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Pica Practice and Associated Factors among Pregnant Women Receiving Antenatal Care in Obio Cottage Hospital, Port Harcourt, Rivers State

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Background: PICA is a psychological disorder characterized by an appetite for substances that are largely non-nutritive, such as ice, paper, soil etc. Pica practice in pregnancy has persisted through the years over time and in some societies considered normal, pica prevalence in Nigeria has been recorded to be 78%, 53%, 13% and 50% respectively, conducted in the East, North, and Western parts of Nigeria. Pica practices play major roles in maternal and fetal nutrition as whatever is ingested will undoubtedly have impacts, positive or negative on health. The aim of this study was to determine the prevalence of pica practice among pregnant women receiving antenatal care in Obio Cottage Hospital, Rumuobiakani, Port Harcourt, Nigeria.
Methodology: The study employed a descriptive, cross-sectional design on a sample of 420 pregnant who were in their second and third trimester that were selected using a convenience sampling method. The study used both quantitative and qualitative data. Qualitative data was extracted using an interview guide and quantitative data was collected using an interviewer-administered questionnaire. The statistical package for Social Sciences (SPSS) version 20 was used for data analysis.

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Results: The findings of the study revealed a relatively high prevalence (62.86%) of pica practice among pregnant women. On the pattern of pica practice, clay was the commonest (50%) followed by nail biting (7.58%), sour food (6.06%) and plant roots/seeds/leaves (4.11%) among others. About 80.31% of those that practiced pica consumed the preferred items almost every day with over 94% taking the item 2 or more times each day. The main reasons for consumption are pleasant taste/smell (40.95%), craving (35.71%), control of nausea/hyperemesis gravidarum (14.52%) and sex (male or female) of fetus (12.62%) among several.

On the perceived effect, 30.71% of respondents think it has positive effect on pregnancy which are mainly cleansing the baby's body (69.77%), nourishes the baby (13.18%) and calms the baby (10.08%). Additionally, 40.95% felt pica has positive effects on the health of the woman which are majorly control of nausea (47.09%), cleansing of the system (14.53%) energy (11.63%). The main perceived negative effect on health is anaemia (28.0%).

On the factors associated with pica practice, having secondary education or less (OR= 1.7; 95% CI: 1.11-2.62; p = 0.02), perceived positive effect on health (OR = 134.36; 95% CI: 16.45-5812.12; p =0.000), perceived positive effect on pregnancy (OR = 128; 95% CI: 0.82-10093.90; p = 0.006) and being anaemic (OR = 4.19; 95% CI: 2.70-6.53; p =0.000).

Conclusion: From the findings, it is evident that majority of pregnant women practice pica. The patterns practiced were clay consumption, followed by finger nail biting, consumption of sour foods and fruits, plant roots, seeds and leaves. To discourage the practice, there is the need to improve female education, correct misconceptions on the positive effects of the practice and creation of awareness on the negative effects of the practice particularly anemia.

Keywords: PICA; PICA practices; phagias; eating disorders in pregnancy.

1. INTRODUCTION

Maternal nutrition in pregnancy is important to the reproductive health of the pregnant women as the kind of food consumed during the period of pregnancy affects the outcome of pregnancy [1,2]. The term pica has been portrayed as a dietary issue described as the constant ingestion of non-nutritive substances for a time of no less than one month at an age in which this conduct is wrong [3].

Evidence from studies carried out in different areas of the world has established pica practices during pregnancy to be a nearly worldwide phenomenon [4,5] and the nature of substances ingested to vary in type and extent in different parts of the world. Pica prevalence varies in different areas of study usually due to its different definitions and the reluctance to disclose indulgence in these practices. Globally, pica practice is reported to be most prevalent in Africa at 44.8%, followed by North and South America with 23% prevalence and Eurasia with 17.5% [6]. Rates of pica among pregnant women in developing countries, however, can be much higher, with estimates of 63.7% and 74.0% reported for two different African populations [7,8]. In Nigeria, pica practice has different records of prevalence, 50% by Sule and Madugu in Zaria [5].

