

Prevalence of Pica Behaviour among Pregnant Women in the Bibiani-Anhwiaso Bekwai district in the Western Region of Ghana

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Abstract: Some pregnant women crave for non-food items with little or no nutritional value. This is called pica. The purpose of this study was to find the prevalence of pica behaviour among pregnant women residing in rural and urban environs of Bibiani-AnhwiasoBekwai District in the Western Region of Ghana and to evaluate the possible medical risk associated with the pica practices. A total of 400 pregnant women who were receiving antenatal care at two health centres, Divine Love hospital and Bibiani government hospital were interviewed using a questionnaire. Information on maternal haemoglobin levels, blood pressures as well as available birth weights of babies of the pregnant women were recorded based on their medical records. The prevalence of pica in the total population studied was 30.25% (n= 121) with a prevalence of 63.64% (n=77) in the rural group and 36.36% (n = 44) in the urban group. The ingestion of white clay (61.16%), red clay (16.53%) and ice (8.26%) were high among the pregnant women. White clay (58.44%, n=45) was the common pica item among the rural group and ice (20.45%, n=9) recorded the highest in the urban group. Haemoglobin levels of pregnant women practising pica were lower than the non-pica pregnant women in all the three trimesters of pregnancy ($p < 0.05$). There was no significant difference in the mean birth weight of babies born to pica and non-pica pregnant women ($p > 0.05$). These findings suggest that pica is prevalent among pregnant women in the District and hence the need for education to create awareness. There is also the need to educate pregnant women about healthy nutritional practices.

Keywords: Pica, haemoglobin, anaemia, pregnancy, amylophagia, geophagia.

1. INTRODUCTION

Most early pregnancies bring pleasure and happiness to the expectant mother. However, the nine months period may be associated with a number of complications. The mothers' health during and after pregnancy, may be affected by genetics, exposure to environmental toxins and a variety of nutritionally linked problems with symptoms that are sometimes very unpleasant and difficult to tolerate (Doerr, 2002). Complications which may arise from pregnancy include diabetes, anaemia, constipation, vomiting, nausea, pregnancy-induced hypertension, aversions and cravings for non-food items (pica) (Margaret, 2007).

Pica is the pathological act of eating non-food items or normal food constituents with little or no nutritional value (Callahan, 2003). Such non-food substances include clay, ice, burnt matches, soot, charcoal, cigarette ashes, etc. (Walker et al., 1985). There are several forms of pica, depicting the type of non-food item that is eaten. Some of these include pagophagia (ice eating), amylophagia (starch eating) and geophagia (clay and dirt eating). Pica behaviour is mostly found in young children, pregnant women, and people with developmental disabilities and people whose family or ethnic groups include eating certain non-food substances.

Several reasons have been documented for the eating of these non-food items. Some of these include their taste, texture and availability (Tayie and Lartey, 1999).

Although several proposals have been made, the etiology of pica is poorly understood. One theory suggests that the ingestion of non-food substances relieve nausea and vomiting. Others also suggest that the deficiency of essential nutrients such as calcium and iron result in the eating of non-food substances that contain these nutrients (Lopez and Langini, 2007). Pica poses significant health risks that often require medical interventions. These include electrolyte and metabolic disorders, parasitic infections, intestinal obstruction, anaemia, dental damage, lead poisoning which is common in children, malnutrition and pregnancy-induced hypertension (Hoodaet al., 2004). The health benefits of pica have not yet been identified, however, it is proposed that the practice of pica during pregnancy increases lactation relieves gestational nausea, pain and increases mineral supplementation especially iron and zinc (Lopez and Langini, 2007).

The prevalence of pica behavior has been reported in different regions but there is lack of data in the Western part of Ghana. The purpose of the study was to determine the prevalence of pica among pregnant women in the Bibiani Anhwiaso-Bekwai District in the Western Region of Ghana and to evaluate any possible medical risk.

2. METHODOLOGY

This cross-sectional study was conducted at two health centres, Divine Love Hospital and Bibiani Government Hospital. Subjects for the study were pregnant women residing in Bibiani and its environs. A total of 400 pregnant women who were receiving antenatal care at the two maternity centres were randomly selected for the study. Questionnaires for the study were explained to subjects and they showed interest and consent before participating in the study.

Participants were interviewed mostly in the local dialects, Twi, Sefwi, Nzema and in some cases English for those who could not speak the familiar local dialects. The questionnaire captured information on demographic profile and pica in past and present pregnancies. Information on maternal haemoglobin levels and blood pressures of the pregnant women were taken once in every trimester as stated in their maternal health record book. The available birth weights of babies of respondents were also recorded.

Data entry and analysis were done using EPI-INFO version 3.5 by Centre for Disease Control (CDC) and SPSS version 17.0 respectively. Frequency, proportions, means and standard deviation were used for categorical variables. Student's T-test (unpaired) was used to find significant differences in haemoglobin, birth weights and blood pressures between the two groups. All findings were considered statistically significant at $p < 0.05$.

