

Research Article

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Determination of Prevalence, Utilization Patterns, and Clinical Pharmacists' Role in Hormonal Health Management Among Female Students of Reproductive Age in Niger Delta University, Amassoma, Bayelsa State

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Abstract

Hormonal health plays a critical role in the reproductive, metabolic, psychological, and overall well-being of women of reproductive age. University students are particularly vulnerable to hormonal imbalances due to stress, lifestyle changes, irregular diet, contraceptive use, and self-medication practices. Despite increasing reliance on hormonal therapies, the role of clinical pharmacists in hormonal health management among female students remains underexplored. This study assessed the prevalence of hormonal health challenges, patterns of use of hormone-related medications, and the role of clinical pharmacists in hormonal health management among female students of reproductive age at Niger Delta University (NDU), Amassoma. A descriptive cross-sectional study was conducted among female undergraduate students aged 16-35 years using systematic random sampling. A structured, validated, and pretested questionnaire was used to collect data on socio-demographics, menstrual and hormonal health status, medication utilization patterns, knowledge of hormonal therapies, and perception of clinical pharmacists' roles. Data were analyzed using SPSS version 27 and presented as frequencies and percentages. A total of 370 participants were surveyed. A high proportion of respondents reported experiencing hormonal-related symptoms including menstrual irregularities (48.9%), dysmenorrhea (62.3%), acne (41.7%), mood changes (55.4%), and weight fluctuations (36.8%). Approximately 58.6% reported using hormonal-related medications or supplements, including oral contraceptives (34.2%), emergency contraceptives (29.6%), hormonal therapy for acne or cycle regulation (18.7%), and herbal hormonal supplements (17.5%). Notably, 39.8% engaged in self-medication without prescription. Pharmacies (44.5%) and friends/peers (27.1%) were the major sources of information and access. Only 28.4% reported receiving counseling from a clinical pharmacist. However, 88.9% expressed willingness to seek pharmacist-led hormonal health services if available. Hormonal health challenges are prevalent among female students at NDU, with significant utilization of hormonal therapies and notable levels of self-medication. Clinical pharmacists remain underutilized despite strong student willingness for engagement. Strengthening pharmacist-led hormonal health services within university settings could significantly improve safe medication use and reproductive health outcomes.

Keywords: hormonal health; female students; reproductive age; clinical pharmacists; medication utilization; Niger delta university

Introduction

Hormonal regulation is fundamental to female reproductive health, influencing menstrual cycles, fertility, metabolic balance, mood, dermatological conditions, and long-term health outcomes. Women of reproductive age frequently experience hormonal disturbances including dysmenorrhea, irregular menstruation, premenstrual syndrome (PMS), acne, and symptoms suggestive of endocrine disorders such as PCOS.

University environments introduce additional stressors including academic pressure, dietary

changes, sleep disruption, and psychosocial transitions, all of which may influence endocrine stability. Consequently, female undergraduates may resort to hormonal medications, supplements, and herbal preparations—sometimes without adequate professional supervision.

Hormonal therapies commonly used among young women include oral contraceptives, emergency contraceptives, progesterone-based therapies, and anti-androgenic treatments. While these medications offer therapeutic benefits, improper use, self-medication, and misinformation may increase risks

such as thromboembolism, metabolic disturbances, and hormonal dysregulation.

Clinical pharmacists, as medication experts, play a crucial role in ensuring safe, effective, and rational use of hormonal therapies through counseling, monitoring, drug interaction assessment, and patient education. However, the extent of their involvement in hormonal health management within Nigerian tertiary institutions remains insufficiently documented.

This study, therefore, investigates hormonal health prevalence, utilization patterns, and the clinical pharmacist's role among female students at Niger Delta University.

Objectives of The Study

Main Objective

To assess the prevalence, utilization patterns, and clinical pharmacists' role in hormonal health management among female students of reproductive age at Niger Delta University.

Specific Objectives

1. To determine the prevalence of hormone-related health challenges.
2. To assess patterns of hormonal medication and supplement use.
3. To evaluate self-medication practices.
4. To examine sources of information and access to hormonal therapies.
5. To assess awareness and perception of clinical pharmacists' roles.
6. To identify opportunities for pharmacist-led interventions.