Pica practice has an intricate etiology and is proposed to have numerous contributory factors, for example, social, dietary, financial, physiologic and most likely mental variables. Various nutritional theories suggest nutritional deficiencies as a cause of pica practice as seen with animal nutrition and food preferences but there is no known study to confirm this link between nutritional deficiencies and behaviour in humans [9]. The diverse examples of ingestion are for the most part known as "phagias, for example, geophagia (eating soil, dirt, sand or chalk; lithophagia: eating stone; pagophagia: eating ice, frost from freezers or cooler ices; plumbophagia: eating lead; amylophagia: eating clothing starch; coprophagia: eating dung and different various things) [10]. The substances reported to be more commonly ingested include clay, soil, sand, ice blocks, freezer frosts, laundry starch, and corn starch. Other reported pica substances include ashes, stones, cigarette butts, pebbles, soap, baking powder, baby powder, raw potatoes, baking soda, lead, burnt match heads, vinyl gloves, latex gloves, faeces, plastic, pencil erasers, hair, finger nails, pieces of papers, chalk, paint chips, charcoal, plaster, coal, plastic bulbs, coffee grounds, soot, needles, coins, screws, thumbtacks, glue, buttons, toothpaste, and cloth [10].

In Nigeria, the local white clay or chalk is usually most consumed, commonly called 'nzu,' 'toru,'

'ndom' or 'do' by various ethnicities. It has been said to contain kaolin, layered silicate soft clay usually white but occasionally red, bluish or brown. This clay is perceived to have benefits such as induction and acceleration of blood clotting, it is also believed capable to soothe an upset stomach [11] and it is likewise believed capable to calm an upset stomach [12] and stifle hunger [13,14,15]. Others are of the opinion that this phagia gives energy, strength and a feeling of satiety in the absence of food or in the case of aversion to food. Some believe that different pica practices protect their babies from poisons and/or 'attacks,' prevents prolonged labour and abates morning sickness [16]. Going by the above, it apparently seems that no substance is far from the imagination of pregnant women with pica affinity.

Pica is of public health interest because of its potential health consequences [17,18]. It could be beneficial in terms of protecting against harmful pathogens and toxins; quelling nausea, vomiting and diarrhoea; or contributing beneficial nutrients. Pica may also be harmful, by reducing the bioavailability of beneficial nutrients, introducing toxic substances, or by acting as a vector for soil-transmitted helminthic infections. Furthermore, it is of public health interest because it is highly prevalent among the most biologically vulnerable populations: pregnant women and children [17]. Many pregnant women have been found to develop strong and bizarre cravings for some items/substances, and repeatedly ingest these items (that most times are not culturally accepted food substances) during pregnancy.

Pica practice in pregnant women is a health issue which is of a great concern since pregnant women must be able to practice good eating habits by consuming highly nutritious foods that will provide needed nutrients to both fetus and mother. Despite this, the habit of consuming non-food items among pregnant women is very common and continues to exist in several countries. The practice of pica in pregnancy has reported a contrast of prevalence ranging from as low as 8% to as high as 68% in various studies [19]. In sub-Saharan Africa, pica practice has been reported in several countries including Tanzania, Sierra Leone, Ghana, and Nigeria. Pica prevalence in some African countries such as Kenya reported to be as high as 74.0% [7]. In Ghana, some studies were conducted as regards to pica such as that conducted by [20] in Accra who found that 57% of the respondents practiced pica. The case is not different in Nigeria, where 50% of pregnant women in were found to be practicing pica in a study conducted in Northern Nigeria [5].

Pica practice can be prevented, treated or curtailed in varying circumstances therefore; information gathered from this study based on the objectives will contribute to the information database of pica in pregnant women in Nigeria and Rivers State. It will reveal the prevalence of pica practice, the patterns of the practice and the factors associated with the practice of pica. Also, the study will help inform health workers on the prevalence of pica in pregnant women under their care and prompt them to assist pregnant women in making informed choices on foods they consume during pregnancy. This study would also help inform policy makers in developing/buttressing policies, projects and programs aimed at reducing and eliminating pica practice among pregnant women in Nigeria. Therefore, this study aimed at determining the prevalence of pica practice and associated factors among pregnant women utilizing antenatal care in Obio Cottage Hospital, Port Harcourt.

