PREVALENCE OF HYPERTENSION AND MENTAL HEALTH DISORDERS AMONG PREGNANT WOMEN IN LAGOS STATE, NIGERIA

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Abstract

This research explores the prevalence of hypertension and mental health disorders among pregnant women in Lagos State, Nigeria. Employing a prospective design, the study focused on women at 20-24 weeks of gestation across six maternal and child health centers. A sample size of 300 participants from each of the six facilities yielded a diverse demographic distribution. The majority were aged 25-34 (63.2%), educated to tertiary level (76.4%), and engaged in professional occupations (40.2%). The prevalence of hypertension and mental health disorders was assessed across the second trimester, third trimester, delivery, and postpartum stages. The findings detail the prevalence of hypertension, revealing that 88.2% of pregnant women maintained normal blood pressure, while 10.7% exhibited high blood pressure, and 1.7% had low blood pressure. Notably, the prevalence remained relatively stable across different stages. The findings further illustrates mental health disorder prevalence, categorizing participants into normal, mild, moderate, and severe groups. Normal mental health was predominant (46%), while 38% had mild disorders, 12% exhibited moderate symptoms, and 4% faced severe conditions. These patterns persisted throughout the stages, indicating a significant prevalence of normal mental health. Recommendations include the development of integrated health monitoring programs, targeted interventions for high-risk groups, and enhanced collaboration between obstetric and mental health services. These measures aim to ensure comprehensive care for pregnant women, addressing both physical and mental well-being.

Introduction

Pregnancy is a consequential physiological process that has a profound effect on the lives of women. Pregnancy, as defined by the World Health Organisation (WHO), is an inherent occurrence that initiates physiological, social, and psychological changes. Additionally, it is a time when women often encounter ailments (Gilbert et al., 2020). Additionally, this period is characterised by apprehensions, worries, and unease, all of which are regarded as typical and anticipated throughout this stage of bodily transformations. Nevertheless, when these feelings reach an extreme level, they become aberrant and might lead to difficulties (Nasr & Hassan, 2016). Moreover, pregnancy induces several modifications in the physiological and psychological aspects of women's bodies, as they undergo preparations for giving birth. The physiological alterations might give rise to imbalances that can lead to illnesses such as hypertensive problems during pregnancy, while the psychological changes may contribute to mental health issues (Braunthal & Brateanu, 2019).

According to Battarbee et al. (2020), hypertensive problems that develop during pregnancy significantly contribute to the occurrence of illness and death in both mothers and foetuses globally. Hypertension is a prevalent medical problem during pregnancy, affecting around 2-3% of pregnancies and making them more complicated (Rapaport, 2020). According to research estimations, about 5-10% of pregnant women will have hypertension (Dennis et al., 2020). The hypertensive diseases that may occur during pregnancy include chronic hypertension, preeclampsia, eclampsia, preeclampsia superimposed on chronic hypertension, and gestational hypertension without proteinuria (Portelli & Baron, 2019). Chronic hypertension (CH), gestational hypertension (GH), preeclampsia (PE), and eclampsia occur in about 5%–10% of pregnancies, making them the second most common cause of maternal death in pregnant women. These diseases are linked to higher chances of stillbirth, death of newborns, and numerous health concerns for both mothers and infants, such as restricted development inside the womb (Akinola et al., 2019). Due to the high occurrence of these illnesses and their associated outcomes, comprehending their origin is a vital priority for public health (Lahti-Pulkkinen et al., 2020).

Psychiatric conditions are common during pregnancy and the time after childbirth, especially among women with hypertensive diseases. These diseases include a clinical condition with a multifaceted cause, encompassing elements such as anxiety, depression, post-traumatic stress syndrome, and even psychosis. Their influence is especially evident

during pregnancy (Battarbee, 2020). The importance of these problems is generally acknowledged, with the World Health Organisation (WHO) recognising mental illnesses as a significant contributor to illness and disability, affecting not just young people but also pregnant women. Studies reveal that a significant proportion of pregnant women worldwide, namely 16%, encounter mental health issues such as anxiety, depression, and post-traumatic stress. The ramifications of these disorders are many, since depression may impact a pregnant woman's ability to take care of herself and thus offer hazards to the welfare of the infant.

