

Pattern of Pica Practices and Prevalence of Gestational Hypertension among Antenatal Attendees in Tertiary Hospitals in Rivers State

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ABSTRACT

More than 500,000 women die each year from pregnancy and childbirth-related causes. Gestational hypertension complicates the pregnancy of 6-17% of healthy primigravida women and 2-4% of multiparous women. Maternal nutrition is a major factor for avoiding many complications in pregnancy and bring about good pregnancy outcomes. The aim of the study was to assess the Pattern of Pica Practice and Prevalence of Gestational Hypertension among Antenatal Attendees in Tertiary Hospitals in Rivers State. This study was a descriptive cross sectional study conducted on 250 antenatal attendees between the ages of 18 and 45 years in tertiary hospitals in Rivers State. It was a non-invasive self-administered questionnaire based study. Data obtained from the study was analysed using Statistical Package for Social Sciences (SPSS) version 25 and values of 0.05 and below were considered significant. The result obtained from the study revealed a 14.0% prevalence of gestational hypertension among antenatal attendees. It also revealed a 31.6% pattern of pica among the attendees. The most common forms of pica in the study were Geophagia (75.9%), Pagophagia (64.6%), Amylophagia (20.3%), and lastly Lithophagia (16.5%). The frequency of pica was 55.7% daily, 8.9% thrice a week and 36.4% weekly. Those with mild pica were about 31.6%, moderate pica was 55.7% and severe was about 12.7%. At the end of the study, it was ascertained that there was a 14% prevalence of gestational hypertension among antenatal attendees at tertiary hospitals in Port Harcourt. The pattern of pica among the women was 31.6% and consisted of Geophagia, Pagophagia, amylophagia and lithophagia. There was a significant association between sociodemographic characteristics such as age, marital status, occupation and ethnicity with pica practice. Clinical and obstetric characteristics like gravidity, parity, blood pressure and family history of gestational hypertension were significantly associated with pica practice.

KEYWORDS: *Pica, Gestational Hypertension, Antenatal attendees*

INTRODUCTION

Gestational hypertension (GHTN), accounts for roughly 70% of all cases of pregnancy-related hypertension and complicates 6–17% of healthy primigravida women's pregnancies and 2-4% of pregnancies of multiparous women. It is more common in younger primigravid pregnant women than in older multiparous pregnant women, depending on the woman's age and parity [1]. Gestational hypertension (GHTN) can also be described as a transient hypertension characterized by as systolic blood pressure of greater 140 mmHg and diastolic blood pressure of greater than 90mmHg. GHTN is further classified as mild (with Systolic blood pressure of 140-149 and diastolic blood pressure of 90-99mmHg), moderate (SBP 150-159 and DBP 100-109 mmHg) and severe (SBP \geq 160 and DBP \geq 110 mmHg) (Kintiraki et al., 2015).

Globally Gestational hypertension is a common medical complication of pregnancy [2]. It covers a range of conditions which includes; chronic hypertension, gestational hypertension (GHTN), and pre-eclampsia (PE) which occurs in about ten percent of pregnancies worldwide [3]. About 5-22% of pregnancies, particularly in developing countries, are affected by hypertension [3]. In underdeveloped nations also, hypertension in pregnancy is the most prevalent medical condition during pregnancy with an unknown aetiology and is attributed to a significant risk [5]. Although preeclampsia and eclampsia appear to raise greater concerns than the others, there is ample evidence that any form of hypertension during pregnancy increases the likelihood of unfavourable outcomes for women [5]. In Nigeria, research has revealed that maternal mortality rates are highest in northern Nigeria, and this maternal mortality in northern Nigeria was said to be primarily caused by hypertension-related disorders [5]. The National High Blood Pressure Education Program Working Group on High Blood Pressure recognizes four categories of hypertension in pregnancy. They include; Chronic hypertension, preeclampsia-eclampsia, preeclampsia superimposed chronic hypertension, and gestational hypertension (either transient hypertension of pregnancy or chronic gestational hypertension diagnosed in late part of pregnancy) [6]. The incidence of gestational hypertension was reported to be 6.3% in a 10-year study in a health district in Calgary, Canada (Walker et al., 2016). In a different study carried out in Nigeria, the incidence of gestational hypertension was 5.9% [1]. According to Saudan et al., about 15–25% of pregnant patients diagnosed and admitted for gestational hypertension go on to develop pre-eclampsia [2].