2. METHODOLOGY

This study was conducted in Port Harcourt which is the largest city in Rivers State and the capital of the state and the study location is Obio Cottage Hospital, Rumuobiokani, Port Harcourt. It is berthed on the co-ordinates 4°49'27" N 7°2'1" E. The old Port Harcourt city was founded in 1912 and incorporated in 1913; it is now an expanse of three different local government areas- Port Harcourt city, Obio-Akpor and Eleme local government areas. Port Harcourt has an estimated population of 1,865,000 inhabitants. It is an area steaming with various economic activities due to its location, resources and opportunities, no wonder its mixed, vast population. The city of Port Harcourt has an abundance of educational and health facilities, multinational firms, private and public industries, refineries and ports. It also has ample agro-resources from surrounding agricultural settlements; Port Harcourt has some recreational places to boost culture and tourism [21].

Participants for this study were pregnant women utilizing antenatal services at Obio Cottage Hospital, Port Harcourt, Nigeria within the time frame of this study.

2.1 Study Population

Pregnant women that utilized antenatal services in Obio Cottage Hospital, Port Harcourt within the time frame of this study served as the population for this study.

2.2 Inclusion Criteria

The following criteria qualified individuals to participate in this study:

a. Participant must be pregnant
b. Pregnancy must be from gestational age of 6 months and above
c. Participant must have registered for antenatal care at the health facility

2.3 Exclusion Criteria

a. Pregnant women with complications or critically ill.
b. Pregnant women who are registered in the health facility but were not present at the facility during recruitment or selection.

2.4 Sample Size Determination

Sample size was obtained using the descriptive studies sample size determination formula, given as n= $\frac{z^2 p.q}{d^2}$ by Bluman [22] where, n= the desired sample size, z=standard normal deviate which corresponds to 95% confidence interval, d= the desired degree of accuracy, p= the estimated percentage of the attribute in the population, here the prevalence of Pica in pregnant women in Nigeria- 50% [(5)] and q= 1-p. Using 5% margin of error at 95% confidence level, the sample size obtained was 420 after considering 10% non-response rate.

2.5 Sampling Methods

The city of Port Harcourt has an abundance of educational and health facilities, multinational firms, private and public industries, refineries and ports. It also has ample agro-resources from surrounding agricultural settlements; Port Harcourt has some recreational places to boost culture and tourism [21]. Of this number, all consenting pregnant women within the stipulation of the inclusion criteria were recruited for the study until the sample size of 420 was gotten. For subjective evaluation, a representative of the aggregate sample estimate was utilized comprising of 15 pregnant women.

2.6 Study Instrument

The study instruments employed for this study were a semi-structured interviewer-administered questionnaire and an interviewer guide. The semi-structured, interviewer-administered questionnaire was used to capture quantitative data and an interviewer-guide was used to obtain qualitative data via in-depth interview. The questionnaire comprised of four sections;

Section A containing Socio-demographic information: This section features questions that helped to illicit responses concerning the age, occupation, religion, tribe, education status and area of residence. These features are collectively called socio-demographic characteristics.

Section B containing Family history and parity statuses: Questions that concern the respondent's family experiences with respect to pica practices were asked. Also in this section, the respondent's history of child bearing (parity) was obtained.

Section C containing Pica Practices among respondents: All the questions that were necessary to be able to surmise that a respondent knows what pica is and whether or not she practices pica were asked. This also includes questions that concerned the type of pica practiced by respondent.

Section D showing the recorded Haemoglobin levels of participants.

The interviewer guide contained open-ended questions; it was employed to elicit the expression of respondents concerning their aversions, experiences, patterns of indulgence as regards pica practices. The responses were recorded and analyzed using thematic response process.