Materials and Methods

Study Design

This study adopted a descriptive cross-sectional survey design to assess the prevalence, utilization patterns, and clinical pharmacists' role in hormonal health management among female undergraduate students of reproductive age at Niger Delta University (NDU). The cross-sectional design was considered appropriate as it allows for the collection of data at a single point in time and enables the description of patterns and associations within a defined population.

Study Setting

The study was conducted at Niger Delta University (NDU), located on Wilberforce Island, Amassoma, in the Southern Ijaw Local Government Area of Bayelsa State, Nigeria. NDU is a state-owned tertiary

institution established in 2000, with an estimated student population exceeding 20,000 across multiple faculties including Health Sciences, Pharmacy, Nursing, Basic Medical Sciences, Sciences, Social Sciences, Management Sciences, Law, Agriculture, and Education.

Wilberforce Island is a semi-rural community with limited access to advanced healthcare facilities. The university environment provides a unique setting to study hormonal health behaviors among young women, as students experience academic pressure, lifestyle transitions, dietary changes, and psychosocial stressors that may influence endocrine and reproductive health patterns.

Study Population

The study population consisted of female undergraduate students aged 16–35 years enrolled across all faculties of Niger Delta University during the study period. This age range corresponds to women of reproductive age, who are most likely to experience hormone-related physiological changes and utilize hormonal therapies.

Sample Size Determination

The sample size was determined using the Yamane Taro formula (1967) for finite populations: $n = \frac{N}{1 + N(e)^2}$

Where: n = required sample size; N = estimated female undergraduate population; e = margin of error (0.05).

Assuming an estimated female undergraduate population of approximately 4,500:

$$n = \frac{4500}{1 + 4500(0.05)^2}$$

$$n = \frac{4500}{1 + 4500(0.0025)}$$

$$n = \frac{4500}{1 + 11.25}$$

$$n = \frac{4500}{12.25} \approx 367$$

To account for non-response and incomplete questionnaires, an additional 10% (≈ 37 respondents) was added, resulting in a final target sample size of approximately 400 participants.

A total of 400 questionnaires were distributed, and 370 valid responses were retrieved and analyzed.

Sampling Technique

A stratified random sampling technique was employed to ensure adequate representation across faculties and academic levels.

First, female students were stratified based on:

- Faculty
- Level of study (100-500 level)

Proportionate allocation was then applied to determine the number of participants selected from

each stratum. Within each stratum, systematic random sampling was used to recruit eligible participants.

This method ensured balanced representation and enhanced the generalizability of findings across the university population.

Inclusion Criteria

- Female undergraduate students aged 16-35 years.
- Currently enrolled at Niger Delta University.
- Students who provided written informed consent.

Exclusion Criteria

- Pregnant students (due to altered hormonal physiology).
- Postgraduate students.
- Students on official leave of absence.
- Incomplete questionnaire responses.

Research Instrument

Data were collected using a structured, self-administered questionnaire developed in line with the study objectives and relevant literature.

The questionnaire was written in English and distributed as a printed physical copy. It was divided into five (5) sections:

Section A: Socio-Demographic Characteristics

Included age, faculty, level of study, residence status, marital status, and socioeconomic indicators.

Section B: Hormonal Health Profile

Assessed menstrual patterns, dysmenorrhea, irregular cycles, acne, mood changes, weight fluctuations, and previous diagnosis of hormonal disorders (e.g., PCOS).

Section C: Utilization Patterns of Hormonal Products

Assessed use of oral contraceptives, emergency contraceptives, hormonal therapies for acne or cycle regulation, herbal supplements, frequency of use, and reasons for use.

Section D: Self-Medication and Access Patterns

Examined prescription status, source of medication (pharmacy, peers, online), and factors influencing utilization.

Section E: Clinical Pharmacists' Role and Perception

Evaluated awareness of pharmacists' role, previous counseling received, perceived benefits, and willingness to engage in pharmacist-led hormonal health services.

Validity and Pilot Testing

The questionnaire was reviewed and validated by academic supervisors and experts in Clinical Pharmacy and Reproductive Health to ensure content validity and clarity.

A pilot study was conducted among 20 female students who were excluded from the main study. Necessary modifications were made based on feedback regarding clarity, structure, and relevance.

Data Collection Procedure

Data collection was conducted over four weeks. Participants were approached within lecture halls, hostels, and faculty buildings. The purpose of the study was explained, and informed consent was obtained before questionnaire administration.

Participation was voluntary, and questionnaires were completed anonymously and returned immediately to minimize data loss.