The objective of the research undertaken by Akinola et al. (2019) was to examine the correlation between polygamous marriage and depression during pregnancy in Nigeria. The research conducted was a cross-sectional survey that included 200 expectant women who were selected from three primary health care centres in Ibadan, Nigeria. The research findings indicated that pregnant women in polygamous unions had an elevated susceptibility to depression compared to those in monogamous unions. More precisely, the occurrence of depression was 28.6% among pregnant women in polygamous marriages, as contrast to 13.3% among those in monogamous marriages (p=0.03). The research further discovered that pregnant women with a prior history of depression, those who had undergone stressful life events, and those who had inadequate social support had an elevated risk of depression.

Akinola et al. (2019) conducted a research that offers significant insights into the correlation between polygamous marriage and depression during pregnancy in Nigeria. The results indicate that engaging in polygamous marriage may increase the likelihood of experiencing depression during pregnancy. This emphasises the need of doing more studies to investigate the underlying processes that contribute to this connection. The research highlights the need of recognising and tackling the risk factors associated with depression during pregnancy, including a prior history of depression, stressful life events, and inadequate social support, with the aim of enhancing the health outcomes of both the mother and child.

Ashenafi, et al (2019) performed a cross-sectional research in three administrative towns (Robe, Goba, and Ginnir) in Bale zone in South-East Ethiopia from December to January 2019. The study was based on the community. The research focused on the frequency of Common Mental Disorders (CMD) and the variables that contribute to it among pregnant women in Southeast Ethiopia. The data was gathered from 743 pregnant women using interview-administered, standardised questionnaires throughout the period of December

2018 to January 2019. The Self-Reported Questionnaire (SRQ) developed by the World Health Organisation (WHO) was used to assess and identify Common Mental Disorders (CMD). The results indicate that several factors are significantly associated with Common mental disorders. These factors include the inability to read and write (AOR = 2.06; 95% CI: 1.05–4.04), health risks (AOR = 2.94; 95% CI: 1.53–5.66), financial instability (AOR = 1.72; 95% CI: 1.06–2.82), physical or emotional abuse (AOR = 2.40; 95% CI: 1.36–4.24), forced sexual intercourse in the last year (AOR = 3.85; 95% CI: 1.67–8.88), family history of psychiatric illness (AOR = 3.14; 95% CI: 1.66–5.94), and history of chronic medical illness (AOR = 3.26; 95% CI: 1.64–6.48). These associations were found to be statistically significant (p < 0.05). The research found that the overall prevalence of CMD during pregnancy was 35.8% (95% CI: 34–38%). This indicates that 35.8% of pregnant women experienced CMD. The objective of the research is to determine the prevalence of hypertension and mental health disorder among pregnant women in Lagos State, Nigeria.

Methodology

A prospective research design was used in the study. A prospective study follows a group of individuals over time to observe the development of a condition and calculate its prevalence. The study focused on pregnant women who were in their 20-24 weeks of gestation and receiving antenatal care. These women were selected from six specific maternal and child health centers located within General Hospitals in Lagos State. The calculated sample size using the Cochran formula is approximately 280. This was rounded up to 300 to make room for attrition rate of 7% from each of the selected maternal and child health centers. The pregnant women were selected from the three senatorial districts of Lagos State, which are Lagos West, Lagos East and Lagos Central. The sampling technique employed in the study involved serial recruitment of pregnant women who met the inclusion criteria at each study site. The recruitment process began at 20 to 24 weeks gestation and continued until the desired sample size of 300 participants was reached for each of the 6 health facilities. Participants were then followed up at the third trimester, delivery, and postpartum stages, specifically within 4 to 6 weeks after giving birth.

Serial recruitment refers to the continuous enrollment of participants over a defined period until the desired sample size is achieved. In this study, pregnant women who met the

inclusion criteria were recruited in a sequential manner from each study site. This approach allowed for a gradual accumulation of participants, ensuring a representative sample and minimizing potential biases associated with recruiting a large number of participants at once. The recruitment process started at a specific time frame, between 20 to 24 weeks gestation. This period was chosen to capture pregnant women at a relatively advanced stage of pregnancy while still allowing sufficient time for follow-up assessments during the third trimester, delivery, and postpartum stages. By recruiting participants at this specific gestational age, the study aimed to examine the mental health effects across different phases of pregnancy and the early postpartum period. Data collected were analyzed using descriptive statistics.

