

MENSTRUAL PATTERN, MENSTRUAL DISORDERS AND HEALTH-RELATED QUALITY OF LIFE AMONG FEMALE PATIENTS OF REPRODUCTIVE AGE IN STATE SPECIALIST HOSPITAL, ASHUBIARO, OSOGBO.

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ABSTRACT

Menstrual patterns and disorders are prevalent health concerns that significantly impact the well-being of women, particularly those of reproductive age. Irregular cycles, dysmenorrhea, and other menstrual disorders often cause physical, emotional, and social challenges, affecting health-related quality of life (HRQoL). Despite the known influence of menstrual health on women's well-being, there is a need to specifically examine how menstrual patterns and disorders relate to HRQoL among female patients in clinical settings, such as the State Specialist Hospital, Ashubiaro, Osogbo. This study used a cross-sectional design, involving 182 female patients (mean age = 29.62) at the hospital, recruited through convenience and stratified random sampling. Data were collected using the HRQoL (SF-12), Menstrual Pattern Questionnaire (MPQ-13), and Menstrual Distress Questionnaire (MDQ-22), analyzed with Pearson product-moment correlation and multiple regression. Results showed that menstrual patterns positively impact HRQoL ($\beta=0.269$, $t=4.744$, $p<0.05$), while menstrual disorders negatively affect it, with higher severity linked to lower HRQoL ($\beta=0.486$, $t=8.591$, $p<0.05$). Together, menstrual patterns and disorders accounted for 33.3% of HRQoL variance ($R=0.577$, $R^2=0.333$), with joint significance confirmed ($F=52.376$, $p<0.05$). These findings indicate that consistent menstrual cycles enhance HRQoL, whereas severe menstrual disorders diminish it, underscoring the importance of addressing menstrual health in clinical practice to improve women's overall well-being.

Keywords: *Health-related quality of life (HRQoL), menstrual cycle, menstrual disorders, menstrual patterns, reproductive age, women*

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INTRODUCTION

According to Carlozzi and Tulskey (2013), Health-Related Quality of Life (HRQoL) is a critical indicator of well-being, reflecting how health conditions impact physical, emotional, and social functioning. In particular, HRQoL is a useful framework for understanding how specific health challenges affect daily life, especially among women of reproductive age (Diro & Ataro, 2024). For women in this demographic, menstrual patterns and menstrual disorders significantly shape HRQoL, with irregular cycles, dysmenorrhea, and menorrhagia often leading to discomfort, psychological distress, and limitations in daily activities. The effects are exacerbated in environments where socio-cultural and healthcare barriers restrict access to appropriate treatment and open discussion. In Nigeria, where cultural taboos and restricted healthcare access intensify these concerns, the impact of menstrual health issues on health-related quality of life needs to be investigated. This knowledge gap highlights the necessity for focused research and initiatives, especially for global development objectives. Addressing these concerns corresponds with the Sustainable Development Goals (SDGs),

namely SDG 3 (Good Health and Well-being) and SDG 5 (Gender Equality), by enhancing health outcomes and advancing gender equity.

Health-Related Quality of Life (HRQoL), as defined by Wilson and Cleary (1995), is a multifaceted notion that encapsulates an individual's feeling of well-being about their physical, mental, and social health. It assesses the influence of health conditions and healthcare interventions on daily functioning and quality of life, transcending the simple absence of disease (Wilson & Cleary, 1995; Oladejo et al., 2024). For women of reproductive age, HRQoL is especially significant, as this demographic encounters distinct health challenges, including pregnancy, childbirth, and menstrual disorders (Estebansari et al., 2020; Etuk et al., 2023). Menstrual abnormalities affect around 14% to 25% of women of reproductive age worldwide (Whitaker et al., 2016). Odongo et al. (2023) mentioned that menstrual abnormalities, impacting up to 90% of adolescent females, are the primary reason for gynaecological consultations, with dysmenorrhea being the most often cited condition. A study in India indicated that 67% of women with

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dysmenorrhea experienced significant disruptions to daily activities (Shaba et al., 2021). Also, research in the United States demonstrated that women with heavy menstrual bleeding had markedly lower menstrual quality of life scores than those with lighter bleeding (Lancastle et al., 2023). These illnesses affect physical functioning, mental stability, and job productivity, underscoring the global necessity for comprehensive management techniques.

In Nigeria, menstrual disorders also take a significant toll on HRQoL, although their impact is under-researched (Oladejo et al., 2024). A study by Njelita et al. (2023) revealed that the prevalence of dysmenorrhea among Nigerian women of reproductive age varied from 51.1% to 76.3% and emphasised its considerable role as a primary cause of absenteeism in educational and professional settings among young women. Moreover, almost 18% of women experience severe menstrual bleeding, which correlates with fatigue, anaemia, and reduced physical functioning (Abioye et al., 2024). Cultural taboos about menstruation exacerbate these problems by hindering open discourse and restricting access to healthcare and education on menstrual health (Edet et al.,

2021). The issues are intensified by insufficient healthcare infrastructure, especially in semi-urban and rural regions, resulting in delays in the diagnosis and treatment of menstruation illnesses. As a result, numerous Nigerian women experience a reduced HRQoL due to unaddressed symptoms. The high prevalence of dysmenorrhea among Nigerian women of reproductive age underscores the urgent need for research to better understand its effects and identify effective interventions to improve women's health and productivity.

