


## RESEARCH ARTICLE

# Practices of pica among pregnant women in a tertiary healthcare facility in Ghana

Kennedy Diema Konlan<sup>1</sup> | Juliana Asibi Abdulai<sup>2</sup> | Kennedy Dodam Konlan<sup>3</sup> |  
Roberta Mensima Amoah<sup>4</sup> | Abdul-Razak Doat<sup>5,6</sup> 

<sup>1</sup>Department of Public Health Nursing, School of Nursing and Midwifery, University of Health and Allied Sciences, Ho, Ghana

<sup>2</sup>Department of Surgery, Tamale Teaching Hospital, Tamale, Ghana

<sup>3</sup>Department of Nursing, West End University College, Accra, Ghana

<sup>4</sup>Department of Public Health, School of Allied Sciences, University for Development Studies, Tamale, Ghana

<sup>5</sup>Nursing and Midwifery Training College, Tamale, Ghana

<sup>6</sup>Tehran University of Medical Sciences, Tehran, Iran

## Correspondence

Abdul-Razak Doat, Nursing and Midwifery Training College, Tamale, Ghana, and Tehran University of Medical Sciences, Tehran, Iran. Email: rdoat@yahoo.com

## Abstract

**Aim:** This study assessed the practice of pica among pregnant women in the Ho Teaching Hospital.

**Design:** Descriptive cross-sectional.

**Methods:** Systematic sampling technique was used to recruit 286 pregnant women. Questionnaire was used to collect data. Data entered into Statistical Package for Social Sciences for analysis.

**Result:** Of the 286 pregnant women, 21.2% and 17.8% considered white clay and ice respectively as nutritious. Prevalence of pica was 47.5%, while 44.9% of pregnant women who practised pica reported they feel uncomfortable when they do not eat pica as 63.3% considered intake of pica as harmful. Among women who received education against pica practice, 49.4% have ever taken pica as 50.9% of them with education on effects of pica were currently engaged in the activity ( $\chi^2 = 1.93$   $p = .17$ ).

**Conclusion:** Health professionals, especially midwives must intensify education on effects of pica among pregnant women.

## KEYWORDS

disorders, eating, food, nurses, nursing, nutrition, pica, pregnancy

## 1 | INTRODUCTION

Adequate intake of nutrition is a key component for an individual's health and well-being, particularly during pregnancy (Fekadu Beyene, 2013). Generally, pica is defined as the repeated ingestion of non-food items which is normally insatiable and leads to compulsive consumption (Ellis, Figueredo, Brumbach, & Schlomer, 2009).

The Diagnostic and Statistical Manual of Mental Disorders (2013) described pica as persistent intake of non-nutritive substances for at least 1 month that is inappropriate to developmental

level and not part of a culturally supported or socially normative practice (Mishori & McHale, 2014). Four diagnostic criteria for pica are generally noted as follows: the persistent eating of non-nutritive substances for the period of at least 1 month; the eating behaviour, not part of a culturally sanctioned practice; the eating of non-nutritive substances which is inappropriate to the developmental level; if the eating behaviour occurs exclusively during the course of another mental disorder, which is sufficient to warrant independent clinical attention (Hartmann, Becker, Hampton, & Bryant-Waugh, 2012). The term pica originates from a Latin word "magpie," a bird that is famed for its unusual eating behaviours, where it is known to eat almost everything (Kaur, 2014).

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The most common types of pica are geophagy (consumption of earth), amylophagy (consumption of raw starches such as cornstarch or uncooked rice) and pagophagy (the consumption of large quantities of ice) (Young et al., 2010). Investigators from diverse fields have explored pica's causal role in conditions such as heavy metal poisoning, especially lead (Geissler et al., 1999), micronutrient imbalances (by binding with consumed food or preventing absorption in the small intestine) and transmission of parasites (Young et al., 2010). Others have studied pica's positive health effects, such as providing micronutrients (Geissler et al., 1999), soothing gastrointestinal upset or preventing harmful chemicals or pathogens from entering the bloodstream (Young et al., 2010). An extraordinary array of inedible materials consumed by psychotic patients indicates this behaviour might be a cardinal sign of psychosis, "a perversion of the appetite" (Blinder & Salama, 2008). Countless expositions describe other forms of pica, including eating ice, dirt, soil and clay, starch, burnt matches, cardboard, hair, laundry detergent, chalk, soap, firecrackers and metal artefacts such as coins. Its true prevalence is difficult to assess because most people do not report pica (Mishori & McHale, 2014) or may not even identify its detrimental health effect.