Proper diagnosis of GHTN can be very challenging, particularly if the pregnant woman is seen for the first time after about 20th week of pregnancy or if her blood pressure measurement was not recorded prior to 20 weeks of pregnancy. However, the presence of elevated blood pressure that was previously normal, negativity for proteinuria, and the absence of preeclampsia-eclampsia symptoms are the criteria that help with the diagnosis of GHTN and its differentiation from other hypertensive disorders of pregnancy. Other tests that must be performed in the differential diagnosis of gestational hypertension includes; spot urine PCR, full blood count (FBC), urea, creatinine, electrolytes, ultrasound assessment of foetal growth and amniotic fluid volume, and umbilical artery Doppler assessment [1]. Women undergo series of challenges as a result of gestational hypertension. GHTN is a major pregnancy complication that can result to preterm delivery, intrauterine growth restriction, perinatal death, antepartum bleeding, postpartum bleeding, abruptio placentae, fetal death, maternal mortality, morbidity and disability. Long-term health problems like kidney failure, nervous system disorders and chronic hypertension can also result from GHTN [8]. Recent studies have revealed that treating pregnancy-related hypertension does not affect the disease's course,

although it can lessen the frequency of hypertensive complication as well as the magnitude of neonatal complications [9].

During pregnancy a mother's body changes in many ways, and as her body changes so does her nutritional needs. Despite the fact that pregnant women require more energy, vitamins, and minerals, the relative rise in energy requirements is lower than the increases in other macronutrients and micronutrients. A healthy diet must therefore include foods that are nutrient-dense, which have larger proportions of macronutrients and micronutrients compared to calories. Fruits, vegetables, whole grains, beans, peas, reduced-fat dairy products, and lean meats are some examples of nutrient-dense foods. Healthy eating should be able to cover virtually all of a pregnant woman's increased dietary needs.

Excluding unsafe abortions, poor maternal nutrition is a major contributor to the growth, survival and development of neonates and infants. It is also the case for maternal morbidity and mortality, low birth weight (LBW), preterm delivery, and neonatal and infant survival [10]. Maternal nutrition important to arrive at optimum pregnancy outcomes. The term "pica" is defined as the frequent consumption of non-food items that is normally insatiable and results in compulsive consumption [11]. Pica is accurately classified as a syndrome connected to eating and is commonly described as the obsessive consumption of items that give no nourishment [12]. This definition captures a wide range of excessive and persistent intake of both nutritive and non-nutritive items with no regards for one's health but rather for one's own satisfaction or enjoyment. The condition is particularly associated with pregnancy and incidence varies differently across the world. Accordingly, pica may involve consuming things like ice or freezer frost, corn or laundry starch, dust, earth, soil, or clay, among a variety of other things [12]. Pica behaviour is typically seen in low income and less educated populations, but tradition, culture, and religion also have a significant impact on this habit. It can be harmful for both mother and developing baby and can cause growth retardation, preterm deliveries, and intra uterine death. The habit of eating non-nutritional things have been linked to some underlying nutritional deficiencies. The desire for soil is still seen in some African nations as a precursor to pregnancy and an indication of deficiency. Pica's aetiology, risk factors, and health effects are still poorly known on a global scale. More research is still required in this area because, although it is thought to be a treatment for the symptoms of early pregnancy, pica may also have negative health effects [9]. The true or actual prevalence of pica in any group is underreported since most patients are unwilling to admit this practise out of embarrassment or because some may feel it is normal, but more significantly because fewer healthcare professionals place attention on this unhealthy habit and inquire about it [13]. When pregnant women start to crave for soil, ice and the likes, their cravings for normal nutritional food is averted, this intake of non-nutritional substances leads to under nutrition. Maternal under nutrition can results in elevated risks for acute complications like low birth weight, preterm birth, intrauterine growth restriction (IUGR), prenatal and infant mortality and morbidity [14]. Another study revealed that pregnant mothers could suffer from lead poisoning, dental injuries, parasitic infections, hyperkalaemia intestinal obstructions and even constipation, if they take pica in excess [14]. Maternal nutrition is key to attaining good pregnancy outcomes. With this knowledge it is crucial to understand the health and developmental consequences associated with pica and its forms which leads to pica practices in pregnant women and also the respondent seek to establish an overview of the point prevalence of gestational hypertension among soon to be mothers attending the usual antenatal clinic in tertiary facilities.