The State Specialist Hospital, Asubiaro, Osogbo, is a pivotal site for this study because it serves as a vital healthcare provider for women from various socio-economic strata in Osun State. Health-Related Quality of Life, a crucial indicator of well-being, is profoundly influenced by reproductive health issues. However, there is scant research about the specific impact of menstrual health concerns on HRQoL among Nigerian women. Although menstrual diseases such as dysmenorrhea and menorrhagia affect up to 64% of Nigerian women (Titilayo et al., 2009), their direct influence on HRQoL is insufficiently investigated. Studies indicate that irregular menstruation patterns and

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disorders frequently result in physical discomfort, mental suffering, and social disturbances, which cumulatively diminish the quality of life (Igbokwe & John-Akinola, 2021; Dhar et al., 2023). Moreover, cultural stigmas and insufficient healthcare access exacerbate these difficulties, especially in semi-urban and rural areas, resulting in women experiencing untreated symptoms and diminished functionality. Notwithstanding these findings, the majority of current research concentrates on the prevalence and therapeutic management of menstrual diseases, with insufficient attention to their impact on HRQoL. Specifically, further study is required to investigate the relationship between monthly patterns, menstrual disorders, and HRQoL within Nigerian public healthcare environments. This disparity highlights the necessity for thorough research to comprehend the particular problems encountered by women in these situations. This study seeks to fill this gap by offering practical insights into the influence of menstrual health on HRQoL, so as to inform interventions and policies that can improve women's overall well-being and advance global health goals. The following research questions were posed in this study:

1. What are the prevalence rates of menstrual patterns, menstrual disorders, and HRQoL among female patients of reproductive age in Asubiaro, Osogbo?
2. How do menstrual patterns impact the HRQoL of female patients of reproductive age in Asubiaro, Osogbo?
3. What is the relationship between menstrual disorders and the HRQoL of female patients of reproductive age?
4. What is the joint influence of menstrual patterns and menstrual disorders on HRQoL of female patients of reproductive age?

LITERATURE REVIEW

Theoretical Review

Wilson and Cleary Model of Health-Related Quality of Life (HRQoL)

This study is anchored in the Wilson and Cleary Model of HRQoL (1995), which offers a comprehensive framework for understanding the interconnected pathways through which health conditions affect an individual's overall quality of life. The model integrates biological, psychological, and social dimensions, making it particularly relevant for exploring the impact of menstrual patterns and disorders on HRQoL among women of reproductive age (Wilson & Cleary, 1995; Sims, 2024). According to Ojelabi et al. (2017), the model delineates five interrelated domains: biological and physiological variables, symptom status, functional status, general health perceptions, and overall HRQoL. Biological and physiological variables, such as irregular menstrual patterns, dysmenorrhea, and menorrhagia, serve as the foundational factors that influence symptom status, such as pain, fatigue, or psychological distress (Situmorang et al.,

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2024). These symptoms, in turn, affect functional status, which refers to an individual's ability to perform physical, social, and emotional roles (Wilson & Cleary, 1995; Situmorang et al., 2024). For example, menstrual disorders may lead to absenteeism, reduced productivity, and social withdrawal.

General health perceptions represent an individual's subjective assessment of their overall health and well-being, influenced by functional limitations and symptom severity (Megari, 2013; Jackson et al., 2023). These perceptions are critical in shaping HRQoL, the final domain, which encompasses a multidimensional understanding of how health conditions affect an individual's physical, emotional, and social functioning (Jackson et al., 2023). In the context of this study, menstrual disorders significantly diminish HRQoL by imposing physical discomfort, emotional distress, and societal stigma. The Wilson and Cleary Model underscores the need for targeted interventions at each domain level to improve health outcomes. This study adopts the model to systematically examine how menstrual patterns and disorders impact the HRQoL of women attending the State Specialist Hospital, Ashubiaro, Osogbo. By employing this framework, the research seeks to identify the pathways through which menstrual health influences well-being,

providing insights to guide evidence-based healthcare policies and interventions aimed at enhancing HRQoL for Nigerian women.

Review of Empirical Studies and the Development of Hypotheses

Menstrual patterns and HRQoL

According to Fraser et al. (2007), menstrual patterns refer to the regularity, duration, and characteristics of menstrual cycles, encompassing aspects such as cycle length, flow intensity, and associated symptoms. Menstrual patterns are vital indicators of reproductive health and can be influenced by physiological, hormonal, and environmental factors (Fraser et al., 2007; Critchley et al., 2020). Menstrual patterns, including the regularity, duration, and intensity of menstrual cycles, significantly impact women's HRQoL (Odongo et al., 2023). Dysmenorrhea, menorrhagia, and irregular menstrual cycles are among the most reported menstrual disorders that adversely affect HRQoL (Shimamoto et al., 2021). Studies reveal that these conditions disrupt physical, emotional, and social well-being (Osayande & Mehulic, 2014; Attia et al., 2023). For instance, Shaba et al. (2021) found that 67% of women with dysmenorrhea in India experienced severe disruptions in daily activities, with 45%

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reporting frequent absenteeism from work or school. Similarly, Lancaster et al. (2023) highlighted that women in the United States with heavy menstrual bleeding were 70% more likely to report low HRQoL, particularly in areas such as energy levels and emotional stability. These findings emphasise the widespread impact of menstrual patterns on women's quality of life worldwide.