2.7 Data Management

All returned questionnaires were checked for adequacy of responses by the respondents. All variables in the four sections of the questionnaire were entered in numeric formats and coded in Microsoft Excel before exported to the Statistical Package for Social Science (SPSS) version 20 software for data analysis. Additionally, WinPepi Version 11.43, another statistical software was used to double-check and confirm the derived results. Descriptive summary of the qualitative data provided were presented in frequencies and percentages while those of the quantitative form were presented in means and standard

deviations. Inferential statistics included were Test of significance (using Pearson's Chi-Square and Fisher's Exact Test) and Association (using Logistic Regression Model). However, some continuous variables like age was transformed (categorized) and presented in frequency and percentage. Statistical significance was set as ≤ 0.05 at 95% confidence interval. Qualitative data was analyzed using thematic response.

3. RESULTS

3.1 Socio-Demographic Characteristics of Respondents

Table 1 shows that 208 (49.5%) of the respondents were within the ages of 30-39 years, majority 385 (91.7%) of the respondents were married and 402 (95.71%) respondents were Christians.

Information concerning the distribution of educational status, occupation and ethnicity of respondents showed that 269 (64.0%) of the respondents had tertiary education, and 151 (36.0%) of the respondents were business inclined. Additionally, 188 (44.8%) were of Igbo origin, while only 17 (4.0%) of the respondents were from Yoruba ethnic groups.

3.2 Obstetric History of Respondents

Information concerning the child-bearing history of respondents showed that 199 (47.38) of the respondents were in their second trimester while 221(52.62%) were in their third trimester. Additionally, the table shows that 115 (27.38%) were primigravida and 200 (47.62%) had had 2 or more previous pregnancies. Also, 125 (29.76%) of the respondents had one child while 134 (31.90%) had 2 or more children.

3.3 Pica Practice and Pattern among Respondents

Table 2 shows that 264(62.86%) of the respondents practiced pica in their present pregnancy, and the most consumed substance is clay which is consumed by 132(50%), followed by fingernails 20(7.58%). About 109(41.29%) pica practicing women reported to consume their favored item daily The table further reveals that on a consuming day, most pica practitioners consume the substance 2-3 times/day 169(64.02%) and majority of the pica practitioners have been doing so for a period of 2-3 months 114(43.18%).

Concerning PICA practices in pregnancy, all the 305 women who have been previously pregnant, only 78(25.57%) of them practiced pica when not pregnant. Also, 25(32.05%) of them reported that the urge came just before or during their menses and 19.23% of them consumed the favored item daily while 32.05% of them consumed the pica substances fortnightly.

Reasons for Pica practices and effects on mothers among respondents showed that 172(40.95%) of pica practitioners did so because of the pleasant taste, smell or texture of their favored item while 150 (35.71%) reported to indulge because of un-ignorable cravings; Majority of the respondents (53.10%) were unaware of any effects of pica practice on their health while 172(40.95%) perceived pica to have positive effects and 25 (5.95%) felt it has negative effect. For the positive effect, 81(47.09%) of them used pica to control of nausea and spitting; while 7(28%) of them perceived the negative effect to be mainly anaemia.

3.4 Effect of Pica Practice on Mothers and Fetuses

Table 3 shows that with respect to the effects of pica practice, majority 289(68.81%) of respondents were unaware of any effects on pregnancy, 129(30.71%) believed it had positive effects; 90(69.77%) of them believed that pica substances cleanse the baby's body. 2(0.48%) participants believed pica practices had negative effects on the pregnancy.

Table 4 shows that 114 (27.14%) of the respondents had haemoglobin concentration within the range of 7-10g/dl and 286 (68.10%) had 10.1-12g/dl while 20 (4.76%) had ≥12.1g/dl. The table also shows that from the cut off value of 11g/dl, 236 (56.19%) of the respondents were anaemic while 184 (43.81%) were not anaemic. It further reveals that of those who were anaemic, 180 (76.27%) had mild anaemia while 56 (23.73%) had moderate anaemia.

