. This study is significant because it highlights the relationship between menstrual disorders and women's quality of life, including physical, psychological, and social dimensions.

* The importance of this study lies in the following:

• **Raising health awareness**: By shedding light on the multifaceted effects of menstrual disorders, the study helps empower women to seek appropriate medical and psychological support.

• **Improving healthcare services**: The findings can support healthcare professionals in designing targeted treatment and awareness programs that address both physical and emotional needs.

Introduction

• **Supporting women's mental and social well-being**: The research emphasizes how menstrual disorders can negatively affect daily functioning, productivity, and interpersonal relationship

• **Filling a research gap**: While international literature has examined this topic, studies exploring the relationship between menstrual disorders and quality of life in the Arab context are still limited. This study provides valuable insights that contribute to local and regional understanding.

Ultimately, this research aims to promote a more holistic approach to women's health—one that considers physical symptoms alongside psychological and social well-being.

Chapter 2

BACKGROUND

Background:

2.1 Clinical Overview:

Normal menstruation is the periodic flow of blood that occurs due to the shedding of endometrium lining. This happens in all non-pregnant females throughout their reproductive life that means between menarche and menopause. This happens in all non-pregnant females throughout their reproductive life that means between menarche and menopause [5] and it defined as cycles occurring every 24 to 38 days and have consistent frequency, regularity is de, duration, and volume of flow and bleeding lasting 8 days or less. [6]

Pathophysiology of menstrual cycle: The normal menstrual cycle is the result of a highly coordinated hypothalamic-pituitary-ovarian (HPO) axis with complex hormonal feedback loops that lead to the formation of a dominant follicle, ovulation and, in the absence of fertilization, shedding of the endometrial lining at regular intervals. it occurs as a result of the pulsatile release of gonadotropin-releasing hormone (GnRH) from the hypothalamus, which stimulates the secretion of luteinizing hormone (LH) and follicle-stimulating hormone (FSH) by the anterior pituitary. [7]

Menstrual disorders are the most common gynecological problem among adolescent girls which may affect normal life. Previous studies reported that 60-80 % girls suffering from menstrual disorders. To improve the health status of adolescent girls by assessing the impact of menstrual disorders on their health. abnormal menstruation it is vary in interval, duration of flow, blood quantity with various conditions named from amenorrhea, oligomenorrhea, heavy menstrual bleeding, irregular cycle, frequent menstrual cycle, pain and symptoms before menstruation. [8]

Types of menstruation problems According to the International Federation of Gynecology and Obstetrics (FIGO) it classified to:

1- Painful menstruation {dysmenorrhea}: defined as less than 5 mL of blood loss per cycle.

2- Heavy menstruation {menorrhagia}: is defined as blood loss exceeding 80 mL per cycle.

3- Absent menstruation (Amenorrhea)

Background

2.2 Disorders related to menstrual cycle:

2.2.1 Dysmenorrhea: [9]

Dysmenorrhea is common and usually independent of, rather than secondary to, pelvic pathology. Dysmenorrhea occurs in 50% to 90% of adolescent girls and women of reproductive age and is a leading cause of absenteeism

is defined as painful menstruation, affects up to 50% to 90% of adolescent girls and women of reproductive age. Nearly one-half of patients (45%) with symptoms of dysmenorrhea will present first to their primary care physician. Dysmenorrhea leads to decreased quality of life, absenteeism, and increased risk of depression and anxiety. Up to one-half of patients with dysmenorrhea miss school or work at least once, and 10% to 15% have regular absences during menses. A prospective longitudinal study of 400 patients with dysmenorrhea revealed that most have persistent symptoms throughout their years of menstruation, although some improvement in severity may occur, for example, after childbirth.

Risk factor:

1. Age: younger than 30years old
2. Smoking
3. Early menarche: age less than 12years old
4. Nulliparity
5. premenstrual syndrome
6. any Genealogical disease like pelvic inflammatory disease

Clinical presentation:

1. cramping pain in the lower abdomen beginning at the onset of menstrual flow and lasting eight to 72 hours.
2. nausea, vomiting, diarrhea, headaches, muscle cramps, low back pain, fatigue
3. sleep disturbance

Background

Types of dysmenorrhea:

1. Primary dysmenorrhea which begins an average of six to 12 months following menarche, corresponding with the initiation of ovulatory cycles, and tends to recur with every menstrual cycle.
2. Secondary dysmenorrhea may start immediately following menarche or may arise later in life

Treatment:

1. NSAID as first line treatment and act by reducing prostaglandin production
2. Hormonal therapy is also considered a first-line treatment for dysmenorrhea and can be added or used as an alternative to NSAID therapy in patients who are not planning to become pregnant
3. ther hormonal contraceptives are also acceptable for the management of dysmenorrhea, including transdermal patches, vaginal rings, progestin implants, intramuscular or subcutaneous medroxyprogesterone depot injection (Depo-Provera), and the levonorgestrel-releasing intrauterine system (Mirena).

2.2.2 menorrhagia [10]:

Is an excessive blood loss menstrual bleeding during the period of women, It is a condition affecting the physical, social, emotional or material quality of life of 20-30% reproductive women up to 50 years of age. Average blood loss during menstruation is about 30 to 40 milliliters; a period of 4-5 days of menorrhagia is a loss of more than 80 milliliters of blood in one cycle, or twice the normal loss of the amount. It may flow longer than 67 days at one time. Menorrhagia is limiting normal activity and two-thirds of women, and may be anemia due to more blood loss due to menstrual bleeding there may be disorders of prostaglandin associated with idiopathic menorrhagia and abnormally severe bleeding.

Background

Symptoms:

1. Soaking through that menstrual flow, use more sanitary pads.
2. The need double sanitary protection for do not fall on clothes
3. The menstrual cycle or period that lasts more than 7 days.
4. The menstrual bleeding includes large blood clots.
5. The daily activities restricting due to heavy pain menstrual flow and uncomfortable life style
6. May be lead to anemia; like pallor, tiredness, fatigue, shortness of breath.

Cause:

1. Hormonal Disturbances: If the normal fluctuations of progesterone and estrogen change, the endometrium or uterine inner lining may build up too much. During the menstrual bleeding this is then shed.
2. Ovarian Dysfunction: No progesterone is released if the ovary does not release an egg, resulting in a hormone imbalance.
3. Uterine Fibroids: Non-cancerous, or benign, tumors
4. Uterine Polyps: These benign growths can lead to increased levels of hormones.
5. Adenomyosis: endometrial glands become embedded in uterine muscle.
6. Intrauterine Non-Hormonal Device(IUD): This type of birth control device can lead to more severe bleeding than normal.
7. Pelvic Inflammatory Disease (PID): A reproductive organ infection that may have severe complications
8. Complications of Pregnancy: Examples include a miscarriage or an ectopic pregnancy.
9. Cancer: The reproductive system is affected by uterine, cervical, and ovarian cancers
10. Bleeding Disorders Inherited: These include Von Will brand disease or platelet function disorder.
11. Medicines: Anti-inflammatory and anticoagulant medicines can cause severe bleeding.

Treatment:

1. Nonsteroidal Anti-inflammatory Drugs The first-line medical therapy in ovulatory menorrhagia is the non-steroidal anti-inflammatory drugs (NSAIDs). Studies show an average reduction in menstrual blood flow of 20-46 per cent.
2. Oral Contraceptive Pills Oral contraceptive pills (OCPs) for women who want contraception are a popular first-line therapy
3. Progestin Therapy The most frequently prescribed drug for menorrhagia is progestin. When used alone, treatment with this drug results in a significant reduction in menstrual blood flow. Progestin works as an anti-estrogen by minimizing the effects of estrogen on target cells, thus keeping the endometrium in a down-regulated state.

2.2.3 Amenorrhea

Amenorrhea is the absence of spontaneous menses in a woman of reproductive age. In adolescents, amenorrhea traditionally has been divided into:

1-primary amenorrhea: it is amenorrhea in a patient otherwise expected to have regular periods.

2- secondary amenorrhea: it is amenorrhea in a patient who has already established regular menstrual cycles.

Traditionally this term has only been used in those with amenorrhea of greater than 3 months' duration. The distinction between primary amenorrhea and secondary amenorrhea is somewhat arbitrary and there is a great deal of overlap. Any cause of secondary amenorrhea (including pregnancy) can also be a cause of primary amenorrhea. [11]

Background

Etiology of amenorrhea in adolescents: [12]

1. Hypothalamic: Eating disorders, Immaturity of the HPO axis, Exercise-induced amenorrhea, Medication-induced amenorrhea, Chronic illness Stress-induced amenorrhea and Kallmann syndrome
2. Pituitary Hyperprolactinemia Prolactinoma Craniopharyngioma and Isolated gonadotropin deficiency
3. Thyroid Hypothyroidism Hyperthyroidism
4. Adrenal Congenital Adrenal Hyperplasia Cushing syndrome
5. Ovarian Polycystic ovary syndrome Gonadal dysgenesis (Turner syndrome) Premature ovarian failure Ovarian tumor
6. Uterine Pregnancy Androgen Insensitivity Uterine adhesions (Asherman syndrome) Mullerian agenesis Cervical agenesis
7. Vaginal Imperforate Hymen Transverse Vaginal Septum Vaginal agenesis

Symptoms of Amenorrhea: [12]

The main symptom of amenorrhea is the absence of your monthly period. It often signifies a larger health problem or condition. Related symptoms can include:

1. Headache.
2. Vision changes.
3. Nausea.
4. Extra facial hair.
5. Hair loss.
6. Changes in breast size.
7. Milky fluid, or discharge, from breast

Background

Amenorrhea Medical Treatment: [13]

Treatment depends on the cause of amenorrhea. Once the cause is determined, treatment is directed at correcting the underlying disease, which should restore menstruation. In case of anatomical abnormalities of the genital tract, surgery may be indicated. Some causes of amenorrhea can be managed by medical (drug) therapy. Examples include the following:

1. Dopamine agonists such as bromocriptine or pergolide, are effective in treating hyperprolactinemia. In most women, treatment with dopamine agonists medications restores normal ovarian endocrine function and ovulation.
2. Hormone replacement therapy consisting of an estrogen and a progestin can be used for women in whom estrogen deficiency remains because ovarian function cannot be restored.
3. Metformin is a drug that has been successfully used in women with polycystic ovary syndrome to induce ovulation
4. In some cases, oral contraceptives may be prescribed to restore the menstrual cycle and to provide estrogen replacement to women with amenorrhea who do not wish to become pregnant. Before administering oral contraceptives, withdrawal bleeding is induced with an injection of progesterone or oral administration of 5-10 mg of medroxyprogesterone (Provera) for 10 days

Amenorrhea Surgery Option: [14]

1. Some pituitary and hypothalamic tumors may require surgery and, in some cases, radiation therapy.

2. Women with intrauterine adhesions require dissolution of the scar tissue.

3. Surgical procedures required for other genital tract abnormalities depend on the specific clinical situation.

2.3 Quality of life

2.3.1 Quality of life:

It is a term used to describe the level of well-being of individuals and societies, and includes material and moral aspects that affect human life, such as: Physical and mental health, income and standard of living, quality of the surrounding environment, social relations, security and safety, education and work opportunities, life and work balance, and individual freedom and rights, This concept is comprehensive and goes beyond mere economic well-being, to include a sense of satisfaction, happiness, and the ability to achieve self-realization in a supportive and stimulating. [15]

In 1947, the World Health Organization (WHO) defined QoL as a "state of complete physical, mental, and social well-being, and not merely the absence of disease and infirmity" [16]. In 1995, the WHO definition evolved as follows: "Individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. It is a broad ranging concept incorporating in a complex way the persons' physical health, psychological state, level of independence, social relationships, personal beliefs, and them relationships to salient features of the environment. [17]

For long, this definition has been the most important and influential definition, but the concept of QoL has changed during recent years. Successively, the concept of health-related quality of life (HR-QoL) was introduced and defined as "how well a person functions in their life and his or her perceived wellbeing in physical, mental, and social domains of health" [18].

