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# Hormonal Contraceptives use and Clinical Changes in Women attending a Tertiary Healthcare Facility in North-central Nigeria

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## ABSTRACT

**Background:** Hormonal contraceptives are commonly used and advocated in reproductive health particularly in birth control and family planning. This study was designed to identify the commonly used ones and their effects on clinical parameters, like body mass index and blood pressure, of women accessing healthcare in a tertiary facility in northern Nigeria.

**Methods:** This was a cross-sectional study. A total of 261 women aged 18 years and above who were accessing hormonal contraceptives at the family planning clinic were recruited using a convenience sampling technique due to resource constraints and difficulty in accessing a larger random sample. Data on socio-demographic characteristics, changes in clinical parameters, obstetric history, and contraceptive preferences were collected and analysed using descriptive statistics.

**Results:** The majority of participants were between the ages of 31-35 years, and 41.8% had secondary education. About 50.9% were on injectables, with concerns about side effects being the primary reason for discontinuation; 28.1% discontinued the contraceptives on account of weight gain, and 26.3% on account of increased blood pressure. Clinical assessments revealed that 64.7% and 88.5% of the participants had body mass indices and blood pressures within the normal range.

**Conclusion:** This study highlighted the diverse background and reproductive experiences of women accessing hormonal contraceptives in the family planning clinic of the University of Ilorin Teaching Hospital (UITH). Weight gain, increased body mass index, and blood pressure were found to affect compliance with contraceptive therapy. These findings can inform the development of targeted interventions to improve contraceptive uptake and compliance, which will ultimately contribute to better reproductive health outcomes.

**Keywords:** Healthcare, Parameters, Contraceptive, Women, North-central

## 1.0 INTRODUCTION

Access to effective contraception is fundamental for promoting reproductive and family health, preventing unintended pregnancies, and reducing maternal and neonatal morbidity and mortality [1]. In many low-resource settings, healthcare service delivery, including contraceptive service, is very poor. Nigeria, for example, ranks among the worst in access and quality of services [2].

Maternal and neonatal mortality rates are higher in lower and middle-income countries (LMICs), and Nigeria is one of the countries in this category with the highest maternal mortality rates globally. In 2018, the maternal mortality ratio (MMR) in Nigeria was estimated to be 512 deaths per 100,000 live births [2]. In 2019, the MMR was estimated to be over 800 maternal deaths per 100,000 live births with a neonatal mortality rate at 33 per 1000 live births [3, 4].

According to the Sustainable Development Goals (SDGs), the global target for maternal mortality is 70 deaths per 100,000 live births [5, 6]. Recent data from a World Health Organization (WHO) factsheet released in March 2023 presents a bleak picture of maternal health outcomes in Nigeria. In 2017, the maternal mortality rate in Nigeria was 917 deaths per 100,000 live births. This rate has risen by approximately 14% in just three years, reaching 1047 deaths per 100,000 live births in 2020 [7].

In Nigeria, contraceptive use prevalence rates are relatively low, and this increases the risk of unwanted pregnancy with its attendant obstetric complications and contributes to a high maternal mortality rate. Ensuring universal access to contraceptive services is a public health priority [8]. The choice of contraceptive methods and patterns of contraceptive use may vary based on individual preferences, access to healthcare services, and cultural norms [9]. Some previous studies highlighted the influence of socio-demographic factors, such as age, education, marital status, and income, on contraceptive decision-making and utilization [10, 11]. Additionally, obstetric history, including age at menarche, age at first childbirth, and parity, can impact contraceptive needs and preferences [12].

There are limited studies examining the socio-demographic characteristics and clinical parameters of women accessing hormonal contraceptives in Nigeria [13]. Understanding these factors is essential for tailoring contraceptive service delivery to the needs of the target population and improving reproductive health outcomes [14]. Injectable contraceptives are commonly used methods in many settings due to their effectiveness, convenience, and discreet administration [15]. However, concerns about side effects and access to healthcare services may influence use and continuation rates [15, 16]. Clinical assessment of body mass index (BMI) and blood pressure are essential for assessing the safety and suitability of hormonal contraceptives for individual users [16].

Although studies on hormonal contraceptive use exist, there is a paucity of data on their effect on clinical parameters. Addressing this gap is crucial for informing evidence-based contraceptive service delivery and improving reproductive health outcomes in north-central Nigeria and beyond. Therefore, this study investigated the factors affecting hormonal contraceptive use and changes in clinical parameters of women in a tertiary healthcare facility who are using these contraceptives. This will provide valuable insights for healthcare providers, decision-makers, and researchers in reproductive medicine.