Studies have shown that pica practice may lead to poor intake of required diet necessary for pregnancy and hence may lead to other issues like anaemia in pregnancy as well as gestational hypertension [15]. A study by [16] also showed a 4.5% prevalence of gestational hypertension among women that practice pica. It can be posited that consistent intake of these non-nutritive substances such as those of clay origin (e.g intake of calabash chalk also known as “Nzu” by the South-South people of Nigeria) which is known to have salt content, may predispose or act as a risk factor for having gestational hypertension. However, existing literatures that out rightly showcases the association between pica and onset of gestational hypertension are few.

Aim and Objectives

The aim of the study was to assess the pattern of pica practice and the prevalence of gestational hypertension among antenatal attendees in tertiary hospitals, in Rivers State, Nigeria.

The Specific objectives of the study are as follows

1. To assess the proportion of antenatal attendees practicing pica in tertiary hospitals in Rivers State, Nigeria.
2. To determine the prevalence of gestational hypertension based on records among antenatal attendees in tertiary hospitals in Rivers State, Nigeria.

Hypothesis

- 1) There is no significant association between socio demographic characteristics and the pica practices among antenatal attendees in tertiary hospital in Rivers State.
- 2) There is no significant association between obstetric history and pica practice among antenatal attendees in tertiary hospitals in Rivers State.

METHODOLOGY

The study is a descriptive cross-sectional study that was conducted over a period of 4-months at the antenatal clinics of two tertiary hospitals in Rivers State, Nigeria. The retrospective research approach was utilized to answer research question one on prevalence of gestational hypertension in the study settings for a period of 2017 – 2021.

The study population consisted of antenatal attendees of University of Port Harcourt Teaching Hospital and Rivers State University Teaching Hospital. It comprised of two population groups (previous antenatal attendees and present antenatal attendees). The previous attendee’s population included pregnant women that attended the antenatal clinics within the past five years (2017-2022) and this population was used to obtain information on the prevalence of gestational hypertension retrospectively. Pregnant women presently attending the clinic will be evaluated on their pica practices. The average daily attendance during antenatal clinics in these hospitals combined is about seventy (70) pregnant women per day, with a combined monthly attendance of about 2000 pregnant women.

A simple random sampling method was employed for this study. This study was a non-invasive questionnaire based study. Hence all data was obtained from the questionnaire which was administered to the 252 respondents after consent has been obtained, as well as from patients records available within the last five years (2017-2022). The study instrument was a self-administered questionnaire. The questionnaire was categorized into four sections (sections A through D) collecting data to answer research questions 2 – 4. The first section (section A) was

on sociodemographic characteristics of the respondents which included age, marital status, religion, level of education, ethnicity, occupation, average monthly income etc. The second section (Section B) consisted of obstetrics data such as gestational age, parity, gravidity etc. The third section (section C) contained information on hypertension history as well family history of hypertension. The fourth section (section D) was concerned with information on pica practices which included identification of the presence of pica, if present, forms of food consumed, severity of consumption of such non-nutritive foods, adverse effects and consequences noticed so far. Socioeconomic status of the respondents was obtained using Oyedeji Classification of Social class instrument. For research question 1 on prevalence of gestational hypertension, a proforma was developed that guided the retrospective collection of data from the medical records of pregnant women who received antenatal care from 2017-2021 in University of Port Harcourt Teaching Hospital and Rivers State University Teaching Hospital (see appendix III). The data obtained from the study was analysed using the Statistical Package for Social Sciences for Windows version 25.0 (SPSS). Summary of descriptive statistics was obtained for the quantitative variables like age and values expressed as mean \pm SD. Qualitative variables such as occupation, marital status, parity, gestational age and information on consumption of non-nutritive substances of the participants was entered into contingency tables and the various frequencies and proportions ascertained. Association between variables was obtained using suitable statistical tests of significance via independent sample t-test, ANOVA and Chi-square/Fisher's Exact. P value of < 0.05 was considered statistically significant. Bivariate analysis was employed to assess the effects of the above clinical data as predictors of gestational hypertension and pica practices and relevant predictors was fitted into logistic regression model to ascertain the significance of the relationship.