Nowadays, the QoL concept includes other aspects related to a patient's well-being. Many authors placed a greater emphasis on people's subjective perceptions of the most important features of their lives, considering the QoL more of a personal perception and not only an objective and measurable entity. In this sense, Wenger et al. in 1984 defined QoL as "an Individual's perceptions of his or her functioning and well-being in different domains of life" [19].

This new definition of QoL takes into account what a patient thinks about his/her internal state, as well as their relationship with other people. QoL should be considered as a rich interplay and balance between how people see their internal state and how people see their relationships with other people (e.g., partner, friend, etc.). This new concept of QoL has important consequences for the management of patients affected by urological and andrological diseases. Any therapeutic approach should be considered in the light of this new and extended definition [20].

In this sense, the aim of treatment was not only to promote the absence of the disease or symptoms relief, but to improve patients' QoL both in terms of his/her internal status and the relationship with other people [20,21]. The QoL then becomes a two-dimensional entity: an internal dimension (patients' feel good about her/himself) and an external dimension (patients' feel good about others) [21].

2.3.2 Measurement of quality of life: [21]

1-QOL measures are used to quantify the impact of a condition and to compare the effects with the consequences of other chronic medical problems.

2- QOL measures can be used to evaluate changes resulting from therapeutic intervention or the course of disease.

3-QOL measures are necessary as a central component of cost/effectiveness analysis.

2.3.3 Specific QoL components: [21,22]

1. Physical health (somatic sensations, disease symptoms)

2. Mental health (positive sense of well-being, non-pathological forms of psychological distress or diagnosable psychiatric disorders)

3. Social health (aspects of social contacts and interactions)

4. Functional health (self-care, mobility, physical activity level and social role functioning in relation to family and work)

2.4 Effect of Quality of life on menstruation:

Many studies talk about the relationship between stress, body mass index, inherited blood disease with the menstrual cycle, however no studies to date have examined the psychological impact of life stressors and social quality on menstrual disorder in women on reproductive age.

2.5 Previous studies:

In Iran, study aimed to assess whether health-related quality of life (HRQoL) scores would be different for adolescent girls with menstrual issues compared to adolescent girls with normal menstruation. The Pediatric Quality of Life Inventory (PQLI) scale and menstrual questionnaires were used in 126 schoolgirls and the result was**:** Ninety-seven (77%) girls had menstrual problems. Dysmenorrhoea (n = 92, 73%) was the most frequent of these, followed by oligomenorrhoea (n = 13, 10.3%) and heavy menstrual bleeding (n = 6, 4.8%). Thirteen (10.3%) girls had combined disorders. A multivariate analysis adjusted for life-style factors found an independent association of any menstrual problems, oligomenorrhoea and dysmenorrhoea with low HRQoL scores in the emotional functioning domain. For adolescents with oligomenorrhoea, an association with low total scale scores was also shown but it did not reach statistical significance**,** in Conclusion, the prevalence of menstrual problems is high among schoolgirls. Medical professionals working with adolescents should know that girls with menstrual problems are highly likely to have a poor quality of life, especially those with oligomenorrhoea. **[23]**

In Uganda, study aimed to determine the prevalence of menstrual cycle disorders and to determine the impact of menstrual cycle disorders on the quality of life of female undergraduate students at the Faculty of Health Sciences, Makerere University. A cross-sectional study was designed using a self-administered questionnaire that utilized the World Health Organization (WHO) questionnaire,

Of the participants, 275 were included in the data analysis. The median age of the participants was 21 years with range of 18–39 years and interquartile range of 20–24 years. All the participants had attained menarche. Of the participants, 97.8% (95%CI: 95.2–99.0) (269/275) reported some form of menstrual disorder. Premenstrual symptoms were the commonest disorder (93.8% (95%CI: 90.2–96.1), N = 258) followed by dysmenorrhea (63.6% (95% CI: 57.7–69.1), N = 175), irregular menstruation (20.7% (95%CI: 16.3–25.9), N = 57), frequent menstruation (7.3% 95% CI:4.7–11.0, N = 20) and infrequent menstruation (3.3% (95% CI:1.7–6.2), N = 9). Dysmenorrhea and premenstrual symptoms significantly reduced the QOL scores of participants, in

Conclusion, Menstrual disorders were highly prevalent with negative effects on QOL and class attendance. Efforts should be made to screen and possibly treat menstrual disorders among university students as well as to conduct further studies to elucidate more on the effects of menstrual disorders on quality of life. **[24]**

In Japan, study aimed to assess a clinical relevance of three-dimensional occupational stress (job stressor score [A score], psychological and physical stress response score [B score], and social support for workers score [C score]) of the Brief Job Stress Questionnaire (BJSQ) in the national stress check program in Japan to irregular menstruation, they use retrospective cohort study included 2,078 female employees aged 19–45 years who had both annual health checkups and the BJSQ between April 2019 and March 2022 in a national university in Japan. The outcome was self-reported irregular menstruation measured at annual health checkups until March 2023. A dose-dependent association between BJSQ scores and incidence of irregular menstruation was examined using Cox proportional hazards models to calculate multivariable-adjusted hazard ratios (HRs) of four quantile (0–49% [Q0–49], 50–74% [Q50–74], 75–89% [Q75–89], and 90–100% [Q90–100]) of the BJSQ scores, and they found that During 2.0 years of the median observational period, 257 (12.4%) women reported irregular menstruation. B score, not A or C scores, was identified as a significant predictor of irregular menstruation (adjusted HR [95% confidence interval] of A, B, and C scores per 1 standard deviation: 1.06 [0.89–1.27], 1.35 [1.15–1.57], and 0.93 [0.80–1.08], respectively). Women with higher B score had a significantly higher risk of irregular menstruation in a dose-dependent manner (adjusted HR [95% confidence interval] of Q0–49, Q50–74, Q75–89, and Q90–100: 1.00 [reference], 1.38 [1.00–1.90], 1.48 [1.00–2.18], and 2.18 [1.38–3.43], respectively) and concluded that the Psychological and physical stress response predicted irregular menstruation. **[25]**

In Indonesia , study show Stress is part of several factors that cause menstrual cycle disorders, reinforced by the opinion that high levels of stress, depression, and psychological counseling will be associated with an increased risk of irregular menstrual cycles so, this study aims to examine the relationship between BMI, stress, and menstrual cycle irregularities as a preventive measure to maintain optimal menstrual health using an observational analytical study utilized a non-probability sampling technique. Data analysis was conducted using Spearman's Rho Correlation test and Cross Tabulation test

at a significance level of 0.05 and they found presents an overview of the study respondents categorized by Body Mass Index (BMI), stress levels, and menstrual cycle status. Regarding BMI classifications, 25% (25 respondents) were identified as underweight. A significant portion, 49% (49 respondents), fell within the normal weight range. Meanwhile, 19% (19 respondents) were categorized as overweight, and 7% (7 respondents) were classified as obese. In terms of stress levels, 26% (26 individuals) exhibited normal stress. Mild stress was observed in 24% (24 respondents), while moderate stress encompassed 25% (25 individuals). Severe stress was reported by 18% (18 respondents), and very severe stress was noted in 7% (7 individuals). When examining menstrual cycle criteria, a majority of 55% (55 respondents) reported normal menstrual cycles. However, 17% (17 individuals) experienced polymenorrhea, 26% (26 respondents) faced oligomenorrhea, and 2% (2 individuals) reported secondary amenorrhea. This distribution highlights the diverse range of health profiles within the respondent group, offering a thought-provoking context for further analysis so, Among the 26 participants experiencing normal stress levels, the majority—73.1% (19 individuals)—maintained normal menstrual cycles, while 15.4% (4 individuals) had polymenorrhea, and 11.5% (3 individuals) experienced oligomenorrhea. In those with mild stress, out of 25 participants, 75.0% (18 individuals) had normal cycles, 8.3% (2 individuals) faced olymenorrhea, and 16.7% (4 individuals) encountered oligomenorrhea. As stress levels increased to moderate, among the 24 individuals assessed, 64.0% (16 participants) remained with normal cycles. However, polymenorrhea affected 12.0% (3 individuals), and oligomenorrhea was seen in 24.0% (6 individuals). When observing severe stress levels among 18 participants, the trend shifted notably: only 11.1% (2 individuals) maintained normal cycles, 33.3% (6 individuals) dealt with polymenorrhea, 50.0% (9 individuals) experienced oligomenorrhea, and 5.6% (1 individual) encountered secondary amenorrhea. Finally, the very severe stress category included 7 participants, none of whom had normal cycles. Here, 28.6% (2 individuals) experienced polymenorrhea, a significant 57.1% (4 individuals) faced oligomenorrhea, and 14.3% (1 individual) suffered from secondary amenorrhea. This progression illustrates a clear pattern of increased menstrual cycle irregularities with escalating stress levels and they concluded that The findings of this study reveal noteworthy correlations between Body Mass Index (BMI), stress, and menstrual cycle irregularities among female adolescents at SMA Hang Tuah 2 Sidoarjo. A significant relationship with a positive, albeit low, correlation ($r = 0.258$) exists between BMI and menstrual cycle disorders. Similarly,

stress demonstrates a moderate positive correlation (r = 0.480) with menstrual irregularities, emphasizing its greater impact. These associations highlight the critical need for targeted interventions to optimize both BMI and stress management, contributing to healthier menstrual cycles**. [26]**

Chapter 3

METHODOLOGY

Methodology

3.1 Study design:

This study is a Descriptive cross sectional study used for research about impact quality of life on menstrual disorder in women at reproductive age in Sana'a city.

3.2 Study setting:

This study would be conducted in the city of Sana'a at the Al-Thawra General Hospital in Yemen located in Khwlan street in center of sana'a city which is the largest teaching and referral hospital, Al-Gumhori Hospital located in Alzubairy street in Yemen and It is central hospital in Sana'a city, and Emirates International University located in Bairot street in sana'a city. In June 2025.

Students, patients, employees and general women in these places were targeted.

3.3 study population:

This study was conducted on sample of women at reproductive age in Sana'a city according to the following inclusion criteria:

1. Started menstruating
2. Still pre-menopausal
3. Yemeni
4. Agree to share information credibly

Exclusion criteria:

1. Have not started a cycle
2. Menopause
3. Proven organic gynecological issues

3.4 Study period:

The preparatory phase was from 24/4/2025 to 25/5/2025

The data collection phase was from 26/5/2025 to 31/5/2025

The data analysis and report writing was from 9/6/2025 to 25/6/2025

3.5 Data collection tool:

A questionnaire that includes the WHOQOL (World Health Organization Quality of Life Scale) and questions about menstrual pattern (regularity, frequency, pain, bleeding).

Dependent variable: Menstrual Disorders

Independent variable: Quality of life

The questionnaire was reviewed and judged by Dr. Amal Jahaf, an obstetrician and gynecologist, Dr. Muammer Al Fahad, a psychiatrist, and Dr. Muammer Badi, a community medicine and health management specialist.