In Nigeria, menstrual health challenges are equally prevalent and significant, albeit underexplored. Titilayo et al. (2014) reported that nearly 64% of Nigerian women of reproductive age experience dysmenorrhea, with 25% indicating that it severely affects their work or academic performance. Ukoaka et al. (2024) further revealed that heavy menstrual bleeding affects approximately 18% of Nigerian women, leading to complications such as fatigue, anaemia, and reduced productivity, thereby lowering HRQoL. Cultural stigmas and poor access to healthcare exacerbate the problem, leaving many women without adequate diagnosis or treatment. Idowu (2013) and Onubogu et al. (2024) observed that the lack of menstrual health education in many Nigerian communities often leads to delays in seeking care, compounding the physical and emotional toll on women.

Studies also highlight the moderating role of socio-economic status and access to healthcare on the relationship between menstrual patterns and HRQoL. For example, Kuhlmann et al. (2017) noted that women with better access to menstrual health management resources reported fewer disruptions to their daily lives compared to those in low-resource settings. This aligns with the findings by Jaafar et al. (2023), who observed that women in rural Nigerian communities experience greater HRQoL impairments due to limited access to sanitary products and menstrual health services. These studies collectively underscore the need for improved menstrual health interventions to enhance HRQoL among women of reproductive age, particularly in resource-constrained settings like Nigeria. By exploring these dynamics in the context of female patients at the State Specialist Hospital, Asubiaro, Osogbo, this study aims to provide evidence-based recommendations to improve HRQoL outcomes. Therefore, we propose the following:

Hypothesis 1: Menstrual patterns will significantly impact the HRQoL of female patients of reproductive age.

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Menstrual disorders and HRQoL

According to Munro et al. (2011), menstrual disorders refer to a range of abnormalities in menstrual function, including irregular cycles, excessive bleeding, pain, or absence of menstruation, that significantly impact a person's physical, emotional, and social well-being. These disorders encompass conditions such as dysmenorrhea, menorrhagia, and oligomenorrhea, and they are critical indicators of underlying reproductive or systemic health issues, requiring prompt evaluation and management (Munro et al., 2011; Igbokwe & John-Akinola, 2021). Menstrual disorders, such as dysmenorrhea, menorrhagia, premenstrual syndrome (PMS), and irregular menstrual cycles, have been widely documented as significant factors negatively influencing HRQoL among women of reproductive age. Muhaidat et al. (2022) conducted a study on the impact of menstrual irregularities during the COVID-19 pandemic, focusing on how pandemic-related stressors affected women's quality of life. The study found that 56.2% of the women reported experiencing menstrual-related quality of life impairments, which were closely linked to the increased psychological and physical stress

associated with the pandemic. Factors such as anxiety, changes in daily routines, social isolation, and disruptions to health services likely contributed to the onset or exacerbation of menstrual irregularities during this period. These irregularities, in turn, affected the participants' overall well-being, with many reporting negative impacts on their emotional state, productivity, and social interactions.

In Nigeria, menstrual disorders, particularly dysmenorrhea, have been extensively studied for their prevalence and impact on HRQoL. Studies have highlighted that dysmenorrhea is highly prevalent among Nigerian females of reproductive age, significantly affecting school/work attendance and productivity. For example, Femi-Agboola et al. (2017) conducted a study in Ibadan. They found that dysmenorrhea was a major cause of absenteeism, particularly in those experiencing severe pain, thereby impacting their academic performance and daily activities (Femi-Agboola et al., 2017). Similarly, research in Maiduguri identified factors such as stress and lifestyle as exacerbating the severity of menstrual pain, contributing to reduced HRQoL among university students (Okoro et al., 2013). Nwankwo et al. (2010) conducted a study

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among adolescent schoolgirls in Enugu. They found that irregular menstrual cycles significantly disrupted adolescents' academic routines, while Rabi et al. (2019) reported that heavy menstrual bleeding and associated symptoms were prevalent among adolescent schoolgirls in Kano, leading to diminished physical well-being. Mohammed and Larsen-Reindorf (2020) observed that cultural taboos surrounding menstruation exacerbate these challenges, as women often delay seeking medical care due to stigma and misinformation. Additionally, the limited availability of specialised healthcare services and menstrual health education in many Nigerian communities further compounds the physical and psychological burden of menstrual disorders, leading to significantly impaired HRQoL. These

studies underscore the critical need for targeted interventions to address the impact of menstrual disorders on HRQoL. This study, focusing on female patients at the State Specialist Hospital, Ashubiaro, Osogbo, seeks to bridge existing knowledge gaps and provide evidence-based recommendations for improving HRQoL among women of reproductive age. Therefore, we propose the following:

Hypothesis 2: Menstrual disorders will have a significant impact on the HRQoL of female patients of reproductive age.