RESULTS AND DISCUSSION

4.1 Research and Analysis

Table 4.1 Sociodemographic variables of antenatal attendees in the study

Variables	Frequency (n=250)	Percentage
Age (Mean \pm SD)	32.64 \pm 4.62	Range (23-42)
Marital status		
Divorced/separated	19	7.6
Married	215	86.0
Single	16	6.4
Occupation		
Business	111	44.4
Civil servant	46	18.4
Professional	51	20.4
Student	25	10.0
Unemployed	17	6.8
Level of education		
Primary	3	1.2

Secondary	75	30.0
Tertiary	172	68.8
Religion		
Christianity	236	84.4
Islam	10	4.0
Others	4	1.6
Ethnicity		
Hausa	3	1.2
Igbo	121	48.4
Ikwere	35	14.0
Yoruba	27	10.8
Others	64	25.6

SD= Standard deviation

Table 4.2 Clinical and Obstetric characteristics of antenatal attendees in the study

Variables	Frequency (n=250)	Percentage
Gravidity		
G1	82	32.8
G2-3	118	47.2
G4-5	37	14.8
>G5	13	5.2
Parity		
Nulliparous	88	35.2
Para 1-4	147	58.8
>Para 4	15	6.0
Weight of previous babies		
<2.5kg	11	4.4
2.5-4kg	115	46.0
>4kg	40	16.0
Nil	84	33.6
Blood Pressure		
<140/90	216	86.4

>140/90	34	13.6
Diagnosed with gestational hypertension		
No	215	86.0
Yes	35	14.0
Family with gestational hypertension		
No	201	80.4
Yes	49	19.6

*G denotes gravidity

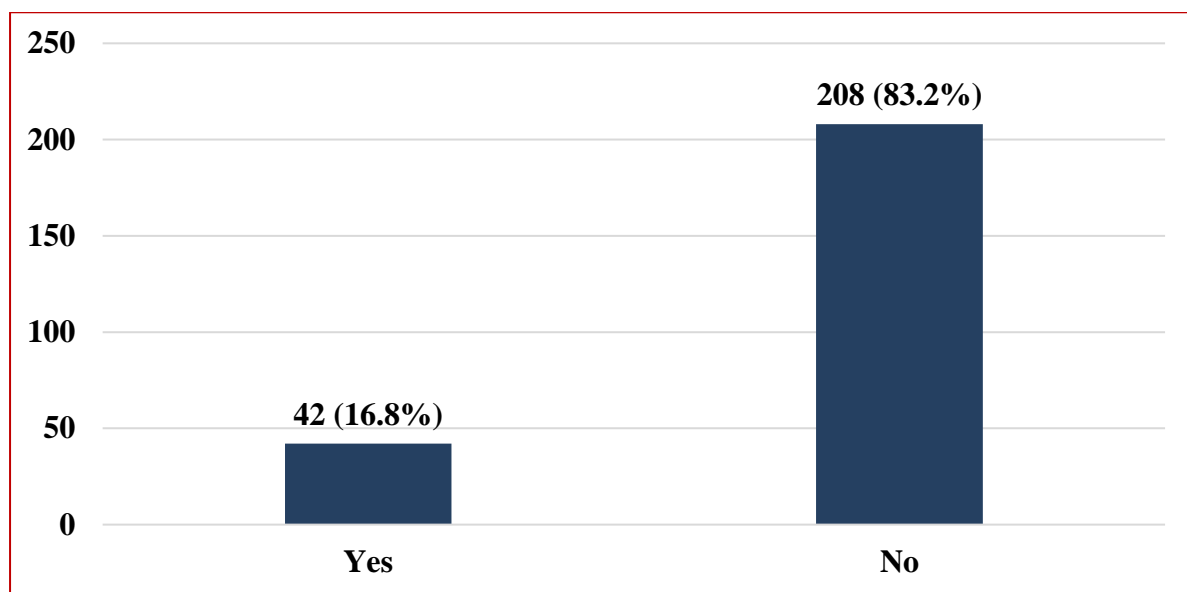


Fig 4.1 Retrospective prevalence of gestational hypertension among previous antenatal attendees