3.6 Sample technique:

Non-probability Convenience sampling

3.7 Sample size:

distribution data, females make up 49.35% of the total population. Applying this ratio, the number of women is estimated to be around 1,740,000. [27]

Looking at age groups, the 15-64 age group represents 56.27% of the population [28], and since the 18-49 age group falls within this range, it is estimated that 70% of this group are women between the ages of 18-49. Thus, the number of women in this age group in Sana'a City is estimated to be around 580,000 [29]

To determine the appropriate sample size from this population, Cochran's formula (Cochran, 1977) was used to calculate the sample size:

$$\mathbf{n_0 = \frac{Z^2 \cdot p \cdot (1-p)}{e^2}}$$

where:

z = 1.96 at the 95% confidence level

p = 0.5 (no exact estimate of variance)

e = 0.05 (5% margin of error)

$$n_0 = \frac{(1.96)^2 \cdot 0.5 \cdot (1 - 0.5)}{(0.05)^2} = 384.16$$

Since the population size is finite (580,000), the Finite Population Correction is applied as follows:

$$n = \frac{n_0}{1 + \left(\frac{n_0 - 1}{N}\right)} = \frac{384}{1 + \left(\frac{384 - 1}{580000}\right)} \approx 384$$

Thus, the appropriate sample size to conduct a study on women in reproductive age in Sana'a city, with a margin of error of 5% and a confidence level of 95%, is **384** participants. With a 10% chance of damage or errors, the total number of questionnaires is 422.

Data was collected for 422 questionnaires as follows:

19.91% from UAE University

35.31% from Al-Thawra Hospital

44.78% from Al-Gumhouri Hospital

At the time of analysis, 20 questionnaires were discarded due to damage or non-conformity, bringing the total number to 402.

3.8 Methods of analysis:

Data were analyzed using statistical package for social sciences (SPSS) software. After careful coding and data entry, descriptive statistics were conducted to summarize the sociodemographic characteristics of the sample, including frequencies, percentages, means, and standard deviations.

A value of 1 was given for having a disorder and 0 for not having a disorder and the score was for questions 2-8 without the question of explaining menstrual cycle change, Accordingly, the results were divided into two groups of more or equal to 4 and less than 4. The first question was considered for those who answered yes to having a disorder.

To examine relationships between study variables, the following inferential statistical tests were applied:

- The Independent Samples T-test was used to compare quality of life scores between women with and without menstrual cycle disorders.
- The Chi-square test was used to assess associations between menstrual disorders and sociodemographic variables such as age, income, and marital status.
- The One-Way Analysis of Variance (ANOVA) was applied to examine differences in quality of life domains based on variables such as age group, education level, income, and occupation, when reviewing the questionnaire,

the question (Satisfaction with sexual life) was deleted because the method of filling out the questionnaire was direct, and due to the embarrassment of the topic and the special characteristics of our society, the question was canceled, especially since our society is conservative and there are no relationships except within marriage.

The mean scores indicate moderate levels of quality of life among participants:

- **Physical domain**: Mean = 48.21, SD = 11.76 — suggests moderate physical functioning with some limitations.
- **Psychological domain**: Mean = 63.95, SD = 13.65 — indicates relatively better mental well-being compared to other domains.
- **Social domain**: Mean = 53.61, SD = 26.50 — shows considerable variation in perceived social support and relationships.
- **Environmental domain**: Mean = 50.99, SD = 16.62 — reflects moderate satisfaction with environmental factors (e.g., safety, resources).
- **Overall WHOQOL score**: Mean = 54.19, SD = 12.21 — indicates an average level of quality of life among the sample.

A significance level of 0.05 was adopted to determine statistical significance.

The results revealed statistically significant associations for certain variables, most notably age and monthly income, as well as significant differences in quality of life domains (particularly physical, psychological, and environmental) among participants with menstrual disorders.

- Binary logistic regression analysis was used to examine the relationship between quality of life and the severity of menstrual disorders among women.

The following hypotheses were tested:

- **Null Hypothesis (H_0):** There is no statistically significant relationship between quality of life and the severity of menstrual disorders among women.
- **Alternative Hypothesis (H_1):** There is a statistically significant inverse relationship between quality of life and the severity of menstrual disorders,

such that lower quality of life is associated with an increased likelihood and severity of menstrual disturbances.

Percent change in odds ratio: $(1-0.971) \times 100\% = 0.029 \times 100\% = 2.9\%$

The regression results showed a statistically significant effect of quality of life on the likelihood of experiencing severe menstrual disorders (B = -0.030, p = 0.009), indicating an inverse relationship. Specifically, each one-point decrease in quality of life score was associated with approximately a 2.9% increase in the odds of severe menstrual disorders.

3.9 Ethical Considerations:

Ethical considerations were of utmost importance in this study as the first ethical approval and written permission was obtained from the Emirates International University to request the consent of the target hospitals before starting the study and all participants were given informed consent and given a clear explanation about the research and its objectives and the dignity and respect of all research participants was prioritized and information was collected without requesting the name to maintain their privacy and in the end the confidentiality of the research data was guaranteed and the anonymity of all collected information was ensured.

Chapter 4

RESULTS

RESULTS

From 402 women of reproductive age, located in the study sites mentioned in the previous chapter during the study period, our study found the following results:

4.1 Demographic Data:

Age:

(Table1) the sample includes 402 participants. The **mean age** is approximately **26.24 years**, indicating a relatively young population. The **median** age is **24**, and the **mode** is also **24**, suggesting that the most frequent and central age among participants is 24 years. The **standard deviation** is **6.91**, which reflects moderate variability in ages across the sample. The **youngest participant** is **15 years old**, while the **oldest** is **50 years old**, showing a broad age range among participants.

Table1: Descriptive Statistics of Age

Statistics	age
Mean	**26.24**
Std. Deviation	**6.91**

(Table2) The participants were grouped into four age categories. The majority, 280 **(69.7%)**, are between **20 and 29 years old**, indicating that most of the sample consists of young adults. A smaller proportion, 55 **(13.7%**), falls in the **30–39** age group, followed by 35 **(8.7%**) who are **19 or younger**, and 32 (**8.0%**) who are **40 years or older**. This distribution confirms that the sample is largely composed of individuals in early adulthood.

RESULTS

Table2: Participants according to age groups

Age	Frequency	Percent
<=19	**35**	**8.7**
20-29	**280**	**69.6**
30-39	**55**	**13.7**
>=40	**32**	**8.0**
Total	**402**	**100.0**

Educational level:

(Table3) shows that the majority of participants, 241 **(60.0%)**, have received postgraduate studies, indicating a highly educated sample. Additionally, 111 **(27.6%)** of the participants completed high school, while smaller proportions had completed middle school 26 (**6.5%)**, primary education 20 **(5.0%)**, or reported having no formal education 4 **(1.0%)**.

Table3: Participants according to Educational level

What is the highest education you received?	Frequency	Percent
Illiterate	**4**	**1.0**
Primary education	**20**	**5.0**
Middle school	**26**	**6.5**
High school	**111**	**27.5**
Postgraduate studies	**241**	**60.0**
Total	**402**	**100.0**

RESULT

Marital status:

(Table 4) reveals that the majority of participants are **single** 282 **(70.1%)**, suggesting that most of the sample is unmarried. Additionally, 103 **(25.6%)** of the participants are **married**, while smaller proportions are **widowed** 14 **(3.5%)** or **divorced** 3 **(0.7%)**. This distribution indicates that the sample primarily consists of young, unmarried individuals.

Table 4: Participants according to marital status

Marital status	Frequency	Percent
Single	**282**	**70.1**
Married	**103**	**25.6**
Divorced	**3**	**0.75**
Widowed	**14**	**3.5**
Total	**402**	**100.0**

Place of residence:

(Table 5) According to the data, a vast majority of participants, 380 **(94.5%)**, reside in **urban areas**, while only 22 **(5.5%)** live in **rural areas**. This suggests that the sample is predominantly urban, and any conclusions drawn from the data may be more reflective of urban living conditions and experiences.

Table 5: Participants according to Place of residence

Place of residence	Frequency	Percent
Rural	**22**	**5.5**
Urban	**380**	**94.5**
Total	**402**	**100.0**

RESULTS

Type of housing (living arrangement):

(Table 6) indicates that the majority of participants, 319 **(79.4%)**, live **with their families**, whilev76 **(18.9%)** live **independently**. A small portion,7 **(1.7%)**, reported **other types of living arrangements** as Student or office accommodation, this suggests that most of the sample maintains close family ties and lives in shared household settings, which could influence their lifestyle and social support systems.

Table 6: Descriptive Statistics of type of housing

Type of housing (living arrangement)	Frequency	Percent
Living with family	**319**	**79.4**
Independent	**76**	**18.9**
Other (Student or office accommodation)	**7**	**1.7**
Total	**402**	**100.0**

Housing ownership:

(Table 7) show that 231 **(57.5%)** of participants live in **owned houses**, while 168 **(41.8%)** reside in **rented houses**. A small proportion, 3 **(0.7%)**, reported **other housing arrangements** as Tents, shelters. This indicates that more than half of the participants have stable housing ownership, which may reflect a certain level of financial security or family support.

Table 7: Participants according to Housing ownership

Housing ownership	Frequency	Percent
Owned house	**231**	**57.5**
Rented house	**168**	**41.8**
Other (Tents, shelters, …)	**3**	**0.7**
Total	**402**	**100.0**

RESULTS

Occupation:

(Table 8) The occupational distribution among participants shows that 116 **(28.9%)** are **students**, making them the largest group in the sample. Additionally, 108 **(26.9%)** are **housewives or unemployed**, while 91 **(22.6%)** work in the **healthcare sector**, and 87 **(21.6%)** are employed in **non-healthcare fields**. This reflects a diverse sample in terms of work status, with a significant proportion still in education or outside the workforce**.**

Table 8: Participants according to Occupation

Occupation	Frequency	Percent
student	**116**	**28.9**
house wife/Unemployed	**108**	**26.9**
Healthcare worker	**91**	**22.6**
Non-healthcare employee	**87**	**21.6**
Total	**402**	**100.0**

Monthly income:

(Table 9) The data reveals that 231 **(53.0%)** of participants reported that their monthly income is **not sufficient to cover expenses until the end of the month**, indicating financial strain in over half the sample. Meanwhile, 175 **(43.5%)** stated that their income is **just sufficient**, and only 14 **(3.5%)** reported having **more than sufficient** income. This suggests that the majority of the sample experiences **financial limitations**, which may impact other aspects of quality of life.

Table 9: Participants according to Monthly income

Monthly income	Frequency	Percent
Not sufficient until the end of the month	**213**	**53.0**
Sufficient until the end of the month	**175**	**43.5**
More than sufficient	**14**	**3.5**
Total	**402**	**100.0**

RESULT

financially support:

(Table 10) shows that the majority of respondents 270 **(67.2%)** do not financially support anyone, while 132 **(32.8%)** reported having financial responsibilities towards others. This indicates that about one-third of the participants bear some financial support burden.

Table 10: Participants according to financially support

"Do you financially support anyone?"	Frequency	Percent
No	**270**	**67.2**
Yes	**132**	**32.8**
Total	**402**	**100.0**

4.2 Menstrual Cycle Disorders:

(Table 11) The dataset on menstrual cycle disorders includes 288 valid responses and 114 missing entries. The average score for menstrual cycle disorders is 4.12 with a standard deviation of 1.06, indicating moderate variability in the responses. The median and mode are both 4.00, suggesting that this is the most common and central value in the data. The scores range from a minimum of 1 to a maximum of 6, reflecting a diverse range of reported severity or frequency.

Table 11: Descriptive Statistics of Menstrual Cycle Disorders

Menstrual Cycle Disorders:		
Median		**4.00**
Minimum		**1.00**
Maximum		**6.00**

RESULTS

(Table 12) The data shows that 334 **(83.1%)** of the participants reported experiencing menstrual cycle disorders, while 68 **(16.9%)** reported no such disorders. This indicates that the majority of the sample is affected by menstrual cycle issues.