The yearning and conscious consumption of non-food stuff is common among many populations, especially during pregnancy, yet the health consequences are not well understood (Lin et al., 2015). Maternal under nutrition results in increased risks of short-term consequences such as intrauterine growth restriction (IUGR), low birth weight, preterm birth, prenatal and infant mortality and morbidity (Fekadu Beyene, 2013). In a study conducted by Khoushabi et al. (2014) reported that mothers could suffer from dental injuries, intestinal obstructions, toxemia, constipation, lead poisoning, parasitic infections and hyperkalemia if the intake of pica becomes pervasive. Myths and misunderstanding surrounding eating of non-food items can expose pregnant women to serious health consequences. For example, most pregnant women eat clay ("ayilor") to satisfy their cravings and this can cause severe constipation and anaemia (Horner, Lacey, Kolasa, & Warren, 1991). Kelkitli et al. (2016) reported that certain heavy metals in pica substances, zinc, manganese and cobalt, can interfere with the iron intestinal absorption pathway.

The nature and characteristics of people who eat pica is documented, and this is evident in a meta-analysis of dirt-, clay- and starch-eating women conducted by Horner et al. (1991). The outcome of the study was that race was a major risk factor for pica during pregnancy. It was four times higher in black than in white women. Although pica may be practised by both children and adults, it is not limited to, any culture, race, sex or socioeconomic status. Higher incidence is associated with pregnancy, developmental delay and mental retardation, psychiatric disease and autism, early childhood, poor nutrition or low blood levels of iron and other minerals and certain cultural or religious traditions (Rose, Porcerelli, & Neale, 2000). Intake of pica among pregnant women is an issue of health concern that has brought about high medical conditions in pregnancy, especially iron deficiency and anaemia in pregnancy. There is a strong evidence of a relationship between pica and anaemia in pregnant women (Young et al., 2010).

Maternal nutrition is key to attaining good pregnancy outcomes. The story is no different in the case of Ghana where some pregnant women in the Volta region have developed some love for pica. Clay is baked into egg-balls called "Ayilo" and then sold on the local market to persons who patronize it (Arhin & Zango, 2017). Mensah, Twumasi, Amenawonyo, Larbie, and Jnr (2010) reported that 47% of pregnant women in the Kumasi Municipality practised pica of which pagophagia accounted for 41%, followed by geophagia (29.8%), amylophagia (7.4%), plumbophagia (6.4%) and tricophagia (3.7%). Studies conducted in the Bibiani-Anhwiaso Bekwai District in the Western Region of Ghana revealed that a higher number of pregnant women craved for white clay (61.16%), followed by red clay (16.53%). Ice block was the third most prevalent pica item (8.26%) (Norman, Binka, & Godi, 2015).

In Ghana during antenatal care, pregnant women are expected to receive a comprehensive health education in specific thematic areas such as personal and environmental hygiene, exercise, rest and sleep, birth preparedness and complication readiness, immunizations, malaria prevention, nutrition and danger signs. This is affirmed in a study conducted in Ho in the Volta Region of Ghana by Konlan, Kombat, Japiong, and Konlan (2018) where most (61.2%) women were educated on all the nine topics of ANC, which include: personal and environmental hygiene, exercise, rest and sleep, birth preparedness and complication readiness, immunizations, malaria prevention, nutrition and danger signs. Armed with evidence on focus antenatal services, it is imperative to assess the practices of pica among pregnant women in a tertiary facility.

## 2 | PROBLEM STATEMENT

In Ghana, information about pica is minimal leading to an increase in teratogenic risks and birth defects during pregnancy thus increase in infant mortality and morbidity (Hommey, 2016). There are little studies conducted on pica in many African communities where the practice of pica is believed to be highly prevalent. The high prevalence of anaemia in pregnant women in the Ho Municipality and the lack of knowledge on the effects of pica make it important for this research, to examine the perception and practice of pregnant women in the Ho Teaching Hospital on the use of pica.

## 3 | OBJECTIVE

This study assessed the practice of pica among pregnant women in Ho Teaching Hospital of the Volta Region.