Hypothesis 3: Menstrual patterns and menstrual disorders jointly have a significant influence on the HRQoL of female patients of reproductive age.

METHOD

Design

This five-month cross-sectional study was conducted at State Specialist Hospital, Ashubiaro, Osogbo, Osun State, Nigeria, to investigate the relationship between menstrual patterns, menstrual disorders, and HRQoL among women of reproductive age. The design was chosen to assess these variables at a single point in time, allowing

for the analysis of their prevalence and relationships within the study population.

Participants

The population of this study comprised women of reproductive age at State Specialist Hospital, Ashubiaro, Osogbo, purposely selected. A total of 200 questionnaires were distributed. The sample was determined using Taro Yamane's (1973) method:

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Sample size $n = N / 1 + N(e)^2$

Where:

n = sample size

N = population size = 280

1 = constant

e = level of precision = 0.05

Therefore,

$n = 280 / 1 + 280(0.05)^2$

$n = 280 / 1 + 280(0.0025)$

$n = 280 / 1 + 0.7$

$n = 280 / 1.7$

$n = 164.7$

$n = 165$

With an attrition rate of 10%

Attrition rate = $10/100 * 165$

= 16.5

= 17

= $17 + 165$

= 182

Thus, 182 patients participated in the study, and their social demographic variables revealed a mean age of 29.62 years ($SD=7.47$ $SD = 7.47$ $SD=7.47$). The participants represented diverse ethnic groups, including Yoruba (74.2%), Igbo (18.7%), and Hausa (7.1%). In terms of religion, 59.3% were Christians, 40.1% were Muslims, and 0.5% practised traditional religion. Most participants were single (59.3%) or married (40.1%), while a smaller percentage were widowed (1.6%) or divorced (1.1%). Educational attainment varied, with 54.9% having tertiary education, 31.3% secondary education, and 13.7% primary education.

Sample and Sampling Technique

The participants were selected using a stratified random sampling technique to ensure representation across different socio-demographic categories such as age, marital status, and educational background. Stratification was based on these demographic variables to capture the diversity within the population. A total of 182 participants were recruited to meet the study's sample size requirement for statistical analysis and to allow for meaningful generalisations.

Inclusion criteria

All available female patients in State Specialist Hospital, Ashubiaro, Osogbo, during the process of data collection. Patients who provided their consent to participate and were willing to engage in the study.

Exclusion criteria

Patients with other clinical conditions at the time of data collection. Patients who did not give their consent to participate in the study

Instrumentation

Health-Related Quality of Life: This variable was measured using the Health-Related Quality of Life (SF-12), developed by Ware et al. (1994). It is a short version

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of the SF-36 Health Survey, which was created to measure Health-Related Quality of Life (HRQoL). The SF-12 evaluates both physical and mental health components through 12 items, focusing on aspects such as physical functioning, bodily pain, general health perceptions, vitality, social functioning, emotional role functioning, and mental health. The SF-12 is scored to generate two main components: the **Physical Component Summary (PCS)** and the **Mental Component Summary (MCS)**. Each of the 12 items is scored on a **Likert scale**, and responses are weighted to reflect their contribution to either the PCS or MCS. The scoring is done using a specific algorithm where higher scores indicate better health-related quality of life. The results range from **0 to 100**, with **0 representing the lowest possible quality of life** and **100 representing the highest possible quality of life**. The scores are standardised to population norms to allow comparisons across different groups and settings. The current study found a reliability coefficient of 0.79 among female patients of reproductive age in Asubiaro, Osogbo.

Menstrual Pattern: This variable was measured using the Menstrual Pattern (Menstrual Pattern Questionnaire - MPQ) developed by the researcher. The MPQ is a

13-item self-reported instrument designed to assess both the intensity and frequency of menstrual-related symptoms, with participants rating their experiences based on recent months, including the day they completed the questionnaire. The domains of MPQ include cycle regularity (2-items), length (2-items), duration (2-items), flow intensity (2-items), dysmenorrhea (3-items) and general satisfaction with menstrual health (2-items). Sample items from the instrument include "How often do you experience a regular menstrual cycle (occurring every 21 to 35 days)?", "My menstrual cycle typically lasts between 21 and 35 days", "I feel my menstrual period lasts for an appropriate duration", "I am satisfied with the intensity of my menstrual flow," "How often do you experience menstrual pain (cramps) during your period?," and "Overall, I am satisfied with my menstrual health". The questionnaire captures these dimensions through a series of Likert-scale items, providing insight into the frequency, satisfaction and impact of menstrual experiences. Each item is scored on a scale of one to five, indicating that the higher the score, the greater the regularity, satisfaction and manageability of menstrual patterns reported by participants. Higher scores indicate more favourable experiences, such as regular cycles,

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appropriate cycle length, manageability flow intensity, and minimal impact of menstrual pain on daily activities. Meanwhile, lower scores suggest more irregular cycles, dissatisfaction with menstrual health, and a greater negative impact of symptoms like dysmenorrhea. Thus, higher scores reflect a more positive perception of menstrual health and well-being. The current study found a reliability coefficient of 0.805 among female patients of reproductive age in Asubiaro, Osogbo.