Table 12: Participants according to Menstrual Cycle Disorders

Menstrual Cycle Disorders:	**Frequency**	**Percent**
No	**68**	**16.9**
Yes	**334**	**83.1**
Total	**402**	**100.0**

(Table 13) presents the distribution of menstrual cycle disorders across various socio-demographic factors among the study participants (N=402). The Chi-square test results indicate a statistically significant association between age groups and menstrual cycle disorders (χ^2=8.140, p=0.043), with the highest prevalence observed in the 30-39 age group (89.1%). Additionally, monthly income is significantly related to menstrual cycle disorders (χ^2=9.415, p=0.009), where women with insufficient monthly income have a higher proportion of disorders (88.3%) compared to those with sufficient income. Other variables such as education level, marital status, place of residence, occupation, and whether the participant financially supports others did not show statistically significant associations with menstrual cycle disorders ($p > 0.05$).

These findings suggest that age and economic status are important factors related to menstrual cycle health in this population.

RESULT

Table 13: Association Between Sociodemographic Factors and Menstrual Cycle Disorders Among Women

Variable	Category	No Menstrual Disorder (Count & %)	Yes Menstrual Disorder (Count & %)	p-value
Age	<=19	10 (28.6%)	25 (71.4%)	**0.043**
	20-29	43 (15.4%)	237 (84.6%)	
	30-39	6 (10.9%)	49 (89.1%)	
	>=40	9 (28.1%)	23 (71.9%)	
Highest Education	None	2 (50.0%)	2 (50.0%)	0.164
	Primary	6 (30.0%)	14 (70.0%)	
	Middle school	4 (15.4%)	22 (84.6%)	
	High school	15 (13.5%)	96 (86.5%)	
	Postgraduate studies	41 (17.0%)	200 (83.0%)	
Marital Status	Single	50 (17.7%)	232 (82.3%)	0.306
	Married	18 (17.5%)	85 (82.5%)	
	Divorced	0 (0.0%)	3 (100.0%)	
	Widowed	0 (0.0%)	14 (100.0%)	
Place of Residence	Rural	5 (22.7%)	17 (77.3%)	0.455
	Urban	63 (16.6%)	317 (83.4%)	
Occupation	Housewife/Unemployed	15 (13.9%)	93 (86.1%)	0.626

	Student	19 (16.4%)	97 (83.6%)	
	Healthcare worker	19 (20.9%)	72 (79.1%)	
	Non-healthcare employee	15 (17.2%)	72 (82.8%)	
Monthly Income	Not sufficient	25 (11.7%)	188 (88.3%)	**0.009**
	Sufficient	41 (23.4%)	134 (76.6%)	
	More than sufficient	2 (14.3%)	12 (85.7%)	
Do you financially support anyone?	No	51 (18.9%)	219 (81.1%)	0.131
	Yes	17 (12.9%)	115 (87.1%)	

(Table 14) indicates that 114 **(28.4%)** of the respondents reported having diagnosed medical conditions related to menstrual health, such as hormonal imbalance or polycystic ovary syndrome, while the majority 228 **(71.6%)** reported no such conditions.

Table 14: Participants according to diagnosed medical conditions for Menstrual Cycle Disorders

1. Do you have any diagnosed medical conditions (e.g., hormonal imbalance, polycystic ovary syndrome, etc.)?	**Frequency**	**Percent**
yes	**114**	**28.4**
no	**288**	**71.6**
Total	**402**	**100.0**

RESULT

1. Is your menstrual cycle usually regular?

Among the 288 respondents, a majority of 80.9% reported having a regular menstrual cycle, while 19.1% indicated irregularity. . (Table 15)

2. In the past six months, have you noticed any changes in the timing of your menstrual cycle?

About 41.7% of the participants noticed changes in the timing of their menstrual cycle in the last six months, whereas 58.3% did not observe any changes. (Table 15)

Table 15: Participants according to Regularity and frequency of Menstrual Cycle

		yes	no	Total
. Is your menstrual cycle usually regular	**Frequency**	**233**	**55**	**288**
	Percent	**80.9**	**19.1**	**100.0**
3. In the past six months, have you noticed any changes in the timing of your menstrual cycle?	**Frequency**	**120**	**168**	**288**
	Percent	**41.7**	**58.3**	**100.0**

(Table 16) Among those who reported changes in their menstrual cycle timing (120 participants), 40% experienced delays of more than 7 days, 35% had their cycle come earlier than usual, while 12.5% reported more than one cycle occurrence in a month, and another 12.5% missed their cycle for one month or more. This variety of changes highlights the complexity and variability in menstrual irregularities within the sample.

Table 16: Participants according to Menstrual cycle changes over the past six months

If "Yes", please specify :	Frequency	Percent
Delayed for more than 7 days	**48**	**40.0**
Came earlier than usual	**42**	**35.0**
Occurred more than once in a month	**15**	**12.5**
Missed for one month or more	**15**	**12.5**
Total	**120**	**100.0**

RESULT

(Table 17) shows that 166 **(57.6%)** of respondents reported no change in the amount of bleeding during their menstrual period. However, 83 **(28.8%)** experienced lighter bleeding, and 39 **(13.5%)** reported heavier bleeding recently. These variations in bleeding patterns could have implications for the participants' health and quality of life.

Table 17: Participants according to changed amount of bleeding in Menstrual cycle

4. Has the amount of bleeding in your period changed recently?	Frequency	Percent
No change	**166**	**57.6**
Lighter bleeding	**83**	**28.8**
Heavier bleeding	**39**	**13.5**
Total	**288**	**100.0**

(Table 18) reveals that only 19 **(6.6%)** of respondents do not experience severe pain during menstruation. Meanwhile, 128 **(44.4%)** experience severe pain occasionally, 70 **(24.3%)** frequently, and 71 **(24.7%)** always. This indicates that the majority of participants suffer from some degree of severe menstrual pain, which could significantly affect their daily activities and quality of life.

Table 18: Participants according to experience severe pain during menstruation

Do you experience severe pain during menstruation?	Frequency	Percent
no	**19**	**6.6**
Occasionally	**128**	**44.4**
Frequently	**70**	**24.3**
Always	**71**	**24.7**
Total	**288**	**100.0**

RESULT

(Table 19) A significant majority of respondents 234 **(81.3%)** reported noticing new symptoms before or during their menstrual period, while only 54 **(18.8%)** did not observe any new symptoms. This high prevalence highlights the importance of addressing menstrual-related symptoms in healthcare and quality of life assessments.

Table 19: Participants according to noticed new symptoms before or during menstruation

6. Have you noticed new symptoms before or during your period	Frequency	Percent
yes	**234**	**81.3**
no	**54**	**18.8**
Total	**288**	**100.0**

(Table 20) The data shows that a substantial majority of respondents 209 **(72.6%)** believe that changes in their menstrual cycle are related to periods of psychological stress or tension. A small proportion 28 **(9.7%)** disagreed, while 51 **(17.7%)** were uncertain. This suggests a strong perceived link between psychological factors and menstrual cycle irregularities among the participants.

Table 20: Participants according to Association of menstrual cycle changes with periods of psychological stress or tension

7. Are the changes in your menstrual cycle related to periods of psychological stress or tension?	Frequency	Percent
Yes	**209**	**72.6**
No	**28**	**9.7**
not sure	**51**	**17.7**
Total	**288**	**100.0**

RESULT

4.3 Quality of life:

(Table 21) The **minimum and maximum values** across all domains show a wide range in perceptions, with some participants reporting very poor and others excellent quality of life.

Table 21: Descriptive Statistics of Quality of life

Statistics					
	Physical Domain (0-100 Scale)	Psychological Domain (0-100 Scale)	Social Domain (0-100 Scale, adjusted)	Environmental Domain (0-100 Scale)	Overall WHOQOL Score (0-100, Adjusted)
Median	**50.00**	**62.50**	**50.00**	**50.00**	**54.15**
Minimum	**10.71**	**16.67**	**0.00**	**9.38**	**20.83**
Maximum	**82.14**	**95.83**	**100.00**	**93.75**	**86.61**

(Table 22) The results showed a statistically significant difference in the Psychological domain across age groups ($p = 0.050$), with post hoc analysis revealing that individuals aged 30–39 had significantly lower psychological well-being compared to those aged ≤19 and 20–29.

Although the Environmental domain approached significance ($p = 0.060$), only the pair 20–29 vs. 30–39 showed a significant difference ($p = 0.009$). No significant differences were observed in the Physical, Social, or Overall WHOQOL scores.

Table 22: Descriptive Statistics of WHOQOL Domain Scores by Age Group

Domain	Age Group	Mean	SD	F-value	Sig.
Physical Domain	≤ 19	49.18	12.64		0.431
	20–29	47.97	11.94		
	30–39	47.14	12.05	0.92	
	≥ 40	51.12	7.98		

Psychological Domain	≤ 19	67.14	13.44		0.05
	20–29	64.58	13.77		
	30–39	60.23	13.39	2.63	
	≥ 40	61.33	12.03		
Social Domain	≤ 19	56.07	27.85		0.669
	20–29	53.93	26.71		
	30–39	53.41	25.96	0.52	
	≥ 40	48.44	24.54		
Environmental Domain	≤ 19	52.5	17.51		0.06
	20–29	52.03	16.27		
	30–39	45.63	17.32	2.485	
	≥ 40	49.51	16.29		
Overall WHOQOL Score	≤ 19	56.22	11.51		0.227
	20–29	54.63	12.27		
	30–39	51.6	12.53	1.455	
	≥ 40	52.6	11.58		

(Table 23) The results of the one-way ANOVA revealed no statistically significant differences across educational levels in any of the WHOQOL-BREF domains (physical, psychological, social, environmental, or overall quality of life), as all p-values exceeded the 0.05 significance level.

Table 23: Descriptive Statistics of WHOQOL-BREF Domain Scores by Educational Level

WHOQOL Domain	Educational Level	N	Mean	Std. Deviation	F-value	Sig.
Physical Domain (0–100 Scale)	None	14	50.54	14.44	0.985	.416
	Primary education	25	46.61	11.90		
	Middle school	39	48.35	10.49		
	High school	217	47.87	12.23		
	Postgraduate studies	107	48.49	11.49		

Psychological Domain (0–100)	None	14	65.12	13.28	0.169	.954
	Primary education	25	64.08	13.14		
	Middle school	39	66.04	13.10		
	High school	217	63.82	13.89		
	Postgraduate studies	107	64.21	13.47		
Social Domain (0–100)	None	14	69.11	24.26	1.844	.120
	Primary education	25	36.61	26.34		
	Middle school	39	38.10	24.58		
	High school	217	54.13	27.27		
	Postgraduate studies	107	45.72	23.96		
Environmental Domain (0–100)	None	14	54.46	18.20	1.753	.138
	Primary education	25	48.36	16.67		
	Middle school	39	55.59	17.12		
	High school	217	50.47	16.66		
Environmental Domain (0–100)	Postgraduate studies	107	50.39	15.74		
Overall WHOQOL Score (0–100)	None	14	58.08	13.52	0.760	.552
	Primary education	25	50.23	12.30		
	Middle school	39	50.11	11.42		
	High school	217	54.68	12.66		
	Postgraduate studies	107	54.46	11.61		

(Table 24) The table presents the mean scores, standard deviations, ANOVA F-values, significance levels, and post hoc comparisons for quality of life domains across different marital status groups. Significant differences were found in the Psychological and Environmental domains. Specifically, single women scored significantly higher than married women in both the Psychological domain (mean difference = 4.52, p = 0.004) and the Environmental domain (mean difference = 4.96, p = 0.009). No significant

differences were observed in the Physical, Social, or Overall WHOQOL scores among the groups. These results suggest that marital status may influence certain aspects of psychological well-being and environmental quality of life among women.