## 4 | METHODOLOGY

### 4.1 | Study design

Quantitative descriptive cross-sectional design was used for this study. A cross-sectional survey, which involved a one-time interaction with

one group of people to collect information that describes the practices of pica among pregnant women in the Ho teaching hospital was used.

## 4.2 | Study site

Prior to the conversion of the facility to the status of a teaching hospital in 2019, the Volta Regional Hospital (VRH), popularly known as "Trafalgar," was built and handed over to the Ghanaian government in November 1998. It is the major referral hospital for other health facilities within the region and the eastern corridor of southern Ghana. Health delivery by the hospital extends beyond the borders of Ghana to neighbouring countries like Togo, Benin and Federal Republic of Nigeria. The hospital provides outpatient, maternal and childcare, inpatient, surgical services and herbal medicine Services, including mental health. The maternity department has four main units – the antenatal clinic (ANC), maternity ward, labour ward and the postnatal clinic. The study was conducted at the antenatal clinic. It renders services to pregnant women who come for antenatal

services. The antenatal clinic of the facility attends to an average of 1,000 clients within a month.

## 4.3 | Study population

The study population included all pregnant women registered as clients in the ANC unit of the hospital. Study participants were clients who did not have any complication related to the pregnancy.

## 4.4 | Sampling and sampling technique

The sample size was determined using Yamane's formula (Yamane, 1967) for sample size calculation for finite populations. Total antenatal attendance for a month is averaged as 1,000 clients who have no demonstrable complication or diagnosis of any form.

$$n = \frac{N}{(1 + ne^2)} = n = 286$$

$n$  = estimated sample size,  $e = 0.05$ ,  $N$  = estimated population = 1,000.

The systematic sampling method was employed to recruit participants into the study. Computing a sampling fraction of every 3rd person, research assistants were positioned at the antenatal vital signs desk and recruited every third person who sort for ANC services. In instances where the third person did not consent to the study, the fourth person was recruited.

## 4.5 | Data collection and analysis

A pre-tested research questionnaire was used for the data collection. The questionnaire was pre-tested among twenty pregnant women in the Ho Municipal Hospital. The questionnaire was grouped into three thematic areas. Section A was on social-demographic data, section B was on perception on pica and section C was on pica practice and associated risks.

Data were collected in March 2019. During the period of data collection, research assistants visited the antenatal clinic from 7 a.m.–4 p.m. to collect data. Pregnant women who could not read and write were assisted by the research assistants to complete the questionnaire.

Data were checked for appropriateness of responses and completeness before it was doubled entered into Microsoft office 2013 spreadsheet and compared. The data were cleaned, transported to and analysed using Statistical Package for Social Sciences (SPSS) version 22.0. Data were analysed for frequency distribution, proportion and percentages. Chi-square test was used to determine the association between demographic characteristics and the practice of pica.

**TABLE 1** Socio-demographic characteristics of respondents

Variables	Responses	Frequency	Percentage
Age of respondents	18–20	32	11.2
	21–30	170	59.4
	31–40	79	27.6
	41–50	5	1.8
Marital status	Single	105	36.7
	Married	172	60.1
	Divorced	5	1.8
	Cohabiting	4	1.4
Educational level	None	19	6.6
	Primary	22	7.7
	Secondary	143	50.0
	Tertiary	102	35.7
Religious affiliation	None	6	2.1
	Christian	220	76.9
	Muslim	52	18.2
	Traditionalist	8	2.8
Ethnicity	Ga-Adagme	5	1.8
	Ewe	183	63.9
	Akan	52	18.2
	Hausa	28	9.8
	Others	18	6.3
Residential status	Urban	224	78.3
	Rural	62	21.7
Occupation	Public/civil servant	90	31.5
	Self-employed	131	45.8
	Unemployed	48	16.8
	Student	17	5.9

## 4.6 | Ethical considerations

Ethical clearance was obtained from the Institute of Health Research, University of Health and Allied Sciences, to conduct this study [UHAS-REC A.4 {337}18–19]. Permission was also sought from the management of the hospital to conduct the study. A written consent was obtained from each participant after explaining the purpose of the study to them.

## 5 | RESULTS

Pregnant women between the ages of 21–30 years accounted for 59.4% of the respondent's while the age range 41–50 years accounted for 1.8% of respondents. Also, 60.1% were married and 36.7% single. Only 6.6% of the respondents had never had any formal education. Christianity was the major (76.9%) religion among the pregnant women. A large chunk of the respondents 63.9% were from the Ewe ethnic group. Most (45.8%) of the pregnant women were self-employed (Table 1).