Menstrual Distress: This variable was measured using the Short Form Menstrual Distress Questionnaire (MDQ-22), a self-report instrument designed to assess menstrual disorders across multiple domains. It consists of 22 items, each evaluating different aspects of menstrual health, including Irregular Menstruation, Oligomenorrhea, Polymenorrhea, Hypo- or Hypermenorrhea, Abnormal Amount of Blood Loss, Dysmenorrhea, and Premenstrual Syndrome (PMS). This questionnaire captures the frequency and intensity of menstrual symptoms, with each item rated on a 7-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (7). For each domain, respondents are asked to reflect on their menstrual experiences. For instance, Irregular

Menstruation is assessed through items like "My menstrual cycle often varies significantly in length from month to month," while Dysmenorrhea includes items such as "I experience significant menstrual pain or cramps that interfere with my daily activities." Other domains, like Premenstrual Syndrome (PMS), examine emotional and physical symptoms leading up to menstruation, such as mood swings and physical discomfort. The overall score provides insight into the presence and severity of menstrual disorders, with higher scores indicating greater menstrual distress. The current study found a reliability coefficient of 0.846 among female patients of reproductive age in Asubiaro, Osogbo.

Data Collection Procedure

Data were collected over four weeks at the Obstetrics and Gynaecology (O&G) clinic of the State Specialist Hospital, Asubiaro, Osogbo, Osun State, on designated clinic days (Tuesdays and Wednesdays). Ethical approval was obtained from the institutional review board prior to data collection, ensuring adherence to national and international research guidelines, including the 1964 Helsinki Declaration and its subsequent amendments. Participation was entirely voluntary, and informed consent was obtained from all

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participants after explaining the study's purpose and procedures. In order to ensure confidentiality, participant responses were anonymised, and all data were securely stored. Participants were also informed of their right to withdraw from the study at any stage without consequences. Trained research assistants facilitated the process, providing support to participants as they completed structured questionnaires designed to capture information on socio-demographic characteristics, menstrual health, and HRQoL. This comprehensive and ethically guided approach ensured high-quality data collection while respecting participants' rights and well-being.

Data Analysis

Data analysis employed both descriptive and inferential statistical methods. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were utilised to summarise socio-demographic details and the prevalence of menstrual patterns, menstrual disorders, and HRQoL. In order to examine the relationships among variables, correlation analysis was conducted, while multiple regression analysis assessed the independent and combined contributions of menstrual patterns and disorders to HRQoL. A significance threshold of $p < 0.05$ was set for all statistical tests, which were carried out using version 25 of the Statistical Package for the Social Sciences (SPSS).

RESULTS

Table 1: Socio-Demographic Characteristics of the Respondents (n=182)

Variables	Frequency	Percentage
Ethnicity		
Yoruba	135	74.2
Igbo	34	18.7
Hausa	13	7.1
Religion		
Christianity	108	59.3
Islam	73	40.1
Traditional	1	0.5
Marital Status		
Single	108	59.3
Married	69	40.1
Widowed	3	1.6
Divorced	2	1.1
Educational level		
Primary	25	13.7
Secondary	57	31.3

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Tertiary	100	54.9
Age (in years)	Mean: 29.62, SD=7.47	Ranges between 17 and 47 years.

Table 1 reveals key insights about the sample population. The mean age of the respondents was 29.62 years, with a standard deviation of 7.47. This indicates a relatively young population, suggesting that the majority of the participants were in their early to mid-adulthood. The majority of the respondents were Yoruba, accounting for 74.2% of the sample, followed by Igbo (18.7%) and Hausa (7.1%). This reflects the ethnic composition of the population under study, with a significant representation of Yoruba participants, likely influenced by the geographical location of the study. Most respondents identified as Christians (59.3%), while 40.1% were Muslims, and only 0.5% practised traditional religion.

health literacy and quality of life.

This distribution underscores the dominance of Christianity and Islam within the sample and mirrors the general religious diversity in the region. The largest group of respondents were single (59.3%), followed by married individuals (40.1%). A small percentage were widowed (1.6%) or divorced (1.1%), indicating that a significant proportion of the sample was unmarried. The educational background of the respondents reveals that more than half (54.9%) had attained tertiary education, 31.3% had completed secondary education, and 13.7% had only a primary education. This distribution highlights a relatively high level of educational attainment within the sample, which may influence their

Table 2: Summary Table of correlations matrix between menstrual patterns, menstrual disorders and HRQoL

Variables	Mean	SD	1	2	3
Menstrual Patterns	50.88	6.929	1		
Menstrual Disorders	85.01	15.27	.093	1	
Health-Related Quality Of Life	39.58	4.477	.314*	.511*	1

*. Correlation is significant at 0.05 level (2-tailed).