Results

Table 1: Socio-demographic characteristics of participants

Variable	Categories	Frequency(f)	Percentage (%)
Age	18-24	233	12.9
	25-34	1138	63.2
	35-44	422	23.4
	45 and above	7	0.4
Education	No formal education	22	1.2
	Primary education	29	1.6
	Secondary education	374	20.8
	Tertiary education	1375	76.4
Occupation	Housewife	192	10.6
	Unemployed	197	10.9
	Unskilled	48	2.7
	Skilled Artisan	640	35.5
	Professional	723	40.2
Marital status	Single	73	4.1
	Married	1716	95.3
	Divorced	1	.1
	Co-habiting	7	.4
	Widowed	1	.1
	Separated	2	.1
Type of marriage	N/A	50	2.8
	Monogamous	1609	89.4
	Polygamous	141	7.8
Religion	Christianity	1224	68.0
	Islam	551	30.6
	Traditionalist	4	.2
	Others	21	1.2
	Total	1800	100.0

The dataset in table 1 comprises information on 1800 participants, revealing a diverse distribution across various demographic variables. In terms of age, the majority falls within the 25-34 age group, constituting 63.2% of the sample, followed by the 35-44 age group at 23.4%. Participants aged 18-24 account for 12.9%, while those aged 45 and above represent a minimal 0.4%. Education levels among participants vary, with a significant proportion (76.4%) having tertiary education. Secondary education is completed by 20.8% of participants, while those with no formal education or primary education constitute 1.2% and 1.6%, respectively.

Occupationally, the dataset reflects a diverse distribution. Professionals make up the largest group at 40.2%, followed by skilled artisans at 35.5%. Housewives and unemployed individuals account for 10.6% and 10.9%, respectively, while unskilled workers represent 2.7%. Marital status shows a predominant number of married participants (95.3%), with single individuals comprising 4.1%. Other marital statuses, such as divorced, co-habiting, widowed, and separated, each represent less than 1% of the total sample. Regarding the type of marriage, monogamous marriages are prevalent at 89.4%, while polygamous marriages make up 7.8%. A small percentage (2.8%) falls under the category of "N/A." In terms of religion, Christianity is the predominant affiliation at 68.0%, followed by Islam at 30.6%. Traditionalist and other religious affiliations combine for a minimal 1.4%.

Table 2: Prevalence of hypertension among pregnant women

Blood pressure	Second trimester	Third trimester	Delivery	Post partum	Total
Normal	1629 (91.9%)	1564 (88.4%)	1324 (86.2%)	1150 (85.3%)	5675
High	147 (8.1%)	207 (11.6%)	181 (11.8%)	160 (12.4%)	695
Low	24 (1.3%)	24 (1.4%)	30 (1.9%)	31 (2.3%)	109
	1800	1795	1535	1341	6479

Table 2 presents the prevalence of hypertension among pregnant women at different stages, including the second trimester, third trimester, delivery, and postpartum period. The Table also categorizes blood pressure into three groups: normal, high, and low. In the second trimester, the majority of pregnant women (91.9%) exhibited normal blood pressure, while 8.1% had high blood pressure and 1.3% had low blood pressure. Similarly, in the third trimester, 88.4% of women had normal blood pressure, 11.6% had high blood pressure, and 1.4% had low blood pressure.

During the delivery stage, the prevalence of normal blood pressure slightly decreased to 8.2%, while 11.8% of women had high blood pressure, and 1.9% had low blood pressure. In the postpartum period, 85.3% of women had normal blood pressure, 12.4% had high blood pressure, and 2.3% had low blood pressure.

Overall, when considering all stages, the majority of pregnant women (88.2%) exhibited normal blood pressure, while 10.7% had high blood pressure, and 1.7% had low blood pressure.

Table 3: Prevalence of mental health disorders among pregnant women in Lagos State

Mental health assessment	Second trimester	Third trimester	Delivery	Post partum	Total %
Normal	848 (13%)	759 (12%)	713 (11%)	607 (10%)	2927 (46%)
Mild	679 (10%)	637 (10%)	572 (0.9%	527 (0.8%)	2415 (38%)
Moderate	201 (3%)	217 (3%)	191 (3%)	150 (0.2%)	759 (12%)
Severe	67 (1%)	34 (0.05%)	63 (1%)	56 (0.8%)	220 (4%)
Total	1795	1689	1539	1340	6321

Upon analyzing table 3, the prevalence of mental health disorders among pregnant women at various stages, including the second trimester, third trimester, delivery, and postpartum

period. The table further categorizes mental health disorders into four groups: normal, mild, moderate, and severe. In the second trimester, 13% of pregnant women were classified as normal, while 10% had mild mental health disorders, 3% exhibited moderate symptoms, and 1% experienced severe conditions. Similarly, during the third trimester, the prevalence percentages remained consistent, with 12% classified as normal, 10% as mild, 3% as moderate, and 0.05% as severe.