From Table 2, most (30.4%) of the respondents were in their second trimester of pregnancy before they began ANC as 29.4% were in the first trimester and 21.3% were in their third trimester pregnancy. Noteworthy, 30.4% of the pregnant women have never had full-term pregnancies as 27.6% were para one, 26.9% para two and 9.8% para three. With regards to current pregnancy, 25.5% of respondents were in their first trimester, while 36.4% were in the second trimester and 38.1% were in their third trimester. The symptoms experienced by pregnant women included nausea (73.9%), vomiting (63.1%), headache (42.7%) and loss of appetite (41.5%). When respondents were asked to indicate the trimester, these symptoms are more severe, the responses were indicative that most pregnant women had severe symptoms in the first trimester (64.7%), second trimester (8.7%) and third trimester (12.9%). Nonetheless, some (13.7%) indicated that the symptoms are pervasive in all the trimesters of pregnancy.

Of pregnant women, 82.2% included in this study reported they have had an education on nutrition during pregnancy. Most (92.7%) of those who had nutrition education or counselling during pregnancy had this education from the hospital while 17.7% had the education from the media (radio) (Table 3).

Of pregnant women, 21.2% considered white clay and 17.8% considered ice as nutritious foods. Reasons ascribed for the intake of pica among the pregnant women included crave (67.7%), the scent of the non-food item (51.1%), to reduce nausea and vomiting (45.0%) and the taste of non-food items (44.6%). Also, 63.3% perceive eating non-food items as harmful as 30.4% did not know if pica was harmful. On the types of effects of pica, pregnant women indicated anaemia (43.1%), stillbirth (20.5%) and deformed baby (32.0%). Pregnant women considered the following food items usually taken by them to be nutritious. These responses include grains (89.5%), legumes (69.9%), vegetables (86.7%), meat (82.8%), fish (83.9%), fruits

(76.6%), dairy products (58.0%) white clay (21.2%), ice (17.8%), charcoal (3.2%) and toothpaste (2.1%)

In Table 4, 47.5% of pregnant women reported to have ever taken pica when they were pregnant while 77.2% were still eating pica. The types of pica eaten by these women included white clay (61.8%) and ice (24.3%). These substances were largely eaten in the first trimester (47.8%) of the pregnancy. Describing the time of the day, this pica is usually taken, 44.8% report all day, while 43.4% consumed pica in between meals. Noteworthy, 44.9% of pregnant women who have eaten any non-food item during pregnancy reported they feel uncomfortable when they do not eat the item. About 62.2% of the pregnant women reported that they have had education against pica practice and 60.5% received education on the effects of pica practices on pregnancy. With respect to the period of the day, pica is usually taken, participants response showed that 19.1% took it in

**TABLE 2** History of current pregnancy

Variables	Responses	Frequency	Percentage
Month of pregnancy at first ANC visit	1	84	29.4
	2	99	34.6
	3	61	21.3
	Not certain time	42	14.7
Previous pregnancy	0	87	30.4
	1	79	27.6
	2	77	26.9
	3	28	9.8
Number of children	4 or more	15	5.3
	None	94	32.9
	1	83	29
	2	75	26.2
Current pregnancy trimester	3	24	8.4
	4 or more	10	3.5
	1st	73	25.5
	2nd	104	36.4
Pregnancy symptoms	3rd	109	38.1
	None	26	9.1
	Nausea	192	73.9
	Vomiting	164	63.1
	Headache	111	42.7
	Itching	15	5.8
	Loss of appetite	108	41.5
Trimester to experience severe symptoms	Dizziness	81	31.1
	Spitting	113	43.5
	1st	185	64.7
	2nd	25	8.7
Trimester to experience severe symptoms	3rd	37	12.9
	Throughout all trimesters	39	13.7