## 2.0 METHODOLOGY

### 2.1 Study design

This cross-sectional study assessed the prevalence and effects of hormonal contraceptive use on clinical parameters among women attending the family planning clinic at UITH. The cross-sectional approach is appropriate for understanding the relationship between contraceptive use and clinical parameters at a single point in time. The family planning clinic is a primary healthcare facility offering contraceptive services to women in the region.

### 2.2 Study setting

This study was conducted at the family planning clinic of UITH. It is a referral center and serves a diverse population, which could provide a representative sample of women accessing contraceptive services in the region. It is a 750-bed hospital in Ilorin, Kwara's state capital, in Nigeria's North Central geopolitical region. Three Local Government Areas comprise Ilorin: Ilorin-South, Ilorin-West, and Ilorin-East. UITH is a tertiary institution and serves as a referral center for patients from Kwara and nearby states.

### 2.3 Sampling and Participants

A convenience sampling method was employed due to resource constraints and difficulty accessing a larger random sample. All consenting eligible women aged 18 years or older attending the clinic were recruited. Data

collection was carried out using structured questionnaires and clinical assessments. The questionnaire was designed to get information on socio-demographic characteristics (e.g., age, education, marital status, occupation, ethnicity, religion, and income), obstetric history (e.g., age at menarche, age at first childbirth, parity), contraceptive usage patterns (e.g., type of contraceptive method used, duration of use, reasons for discontinuation), and clinical profiles (body mass index and blood pressure). Data collection was done using an interviewer-administered anonymous structured close-ended questionnaire. The sphygmomanometer, weighing scale, and stadiometer were calibrated every morning before the commencement of the research. Body mass index was calculated from the measured weight in kilograms and height in meters. Explanation and translation into Pidgin, English, and Yoruba language was provided when required by the patient. The questionnaire was pretested in the General Hospital, Ilorin, for clarity, applicability, and acceptability.

### 2.4 Data analysis

IBM SPSS 25 software was used for data analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to analyze the data. Socio-demographic characteristics, obstetric history, contraceptive usage patterns, and clinical profiles were summarized using appropriate statistical measures.

### 2.5 Ethical Considerations

Ethical approval was obtained from the Institutional Review Board of UITH, with approval number PAN/2017/03/1650. Informed consent was obtained, participation in the study was voluntary, and the participants could withdraw from the study at any time without interference with their care. Participants were assured of confidentiality and anonymity, and the data obtained were securely stored and managed.

## 3.0 RESULTS

The socio-demographic characteristics of the 261 women who participated in the study are detailed in Table 1 below. The majority of the respondents were within the age group of 31-35, comprising the highest proportion at 29.9%, with an overall mean age of 34.8 ± 6.5 years. Regarding education, 41.8% of the respondents had completed secondary education, while 19.5% had no formal education. Marital status indicated that nearly all respondents (98.9%) were married.

**Table 1.** Socio-demographic characteristics of study respondents (n=261)

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Age groups** | | |
| ≤ 25 | 16 | 6.1 |
| 26 – 30 | 59 | 22.6 |
| 31 – 35 | 78 | 29.9 |
| 36 – 40 | 61 | 23.4 |
| ≥ 41 | 47 | 18.0 |
| Mean ± SD[a] | 34.8 ± 6.5 | |
| **Level of Education** | | |
| Uneducated | 51 | 19.5 |
| Primary | 88 | 33.7 |
| Secondary | 109 | 41.8 |
| Tertiary | 13 | 5.0 |
| **Marital Status** | | |
| Single | 3 | 1.1 |
| Married | 258 | 98.9 |
| **Occupation** | | |
| Farming | 11 | 4.2 |
| Trading | 221 | 84.7 |
| Civil servant | 11 | 4.2 |
| Artisan | 3 | 1.1 |
| Unemployed/Full-time housewives | 15 | 5.8 |
| **Tribe** | | |
| Yoruba | 255 | 97.7 |
| Igbo | 2 | 0.8 |
| Others | 4 | 1.5 |
| **Religion** | | |
| Islam | 215 | 82.4 |
| Christianity | 46 | 17.6 |
| **Income**[b] | | |
| ≤ 18000 | 84 | 32.2 |
| > 18000 | 177 | 67.8 |

[a] Standard deviation

[b] The cut-off of eighteen thousand naira per month was based on the national minimum wage at the time of study.

The respondents' occupations were assessed. 84.7% identified themselves as traders, while 5.8% were full-time housewives. The majority (97.7%) ethnically belonged to the Yoruba tribe, with only 2.3% from other ethnic groups.