During delivery, 11% of women were categorized as normal, while 0.9% had mild mental health disorders, 3% displayed moderate symptoms, and 1% faced severe conditions. Moving into the postpartum period, 10% of women were classified as normal, 0.8% had mild mental health disorders, 0.2% exhibited moderate symptoms, and 0.8% experienced severe conditions. Considering the overall prevalence across all stages, out of the 1800 pregnant women included in the analysis, the majority (46%) were categorized as normal, while 38% had mild mental health disorders. Moderate mental health disorders were observed in 12% of the participants, and severe conditions were reported in 4%.

Discussion

The results provide a comprehensive analysis of the blood pressure values seen in pregnant women at all phases of pregnancy, including the first trimester, second trimester, delivery, and post-delivery periods. The research found that the majority (87.6%) of pregnant women maintained normal blood pressure throughout their pregnancy. These findings demonstrate that most individuals maintained blood pressure values within the anticipated range, indicating a favourable cardiovascular condition. Significantly, the percentage of women with normal blood pressure had a modest decrease over time. At the first visit, 25.3% of women had normal blood pressure, which then declined to 24.1% on the second visit. Subsequent decreases were seen in both the delivery and post-birth periods, with 20.4% and 17.7% of women, respectively, exhibiting normal blood pressure.

Unlike typical blood pressure, a subgroup of pregnant women encountered elevated blood pressure at various points throughout their pregnancy. Out of all the visits, 10.7% of the sample had elevated blood pressure readings. This discovery emphasises the occurrence of hypertension problems in a significant percentage of pregnant women in the study group. The occurrence of high blood pressure differed across visits, with 2.3% of women

experiencing high blood pressure at the first appointment, which slightly rose to 3.2% during the subsequent visit. The proportions exhibited a rather consistent stability over both the delivery phase (2.8%) and the subsequent post-delivery phase (2.5%). These results emphasise the need of properly monitoring blood pressure levels during pregnancy to detect and handle any hazards linked to hypertensive diseases.

Hypotension, albeit less common, was seen in a minority of pregnant women, comprising 1.7% of the whole sample. The incidence of hypotension remained very stable throughout the visits, with rates ranging from 0.4% to 0.5%. While the proportion of women exhibiting low blood pressure was relatively modest, it indicates the existence of hypotension among the participants of the research. Hypotension may have consequences for the well-being of the mother and the health of the foetus, requiring adequate medical care and treatment.

The results of this investigation highlight the need of monitoring blood pressure during pregnancy in order to promptly identify any deviations from the normal range. Prompt detection and treatment of elevated or reduced blood pressure are crucial to minimise any negative consequences for both the mother and the foetus. Additional investigation should explore the variables linked to elevated and reduced blood pressure during pregnancy, including maternal age, pre-existing medical illnesses, lifestyle choices, and socioeconomic circumstances. Comprehending the fundamental factors that cause fluctuations in blood pressure during pregnancy may aid in the creation of efficient therapies and recommendations to enhance the health outcomes of both the mother and the foetus.

Multiple studies have investigated the occurrence and trends of blood pressure fluctuations during pregnancy, corroborating the observations made in this study. Caropreso et al. (2020) did a cohort research on pregnant women to examine the blood pressure trends that occur throughout pregnancy. Caropreso et al. (2020) found that most participants maintained normal blood pressure levels throughout their pregnancy. Consistent with the present investigation, a research conducted by Rapaport et al. (2020) found that 87.6% of pregnant women had normal blood pressure. Rapaport et al. (2020) found that a significant number of pregnant women had normal blood pressure, which supports the idea that their cardiovascular health is generally good throughout pregnancy (Rapaport et al., 2020).

The study by Jalali et al. (2019) found that a significant number of pregnant women suffered from hypertensive diseases, highlighting the need of closely monitoring blood pressure

levels during pregnancy. The findings align with the present investigation, wherein 10.7% of the participants displayed elevated blood pressure measurements (Jalali et al., 2021).

The phenomenon of hypotension during pregnancy has also been investigated in the literature. Portelli et al. (2020) observed that a small number of pregnant women have low blood pressure, emphasising the need of providing appropriate clinical care and treatment for this disease (Abi et al., 2020). The results of this research are consistent with previous data, indicating that 1.7% of the whole sample population suffered hypotension (Rapaport et al., 2020).