The results from Table 2 reveal the relationships among menstrual patterns, menstrual disorders, and HRQoL. A significant positive correlation was

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observed between menstrual patterns and HRQoL ($r = 0.314$, $p < 0.05$), indicating that healthier or more regular menstrual patterns are associated with better HRQoL. This finding suggests that individuals with more predictable and less problematic menstrual cycles may experience improved physical and emotional well-being.

Similarly, there was a significant positive correlation between menstrual disorders and HRQoL ($r = 0.511$, $p < 0.05$). This relationship implies that the presence of menstrual disorders, such as dysmenorrhea or irregular periods, is associated with lower HRQoL. This might be due to the physical discomfort and emotional distress often linked to such disorders, which can

negatively impact daily functioning and overall health satisfaction. Interestingly, the relationship between menstrual patterns and menstrual disorders was weak and not statistically significant ($r = 0.093$, $p > 0.05$). This suggests that while both variables individually relate to HRQoL, they may not directly influence each other in this sample. The results highlight the significant influence of menstrual health on quality of life. Specifically, better menstrual patterns are associated with higher HRQoL, while menstrual disorders are linked to lower HRQoL. These findings underscore the importance of addressing menstrual health concerns as part of broader efforts to enhance individuals' overall well-being.

Prevalence rates of study variables

Table 3: Prevalence Rates of Menstrual Patterns among Participants (n = 182)

Menstrual Pattern	Frequency	Percentage
Regular cycles (21-35 days)	120	65.9
Irregular cycles (>35 days or <21 days)	40	22
Polymenorrhea (<21 days)	12	6.6
Oligomenorrhea (>35 days)	10	5.5

The results presented in Table 3 provide an overview of the prevalence rates of different menstrual patterns among the study participants ($n = 182$). A majority of the participants (65.9%) reported having regular menstrual cycles, defined as cycles occurring between 21 and 35 days. This high prevalence of regular cycles suggests

that most participants experience relatively stable and predictable menstrual patterns, which are often associated with better reproductive health and reduced menstrual-related complications. Conversely, 22% of the participants reported irregular menstrual cycles, characterised by cycles occurring outside the normal range of 21–

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35 days. Irregular cycles can indicate underlying health issues, such as hormonal imbalances or stress, potentially impacting overall well-being. A smaller proportion of participants experienced specific menstrual irregularities: 6.6% reported polymenorrhea (cycles shorter than 21 days), while 5.5% reported oligomenorrhea (cycles longer than 35 days). These less common patterns may be indicative of more specific medical conditions such as thyroid disorders, polycystic ovary syndrome (PCOS), or other reproductive health

concerns that require clinical attention. The findings highlight that while regular menstrual cycles are predominant among participants, a significant portion experiences irregular patterns, which may warrant further investigation and intervention. These findings highlight the critical need for increasing awareness about menstrual health and improving access to healthcare services for individuals with irregular menstrual cycles to address possible underlying health issues effectively.

Table 4: Prevalence Rates of Menstrual Disorders among Participants (n = 182)

Menstrual Disorder	Frequency	Percentage
Irregular Menstruation	56	30.77
Oligomenorrhea	22	12.09
Polymenorrhea	18	9.89
Hypo- or Hypermenorrhea	34	18.68
Menorrhagia	27	14.84
Dysmenorrhea	62	34.07
Premenstrual Syndrome (PMS)	47	25.82

The results in Table 4 highlight the prevalence rates of various menstrual disorders among the study participants (n = 182). Dysmenorrhea, characterised by painful menstruation, emerged as the most prevalent menstrual disorder, affecting 34.07% of participants. The high prevalence of menstrual pain significantly affects daily functioning, productivity, and overall quality of life, highlighting the urgent need for comprehensive pain

management strategies and access to supportive healthcare interventions.

Irregular menstruation, reported by 30.77% of participants, was the second most common disorder, highlighting disruptions in menstrual cycles that could affect fertility and overall health. The substantial prevalence of irregular menstruation calls for further investigation into potential causes, including hormonal imbalances and lifestyle factors.

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Premenstrual Syndrome (PMS), reported by 25.82% of participants, encompasses a range of physical and emotional symptoms experienced before menstruation, which can interfere with daily functioning and psychological well-being. This emphasises the need for comprehensive management approaches, including lifestyle modifications and psychological support.

Menorrhagia, or abnormally heavy menstrual bleeding, was observed in 14.84% of participants. This condition can lead to complications such as anaemia and fatigue, necessitating medical attention and appropriate treatment options to alleviate the physical and emotional burdens associated with excessive bleeding.

Hypo- or hypermenorrhea, affecting 18.68% of participants, refers to

irregularities in the volume of menstrual bleeding, while polymenorrhea, occurring in 9.89% of participants, is characterised by frequent menstrual cycles. Both conditions can disrupt regular daily activities and impact overall health, making effective management strategies essential.