**TABLE 3** Factors related to the intake of pica among pregnant women

Thematic area	Variable	Responses	Frequency	Percentage
Education on pica	Ever had education on nutrition when pregnant	Yes	235	82.2
		No	51	17.8
	Source of education	Home	16	16.7
		Market	5	5.2
		Radio	17	17.7
		Hospital or clinic	89	92.7
Church	9	9.4		
Effects of pica	Eating pica is harmful	Yes	181	63.3
		No	18	6.3
		Do not know	87	30.4
	Effects of pica	Anaemia	78	43.1
		Stillbirth	37	20.5
		Deformed baby	58	32.0
Do not know	8	4.4		
Pica considered by pregnant women to be nutritious	Grains	Yes	256	89.5
		No	30	10.5
	Legumes	Yes	200	69.9
		No	86	30.1
	Vegetables	Yes	248	86.7
		No	38	13.3
	Meats	Yes	236	82.8
		No	49	17.2
	Fish	Yes	239	83.9
		No	46	16.1
	Fruits	Yes	219	76.6
		No	67	23.4
	Dairy products	Yes	166	58.0
		No	120	42.0
	White clay	Yes	61	21.2
		No	225	78.7
	Ice	Yes	51	17.8
		No	235	82.2
	Charcoal	Yes	9	3.2
		No	277	96.8
	Red clay	Yes	8	2.8
		No	278	97.2
	Toothpaste	Yes	6	2.1
		No	280	97.9
Reasons why women eat pica	Because of the taste	Yes	95	33.2
		No	191	66.8
	Because of the smell	Yes	120	42.0
		No	166	58.0
	Because of the texture	Yes	14	4.9
		No	272	95.1
	To reduce nausea and vomiting	Yes	104	36.4
		No	182	63.6
	Just craving for it	Yes	149	52.1
		No	137	47.9
	Due to hunger	Yes	44	15.4
		No	242	84.6

Variable	Responses	Frequency	Percentage
Ever eaten any non-food item	Yes	136	47.5
	No	150	52.5
Currently eat non-food item	Yes	105	77.2
	No	31	22.8
Types of food items considered pica	None	2	1.5
	White clay	84	61.8
	Ice	33	24.3
	Charcoal	5	3.7
	Red clay	4	2.9
	Toothpaste	6	4.4
Frequently eaten pica	Ice	27	19.9
	Red clay	11	8.1
	White Clay	89	65.4
	Charcoal	3	2.2
	None	2	1.5
	Toothpaste	4	2.9
Trimester you do practise pica most	1st	65	47.8
	2nd	24	17.7
	3rd	9	6.6
	Throughout all trimesters	38	27.9
Frequency of consuming pica	Once a day	30	22.1
	More than once a day	81	59.5
	Once a week	10	7.4
	Every other day	15	11.0
Period pica is mostly consumed	Morning	26	19.1
	Afternoon	27	19.9
	Evening	15	11
	Night	7	5.2
	Throughout the day	61	44.8
Relationship of pica to food consumption	Before meals	34	25
	After meals	43	31.6
	In-between meals	59	43.4
The effects of not eating pica	Nothing	27	19.9
	Feel sick	21	15.4
	Get depressed	18	13.2
	Feel hungry	5	3.7
	Feel uncomfortable	61	44.9
	Feel nauseated	4	2.9
Education against pica practice	Yes	178	62.2
	No	108	37.8
Education on effects of pica practices on pregnancy	Yes	173	60.5
	No	113	39.5

**TABLE 4** Practices of pica among pregnant women

the morning, 19.9% in the afternoon, 11% in the evening and 44.8% throughout the day. On the relationship of pica to the intake to food, responses showed that 25.0% participants took it before meals, 31.6% after meals and 43.4% in between meals.

In Table 5, a cross-tabulation of age against the history of pica indicates a significant relationship ( $\chi^2 = 0.21, p = .98$ ). About 50% of respondents within the ages 18–20 years had a history of pica intake while most (52.4%) within the ages 21–30 have never taken