The study also uncovered the frequency of mental health issues among pregnant women in Lagos State, emphasising differences at various stages of pregnancy and the postpartum period. The results disclose the prevalence of mental health illnesses among the participants, classifying them into four categories: normal, mild, moderate, or severe. The overall amount of 6,321 is the cumulative number of mental health replies across all four visits. In the second trimester, 13% of the pregnant women surveyed showed normal mental health, which was the majority. Nevertheless, there was a notable presence of moderate mental health issues, impacting 10% of the individuals. The prevalence of moderate and severe mental health issues among pregnant women was significantly lower, with 3% and 1% having such conditions, respectively.

A similar trend surfaced during the third trimester. Approximately 12% of pregnant women reported having normal mental health, while 10% suffered minor difficulties. The prevalence rates of mild and severe mental health illnesses remained stable, impacting 3% and 0.05% of the population, respectively. As the subjects advanced to the delivery and postpartum periods, the incidence of mental health issues marginally decreased. At delivery, 11% of women exhibited typical mental health, however throughout the postpartum period, this percentage decreased slightly to 10%. At birth, 0.9% of women had mild problems, and throughout the postpartum period, this percentage decreased slightly to 0.8%. During birth, 3% of women had moderate problems, but in the postpartum period, this percentage decreased to 0.2%. During the birth time, 1% of women had severe mental health difficulties, but in the postpartum phase, this number decreased somewhat to 0.8%.

The table's total count of 6,321 reflects the combined replies from all visits and all categories of mental health conditions. The data reveals that out of the total replies, 2,972

indicated normal mental health over the four visits. On the other hand, 2,415 responses showed mild disorders, 759 responses indicated moderate disorders, and 220 responses indicated severe disorders.

In a research conducted by Abi et.al (2020), the objective was to assess the mental well-being of women before to, during, and after pregnancy, in comparison to a control group of women who were not pregnant. Their results corroborate the observations presented in Table 3, which analysed the occurrence of mental health issues among pregnant women in Lagos State at various stages of pregnancy and the postpartum period. Both sources highlight the prevalence of prevalent mental health issues during pregnancy and the postpartum period.

These results emphasise the need of comprehensive mental health assistance throughout both pregnancy and the postpartum period. Timely recognition and suitable treatments tailored to certain phases might enhance the mental welfare of expectant mothers in Lagos State. Additional investigation is necessary to examine the elements that contribute to these mental health issues and design effective techniques for prevention and intervention.

Conclusion

The study investigated the prevalence of hypertension and mental health disorders among pregnant women at different stages, including the second trimester, third trimester, delivery, and postpartum period. For hypertension, the majority of pregnant women exhibited normal blood pressure levels across all stages, ranging from 86.2% to 91.9%. High blood pressure was observed in 8.1% to 12.4%, while low blood pressure was less prevalent, ranging from 1.3% to 2.3%. Overall, 88.2% of pregnant women had normal blood pressure, 10.7% had high blood pressure, and 1.7% had low blood pressure.

Regarding mental health disorders, the study categorized participants into normal, mild, moderate, and severe groups. Throughout the stages, the majority of pregnant women were classified as normal, ranging from 10% to 13%. Mild mental health disorders were prevalent in 10% to 0.8%, moderate symptoms in 3% to 0.2%, and severe conditions in 1% to 0.8%. Overall, 46% of pregnant women were categorized as normal, 38% had mild mental health disorders, 12% exhibited moderate symptoms, and 4% experienced severe conditions. The study highlights a substantial prevalence of normal blood pressure and mental health among pregnant women, with variations observed across different stages of pregnancy.

Recommendations

Based on the study's findings, the following recommendations are made:

1. The ministry of health should develop and implement integrated health monitoring programs for pregnant women that address both physical and mental well-being. Given the prevalence of normal blood pressure and mental health disorders observed across various stages, such programs should provide comprehensive assessments, support, and interventions. This could involve regular check-ups, educational sessions, and access to mental health resources throughout pregnancy, delivery, and the postpartum period.

2. Midwives should identify and prioritize high-risk groups, such as those with high blood pressure or severe mental health disorders, for targeted interventions. This could involve personalized healthcare plans, specialized counseling services, and close monitoring during critical stages like delivery and the postpartum period.

3. Hospital management should foster collaboration between obstetric and mental health services to ensure a coordinated approach to maternal care. Integrating mental health assessments into routine prenatal care and establishing clear referral pathways for individuals identified with mental health concerns can facilitate early intervention.

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