The findings reveal a high prevalence of menstrual disorders among the participants, with dysmenorrhea and irregular menstruation being the most common. These results emphasise the need for increased awareness, better access to healthcare services, and targeted management strategies to address the physical, emotional, and social impacts of menstrual disorders on women's health and quality of life.

Table 5: Prevalence Rates of Health-Related Quality of Life (HRQoL) among Participants (n = 182)

HRQoL Category	Frequency	Percentage
High quality of life	50	27.5
Moderate quality of life	100	54.9
Low quality of life	32	17.6

The results presented in Table 5 provide insights into the prevalence rates of HRQoL among the study participants (n = 182). The majority of participants (54.9%) reported having a moderate quality of life. This indicates that over half of the respondents experience a balance between physical,

emotional, and social well-being, though there may still be room for improvement in specific areas affecting their overall quality of life. A smaller proportion of participants (27.5%) reported a high quality of life, reflecting optimal health and well-being. These individuals likely experience fewer

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health challenges and better manage physical and emotional stressors, contributing to their elevated HRQoL. Conversely, 17.6% of participants reported a low quality of life, suggesting significant challenges in managing health-related concerns that may impact their daily functioning and general well-being. Factors such as chronic health conditions, psychological stress, or menstrual disorders could contribute to this lower HRQoL category. Although most participants

reported moderate HRQoL, a significant proportion experienced low quality of life, emphasising the need for focused interventions to address the factors adversely affecting their health and well-being. Strengthening support systems and improving access to healthcare resources are vital strategies to enhance HRQoL outcomes in this population.

Hypothesis Testing

Table 6: Summary of Multiple Regression table showing joint and independent prediction of menstrual patterns and menstrual disorders on HRQoL

Variables	β	t	P	R	R ²	F	P
Menstrual Pattern	.269	4.744	<.05				
Menstrual Distress	.486	8.591	<.05	.577	.333	52.376	<.05

(F=52.376, R=.577, R² = .33; p<.05)

Hypothesis 1: Menstrual patterns will significantly impact the HRQoL of female patients of reproductive age.

The results from the regression analysis indicate that menstrual patterns have a significant positive impact on HRQoL, with a beta coefficient (β) of 0.269, a t-value of 4.744, and a p-value of less than 0.05. These findings suggest that menstrual patterns are a significant predictor of HRQoL. Given that the p-value is less than 0.05, the hypothesis that "Menstrual

patterns will significantly impact the HRQoL" is accepted.

Hypothesis 2: Menstrual disorders will significantly impact the HRQoL of female patients of reproductive age.

The regression analysis reveals that menstrual disorders have a beta coefficient (β) of 0.486, a t-value of 8.591, and a p-value of less than 0.05. This demonstrates that menstrual disorders significantly influence HRQoL, with higher levels of menstrual disorders corresponding to lower

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HRQoL. Since the p-value is less than 0.05, the hypothesis that "Menstrual disorders will significantly impact the HRQoL" is accepted.

Hypothesis 3: Menstrual patterns and menstrual disorders jointly have a significant influence on the HRQoL of female patients of reproductive age.

The multiple regression analysis shows a combined R-value of 0.577 and an R^2 value

DISCUSSION

This study investigated the relationship between menstrual patterns, menstrual disorders, and HRQoL among female patients of reproductive age. The prevalence rates revealed that 54.9% of participants reported moderate HRQoL, 27.5% reported high HRQoL, and 17.6% experienced low HRQoL, highlighting the varying levels of overall well-being within the sample. Among menstrual patterns, 65.9% of participants reported regular cycles, 22% experienced irregular cycles, 6.6% had polymenorrhea, and 5.5% had oligomenorrhea. For menstrual disorders, dysmenorrhea was the most prevalent (34.07%), followed by irregular menstruation (30.77%) and premenstrual syndrome (PMS) at 25.82%.

The study revealed that Menstrual patterns significantly predicted HRQoL, indicating

of 0.333, indicating that menstrual patterns and menstrual disorders jointly explain 33.3% of the variance in HRQoL. The F-statistic ($F = 52.376$, $p < 0.05$) confirms the joint significance of these variables in predicting HRQoL. Consequently, the hypothesis that "Menstrual patterns and menstrual disorders jointly have a significant influence on HRQoL" is accepted.

a positive association between healthier menstrual patterns and higher HRQoL. This implies that regular menstrual patterns contribute to better physical and emotional well-being, thereby enhancing HRQoL. Attia et al. (2023) found that women with regular menstrual cycles reported higher life satisfaction and fewer health complaints, emphasising the stability provided by predictable cycles. Similarly, Ukoaka et al. (2024) identified a strong link between regular menstrual patterns and reduced psychological distress. Contrarily, studies like Cutler (2019) and Dhar et al. (2023) argued that menstrual regularity alone does not determine HRQoL, as other factors like lifestyle habits and genetic predispositions often play more significant roles. Omidoyin (2014) suggested that even women with regular cycles may experience

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stress due to societal pressures or hormonal fluctuations unrelated to irregularities. The significant influence of menstrual patterns on HRQoL may be attributed to their direct impact on hormonal stability, which supports consistent physical and emotional health. However, external factors such as stress, healthcare access, and socio-cultural attitudes toward menstruation could further modulate this relationship in the Nigerian context.