Table 24: Descriptive Statistics of Marital Status

Marital status	Field	Mean	Std.Dev	F-value	Sig.
Single	Physical	48.38	12.22	1.34	0.261
Married	Physical	46.98	10.76		
Divorced	Physical	51.19	8.25		
Widowed	Physical	53.32	8.57		
Single	Psychological	65.12	13.88	2.87	0.036
Married	Psychological	60.6	12.3		
Divorced	Psychological	62.5	8.33		
Widowed	Psychological	65.48	16.13		
Single	Social	53.81	28.24	1.18	0.318
Married	Social	53.76	21.28		
Divorced	Social	25	25		
Widowed	Social	54.46	24.32		
Single	Environmental	52.59	16.33	3.22	0.023
Married	Environmental	47.63	16.46		
Divorced	Environmental	39.58	12.63		
Widowed	Environmental	45.98	20.04		
Single	Overall WHOQOL	54.97	12.25	1.91	0.128
Married	Overall WHOQOL	52.24	11.89		
Divorced	Overall WHOQOL	44.57	4.82		
Widowed	Overall WHOQOL	54.81	13.33		

RESULT

(Table 25) The table shows the mean scores, standard deviations, ANOVA results, and post hoc LSD comparisons of quality of life (QOL) domains across different occupational groups: housewives/unemployed, students, healthcare workers, and non-healthcare employees.

- **Physical, Social, Environmental domains, and overall QOL scores** showed no statistically significant differences among the occupational groups ($p > 0.05$).
- The **Psychological domain** approached significance ($F = 2.546$, $p = 0.056$). Post hoc tests revealed that healthcare workers and non-healthcare employees scored significantly higher in psychological well-being compared to housewives/unemployed (mean differences of 4.32 and 4.01, respectively; $p < 0.05$).
- No other significant pairwise differences were found among occupational groups.

(Table 25) These findings suggest that occupation, especially working in healthcare or other employment sectors, might be associated with better psychological quality of life compared to being unemployed or a housewife. Other domains and overall QOL did not differ significantly by occupation in this sample

Table 25: Descriptive Statistics for Quality of Life Domains by Occupation

Domain	Occupation Group	Mean	Std. Deviation	ANOVA F	Sig. (p-value)
Physical Domain (0-100)	House wife/Unemployed	48.05	12.07	1.146	0.330
	Student	46.77	12.15		
	Healthcare worker	48.82	10.24		
	Non-healthcare employee	49.71	12.27		
Psychological Domain (0-100)	House wife/Unemployed	61.84	13.07	2.546	0.056
	Student	62.75	13.88		
	Healthcare worker	66.16	13.79		
	Non-healthcare employee	65.85	13.52		

Social Domain (0-100, adj.)	House wife/Unemployed	53.24	24.90	0.172	0.915
	Student	53.77	26.49		
	Healthcare worker	55.08	27.13		
	Non-healthcare employee	52.30	28.11		
Environmental Domain (0-100)	House wife/Unemployed	49.42	15.78	1.556	0.200
	Student	53.26	15.75		
	Healthcare worker	51.89	17.57		
	Non-healthcare employee	48.99	17.56		
Overall WHOQOL Score (0-100)	House wife/Unemployed	53.14	11.85	0.609	0.609
	Student	54.14	11.72		
	Healthcare worker	55.49	12.24		
	Non-healthcare employee	54.21	13.30		

(Table 26, 27) The one-way ANOVA results indicate statistically significant differences in the Social, Environmental, and Overall Quality of Life domains based on monthly income levels. Specifically, individuals with sufficient income until the end of the month tend to report higher social domain scores compared to those with insufficient income. For the environmental domain and overall WHOQOL score, the highest scores are observed among those whose income is more than sufficient. No significant differences were found in the physical and psychological domains. These findings suggest that monthly income has a notable impact on certain aspects of quality of life, particularly social and environmental wellbeing.

RESULT

Table 26: Descriptive Statistics for Quality of Life Domains by Monthly income levels (No Significant Difference)

Domain	Income Group	Mean	Std. Deviation	ANOVA F	Sig. (p-value)
Physical Domain (0-100)	Not sufficient until month end	47.64	12.45	1.193	0.305
	Sufficient until month end	48.59	10.80		
	More than sufficient	52.30	12.26		
Psychological Domain (0-100)	Not sufficient until month end	62.66	14.15	2.067	0.128
	Sufficient until month end	65.36	12.90		
	More than sufficient	66.07	13.95		

Table 27: Descriptive Statistics for Quality of Life Domains by Monthly income levels (with Significant Difference)

Domain	Income Group	Mean	Std. Deviation	ANOVA F	Sig. (p-value)
Social Domain (0-100, adj.)	Not sufficient until month end	50.53	27.83	3.303	**0.038**

	Sufficient until month end	57.43	24.46		
	More than sufficient	52.68	26.03		
Environmental Domain (0-100)	Not sufficient until month end	45.53	15.41	28.121	**0.000**
	Sufficient until month end	56.93	15.77		
	More than sufficient	60.04	16.27		
Overall WHOQOL Score (0-100)	Not sufficient until month end	51.59	12.03	10.840	**0.000**
	Sufficient until month end	57.08	11.74		
	More than sufficient	57.77	12.61		

(Table 28) The T-test results indicate that participants who **do not** financially support others reported significantly **higher scores** in the **Social**, **Environmental**, and **Overall Quality of Life** domains ($p < 0.05$). No statistically significant differences were found in the **Physical** or **Psychological** domains. The standard deviations indicate a relatively wide variation in responses, especially in the Social and Environmental domains.

RESULT

Table 28: Descriptive Statistics of WHOQOL Domain Scores Based on Financial Support Responsibility

Group: Do you financially support anyone?	WHOQOL Domain	Mean	Std. Deviation	t-value	Sig. (2-tailed)
No	Physical	48.23	11.85	0.032	0.974
Yes		48.19	11.62		
No	Psychological	64.38	13.55	0.907	0.365
Yes		63.07	13.86		
No	Social	55.65	26.59	2.219	**0.027**
Yes		49.43	25.93		
No	Environmental	53.77	16.06	4.931	**0**
Yes		45.31	16.35		
No	Overall WHOQOL Score	55.51	11.93	3.124	**0.002**
Yes		51.5	12.38		

Table 29: Descriptive Statistics of Quality of Life Rating and Satisfaction with Health

Category	Very poor	Poor	Neither poor nor good	Good	Very good	Total
Quality of Life Rating	7 (1.7%)	18 (4.5%)	137 (34.1%)	155 (38.6%)	85 (21.1%)	402 (100%)
Satisfaction with Health	20 (5.0%)	49 (12.2%)	143 (35.6%)	104 (25.9%)	86 (21.4%)	402 (100%)

RESULT

Table 30: Descriptive Statistics of level of Physical pain preventing daily tasks, need for medical treatment to function daily, Enjoyment of life, sense of meaning in life

Question	Not at all	A little	A moderate amount	Very much	An extreme amount	Total
Physical pain preventing daily tasks	35 (8.7%)	90 (22.4%)	160 (39.8%)	82 (20.4%)	35 (8.7%)	402 (100%)
Need for medical treatment to function daily	120 (29.9%)	126 (31.3%)	92 (22.9%)	48 (11.9%)	16 (4.0%)	402 (100%)
How much do you enjoy life?	15 (3.7%)	79 (19.7%)	156 (38.8%)	116 (28.9%)	36 (9.0%)	402 (100%)
To what extent do you feel your life to be meaningful?	18 (4.5%)	45 (11.2%)	110 (27.4%)	133 (33.1%)	96 (23.9%)	402 (100%)

Table 31: Descriptive Statistics of ability of concentrate, feeling of safety in daily life, perception of physical environment health

Question	Not at all	A little	A moderate amount	Very much	Extremely	Total
How well are you able to concentrate?	18 (4.5%)	61 (15.2%)	189 (47.0%)	106 (26.4%)	28 (7.0%)	402 (100%)

How safe do you feel in your daily life?	24 (6.0%)	54 (13.4%)	118 (29.4%)	138 (34.3%)	68 (16.9%)	402 (100%)
How healthy is your physical environment?	39 (9.7%)	94 (23.4%)	172 (42.8%)	70 (17.4%)	27 (6.7%)	402 (100%)

Table 32: Descriptive Statistics of completely experience or were able to do certain things in the last two weeks

Question	Not at all	A little	Moderately	Mostly	Completely	Total
Do you have enough energy for everyday life?	35 (8.7%)	80 (19.9%)	183 (45.5%)	86 (21.4%)	18 (4.5%)	402 (100%)
Are you able to accept your bodily appearance?	14 (3.5%)	36 (9.0%)	78 (19.4%)	155 (38.6%)	119 (29.6%)	402 (100%)
Have you enough money to meet your needs?	36 (9.0%)	91 (22.6%)	176 (43.8%)	79 (19.7%)	20 (5.0%)	402 (100%)
How available to you is the information you need?	13 (3.2%)	76 (18.9%)	174 (43.3%)	113 (28.1%)	26 (6.5%)	402 (100%)
To what extent do you have the opportunity for leisure activities?	66 (16.4%)	126 (31.3%)	119 (29.6%)	62 (15.4%)	29 (7.2%)	402 (100%)
How well are you able to get around?	51 (12.7%)	112 (27.9%)	116 (28.9%)	88 (21.9%)	35 (8.7%)	402 (100%)

Table 33: Descriptive Statistics of how good or satisfied they have felt about various aspects of their life over the last two weeks.

Question	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied	Total
How satisfied are you with your sleep?	**39 (9.7%)**	**74 (18.4%)**	**180 (44.8%)**	**65 (16.2%)**	**44 (10.9%)**	**402 (100%)**
How satisfied are you with your ability to perform your daily living activities?	**15 (3.7%)**	**68 (16.9%)**	**211 (52.5%)**	**77 (19.2%)**	**31 (7.7%)**	**402 (100%)**
How satisfied are you with your capacity for work?	**17 (4.2%)**	**46 (11.4%)**	**175 (43.5%)**	**113 (28.1%)**	**51 (12.7%)**	**402 (100%)**
How satisfied are you with yourself?	**10 (2.5%)**	**26 (6.5%)**	**101 (25.1%)**	**130 (32.3%)**	**135 (33.6%)**	**402 (100%)**
How satisfied are you with your personal relationships?	**53 (13.2%)**	**23 (5.7%)**	**190 (47.3%)**	**66 (16.4%)**	**70 (17.4%)**	**402 (100%)**
How satisfied are you with the support you get	**51 (12.7%)**	**58 (14.4%)**	**164 (40.8%)**	**80 (19.9%)**	**49 (12.2%)**	**402 (100%)**

from your friends?						
How satisfied are you with the conditions of your living place?	**34 (8.5%)**	**52 (12.9%)**	**132 (32.8%)**	**108 (26.9%)**	**76 (18.9%)**	**402 (100%)**
How satisfied are you with your access to health services?	**43 (10.7%)**	**78 (19.4%)**	**148 (36.8%)**	**87 (21.6%)**	**46 (11.4%)**	**402 (100%)**
How satisfied are you with your transport?	**77 (19.2%)**	**80 (19.9%)**	**109 (27.1%)**	**70 (17.4%)**	**66 (16.4%)**	**402 (100%)**

Table 34: Descriptive Statistics of frequency of negative feelings

Question	Never	Seldom	Quite often	Very often	Always	Total
How often do you have negative feelings such as blue mood, despair, anxiety, depression?	6 (1.5%)	34 (8.5%)	124 (30.8%)	155 (38.6%)	83 (20.6%)	402 (100%)

4.4 Impact of quality of life on menstrual disorder:

(Table 35) The independent samples t-test revealed statistically significant differences in most WHOQOL domains between women with and without menstrual disorders. Women without menstrual disorders reported significantly higher quality of life scores in the physical, psychological, environmental, and overall domains

compared to those with menstrual disorders ($p < 0.05$). However, there was no significant difference in the social domain. These results indicate that women without menstrual disorders generally experience better quality of life across several domains.