3. RESULTS

The most common pica item craved by the pregnant women was white clay (74; 61.16%) followed by red clay (20; 16.53%). The next prevalent pica item was ice block (10; 8.26%) and was mostly reported by urban participants. Few of the pregnant women practiced poly-pica (7; 5.79%). (Table, 1).

Table: 1. Distribution of reported pica items in rural and urban areas

Pica Substances	Number of Pregnant Women	Rural	Urban
	n=121 (%)	n= 77 (%)	n= 44 (%)
White clay	74 (61.16)	45 (58.44)	29 (65.91)
Red clay	20 (16.53)	19 (24.68)	1 (2.27)
White clay and red clay	5 (4.13)	4 (5.19)	1 (2.27)
Ice block	10 (8.26)	1 (1.30)	9 (20.45)
Paint chips	3 (2.48)	0 (0.00)	3 (6.82)
White clay and chalk	2 (1.65)	2 (2.60)	0 (0.00)
Starch	1 (0.83)	1 (1.30)	0 (0.00)
Other	6 (4.96)	5 (6.49)	1 (2.27)

Reasons for the pica behaviour during pregnancy:

The reasons specified by pregnant women as to why they eat the pica items are shown in Table 2.0. Majority of the participants consumed these pica items to treat nausea while others consumed these items because they liked it. The smell and the taste also accounted for the craving for these pica items among the pregnant women. However, six of the pregnant women gave no reason for the practice.

Table: 2 Reasons for the pica behaviour during pregnancy

Pica item	Number	Just liked it	Taste	Smell	Prevent spitting	Texture	Treat Nausea	Treat heart burns
White clay	74	18	4	13	4	1	34	0
Red clay	20	2	2	6	3	0	7	0
White and red clay	5	1	0	2	0	0	2	0
Ice block	10	5	0	0	1	0	2	2
Paint chips	3	2	0	0	0	0	1	0
White clay and chalk	2	1	0	0	0	0	1	0
starch	1	1	0	0	0	0	0	0

Biochemical Variables among Pregnant Women:

Table 3.0 shows the clinical parameters, blood pressures (BP), mean birth weights and haemoglobin levels of pica and non-pica pregnant women for the three trimesters of pregnancy. The haemoglobin levels decreased from first trimester (10.20g/dl) to the third trimester (9.40g/dl) for pregnant women who practiced pica. The decrease in blood pressure was also observed among pregnant women who did not practice pica.

Table: 3 Mean values of Haemoglobin Level, Birth weights and Blood pressures of pica and non-pica pregnant women at 95% confidence interval

CLINICAL PARAMETERS	PICA		NO PICA		P-Value
	N	Mean ± SD	N	Mean ± SD	
First Trimester	120		278		
Haemoglobin Level (g/dl)		10.20 ± 2.03		10.80 ± 2.21	0.030
Blood pressure (mmHg)	121		279		
Systolic		108.34 ± 10.69		105.41±10.6462.88	0.012
Diastolic		66.63 ± 8.64		± 8.72	0.000
Second Trimester	96		219		
Haemoglobin Level (g/dl)		9.94 ± 0.95		10.36 ± 0.98	0.011
Blood pressure (mmHg)	95		221		
Systolic		108.61 ± 13.44		104.48 ± 9.98	0.003
Diastolic		67.55 ±12.73		62.76 ± 8.45	0.001
Third Trimester	39		85		
Haemoglobin Level (g/dl)		9.40 ± 1.11		10.11 ± 1.00	0.010
Blood pressure (mmHg)	42		88		
Systolic		106.02 ± 13.44		104.76 ± 9.27	0.541 ^{a*}
Diastolic		65.40 ± 10.16		62.58 ± 7.84	0.084
Birth weight (Kg)	8	3.16 ± 0.47	40	3.12 ± 0.47	0.83 ^{a*}

a* No significant difference observed between the groups.

4. DISCUSSION

The consumption of non-food items among pregnant women is prevalent in various parts of Ghana including pregnant women residing in Bibiani Anhwiaso-Bekwai District. Out of the 400 participants, the prevalence of pica behaviour was 30.25% indicating that quite a number of pregnant women in the District engage in pica behaviour during pregnancy. This

low prevalence is not different from the work done by Mortazavi and Mohammadi (2010) and al-Kanhal and Bani (1995) who recorded 15.50% and 8.80% among 560 pregnant women who were referred to the health centers in Zahedan, Iran and 321 pregnant Saudi Arabian women respectively.