The study also revealed that menstrual disorders significantly impacted HRQoL, with higher levels of disorders associated with lower HRQoL. Menstrual disorders, such as dysmenorrhea and menorrhagia, negatively affect daily functioning and overall quality of life. Shaba et al. (2021) reported that dysmenorrhea significantly disrupts physical activity and productivity, lowering overall life satisfaction. Similarly, Lancaster et al. (2021) and Oladejo et al. (2024) found that women experiencing menorrhagia or PMS reported higher levels of fatigue and psychological distress. Conversely, Palm-Fischbacher and Ehlert (2014) and Sójta et al. (2023) argued that psychological resilience can buffer the negative effects of menstrual disorders on HRQoL. Dhar et al. (2023) suggested that while menstrual disorders impact well-being, coping strategies like lifestyle

adjustments can mitigate these effects. The strong influence of menstrual disorders on HRQoL likely reflects the physical discomfort and emotional strain these conditions impose. In resource-limited settings like Nigeria, inadequate healthcare access and cultural stigmas around menstruation may exacerbate these impacts, further reducing HRQoL.

Finally, the study revealed that menstrual patterns and disorders jointly explained 33.3% of the variance in HRQoL, indicating their combined significance in predicting quality of life. This is interpreted to mean that menstrual patterns and disorders substantially influence HRQoL, underscoring the importance of addressing both factors to improve well-being. Ukoaka et al. (2024) highlighted that addressing both menstrual irregularities and associated disorders led to significant improvements in HRQoL among Nigerian women. Similarly, Patel et al. (2022) and Esan et al. (2024) found that integrated interventions targeting menstrual health improved overall quality of life in low-income communities. World Health Organisation and Key Centre for Women's Health in Society (2009), Alsan et al. (2016) and Sure et al. (2023) noted that while menstrual factors contribute to HRQoL, broader determinants

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like socio-economic status and mental health often outweigh their combined influence. Mulugeta et al. (2023) and Wu et al. (2024) argued that the impact of menstrual health on HRQoL is minimal compared to chronic diseases or lifestyle-related conditions. The combined influence of menstrual patterns and disorders on HRQoL emphasises the interplay between physiological health and emotional well-being. Addressing menstrual health comprehensively through education, healthcare access, and cultural shifts could significantly enhance the quality of life for women in resource-constrained settings like Nigeria.

This study highlights the significant relationship between menstrual patterns, menstrual disorders, and HRQoL among female patients of reproductive age. The findings underscore that regular menstrual patterns are positively associated with higher HRQoL, while menstrual disorders such as dysmenorrhea and menorrhagia are linked to lower HRQoL. The combined impact of menstrual patterns and disorders accounts for a substantial portion of the variance in HRQoL, emphasising the need for comprehensive approaches to address menstrual health. Interventions that promote regular menstrual health, effective

management of menstrual disorders, and greater access to healthcare services can improve physical and emotional well-being, thereby enhancing overall quality of life. Given the socio-cultural context and resource limitations in Nigeria, it is crucial to integrate menstrual health education, reduce cultural stigmas, and improve healthcare access to mitigate the negative effects of menstrual disorders. This study contributes to the growing body of evidence on the importance of menstrual health in women's well-being, providing valuable insights for healthcare providers, policymakers, and researchers working to improve the quality of life for women in similar contexts.

Limitations of the Study

1. **Self-Reported Data:** The study utilised self-reported data, which may be influenced by biases such as social desirability or recall errors, potentially impacting the reliability and accuracy of the findings.
2. **Cross-Sectional Design:** The study's cross-sectional design restricts the ability to establish causal relationships between menstrual patterns, menstrual disorders, and HRQoL.

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3. **Limited Generalisability:** The study was conducted at a single health centre in Osogbo, Nigeria, limiting the generalisability of the findings to other populations or regions with varying socio-economic and healthcare conditions.
4. **Exclusion of Other Variables:** The study did not account for other potentially influential factors, such as socio-economic status, lifestyle behaviours, or underlying health conditions, which could also impact HRQoL.

Clinical Message

- **Menstrual Health Education:** Implement educational programs to raise awareness about the importance of menstrual health, focusing on regular cycles, common menstrual disorders, and their impact on well-being.
- **Access to Healthcare Services:** Improve access to healthcare services, including timely medical interventions for menstrual

disorders, to reduce the negative impact of conditions like dysmenorrhea and menorrhagia on women's quality of life.

- **Mental Health Support:** Provide mental health support, including counselling and stress management programs, to help women cope with the emotional and psychological strain associated with menstrual disorders.

- **Cultural Sensitivity and Stigma Reduction:** Address cultural stigmas surrounding menstruation by promoting open discussions and creating supportive environments that encourage women to seek help for menstrual health issues.

- **Comprehensive Menstrual Health Interventions:** Adopt a holistic approach to menstrual health that integrates education, healthcare access, and psychological support to improve overall well-being and quality of life for women, particularly in resource-constrained settings.

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