Table 35: Comparison of Quality of Life Domains Between Women with and Without Menstrual Cycle Disorders

Domain	Group (Menstrual Cycle Disorders)	N	Mean	Std. Deviation	t-value	Sig. (2-tailed)
Physical Domain (0-100)	No	68	50.79	10.02	1.987	0.048
	Yes	334	47.69	12.03		
Psychological Domain (0-100)	No	68	67.16	12.93	2.135	0.033
	Yes	334	63.3	13.71		
Social Domain (0-100)	No	68	57.35	25.11	1.28	0.201
	Yes	334	52.84	26.75		
Environmental Domain (0-100)	No	68	55.79	17.08	2.63	0.009
	Yes	334	50.02	16.38		
Overall WHOQOL Score (0-100)	No	68	57.77	11.4	2.673	0.008
	Yes	334	53.46	12.26		

(Table 36) The binary logistic regression results indicated a statistically significant effect of quality of life on the likelihood of experiencing severe menstrual cycle disorders ($B = -0.030$, $p = 0.009$). Each one-point increase in the quality of life score decreases the odds of severe menstrual disorders by approximately 2.9% (Exp (B) = 0.971, 95% CI [0.950, 0.993]). These findings demonstrate a statistically significant inverse relationship between quality of life and severity of menstrual disorders, supporting the hypothesis that lower quality of life leads to increased severity of menstrual disturbances.

Table 36: Statistical distribution of the probability of the effect of quality of life change on menstrual disorders

Variable	B	S.E.	Wald	df	Sig.	Exp (B)	95% CI for Exp (B)
(QOL_Total)	-0.030	0.011	6.920	1	0.009	0.97	0.950 – 0.993
(Constant)	3.233	0.653	24.489	1	0.000	25.35	–

Chapter 5

Discussion

Discussion

This study was conducted to explore the impact of quality of life on menstrual disorders among women of reproductive age in Sana'a City. The findings revealed a significant prevalence of menstrual disturbances and meaningful associations with several domains of the WHOQOL, as well as with sociodemographic factors such as age and income. This chapter discusses these findings in light of previous literature, theoretical implications, and contextual factors.

5.1 Prevalence of Menstrual Disorders:

The results indicated that 83.1% of participants reported experiencing at least one type of menstrual disorder, including irregular cycles, severe menstrual pain, or changes in bleeding patterns. This prevalence is considerably high and aligns with international findings suggesting that menstrual irregularities are widespread, especially among populations exposed to chronic stress, limited access to healthcare, or sociocultural restrictions regarding women's health.

Such a high prevalence in the Yemeni context may be attributed to factors like ongoing political conflict, socioeconomic instability, limited reproductive healthcare services, and a lack of comprehensive menstrual education. These findings suggest that menstrual health is a key reflection of broader quality-of-life dynamics.

5.2 Association with Quality of Life:

The binary logistic regression revealed a statistically significant inverse relationship between the overall WHOQOL score and the severity of menstrual disorders (B = -0.030, p = 0.009), where each one-point drop in quality of life increased the odds of severe menstrual disturbances by 2.9%. Among the QoL domains:

- The physical domain had the lowest mean score (48.21), highlighting limitations due to pain, fatigue, and physical discomfort related to menstruation.
- The psychological domain (mean = 63.95) showed emotional distress, including anxiety and negative emotions.
- The social domain exhibited wide variability (mean = 53.61, SD = 26.5), potentially affected by cultural stigmas and inadequate social support.

Discussion

- The environmental domain (mean = 50.99) underscored dissatisfaction with safety, accessibility of health services, and financial security.

These findings support the WHOQOL framework's holistic perspective that various life dimensions interconnect to shape overall health outcomes, particularly among women.

5.3 Sociodemographic Influences:

Among the studied sociodemographic variables, age and monthly income were significantly associated with menstrual disorders. Women aged 30–39 years had the highest prevalence (89.1%), likely due to cumulative stress, hormonal fluctuations, and increased life responsibilities. Similarly, women with insufficient monthly income had significantly lower WHOQOL scores and more reported menstrual disturbances.

While education level, occupation, and marital status did not show statistically significant differences in menstrual disturbance prevalence, it is noteworthy that employed women, particularly in the health sector, reported better psychological scores than unemployed women or housewives. This may be attributed to higher social engagement and a sense of agency among working women.

Also it was observed that there is a contradiction between education and job, as the majority were highly qualified, but they are housewives. This may be due to the fact that there are more graduates than jobs, which led to the stagnation of the labor market, or because of some customs that prevent women from working.

5.4 Perceived Link Between Stress and Menstrual Irregularities:

An impressive 72.6% of participants believed that psychological stress had a direct impact on their menstrual patterns. This self-awareness aligns with physiological understanding of the hypothalamic–pituitary–ovarian (HPO) axis, which is sensitive to stress and emotional strain. It also supports findings from several previous studies that established strong connections between perceived stress and menstrual health outcomes.

Discussion

5.5 Comparison with Previous Studies:

The findings of this study both support and expand upon earlier research:

- Pogodina & Rychkova (2022) (Iran) [34]: Found that menstrual disorders among adolescents negatively impacted emotional aspects of QoL. This supports the current study's finding that women with menstrual irregularities report lower psychological wellbeing.

- Odongo et al. (2023) (Uganda) [35]: Reported that 97.8% of female university students experienced menstrual disorders that interfered with academic performance. This aligns with our reported high prevalence and impact on daily functionality.

- Japanese cohort study (2023) [36]: Demonstrated a dose-dependent link between workplace stress and menstrual irregularity. Similarly, 72.6% of women in this study attributed menstrual changes to psychological stress.

- Indonesian study (2023) [37]: Showed a moderate correlation (r = 0.480) between stress and menstrual disorders among adolescents. While our study confirms this relationship, it does so over a broader age range with more robust multivariate analysis.

5.6 Critical Differences with Previous Studies and Interpretative Hypotheses:

Although many of the results of this study are consistent with the previous scientific literature, there are several differences and discrepancies that are worthy of attention for multiple methodological and contextual reasons, and the following are the most prominent of these differences:

- **High prevalence of menstrual disorders compared to foreign studies:**

In our research: The prevalence of menstrual disorders reached 83.1%.
While in studies such as Japanese cohort study (2023) [36], and Indonesian study (2023) [37] the percentages ranged between 40%-65%.

Discussion

Interpretation: This disparity may be due to:

- High levels of chronic stress associated with the political and economic situation in Yemen.
- Lack of access to health care, especially gynecological services.
- The presence of societal stigma that prevents girls from early education about menstruation, leading to mismanagement of symptoms and increased perception of them as disorders

➢ **Differences in the demographics of the sample:**

Previous studies focused on specific groups such as:

- Female university students [Pogodina & Rychkova (2022) (Iran) [34], and Odongo et al. (2023) (Uganda) [35]]
- Female academic staff [Japanese cohort study (2023) [36]]
- Teenagers only [Indonesian study (2023) [37]]

While our research includes a broader group from 15 to 50 years old from different categories (female students, employees, housewives, etc.).

Interpretation: This diversity in the sample may explain the breadth of findings and the overlap of socioeconomic dimensions.

➢ **Measurement instrument and quality of life:**

Our study used the WHOQOL-BREF scale, which assesses quality of life in four detailed dimensions.

Some previous studies used abbreviated scales or only assessed quality from one perspective.

Interpretation: The comprehensive measurement tools in our research may have allowed the detection of deeper relationships between environmental and social aspects and menstrual disorders, which may not be seen in other studies.

Discussion

- **High self-perception of the relationship between stress and menstrual disorders:**

72.6% of participants in this study reported that stress directly affects their cycle, this percentage is higher than some other studies.

Interpretation: This probably reflects an increased awareness among Yemeni women due to the constant exposure to stress and lack of health support, making women more aware of changes in their bodies.

- **Lack of emphasis on environmental factors in other studies:**

Our research showed that the environmental aspect (safety, services, economy) was clearly influential.

Studies such as the Pogodina & Rychkova study (2022) (Iran) [34], Indonesian study (2023) [37] focused on psychological aspects only.

Interpretation: The harsh Yemeni environment and precarious daily living may be a central element that characterizes the study population, making the environmental impact clear and strongly influencing reproductive health.

Chapter 6

Conclusions and Recommendations

6.1 Conclusions:

Based on the data analysis and discussion of the results, the research team reached a number of fundamental conclusions that reflect the relationship between quality of life and menstrual disorders among women of reproductive age in Sana'a city, which can be summarized as follows:

1. The results of the study indicate that a large percentage of the participating women suffer from some form of menstrual disorders, which reflects a high prevalence of these disorders in the target community, and emphasizes the need for more attention to reproductive health in this group.

2.Women in the age group of 30 to 39 years showed a significant decrease in the level of quality of life, especially psychologically, compared to other age groups, and this group was the most vulnerable to menstrual disorders.

3.The data indicated that women with insufficient monthly income had higher rates of PMDD and lower quality of life, especially in the environmental and social domains.

4. The majority of participants recognized a relationship between periods of psychological stress and the occurrence of menstrual disorders, reflecting a growing societal recognition of the interconnectedness between mental health and the hormonal cycle in women.

5. Women who are not working or housewives showed lower mental health scores than those who are working, which may be related to isolation or lack of social activity.

6. Single women showed an association with better psychological and environmental quality of life compared to married women, suggesting that some of the stresses associated with social or family relationships may contribute to psychological deterioration.

Conclusions:

These findings show the importance of adopting a holistic perspective when dealing with menstrual disorders, taking into account not only the biological aspect, but also the psychological, social and economic dimensions that affect women's quality of life and reproductive health.

6.2 Recommendations:

In light of the findings of this study, the research team recommends a set of actions and interventions that will improve women's quality of life and reduce the prevalence of PMDD, as follows:

1. Integrating quality of life assessment into primary and women's health services, especially in obstetrics and gynecology clinics, in order to contribute to the early detection of psychosocial issues associated with PMDD.

2. Special psychological support programs should be directed to the 30-39 age group, focusing on stress management techniques and improving mental health to reduce menstrual disorders at this stage of life.

3. Economic support and social services for low-income women, including financial empowerment programs or housing support, are recommended to improve their living environment and reduce stress.-related to financial status.

4. Provide psychosocial support services within health centers and educational institutions, including individual or group counseling sessions for women with stress-related menstrual disorders.

Recommendations

5. It is recommended to provide continuing education opportunities, voluntary participation or subsidized home projects for housewives, to enhance their sense of accomplishment and belonging and improve their health.

6. Married women should be supported through psychosocial awareness programs on how to deal with marital and family pressures, to improve their quality of life and reduce their impact on reproductive health.

7. Encourage future studies on a larger scale, including samples from different rural and urban areas, using multidimensional assessment tools to accurately measure quality of life and hormonal disorders, thus enhancing the building of a local database that can be used for planning and health interventions.

8. Include the topic of menstrual disorders in school and university health curricula, with the aim of breaking the stigma barrier and promoting a culture of interest in mental and reproductive health among girls from an early age.

6.3 Limitations:

Despite the methodological rigor applied in conducting this study, several limitations must be acknowledged that may affect the interpretation and generalizability of the findings:

1. Study Design Limitations:

The study was initially designed as a case-control model to compare women with menstrual disorders (cases) to those without (controls), practical limitations in the field led to the deviation from this intended structure. Specifically, the high prevalence of menstrual disorders among participants (83.1%) made it difficult to recruit a sufficiently large and balanced control group. As a result, the study relied on cross-sectional comparisons within the full sample, rather than maintaining a clearly defined control-to-case ratio, this deviation limits the strength of causal inference and reduces the ability to directly compare exposures between well-matched groups. Therefore, while significant associations were identified, the study design restricts the ability to attribute directionality or causality to those relationships.