3.5 Factors Associated with Pica Practice

Relationship between socio-demographic characteristics of respondents and PICA practice showed that there is a statistically significant association between respondent's educational status and pica practices. Respondents with a secondary level of education or lower have a higher proportion of pica practices compared to

Table 1. Distribution of age, marital status and religion of respondents

Characteristics	Frequency (n=420)	Percentage (%)
Age group (years)		
20-29	197	46.90
30-39	208	49.52
40-49	15	3.57
Mean Age = 30.23±4.62 years		
Marital status		
Married	385	91.67
Cohabiting	20	4.76
Single	8	1.90
Divorced	7	1.67
Religion		
Christianity	402	95.71
Islam	10	2.38
Traditional worship	8	1.90

Table 2. Pica practices among respondents

Characteristics	Frequency (n=420)	Percentage (%)
Practiced pica in current pregnancy		
Yes	264	62.86
No	156	37.14
Items craved (n = 264; *Multiple response*)		
Clay	132	50.00
Nails biting and chewing	20	7.58
Sour food/fruits	16	6.06
Plant roots, seeds and leaves	14	4.11
Carbonated drinks	13	3.81
Ice block	13	3.81
Kola nut	12	3.52
Raw foods (garri, fufu, noodles, grain)	12	3.52
Spices/spices	17	4.98
Toothpaste	5	1.47
Others	87	25.5
Frequency of consumption (n=264)		
Daily	109	41.29
1-6 days/week	103	39.02
Once weekly	39	14.77
Once on more than 7 days	13	4.92
Occurrence per day (n=264)		
1 time	15	5.68
2-3 times	169	64.02
4-5 times	58	21.97
≥ 6 times	22	8.33
Duration of pica in current pregnancy(n=264)		
2-3 months	114	43.18
4-5 months	103	39.02
≥ 6 months	47	17.80
Mean duration = 4*.15±1.45 months*		
Pica in previous pregnancy (n=305)		
Yes	87	28.52
No	218	71.48

Table 3. Perceived effect of pica practices on the fetus

Characteristics	Frequency (n=420)	Percentage (%)
Perceived effect of pica on pregnancy		
Positive	129	30.71
Negative	2	0.48
Unknown	289	68.81
Positive benefits of pica on pregnancy (n=129)		
Cleanses baby's body	90	69.77
Keeps baby nourished and strong	17	13.18
Calms baby	13	10.08
Controls baby's weight	6	4.65
Boosts breast milk	3	2.33
Negatives of pica on pregnancy (n=2)		
Makes baby too big to push	1	50.00
Unhealthy for baby	1	50.00

Table 4. Haemoglobin concentration and anemic status of respondents

Characteristics	Frequency (n=420)	Percentage (%)
Haemoglobin concentration (g/dl)		
7-10g/dl	114	27.14
10.1-12g/dl	286	68.10
≥12.1g/dl	20	4.76
Mean Hb concentration = 10*.70± 0.88 g/dl*		
Anaemia		
Yes (Hb concentration of <11g/dl)	236	56.19
No (Hb concentration of ≥11g/dl)	184	43.81
Degree of anaemia level		
Anaemia category (n=236)		
Mild (Hb concentration 10.1-11g/dl)	180	76.27
Moderate (Hb concentration of 7.0-10g/dl)	56	23.73

those with tertiary level of education (70.67% vs. 58.52%; p=0.02). Similarly, logistic regression analysis showed that respondents with a secondary level of education or lower were 1.7 times more likely to be engaged in pica practices compared to respondents in tertiary level of education (OR=1.7; p=0.02; 95%CI: 1.11-2.62). There is however, no statistically significant relationship between age, marital status and occupation of the respondents with pica practice (p > 0.05).

Relationship between pregnancy history of respondents and PICA practice showed that there is no statistically significant relationship between, stage of pregnancy, number of previous pregnancies and number of children and practice of pica (p > 0.05).