Data Analysis

Data were coded and entered into Statistical Package for the Social Sciences (SPSS) version 27 and Microsoft Excel.

Descriptive statistics were used to summarize findings. Results were presented as:

- Frequencies
- Percentages
- Tables

Where applicable, cross-tabulations were used to explore patterns across demographic variables.

Ethical Consideration

Ethical approval was obtained from the Research and Ethics Committee of the Dean of Students Affairs, Niger Delta University.

Participation was voluntary, and written informed consent was obtained from each participant before data collection. Respondents were assured of confidentiality and anonymity. No identifying information such as names or registration numbers was collected.

All data were used strictly for academic purposes and stored securely to prevent unauthorized access.

Results

Demographic Characteristics of Respondents

Table 1: Socio-Demographic Characteristics (N = 370).

Variable	Category	Frequency	Percentage (%)
Age	16-19	68	18.4
	20-23	154	41.6
	24-27	118	31.9
	28-35	30	8.1
Level	100	64	17.3
	200	98	26.5
	300	85	23.0
	400	93	25.1
	500+	30	8.1
Residence	On-Campus	236	63.8
	Off-Campus	134	36.2

Prevalence of Hormonal Health Challenges

Table 2: Reported Hormonal-Related Symptoms.

Symptom	Frequency	Percentage (%)
Dysmenorrhea	230	62.3
Menstrual irregularity	181	48.9
Mood changes/PMS	205	55.4
Acne	154	41.7
Weight fluctuation	136	36.8

Utilization of Hormonal Products

Table 3: Types of Hormonal Products Used.

Product Type	Frequency	Percentage
Oral Contraceptives	127	34.2
Emergency Contraceptives	109	29.6
Hormonal Therapy for Acne/Cycle Regulation	69	18.7
Herbal Hormonal Supplements	65	17.5
No Use	153	41.4

Self-Medication Practices

Table 4: Prescription and Self-Medication Patterns.

Practice	Frequency	Percentage (%)
Used with prescription	223	60.2
Self-medication (no prescription)	147	39.8

Sources of Access and Information

Table 5: Sources of Hormonal Medication and Information.

Source	Frequency	Percentage (%)
Pharmacy	165	44.5
Friends/Peers	100	27.1
Online Sources	60	16.2
Health Professionals	45	12.2

Clinical Pharmacists' Role and Perception

Table 6: Awareness and Engagement with Clinical Pharmacists.

Question	Response	Frequency	Percentage (%)
Received Pharmacist Counseling	Yes	105	28.4%
	No	265	71.6%
Aware Pharmacist can Provide Hormonal Counseling	Yes	173	46.8%
	No	197	53.2%

Willing to Use Pharmacist-Led Services	Yes	329	88.9%
	No/Not Sure	41	11.1%

Perceived Benefits of Pharmacist Involvement

Table 7: Expected Benefits of Pharmacist-Led Hormonal Health Services.

Benefit	Frequency	Percentage (%)
Proper Medication Guidance	198	53.5
Prevention of Side Effects	102	27.6
Improved Menstrual Management	50	13.5
Not Necessary	20	5.4

Discussion

This study demonstrates a high burden of hormone-related symptoms among female students of reproductive age at NDU. Dysmenorrhea and menstrual irregularities were particularly prevalent, consistent with global findings among university populations. The substantial use of oral and emergency contraceptives highlights reliance on hormonal therapy for both reproductive planning and symptom control. However, a nearly 40% self-medication rate raises concerns regarding inappropriate dosing, contraindications, and drug interactions. Pharmacies emerged as the main access point, positioning clinical pharmacists strategically within the hormonal health care pathway. Yet, less than one-third of respondents reported receiving pharmacist counseling, indicating underutilization of pharmacist expertise. The strong willingness (88.9%) to engage with pharmacist-led services suggests readiness for structured interventions such as hormonal therapy counseling clinics, menstrual health education programs, and medication therapy management services within the university.

Conclusion

Hormonal health challenges are common among female students of reproductive age at Niger Delta University. Utilization of hormonal medications is substantial, with concerning levels of self-medication. Clinical pharmacists remain underutilized despite high student willingness for engagement. Institutional integration of pharmacist-led hormonal health management programs could significantly improve medication safety, therapeutic outcomes, and reproductive health awareness.

Recommendations

- Establish pharmacist-led hormonal health counseling clinics within university health services.