Regarding income, 67.8% of the respondents reported earnings above ₦18,000 as their monthly income, with a notable proportion (32.2%) earning less than or equal to ₦18,000. These socio-demographic characteristics provided insights into the diverse backgrounds of the women receiving hormonal contraceptives at the UITH family planning clinic.

Table 2 presents the obstetric history of the study participants. Most respondents (71.6%) reported reaching menarche at an age greater than 12 years. Regarding marital age, 96.2% of the respondents were married at 17 years, while 3.8% were married before the age of 17.

Furthermore, almost all respondents (98.9%) had their first delivery at the age of >18, with only 1.1% reporting their first delivery below 18.

With respect to the respondents' parity, 36% of the respondents had more than four children.

**Table 2.** Obstetric history of the study respondents (n=261)

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Menarche age (yr)** | | |
| ≤ 12 | 74 | 28.4 |
| > 12 | 187 | 71.6 |
| **Mean ± SD** | 12.9 ± 0.9 | |
| **Marital age (yr)** | | |
| ≤ 17 | 10 | 3.8 |
| > 17 | 251 | 96.2 |
| **Age at first delivery (yr)** | | |
| ≤ 18 | 3 | 1.1 |
| > 18 | 258 | 98.9 |
| **Mean ± SD** | 20.8 ± 1.5 | |
| **Number of children** | | |
| ≤ 4 | 167 | 64.0 |
| > 4 | 94 | 36.0 |
| **Mean ± SD** | 4.2 ± 2.5 | |

**SD**: Standard deviation; **yr**: year

Table 3 presents the type and duration of hormonal contraceptives used by the study respondents. About half of the respondents (47.5%) reported using Depo-Provera, while 35.2% and 13.0% were using Noristerat and Implant hormonal contraceptives, respectively.

Regarding the duration of use of hormonal contraceptives, the majority (62.1%) had been using hormonal contraceptives for more than 2 years, with a mean duration of 3.8 ± 2.4 years. However, 21.8% of the respondents had discontinued the usage of hormonal contraceptives. Among those who discontinued, the most common types of contraceptives discontinued were **Implant** (43.8%), Depo-Provera (31.6%), and Noristerat (19.3%).

**Table 3.** Duration and reasons for discontinuation of use of hormonal contraceptive in respondents (n=261)

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Duration of use (years)** | | |
| ≤ 2 | 99 | 37.9 |
| > 2 | 162 | 62.1 |
| **Mean ± SD** | 3.8 ± 2.4 | |
| **Discontinued hormonal contraceptive** | | |
| Yes | 57 | 21.8 |
| No | 204 | 78.2 |
| **Types of hormonal contraceptives discontinued.** | (n=57) | |
| Combined oral contraceptives | 3 | 5.3 |
| Depo-provera | 18 | 31.6 |
| Noristerat | 11 | 19.3 |
| Implant | 25 | 43.8 |
| **Reasons for discontinuation of contraceptives** | | |
| Increased weight | 16 | 28.1 |
| Increased blood pressure | 15 | 26.3 |
| High serum lipid profile | 10 | 17.5 |
| Others[+] | 16 | 28.1 |

[+]Irregular bleeding, Amenorrhea, Menorrhagia

The reasons cited for discontinuation included weight gain (28.1%), elevated blood pressure (26.3%), and serum lipids (17.5%). Other reasons included irregular bleeding, amenorrhea, and menorrhagia.

Furthermore, clinical assessment revealed that 18.8% and 2.3% were overweight and obese, respectively, while 11.5% had elevated blood pressure. About 64.7% and 88.5% of the participants had body mass index and blood pressure within the normal range (Figures 1 and 2).