Relationship between Pica status and perceived effects of pica showed that there is a statistically significant relationship between the perceived health effects of pica on the mothers and the perceived effects on the pregnancy and the practice of pica. Among those that practice pica, 99.42% perceived it to have a positive health effect while 56% perceived that it has a negative health effect (p = 0.000). Also 99.22% of the pica practitioners perceived that it has a positive effect on the pregnancy compared to 50% who felt that it has a negative effect on the pregnancy (p = 0.006). Additionally, logistic regression shows that those who perceive that pica practice has a positive health effect on the mothers are 134 times more likely to practice pica compared with those who perceive that pica practice has a negative effect on health (OR=134.36; 95% CI: 16.45-5812.12).

Furthermore, respondents who perceived that pica practice has a positive effect on the pregnancy are 128 times at odds of practicing pica compared with those who have negative perception of pica practice on the pregnancy (OR=128; 95% CI: 0.82-10093.90).

Relationship between anaemic status and PICA practice showed that there is a statistically significant relationship between the occurrence of anaemia and the practice of pica (p= 0.000). Among those who practice pica, 77.12% were anaemic compared to 22.88% who were anaemic among those who did not practice pica. Additionally, logistic regression showed that pica practitioners are about 4 times more likely to be anaemic compared with non-pica practitioners (OR: 4.19; 95% CI: 2.70-6.53).

Relationship between Mean Haemoglobin levels and Pica Practice showed that there is a statistically significant relationship between pica practice and the mean haemoglobin levels of respondents (p=0.001), those who practiced pica had significantly lower mean haemoglobin concentrations as compared to those who do not practice pica (10.45 ± 0.79g/dl for pica practitioners compared to 11.12±0.89g/dl for non-pica practitioners).

3.6 Qualitative Data Summary

Qualitative data was derived from an in-depth interview of 15 women. The participants responded to interview questions guided by an interview guide and their responses were grouped into themes– (a) Low awareness of Pica (b) Cravings pregnant women experience (c) Reasons for Pica practice (d) Perceived risks.

3.7 Low Awareness of Pica

All fifteen participants recorded were unaware of the term 'Pica' but upon my explanation, they all concurred to their understanding of the term.

For example, a participant said, *"I know that such things happen (cravings in pregnancy) but I did not experience any eating disorders or cravings, I eat normally. I don't crave for anything."*

Another participant said, *"I know many women experience this but I don't crave for anything, particularly not 'nzu' because I feel it isn't good for me or the baby. It is dirt and I heard it dries up the blood."*

3.8 Cravings Pregnant Women Experience

The participants acknowledged and spoke about certain cravings women experienced in pregnancy. Four participants said they did not experience any cravings whatsoever while the eleven others said they experienced cravings of different forms.

For example, one participant said *"I crave for 'nzu' (clay) and peppery foods from the third month."*

Another participant said, *"I experience cravings, especially at night for anything sweet. Sometimes I chew raw Quaker oats if I see."*

3.9 Reasons for Pica Practice

The various participants who experienced cravings and practiced gave various reasons for their indulgence. Their reasons were grouped under the sub-themes (i) Satisfaction (ii) Curb nausea/spitting (c) Demands of the baby.

Most participants who experienced these cravings and indulged in them reported to experience a sense of satisfaction after the consumption of their favoured food item/substance.

A participant said, *"After, I have taken it as the urge comes, I feel relaxed and satisfied all over."*

Another participant said*, "I like 'eba' a lot because that is what I always want and it satisfies me o!" saying nothing satisfies her like it even if she eats anything else, she feels light".*

3.10 Perceived Risks

A majority of the participants felt there was no risk attached to their pica practice but a few others said there were. The results were grouped into sub-themes (i) No risk (ii) Anaemia (iii) Raised sugar levels (iv) Gastrointestinal disturbances.

A participant who reported to favour plain rice as many times as she felt hungry said, *"I like as it is hot without aroma or spices, it is healthy for me, baby and gives me energy. But I time myself so I don't eat too much to avoid problem."*

Another participant said, *"I like mineral (soft drinks) but I check myself because too much of everything is bad so that the baby will not have too much sugar."*

Meanwhile, other participants reported that they felt there was no risk attached to their practice.