- Integrate menstrual and reproductive health education into student orientation programs.
- Promote rational hormonal therapy use through structured awareness campaigns.
- Strengthen collaboration between pharmacists, gynecologists, and university health services.
- Develop policies regulating non-prescription hormonal medication access.
- Conduct further analytical studies exploring risk factors and clinical outcomes.

Abbreviations

NDU - Niger Delta University; SPSS - Statistical Package for the Social Sciences; OCP - Oral Contraceptive Pills; PCOS - Polycystic Ovary Syndrome; WHO - World Health Organization; FMOH - Federal Ministry of Health

Declarations

Acknowledgement

The authors acknowledge all study participants and research supervisors for their contributions.

Conflict of Interest

The authors declare no conflict of interest.

References

1. Adebayo AM, Akinyemi OO, Cadmus EO. (2019). Reproductive Health Knowledge and Health-Seeking Behaviour Among Female Undergraduates in A Nigerian University. *Afr J Reprod Health.* 23(2):90-99.

2. Adebisi YA, Alaran AJ, Okereke M, Oladunjoye I, Lucero-Prisno DE. (2024). Menstrual Health Challenges and Their Academic Impact Among Nigerian Undergraduates: A Public Health Perspective. *Int J Adolesc Med Health.*

3. Adepoju O, Adebayo A, Salawu R. (2023). Hormonal Health Challenges Among Women of Reproductive Age in Sub-Saharan Africa. *Afr J Reprod Health.* 27(4):56-65.

4. Adeyemi AS, Adekanle DA, Afolabi AF. (2018). Menstrual Disorders and Health-Seeking Behaviour Among Young Women in A Nigerian University. *J Obstet Gynaecol.* 38(3):356-361.
5. Adeyemo DO, Ogunleye AJ, Aluko OO. (2017). Health Service Utilization and Determinants Among Undergraduate Students in Southwestern Nigeria. *Niger J Clin Pract.* 20(9):1122-1128.
6. Afolayan JA, Jolayemi OA. (2020). Menstrual and Hormonal Health Challenges Among Female University Students in Nigeria. *J Public Health Afr.* 11(1):45-52.
7. Aina BA, Olatoye OO. (2019). Awareness and Perception of Pharmaceutical Care Services Among Health Sciences Students in A Nigerian University. *Int J Pharm Pract.* 27(3):247-253.
8. Akinpelu AO, Oyewole OO, Adegbesan OA. (2018). Age at Menarche and Menstrual Pattern Among Female Undergraduates in Southwest Nigeria. *Afr J Reprod Health.* 22(3):47-54.
9. Al Hamarneh YN, Tsuyuki RT, Al-Jedai A. (2023). Pharmacist Interventions in Reproductive and Women's Health: A Systematic Review. *Res Social Adm Pharm.* 19(4):610-618.
10. Almuzaini T, Alharbi H, Almutairi F. (2022). Role of Clinical Pharmacists in Women's Health: A Systematic Review. *J Pharm Pract.* 35(6):923-931.
11. Alomi YA, Alghamdi TS, Alattyh RA. (2019). Clinical Pharmacists' Roles in Gynecology and Obstetrics Practice: A New Era of Patient-Centered Care. *J Pharm Pract Community Med.* 5(3):68-74.
12. Ayele AA, Mekuria AB, Tegegn HG, Gebresillassie BM, Erku DA. (2021). Role of Clinical Pharmacists in Optimizing Therapy for Chronic Conditions in Resource-Limited Settings. *J Pharm Policy Pract.* 14(1):73.
13. Azziz R, Carmina E, Chen Z, Dunaif A, Laven JSE, et al. (2016). Polycystic Ovary Syndrome. *Nat Rev Dis Primers.* 2:16057.
14. Azziz R, Carmina E, Chen Z, Dunaif A, Laven JSE, et al. (2019). Polycystic Ovary Syndrome. *Nat Rev Dis Primers.* 5(1):69.
15. Babatunde OA, Adewuyi EO, Akinyemi JO. (2019). Menstrual Characteristics and Associated Factors Among Female University Students in Nigeria. *BMC Womens Health.* 19:102.
16. Bello FA, Olayemi O. (2021). Premenstrual Syndrome and Its Impact on Academic and Social Performance Among University Students. *Niger J Clin Pract.* 24(5):678-684.

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