Table 4.3. Knowledge and prevalence of pica among antenatal attendees

Variables	Frequency (n=250)	Percentage
Knowledge of pica		
No	105	42.0
Yes	145	58.0
Prevalence of Pica		
No	171	68.4
Yes	79	31.6
Do you think pica is bad for child health		
I don't know	16	6.4
No	64	25.6
Yes	170	68.0
Complication from pica		

No	232	92.8
Yes	18	7.2

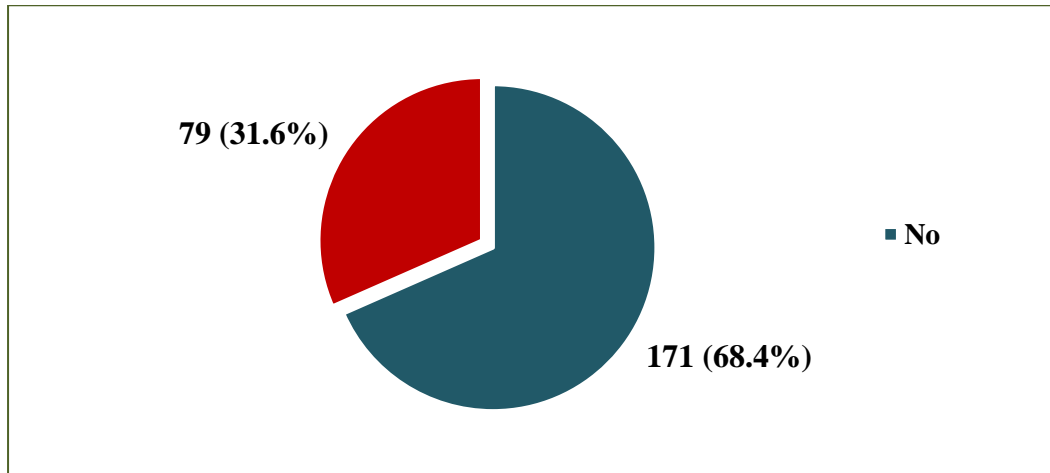


Fig 4.2 Prevalence of pica among antenatal attendees in the study

Table 4.6 Relationship between sociodemographic variables and pica practice

Variables	Pica (N=250)		Chi square	p-value
	No n(%)	Yes n(%)		
Age category				
23-33 years	112 (65.5)	38 (48.1)	6.813	0.009*
34-42 years	59 (34.5)	41 (51.9)		
Marital status				
Divorced/separated	6 (3.6)	13 (16.5)	13.532	0.001*
Married	155 (90.6)	60 (75.9)		
Single	10 (5.8)	6 (7.6)		
Occupation				
Business	83 (48.5)	28 (35.4)	23.806	0.0001*
Civil servant	33 (19.3)	13 (16.5)		
Professional	23 (13.5)	28 (35.4)		
Student	15 (8.8)	10 (12.7)		
Unemployed	17 (9.9)	0 (0.0)		
Level of Education				
Primary	3 (1.8)	0 (0.0)	5.759	0.058
Secondary	44 (25.7)	31 (39.2)		
Tertiary	124 (72.5)	48 (60.8)		
Religion				
Christianity	160 (93.6)	76 (96.2)	1.900	0.387
Islam	7 (4.1)	3 (3.8)		
Others	4 (2.3)	0 (0.0)		
Ethnicity				

Hausa	3 (1.8)	0 (0.0)	22.414	0.0001*
Igbo	86 (50.2)	35 (44.3)		
Ikwerre	26 (15.2)	9 (11.4)		
Others	48 (28.1)	16 (20.3)		
Yoruba	8 (4.7)	19 (24.0)		

Table 4.7 Relationship between Clinical and Obstetrics characteristics with pica practice