2. Instrument-Related Limitations:

The research utilized a self-administered questionnaire combining the WHOQOL-BREF tool and a menstrual health section. While scientifically validated, the reliance on self-reported data may introduce response biases, particularly due to the sensitivity of topics such as reproductive and psychological health in a conservative cultural context.

3. Sample-Related Limitations:

The sample was restricted to participants from three urban locations within Sana'a city (two hospitals and one university). This urban-centric sample may not fully reflect the experiences of women in rural or underserved regions, thereby limiting the broader generalizability of the results, We were unable to conduct field visits to the schools and universities that we planned to visit in order to collect more information, as the information collection phase coincided with the vacation period of university and school students in Sana'a city, and due to the lack of time we were unable to cover the teaching hospitals in Sana'a completely, so we chose according to the random sample lottery and selected two of them as mentioned.

Limitations

4. Time and Setting Constraints:

Data collection occurred over a short duration and coincided with academic vacation periods, which hindered access to broader student populations and limited the intended outreach to additional institutions. This may have affected the diversity and representativeness of the sample.

5. Lack of Clinical Confirmation:

The study did not incorporate clinical diagnostics (e.g., hormonal testing or imaging) to verify menstrual disorders. Diagnosis was based entirely on self-reported symptoms, which could reduce the precision of categorizing participants' menstrual health conditions.

6. Cultural and Social Sensitivity:

Due to sociocultural norms, certain items—such as those related to sexual satisfaction—were excluded from the questionnaire. This may have impacted the comprehensiveness of the assessment, particularly in evaluating the social domain of quality of life among married participants.

While these limitations may affect certain aspects of the study's scope and generalizability, the findings remain valuable and contribute meaningfully to addressing an important public health concern within a culturally relevant context. Future research is encouraged to build on these results using more diversified methodologies and expanded populations.

Rreferences

References

1. Nagma, S., Kapoor, G., & Bharti, R. To Evaluate the Effect of Perceived Stress on Menstrual Function. Journal of Clinical and Diagnostic Research, (2015), 9(3), QC01–QC03.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4535108/

2. Chrousos, G. P., Stress and disorders of the stress system. Nature Reviews Endocrinology, (2009), 5(7), 374–381.
https://doi.org/10.1038/nrendo.2009.106

3. Oechsle K. Palliative Care in Patients with Hematological Malignancies. Oncol Res Treat. 2019;42(1-2):25-30.
https://www.ncbi.nlm.nih.gov/books/NBK536962/

4. Harlow, S. D., & Matanoski, G. M., The association between weight, physical activity, and stress and variation in the length of the menstrual cycle. American Journal of Epidemiology (1991), 133(1), 38–49.

5. Critchley H, Babayev E, Bulun SE, Clark S, Garcia-Grau I, Gregersen PK, et al. Menstruation: Science and society. Am J Obstetr Gynecol. 2020;223(5):624-64.

6. Thiyagarajan DK, Basit H, Jeanmonod R. Physiology, menstrual cycle. InStatPearls [Internet] 2024 Sep 27. StatPearls Publishing.

7. Itriyeva K. The normal menstrual cycle. Current problems in pediatric and adolescent health care. 2022 May 1;52(5):101183.

8. Talekar VC, Singh M, Kamble KA. Impact of menstrual disorders on health of adolescent girls: a systematic review. Uttar pradesh journal of zoology. 2021 Jul 6;42(14):67-76.

9. McKenna KA, Fogleman CD. Dysmenorrhea. American family physician. 2021 Aug;104(2):164-70.

10. Das MS, Daksh MS, Ahmed A, Chandrul K. A Review on Menorrhagia: Investigation, Miracle Role of Herbs and Medical Treatment.

11. Seldmeyer IL, Palmert MR. Delayed puberty: analysis of a large case series from an academic center. J Clin Endo Metab, 2002; 87: 1613–20.

12. Rein dollar RH, Byrd JR, McDonough PG. Delayed sexual development: a study of 252 patients. Am J Obstet Gynecol, 1981; 140: 371–80.

References

13. Khan-Dawood F.S., Huang J.C., Dawood M.Y. Baboon corpus luteum oxytocin: an intragonadal peptide modulator of luteal function. Am J Obstet Gynecol, 1988; 158(4): 882–891.

14. Judd H.L., Yen S.S. Serum androstenedione and testosterone levels during the menstrual cycle. J Clin Endocrinol Metab, 1973; 36(3): 475–481.

15. Barcaccia, Barbara,"Quality Of Life: Everyone Wants It, But What Is It?". Forbes/ Education (September 4, 2013), Archived from the original on 2019-05-22. Accessed on 2016-05-10.

16. World Health Organization. The constitution of the World Health Organization. WHO Chron. 1947, 1, 29.

17. Kaplan, R.M.; Bush, J.W. Health-related quality of life measurement for evaluation research and policy analysis. Health Psychol. 1982, 1, 61–80. [CrossRef]

18. Köves, B.; Cai, T.; Veeratterapillay, R.; Pickard, R.; Seisen, T.; Lam, T.B.; Yuan, C.Y.; Bruyere, F.; Wagenlehner, F.; Bartoletti, R.; et al. Benefits and Harms of Treatment of Asymptomatic Bacteriuria: A Systematic Review and Meta-analysis by the European Association of Urology Urological Infection Guidelines Panel. Eur Urol. 2017, 72, 865–868. [CrossRef] [PubMed]

19. Torrance, G.W. Utility approach to measuring health-related quality of life. J. Chronic Dis. 1987, 40, 593–600. [CrossRef]

20. Karimi, M.; Brazier, J. Health, Health-Related Quality of Life, and Quality of Life: What is the Difference? Pharmacoeconomics 2016, 34, 645–649. [CrossRef]

21. Post, M.W.M. Definitions of quality of life: What has happened and how to move on. Top. Spinal Cord Inj. Rehabil. 2014, 20, 167–180. [CrossRef]

22. Wenger, N.K.; Mattson, M.E.; Furberg, C.D.; Elinson, J. Assessment of quality of life in clinical trials of cardiovascular therapies. Am. J. Cardiol. 1984, 54, 908–913. [CrossRef]

23. 1 Pogodina, A., Dolgikh, O., Astakhova, T., Klimkina, J., Khramova, E., & Rychkova, L. (2022). Pogodina, Anna, et al. "Health-related quality of life and menstrual problems in adolescents." Journal of Paediatrics and Child Health 58.6 (2022): 1028-1032. https://onlinelibrary.wiley.com/doi/abs/10.1111/jpc.15895.

References

24. Odongo, Emmanuel, et al. "Prevalence and effects of menstrual disorders on quality of life of female undergraduate students in Makerere University College of health sciences, a cross sectional survey." BMC women's health 23.1 (2023): 152. https://link.springer.com/article/10.1186/s12905-023-02290-7

25. Matsumura Y, Yamamoto R, Shinzawa M, Nakamura Y, Takeda S, Mizui M, Matsui I, Sakaguchi Y, Yagi A, Ueda Y, Ishibashi C. Psychological and physical stress response and incidence of irregular menstruation in female university employees: a retrospective cohort study. Journal of Epidemiology. 2025:JE20240424.

https://www.jstage.jst.go.jp/article/jea/advpub/0/advpub_JE20240424/_article/-char/ja/

26. Adiwinoto RP, Ulwani QB, Wijayaningrum L, Husodo SD, Gustam TY, Prasetya H, Adnyana IM. Exploring the Threads of Youth: Stress, BMI, and Menstrual Health in Hang Tuah 2 Senior High School, Sidoarjo. Journal of Current Health Sciences. 2025 Feb 21;5(1):27-36.
https://ukinstitute.org/journals/2/jchs/article/view/97

27. World Population Review. Sanaa population 2025 (demographics, maps, graphs) [Internet]. 2025 [cited 2025 Jul 25]. Available from:
https://worldpopulationreview.com/cities/yemen/sanaa

28. TheGlobalEconomy.com. Yemen: Female population, percent of total [Internet]. 2025 [cited 2025 Jul 25]. Available from:
https://www.theglobaleconomy.com/Yemen/percent_female_population/ ,

29. Worldometer. Yemen population (LIVE) [Internet]. 2025 [cited 2025 Jul 25]
https://www.worldometers.info/world-population/yemen-population/

الملخص العربي :

❖ **المقدمة :**

يعد الطمث مؤشر حيوي مهم يعكس صحة المرأة الجسدية والنفسية . ويعد إنتظامها مؤشر على التوازن الهرموني والوظائف الفسيولوجية السليمة بينما قد يشير اي اضطراب فيها (مثل :انقطاع الطمث، عسر الطمث، قلة الطمث، غزارة الطمث) الى خلل في الجهاز الهرموني او تأثر في الحالة النفسية والعصبية.

وفي هذا السياق، تُعرّف جودة الحياة بأنها مفهوم يُعبّر عن رفاهية الفرد أو المجتمع، ويشمل العوامل الإيجابية والسلبية التي تؤثر على وجود الإنسان في لحظة زمنية معينة، مما يُبرز أهمية النظر إلى الطمث كجزء من الصورة الشاملة لصحة المرأة.

❖ **الهدف :**

تحديد تأثير جودة الحياة على اضطرابات الطمث لدى النساء في سن الإنجاب في مدينة صنعاء

❖ **المنهجية :**

❖ اعتمدت دراسة وصفية مقطعية ، وشملت عينة مكونة من 402 امرأة في سن الإنجاب، تم اختيارهن باستخدام أسلوب العينة المتاحة من كلاً من مستشفى الثورة، ومستشفى الجمهوري، والجامعة الإماراتية حيث تم جمع البيانات باستخدام استبيانات تُعبّأ ذاتياً، تضمنت أسئلة حول اضطرابات الطمث وجودة الحياة.

❖ **النتائج** :

أظهرت البيانات أن المجال الجسدي لجودة الحياة كان الأقل تقييمًا بين المجالات الأربعة مما يشير إلى تأثير واضح للعوامل البدنية والمعيشية على الصحة الإنجابية. بينما جاء المجال النفسي بدرجات أعلى نسبيًا ، أظهر تحليل الانحدار اللوجستي وجود علاقة عكسية ذات دلالة إحصائية بين جودة الحياة واضطرابات الطمث ، حيث تبيّن أن كل انخفاض بمقدار نقطة واحدة في جودة الحياة يزيد احتمالية الإصابة باضطراب طمثي شديد بنسبة 2.9%, كذلك أظهرت النتائج أن العمر والدخل الشهري من العوامل المؤثرة، حيث سُجلت أعلى نسبة للاضطرابات بين النساء في الفئة العمرية 30–39 سنة , و النساء اللواتي دخلهن لا يكفي حتى نهاية الشهر , وأفادت نسبة كبيرة من المشاركات (72.6%) بأن التوتر النفسي له تأثير مباشر على اضطراب الطمث وهو ما يعكس وعيًا ذاتيًا بالعلاقة بين الصحة النفسية والوظيفة الهرمونية، ويدعم النتائج الإحصائية التي أظهرت هذا الارتباط بوضوح

❖ **التوصيات :**

استناداً إلى هذه النتائج، توصي الدراسة بدمج تقييم جودة الحياة ضمن برامج الرعاية الصحية الأولية، وتقديم برامج دعم نفسي موجهة للفئات الأكثر تأثراً، خصوصاً النساء في الفئة العمرية(30–39) ، وذوات الدخل المحدود، وربات البيوت .كما توصي بتوفير فرص للتعليم المستمر والمشاركة المجتمعية، إلى جانب إدراج موضوع اضطرابات الدورة الشهرية في المناهج التوعوية، وتشجيع إجراء دراسات مستقبلية أوسع نطاقاً لتطوير قاعدة معرفية تسهم في تحسين الصحة الإنجابية والنفسية للنساء.