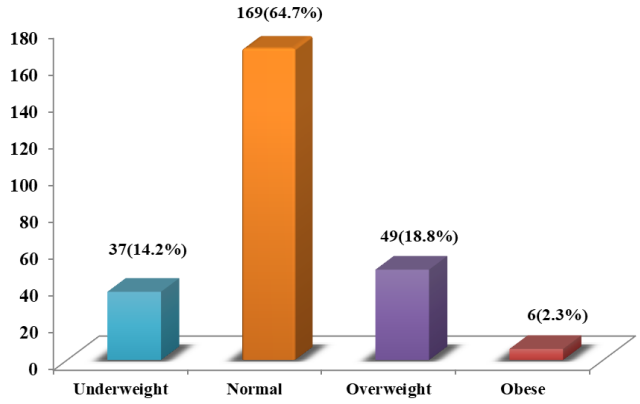



**Figure 1.** Body Mass Index distribution of the respondents

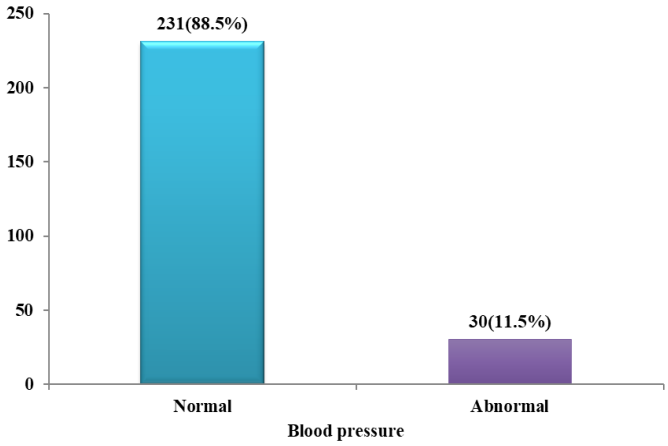



**Figure 2.** Blood pressure status of the respondents

## 4.0 DISCUSSION

The socio-demographic characteristics of women utilizing hormonal contraceptives are crucial as they influence contraceptive decision-making and reproductive health outcomes [16, 11]. In these studies, some of these characteristics, like age, marital status, and level of education, played a significant role in shaping contraceptive knowledge, attitudes, and practices. Married participants and those with higher levels of education had higher uptake of contraceptives and better reproductive health outcomes [17-21]. Contraceptive services in family planning

clinic was at a cost and not totally free as being speculated. Thus, we proposed that income level can impact contraceptive access and utilization. Some researchers have reported that women with high income have better access to contraceptive services and a wider range of contraceptive options [22-24]. Studies have reported that religion can influence contraceptive uptake, given that some religions are not favorably disposed to the use of contraceptives. The majority of our study participants practiced Islam, which was not surprising given that Islam is the predominant religion among Ilorin residents. These findings underscore the influence of cultural and religious factors on contraceptive utilization, with cultural norms and religious beliefs often shaping contraceptive attitudes and behaviors [24].

High parity is associated with increased maternal and neonatal health risk; about two-thirds of the participants had more than four children, hence the need for contraception counseling. Addressing contraceptive needs among women with high parity is crucial in reducing maternal and neonatal mortality [25-28]. Kriel *et al.*, [29]. reported that women accessing family planning services preferred the injectable hormonal contraceptive. About half of the respondents in this study reported using Depo-Provera; this was consistent with previous reports indicating a preference for injectables among women [29, 30]. Hormonal contraceptives were found to increase the weight of some participants and, invariably, their body mass index. Berenson *et al.,* [31]. and Kohn *et al.,* [32] reported a similar finding in their respective studies. The weight gain was found to affect drug compliance among the affected participants as some were noticed to discontinue the use of the contraceptives. About one-tenth of the participants in our study had elevated blood pressure; this was similar to the report by Moralis *et al.,* [33] and White *et al.,* [34] in their studies but at variance with what was reported by Kharbanda *et al.,* [35]. The increased blood pressure was also a reason adduced for discontinuation of therapy, which can compromise the initial gains in reproductive and maternal health. The observed increase in body mass index and blood pressure are of importance as they are independent cardiovascular risk factors and can accelerate the development of cardiovascular diseases like stroke, heart failure, and myocardial infarction [36-39]. These findings highlighted the importance of addressing the effect of hormonal contraceptives on clinical parameters (increase in body mass index and blood pressure), as they are both modifiable cardiovascular risk factors, by providing individualized comprehensive contraceptive counseling and monitoring to improve drug compliance and minimize the development of such adverse effects.

This study highlighted the diverse background and reproductive experiences of women accessing hormonal contraceptives. Increased body mass index and blood pressure were found to affect compliance with contraceptive therapy. These findings can inform the development of targeted interventions to improve contraceptive uptake and compliance, which will ultimately improve reproductive health outcomes.

## Limitation of the study

This study was conducted in the family planning clinic of UITH, a healthcare facility in the North-central geopolitical zone of Nigeria. Thus, the data generated cannot be extrapolated to other healthcare facilities and zones in the country. The convenience sampling technique may introduce selection bias and limit the generalizability of the findings.

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## Conflicts of Interest

The authors declare that there is no conflict of interests.

## Authors' Contributions

**OAA** conceived and designed the study, contributed to data collection, data analysis tools, analysis of data and manuscript writing. **SBO** contributed to study design, data analysis tools, analysis of data and manuscript writing. W**AA, STE, DSO** contributed to data collection, data analysis tools, analysis of data and manuscript writing. **OSA** contributed to data collection, analysis of data and manuscript writing. **NS** contributed to data collection, data analysis tools and analysis of data. **MOB** contributed to study design, collection of data and manuscript writing. All authors approved the final copy of the manuscript.

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