4. DISCUSSION

Maternal nutrition in pregnancy is crucial for maternal health, pregnancy outcomes and even the child's health and development in infancy. Pica is a behavioural and dietary disorder where non-nutritive substances or a nutritive substance is habitually craved for and consumed [3].

4.1 Prevalence of Pica among Respondents

This study revealed that there was a high prevalence of pica practice with 62.86% of the study population practicing pica. This is similar to the findings by Njiru et al in Tanzania who reported pica prevalence to be 63.7% among pregnant women attending antenatal clinic [23] and Koryo-Dabrah et al who recorded pica prevalence in Accra, Ghana to be 57% [20]. Similarly, Ogallo at PCEA Kikuyu Hospital in Nairobi, Kenya recorded a prevalence of 56.8% among pregnant women using antenatal services at the hospital [24] while Ekwenchi et al on pica awareness and practice in Anambra state also reported pica prevalence of 53% among pregnant women [25]. Highly contrasting to the findings of this study is the report of Hommey in Ghana who found a high prevalence of pica practice (83.6%) [26] while Izugbara recorded in his findings a 78.3% prevalence of pica practice among pregnant and lactating Ngwa women of South-Eastern Nigeria [27].

4.2 Patterns of Pica Practice

The findings of this study revealed that, most of the participants consumed clay (134, 50%), followed by fingernails (20, 7.58%), sour foods and fruits (16, 6.06%), plant roots, seeds and leaves (14, 4.11%) as well as ice block and carbonated soft drinks (13, 3.81%). The qualitative assessment of this study also revealed that clay was the most commonly consumed and favoured pica substance followed by soft drinks and sour foods. Similar to the findings of this study, Nwafor reported pica practice at Mecklenburg, South Africa to be majorly clay/soil eating (85%) which corroborates the findings of this study though there is a proportional difference [28]. Tayle et al found that 28.5% of the 48% pica prevalent population practiced geophagia (clay-eating) [29]. Ogallo observed pica practice among Kenyan women in Nairobi and discovered that majority consumed soft stones and clay (52.4%), followed by charcoal (16.7%), ice cubes (14.3%), paint chips (9.5%) and toothpaste (7.1%) [24]. Hommey who undertook a study in Ghana, reported pagophagia (61.52%) to be the commonest form of pica, followed by soil/clay eating (52.12%) and lastly charcoal (21.52%) [26] which is dissimilar to this study just like Mensah et al who recorded pagophagia (ice block and frost eating) as the most predominant pica practice among women (41%), followed by geophagia (eating soil/clay) (29.79%) and while tricophagia (chewing hair) was reported the least (3.7%) [30].

4.3 Factors Associated with Pica Practice

The findings of this study revealed that most participants indulged in their pica practice due to reasons such as the pleasant taste, smell or texture of the item (40.95%), un-ignorable cravings (35.71%), for controlling nausea, sour mouth and spitting (14.52%), due to the sex of the fetus (12.62%), acceptable culture (8.33%), boredom (7.14%), due to the substance having an attractive look (6.67%) and the least, due to inadequate feeding (0.95%); qualitatively, the reasons generated for pica consumption were for satisfaction of an urge, the demands of the baby, to curb nausea and excessive spitting (especially in some public places where random spitting would make them feel embarrassed). These findings are in concordance with that of Tayle who reported that pica practice was widespread in Africa and associated with trado-medicine, ceremonial and spiritual behaviours, hunger, cultural and folk activities and norms [31].

The findings of this study revealed that there was a statistically significant relationship between respondents' educational level and pica practices. Those with secondary education and lower had higher proportions of pica practice compared to those with tertiary education (70.67% vs 58.52%) Logistic regression showed that respondents with secondary education or less were 1.7 times more likely to practice pica than those with tertiary education (OR=1.7; 95%CI: 1.11-2.62; p=0.02). This finding is similar to that of Hommey who reported in her study among pregnant women in Ghana that there was a statistically significant association between education and pica practice (p=0.045) [32]; likewise, the findings of Oni and Tukur with p = 0.02 [33].