Variables	Pica (N=250)		Chi square	p-value
	No n(%)	Yes n(%)		
Gravidity				
>1	59 (34.4)	23 (29.1)	17.236	0.001*
G2-3	88 (51.5)	30 (38.0)		
G4-5	21 (12.3)	16 (20.3)		
>G5	3 (1.8)	10 (12.6)		
Parity				
Nulliparous	62 (36.3)	26 (32.9)	12.883	0.002*
Para 1-4	105 (61.4)	42 (53.2)		
>Para 4	4 (2.3)	11 (13.9)		
Birth weight of previous babies				
<2.5kg	11 (6.4)	0 (0.0)	5.652	0.130
2.5-4.0kg	75 (43.9)	40 (50.6)		
>4kg	27 (15.8)	13 (16.5)		
Nil	58 (33.9)	26 (32.9)		
Blood pressure				
Less than 140/90	155 (90.6)	61 (77.2)	8.292	0.004*
Greater than 140/90	16 (9.4)	18 (22.8)		
Diagnosed with GHTN				
No	158 (92.4)	57 (72.2)	18.396	0.0001*
Yes	13 (7.6)	22 (27.8)		
Family member with history of GHTN				
No	154 (90.1)	47 (59.5)	32.034	0.0001*
Yes	17 (9.9)	32 (40.5)		

*GHTN= Gestational Hypertension

Discussion

The study was carried out to ascertain the point prevalence of gestational hypertension among antenatal attendees in the two tertiary hospitals in Port Harcourt, Rivers State. It also ascertained the prevalence of pica, most common forms of pica, frequency and severity of pica among antenatal attendees Port Harcourt, Rivers State, indicating how it was affected by the sociodemographic variables of the study. As stated earlier, two hundred and fifty (250) antenatal attendees all within tertiary hospitals in the area of the study were recruited based on specific criteria listed above. The neglected issue of pica during pregnancy and how it affects

women has been increasing over the years especially in developing countries such as Nigeria. Hence this study attempts to bridge that information and action gap.

Descriptive summary of the results obtained from the study revealed a mean age of the participants of the study to be about 32.64 years, a value that could be explained by the multiparity of the Nigerian women as well as most of the women getting married late. About 86.0% of the women were married, 7.6% were separated or divorced and 6.4% were single mothers. This ratio is expected since Nigeria is a religious country and infidelity or pregnancy out of wedlock is highly frowned at and sometimes prohibited with severe consequences more especially on the female gender. With the ever increasing unemployment in the federation, most of the respondents in this study were mostly self-employed (44.4%). About 20.4% were professionals, 18.4% were civil servants, 10% were student and 6.8% were unemployed. It is important to note that some women categorized under unemployed were full time housewives and although not making any money of their own, enjoys maximally the money provided by their husbands. Education is important to everyone and results from table 4.1 reveals that 68.8% of the respondents had attained tertiary institution explaining their ease of participation in the study, 30.0% attained secondary education and 1.2% attained only primary education most likely due to financial constraints. Since the study was conducted in the Southern part of Nigeria which is a predominantly dominated by Christian population, about 84.4% of the responders are Christians, 4.0% were Islam and 1.6% did not identify with any of the listed religions which means they could either be traditionalist, atheists or belongs to other religions. Despite the study being conducted in Port Harcourt, the highest proportion of responders were of Igbo extraction, 14.0% were from Ikwere, 1.2% were from Hausa, 10.8% were from Yoruba and 25.6% were from other ethnic groups. The reason for including ethnicity was to have an insight on the relationship between ethnic groups and presence or severity of pica.

The results displayed on table 4.2 indicates clinical and obstetric characteristics of the respondents. About 47.2% of the respondents had been pregnant, in 32.8% of the women were primigravidas. About 14.8% of the respondents are gravida G4-5 and 5.2% had been pregnant more than five times. This explains the fact that the more they experience pregnancy and childbirth, the lesser the women needs to attend the antenatal clinics especially those with lower levels of formal education. The data on weight of previous babies for multigravida mothers indicated that 46.0% of their babies were within the normal weight range (2.5-4kg). About 4.4% of the babies were born underweight and 16.0% of previous babies were overweight. In the course of this discussion, the relationship between pica and weight of babies at birth was highlighted. The study was conducted in a normal antenatal clinic and it was seen that about 86.4% of the women had a current blood pressure of less than 140/90 mmHg mercury and only 14.0% had blood pressure above 140/90mmHg. The above cut off point was chosen because the notable increase in blood pressure significant for further investigations was 140mmHg for systolic blood pressure. Family history of gestational hypertension was positive in about 19.6% of the respondents. As was seen in figure 4.1, the retrospective prevalence of gestational hypertension among the study population was about 16.8%. Results from this study was similar to a study conducted in Belanguru, India, where a 13.9% prevalence was seen (Nath et al., 2021). The prevalence of gestational hypertension in this study was higher compared to a study conducted in South Western Nigeria study which showed a 7.2% prevalence and more in the older age group than the younger age group (Oladele et al., 2018) as well as in another Indian study where a prevalence of 7.4% was seen. In some previous studies it was listed that most common risk factors for gestational hypertension were multiple gestations, high parity, elderly