شُكر وعرفان ...

في ختام هذا البحث ، نتقدم بجزيل الشكر والإمتنان لكل من كان لهم دور في إنجاز هذا العمل العلمي ..

نتوجه بالشكر أولاً الى جميع هامات الطب الذين رافقونا طوال هذه السنوات وإلى مشرفة البحث الدكتورة نورا العواضي ، كما نتوجه بالشكر الخاص لدكاترنا الأفاضل :

الدكتورة أمل جحاف ، الدكتور معمر الفهد ، الدكتور معمر بادي لتعاونهم السخي معنا ..

كما نعبر عن إمتناننا العميق لكل من شاركت وساهمت في تعبئة الإستبيان على تعاونهن وتفهمهن لأهمية البحث وإعطاء المعلومات اللازمة بصدق ودون تخاذل ..

ولا يفوتنا أن نشكر جميع من كان لنا داعماً وحافزاً للإستمرارية والوصول الى ما بين ايدكم اليوم ..

وأخيراً ، نحمد الله على التوفيق في الإنجاز ونسأله أن يجعل فيه النفع والخير ..

دمتم بكل خير ووعي ...

إستبيان لدراسة الارتباط بين جودة الحياة واضطرابات الدورة الشهرية لدى النساء في سن الإنجاب في مدينة صنعاء

عزيزتي المشاركة ، تحية طيبة وبعد ...

نقوم بإجراء هذا الاستبيان كجزء من بحث علمي بعنوان: (**العلاقة بين جودة الحياة واضطرابات الطمث لدى النساء في سن الإنجاب في مدينة صنعاء**) بهدف التعرف على العلاقة بين جودة الحياة بجميع جوانبها والتغيرات التي قد تطرأ على الدورة الشهرية بسببها نرجو منك التكرم بالإجابة على الأسئلة بكل صدق وشفافية ، مع التأكيد على أن جميع المعلومات التي يتم جمعها ستكون **سرية تماماً** وتستخدم لأغراض البحث العلمي فقط ، ولن يتم مشاركة أي بيانات شخصية مشاركتك طوعية ، ولكِ كامل الحرية في الانسحاب في أي وقت ، ونقدر مساهمتك القيمة في دعم هذا البحث .

مع خالص الشكر والتقدير ...

*** هل توافقين على أن تكوني جزء في نجاح هذه الدراسة ؟**

- أوافق
- لا أوافق

* القسم الأول : البيانات الشخصيـة :

قبل أن نبدأ نود منك الاجابة على بعض الاسئلة العامة عن نفسك ، و ذلك بوضع دائرة حول الإجابة الصحيحة أو بملأ الفراغات الموجزة :

I- المعلومات الشخصية والإجتماعية:

1- العمر ..... عام

2- ما هي أعلى درجة تعليم حصلت عليها ؟

❑ لا شئ ❑ المرحلة الإبتدائية ❑ المرحلة الإعدادية ❑ المرحلة الثانوية ❑ الدراسات العليا

3- حالتك الإجتماعية ؟

❑ عازبة ❑ متزوجة ❑ أرملة ❑ مطلقة

4- مكان السكن ؟

❑ الريف ❑ المدينة

5- طبيعة السكن ؟

❑ مع الأهل ❑ مستقلة ❑ غير ذلك ، وضح .....

5- نوع السكن ؟

❑ بيت مِلك ❑ بالإيجار ❑ غير ذلك ، وضح .....

6- المهنة: ..... (يمكن كتابة اكثر من إجابة)

7-الدخل الشهري:

❑ غير كافٍ لنهاية الشهر ❑ يكفي لنهاية الشهر ❑ يزيد عن حاجة الشهر

8- **كم شخص تعيل ؟** .....

* الجزء الثاني : إضطرابات الدورة الشهرية :

هل لديك امراض مثبته مثل (لخبطة هرمونية ، تكيسات مبايض ،...)

○ **نعم** ○ **لا**

إذا كانت الأجابة "لا" يرجى المتابعة :

هل دورتك الشهرية منتظمة عادة :

○ نعم ○ لا

خلال الأشهر الستة الماضية ، هل لاحظتِ أي تغير في مواعيد الدورة الشهرية :

○ نعم ○ لا

إذا كانت الإجابة "نعم" يرجى التوضيح :

○ تأخرت لأكثر من 7 أيام ○ جاءت مبكراً

○ تكررت أكثر من مرة في الشهر ○ أنقطعت شهر أو أكثر

هل تغيرت كمية النزيف في دورتك مؤخراً :

○ لا تغيير ○ أصبحت أكثر غزارة ○ أصبحت أخف

هل تعاني من الام شديدة أثناء الدورة الشهرية :

○ لا ○ أحياناً ○ غالباً ○ دائماً

هل تلاحظين ظهور أعراض جديدة قبل أو أثناء الدورة (تقلبات مزاجية حادة ، صداع شديد ، تعب مفرط ، صعوبة فب التركيز ، انتفاخ ،ألم في الظهر أو البطن ، أعراض اخرى "اذكريها....."):

○ نعم ○ لا

هل ترتبط التغيرات في دورتك الشهرية بفترات تشعرين فيها بالضغط النفسي أو التوتر :

○ نعم ○ لا ○ غير متأكدة

* الجزء الثالث : تقييم جودة الحياة :

هذا الإستبيان يستفسر عما تشعر به فيما يتعلق بنوعية حياتك و صحتك و نواحي أخرى من حياتك ، نرجو الإجابة على جميع الأسئلة . إذا لم تكن متأكد من الإجابة على سؤال معين ، نرجو اختيار الجواب الأنسب . و هذا قد يكون ردك الأول في أحيان كثيرة . نرجو أن تضع في اعتبارك قيمك و آمالك و ما يمنعك و يشغلك . نطلب أن تفكر في نمط حياتك خلال الشهرين الماضيين مثلا . قد يكون السؤال :

	لا يوجد	قليلا	نوعا ما	كثيرا	دائما
هل تحصل على أي دعم أو مساعدة من الأخرين	1	2	3	4	5

عليك وضع دائرة حول االرقم الذي يصف مقدار الدعم أو المساعدة من الآخرين خلال الشهرين الماضيين . و هكذا فإنك ستضع الدائرة حول الرقم (4) إذا كنت قد حصلت على دعم كبير من الآخرين كالآتي :

	لا يوجد	قليلا	نوعا ما	كثيرا	دائما
هل تحصل على أي دعم أو مساعدة من الأخرين	1	2	3	(4)	5

قد تضع الدائرة حول الرقم (1) إذا لم تحصل على أي دعم أو مساعدة تتمناها من الآخرين خلال الشهرين الماضيين .

*** يرجى قراءة كل سؤال و تقيم مشاعرك ووضع الدائرة حول الرقم الذي يعطي أفضل إجابة بالنسبة لك.**

كيف تقيم جودة حياتك؟	سيئة للغاية	سيئة	لا بأس	جيدة	جيدة جدا
	1	2	3	4	5

	غير راضٍ مطلقا	غير راضٍ	راض إلى حد ما	راضٍ	راضٍ تماما
هل أنت راض عن صحتك ؟	1	2	3	4	5

*** الأسئلة التالية تستفسر عن مدى تعرضك لأشياء معينة خلال الشهرين الماضيين**

	لا يوجد	قليلا	بدرجة متوسطة	كثيراَ	بدرجة بالغة
إلى أي حد تشعر بأن الوجع يمنعك من القيام بالأعمال التي تريدها ؟	1	2	3	4	5
كم تحتاج من العلاج الطبي لتتمكن من القيام بأعمالك اليومية ؟	1	2	3	4	5
إلي أي مدى تستمتع بالحياة ؟	1	2	3	4	5
إلي أي مدى تشعر بأن حياتك ذات معنى ؟	1	2	3	4	5
كم أنت قادر على التركيز ؟	1	2	3	4	5
كم تشعر بالأمان في حياتك اليومية ؟	1	2	3	4	5
إلى أي حد تعتبر البيئة المحيطة بك صحية ؟	1	2	3	4	5

*** الأسئلة التالية تستفسر عن مدى قدرتك على إتمام أمور معينة خلال الأسبوعين الماضيين**

	لا يوجد	قليلا	بدرجة متوسطة	كثيراَ	بدرجة بالغة
هل لديك طاقة كافيه لمزاولة الحياة اليومية ؟	1	2	3	4	5
هل أنت قادر على قبول مظهرك الخارجي ؟	1	2	3	4	5
هل لديك من المال ما يكفي لتلبية إحتياجاتك ؟	1	2	3	4	5
كم تتوفر لك المعلومات التي تحتاجها في حياتك اليومية ؟	1	2	3	4	5
إلي أي مدى لديك الفرصة للأنشطة الترفيهية ؟	1	2	3	4	5
كم أنت قادر على التجول بسهولة	1	2	3	4	5

*** الأسئلة التالية تشير إلى كم من المرات شعرت أو تعرضت فيها لأشياء معينة خلال الشهرين الماضيين**

	أبدا	نادرا	أحياناَ	غالباَ	دائما
كم من المرات كانت عندك مشاعر سلبية مثل الحزن أو اليأس أو القلق أو الاكتئاب	1	2	3	4	5

*** الأسئلة التالية تطلب منك أن تعبر عن مدى رضاك نحو جوانب مختلفة من حياتك خلال الشهرين الماضيين**

	غير راض مطلقا	غير راض	راض إلى حد ما	راض	راض تماما
كم أنت راض عن نومك ؟	1	2	3	4	5
إلي أي مدى أنت راض عن قدرتك على القيام بنشاطاتك اليومية ؟	1	2	3	4	5
كم أنت راض عن قدراتك على العمل ؟	1	2	3	4	5
كم أنت راض عن نفسك ؟	1	2	3	4	5
كم أنت راض عن علاقاتك الشخصية ؟	1	2	3	4	5
كم أنت راض عن حياتك الجنسية ؟	1	2	3	4	5
كم أنت راض عن الدعم أو المساعدة من الأصدقاء ؟	1	2	3	4	5
كم أنت راض عن أحوالك السكنية ؟	1	2	3	4	5
كم أنت راض عن الخدمات الصحية المتوفرة لك ؟	1	2	3	4	5
كم أنت راض عن وسائل مواصلاتك.؟	1	2	3	4	5

*** هل ساعدك أحد في ملء هذا الإستبيان ؟**

*** كم من الوقت إستغرقت لملء هذا الإستبيان ؟**

*** هل لديك أي تعليقات حول هذا الإستبيان ؟**

شكرا لمساعدتك

الجمهورية اليمنية

وزراة التربية والتعليم

الجامعة الإمارتية الدولية

كلية الطب والعلوم الصحية

قسم طب المجتمع

العلاقة بين جودة الحياة واضطرابات الطمث لدى النساء في سن الإنجاب في مدينة صنعاء

بحث مقدم إلى قسم طب المجتمع، كلية الطب والعلوم الصحية كمتطلب للحصول على درجة البكالوريوس في الطب والجراحة العامة

اسماء الباحثين :

هديل الشراجي **عُلا الشايف**

مايا العواضي **زينب ابو سند**

روان المقالح **دعاء القفيلي**

الدكتور المشرف :

د/ نورا العواضي

كلية الطب والعلوم الصحية _ جامعة صنعاء

2025