4.4 Perceived Health Effects of Pica Practice

The findings of this study disclosed that majority of the respondents were unaware of any effects

pica had on pregnancy (289; 68.81%) while 129 (30.71%) believed it had positive effects and a scant few 2 (0.48%) believed it had negative effects. Also, 172 (40.95%) believed pica practice had positive effects on their health; 223 (53.10%) were unaware of any effects altogether while 25 (5.95%) believed it had negative effects on their health such as anaemia, increased bleeding, weight gain, heart burn, bowel irritations, infections, chaffed lips, spontaneous abortions and increased sugar levels. Qualitatively, respondents also reported perceived effects of pica practice to include anaemia, high sugar levels and gastrointestinal disturbances even though a few were still unaware of any effects of the practice. This is similar to the documentation of Hertz [34] and Burja-Aburto et al. [35] as cited in Rothenberg et al. [36] that pica practice can increase the risk of spontaneous abortion, weight gain and increased sugar levels. The report of Elgali et al also resonates with the findings of this study that pica practice can result in anaemia, usually iron-deficiency anaemia [37]. The work of Ogallo [24] is in tandem with the findings of this study that pica practice could lead to infections (especially parasitic infections), constipation and dental injuries.

4.5 Relationship between Pica Practice and Perceived Effects

The results of this study showed that there was a statistically significant relationship between perceived health effects of pica on the mothers as well as perceived health effects of pica on the pregnancy and the practice of pica. About 40.95% of those who indulged perceived it to have a positive effect and 5.95% perceived it to have negative effects on them while 53.10% knew no effects. Likewise, 30.71% of those who practiced believed it to have positive effects on the pregnancy, while 68.81% of practitioners knew of no effects at all. Logistic regression showed that those who perceived that pica practice has a positive health effect on them are 134 times more likely to practice pica compared with those who perceive that pica practice has a negative effect on health (OR=134.36; 95% CI: 16.45-5812.12; p= 0.000). Respondents who perceived that pica practice has a positive effect on the pregnancy are 128 times at odds of practicing pica compared to those who had negative perception of pica practice on the pregnancy (OR=128; 95% CI: 0.82-10,093.90; p = 0.006).

5. CONCLUSION

Pregnant women are a vulnerable group and have higher nutritional demands for their health and well-being as well as that of their foetuses developing in utero. Their physiological and psychological demands alter a lot of things therefore they need utmost care and many pregnant women due to these changes or socio-cultural influence tend to consume non-nutritive substances. This has been observed not just in Nigeria but in other countries where people are unaware of the dilemma of pica practice. This study of pica practice and associated factors among pregnant women using antenatal services at Obio Cottage Hospital, Rumuobiakani, Port Harcourt revealed a pica prevalence of 62.86%. Therefore, disclosing what pica is, the pattern of its practice, the importance of its practice in pregnancy and its overall health effects is noteworthy for all women particularly those of child-bearing age to know the health implications of its practice.

6. RECOMMENDATIONS

From the afore-mentioned research findings of this study, it will be considerate to take up some action to alleviate the practice of pica and abate its effects on health such as:

a. The current policy on universal education particularly the girl child should be effectively implemented by all tiers of government so as to empower women to seek information about health issues.
b. The government and partnering NGOs should undertake awareness campaigns in rural and urban areas in collaboration with the mass media and entertainment industry on the dangers of pica practice.
c. Health care providers particularly those involved in the provision of maternal and child services should counsel pregnant women and mothers on the negative health effects of pica practic
d. Health care providers should during clinical encounters with pregnant women ask their clients about their involvement or preference for pica practice and discourage them from doing so.
e. Counselling and psychotherapy with little or no criticism should be offered to aid women with strong habitual consumption of pica substances by health counselors in various health centres and other facilities providing maternal health services.

f. Continuous nutritional advice, support and follow-up for pica indulgent by health workers and family members.

CONSENT

Informed consent was sought from the research participants.

ETHICAL APPROVAL

Ethical clearance for the study was obtained from the Research and Ethics Committee of the University of Port Harcourt. Operational consent was obtained from the Chief Medical Director and Head of Quality Assurance of the facility

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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