primigravida, kidney disease, polyhydramnios, obesity, high salt intake and stress with a 20.8% prevalence rate in the region (Obada et al., 2021).

Point prevalence of pica in this study is 31.6% (79 pregnant women) (table 4.3, figure 4.2). These findings are similar to a Kenyan study that noted 27.1% prevalence of pica. However, it is lower than what was recorded in a study in Mexico City where 44% was reported (Lo'pez et al., 2012). In Tamil Nadu India, prevalence of pica was 15%. As recorded in most of these studies, the aetiology of pica has been attributed to genetic factors, nutritional deficiencies, traditional customs, pregnancy complications, unwanted pregnancies, hormonal/biochemical imbalance as well as low socioeconomic status. Any of the above listed factors and more, may contribute to pica among the women in this study. Other than being directly involved in Pica, there were some responders that were aware and had good knowledge of pica and its endearing results. One hundred and forty-five (58.0%) women in the study had positive knowledge of pica even when not all were involved in it. The extensive knowledge may be due to first-hand experience from someone involved in pica.

Table 4.6 displays the relationship between the sociodemographic characteristics of the women in the study and pica. It was revealed that there was a statistically significant relationship between age and pica and this was seen more in the older age group. Similar deductions were also seen in another recent study by (Konlan et al., 2020). Again, there was significant relationship between marital status and pica. This could be as a result of the psychological component that comes along having a partner. It could be that there could be excess comfort for the married women which may lead to them having the feeling that they need to enjoy themselves with whatever they may want. A similar significant variable was occupation. A line of thought contrary to what was stated above shew that stress may also cause pica and hence women with professional occupation are much more likely to be mental as well as physical stress which they relieve by involving themselves in pica. Based on ethnicity, the Yoruba's were more involved in pica than any of the other tribes in the study, this was contrary to what was reported for the Hausa's as they almost did not have any relationship with pica. Education and religion did not show any relevant relationship with pica. Review of clinical and obstetric characteristics revealed a significant relationship between pica and gravidity and parity ($p < 0.01$). It was observed that those with first or second pregnancy are more prone to pica as the feeling may be intense which may lead to anxiety that will require adjustments and or management and they choose pica to relieve such anxiety. In this study, it was noticed that history of family member with involvement in pica may also be a risk factor for pica although it was not mentioned in the few studies that have been conducted. It is difficult to ascertain the actual flow of the relationship.

Conclusion

The pattern of pica practices which has been neglected in this region of the country has been ascertained in this study. Awareness has been created on pica practices and the possible complications highlighted. Gestational hypertension among antenatal attendees has been ascertained in the area of the study. Possible measures to reduce complications such as pre-eclampsia has also been discussed in this study.

Recommendations

At the end of the study, the following were recommended

1. Pregnant women should be involved in every lifestyle that will not predispose them to gestational hypertension such as healthy eating habit, reduced salt intake, drinking enough water, practicing exercises during pregnancy, getting enough rest and avoiding much intake of cholesterol rich diet.
2. Health education should be intensified in antenatal clinics on danger or complication of pica practices to the mothers or their unborn child.
3. Enlightenment campaigns and seminars should be held in rural areas on the complications of pica practices to a pregnant woman.
4. Emphasis on the component of pica substances consumed such as clay (Nzu), lead etc and its complications should be documented within facilities as posters.
5. Government should encourage women education and empowerment to improve their socio-economic standard.
6. Further studies should include factors responsible for pica practices and the relationship between pica practice and gestational hypertension.

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