The highest age range recorded was 20-25yrs (41.00%). Most of the pregnant women who practised pica were also within this age group. This supports the speculation made by Mortazavi and Mohammadi (2010) that pica is mostly practised by late adolescence or early adulthood and in first pregnancies. Forty-four students (15-19yr) were recorded in the study. This shows that majority of children in the district engage in unprotected sex. More than half of these students did not practice pica. This may be due to the fact that they were aware of the possible effects of the practice or were easily controlled by their parents.

Pica was observed among both the educated and those without formal education. Among the educated, the practice was mostly observed among those who had had their education up to the JSS level. The figure also shows a correlation of the nature of pica item and educational background. Almost all the participants with higher (tertiary) educational background engaged in pagophagia (consumption of ice) with reasons that it was less harmful as compared to the other pica items. Majority of those without formal education settled on white clay and red clay possibly due to their ignorance of the negative effects of these pica items. The observed difference indicates that increasing the literacy level raises awareness.

In this research, pica was recorded among urban and rural participants. This finding supports the belief that pica is a worldwide problem that has no barriers of age, race and geographic region (Sayetta, 1986). The prevalent pica item was white clay (61.16%) followed by red clay (16.53%). Since the people in the District enjoy only one market day in a week (Fridays), most of the participants who practiced geophagia (consumption of white clay) reported that they had to buy the pica item (white clay) in bulk to sustain them throughout the week. This accounted for the high prevalence among the rural respondents. Some of the rural respondents also reported that they sometimes crave for ice block (pica item) but do not get it due to lack of electricity in their area of residence. From table 1.0, the consumption of red clay was less practised among the urban participants due to less availability unlike the rural participants. Other pica items reported included charcoal and dried fecal matter.

The pregnant women gave various reasons as to why they consumed the pica items. Most of the participants consumed the white clay and red clay to treat nausea or morning sickness (28.10%). This confirms the work done by Nwafor (2008) where out of 273 pregnant women studied in Mecklenburg hospital, South Africa, 74.00% of the respondents admitted that they ate soil to treat nausea. The smell of these items also accounted for the cravings of the pica items. This correlates with Cooksey's (1995) findings about the importance of olfaction in pica. Few of the respondents practiced pagophagia to treat heartburns. This may be due to its cooling property. Others also consumed the pica items because they just liked it.

Pica depending on the nature, the amount of the ingested substances and how long it continues, can be linked to complications such as pre-eclampsia (toxemia), prematurity, lead poisoning, iron deficiency anemia, constipation, ulcerations, perforations and intestinal obstructions (Thomas, 2000). In this study, participants who practised pica and those who did not were diagnosed of diseases. More than half the pica practising pregnant women were diagnosed of anaemia, hypertension and other diseases which were mostly found to be respiratory disease and malaria. In this research, only 6 pregnancy induced-hypertension patients were encountered during the study. Out of these, 4 practised pica (paint chips and red clay) while the rest did not engage in pica (data not shown). These pica substances might contain some metals like lead which replaces metals in protein structure thereby changing the shape and function of the protein molecules. Since some of these proteins are involved in the regulation of blood pressure, loss in the protein function may lead to high blood pressure.

Pregnant women who engaged in pica had a lower mean haemoglobin levels in all the three trimesters of pregnancy ($p=0.01$) than the non-pica pregnant women (Table 3.0). This may be due to the prevalent pica items (white clay and red clay) which have the ability to chelate with iron in the blood thereby preventing their absorption. This supports the work done by Tayie and Lartey (1999) who recorded similar low mean haemoglobin levels (10.1g/dl) among pica pregnant women in Accra, Ghana.

There was a significant difference in the mean blood pressures for pica and non-pica pregnant women in the first and second trimesters of pregnancy ($p\text{-value}=0.01$). Those who practised pica had slightly higher blood pressure values in the

first (108/67mmHg) and second trimesters than their non-pica counterparts (105/63mmHg). However, there was no significant difference ($p=0.541$) in the mean blood pressures in the third trimester of pregnancy. Some of the pregnant women stopped practising pica in the third trimester or the pica substances ingested were not high enough to affect their blood pressures.

There was no significant difference in the mean birth weight of the babies born to pica and non-pica pregnant women. This may be due to the fact that the pica items ingested were not sufficient to affect the weight of their babies at birth. Both mean weights recorded for pica (3.16Kg) and non-pica (3.12Kg) pregnant women were normal according to the WHO standards ($>2.5\text{Kg}$).

5. CONCLUSION

The prevalence of pica among pregnant women was 30.25% indicating that pica is being practised among pregnant women residing in the Bibiani-AnhwiasoBewai District. Geophagia (ingestion of clay) was the most prevalent pica behaviour found among pregnant women and was practised by majority of the pregnant women in the rural environs of the District.

6. RECOMMENDATION

The prevalence of pica in the subjects suggests that pregnant women should be educated on the possible negative effects of pica on the mother and fetus. This education can be included as part of the services rendered to pregnant women during antenatal care by health centres. There is also the need to educate them about healthy nutritional practices in pregnancy.

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