**TABLE 5** Association between ever eaten pica and demographic characteristics

Variables	Responses	History of pica use		$\chi^2$	p-value
		Yes	No		
Age	18–20	16 (50.0%)	16 (50.0%)	0.21	.98
	21–30	81 (47.7%)	89 (52.4%)		
	31–40	37 (46.8%)	42 (53.2%)		
	41–50	2 (40.0%)	3 (60.0%)		
Marital status	Single	51 (48.6%)	54 (51.4%)	0.97	.81
	Married	82 (47.7%)	90 (52.3%)		
	Divorced	2 (40.0%)	3 (60.0%)		
	Cohabiting	1 (25.0%)	3 (75.0%)		
Educational level	None	8 (42.1%)	11 (57.9%)	1.90	.59
	Primary	10 (45.5%)	12 (54.5%)		
	Secondary	64 (44.8%)	79 (55.2%)		
	Tertiary	54 (52.9%)	48 (47.1%)		
Religious affiliation	None	0 (0.0%)	6 (100.0%)	9.90	.02
	Christian	114 (51.8%)	106 (48.2%)		
	Muslim	19 (36.5%)	33 (63.5%)		
	Traditionalist	3 (37.5%)	5 (62.5%)		
Ethnicity	Ga-Adagme	4 (80.0%)	1 (20.0%)	4.87	.30
	Ewe	92 (50.3%)	91 (49.7%)		
	Akan	22 (42.3%)	30 (57.7%)		
	Hausa	10 (35.7%)	18 (64.3%)		
	Others	8 (44.4%)	10 (55.6%)		
Residential status	Urban	103 (46.0%)	121 (54.0%)	1.02	.31
	Rural	33 (53.2%)	29 (46.8%)		
Occupation	Civil servant	48 (53.3%)	42 (46.7%)	4.13	.25
	Self-employed	63 (48.1%)	68 (51.9%)		
	Unemployed	20 (41.7%)	28 (58.3%)		
	Student	5 (29.4%)	12 (70.6%)		
Education against pica practice	Yes	88 (49.4%)	90 (50.6%)	0.67	.41
	No	48 (44.4%)	60 (55.6%)		
Education on effects of pica	Yes	88 (50.9%)	85 (49.1%)	1.93	.17
	No	48 (42.5%)	65 (57.5%)		

pica. Also, many (60.0%) of respondents above the age of 41 years have taken pica.

There was a relationship ( $\chi^2 = 1.90, p = .59$ ) of educational status when it was compared with the history of pica intake. The relationship showed that 57.9% of non-educated pregnant women have taken pica while 45.5%, 44.8% and 52.9% respectively of primary, secondary and tertiary education leavers have a history of pica intake. Noteworthy, most (50.3%) of Ewe pregnant women have a history of pica intake. On the geographical location of a pregnant woman, the findings showed a relationship when it was cross-tabulated with the history of pica intake. The results showed that 53.2% of rural women have taken pica.

Another significant ( $\chi^2 = 4.13, p = .25$ ) relationship was shown when the occupation was plotted against the history of pica use. The results showed pica use among civil servants (53.3%), self-employed (48.1%), unemployed (41.7%) and students (29.4%). Among pregnant women

who had received education against pica practice, 49.4% have ever taken pica as 50.9% of the pregnant women who had received education on the effects of pica were still engaged in it ( $\chi^2 = 1.93, p = .17$ ).

## 6 | DISCUSSION

This study assessed the knowledge and practice of pregnant women regarding pica and pica usage. This study showed that 21.2% and 17.8% of the pregnant women considered white clay and ice respectively as nutritious foods. Pregnant woman's perception of pica as nutritious is likely to influence usage of those substances. It is important that pregnant women are educated on sources of nutrition and its effect on the foetus as well as the harmful effect of pica substances taken by pregnant women. Macheka,



Olowoyo, Matsela, and Khine (2016) reported on the prevalence of geophagia and its contributing factors among pregnant women. In that study, respondent believed that geophagia (eating clay or soil) has some health benefits. Some of the consumers indicated that they believed soil improved their health and that of the baby as it acted as an iron supplement and others also mentioned that it helps with heartburn and morning sickness during pregnancy. In a related study, most pregnant women (67.4%) indicated that soil does not provide nutrients to mother or unborn baby, while only a few (3.2%) indicated that soil provides nutrients to mother and unborn baby and 29.4% were not sure whether eating soil provides nutrients to mother and unborn baby (Nyanza, Joseph, Premji, Thomas, & Mannion, 2014).

Sensory perception of respondents continued to influence their behaviour and likely use of pica. The pregnant women indicated that most them who consume non-food items do so because: they crave for it (67.7%), the scent of the non-food item (51.1%), to reduce nausea and vomiting (45.0%) and the taste of non-food items (44.6%). The general need to satisfy craving or sensory, perceptual needs largely are the reasons for the use of pica in pregnancy. Macheke et al. (2016) stated that one of the key reasons for soil consumption among the pregnant women was the cravings due to taste, texture and smell, especially before the rains. Most pregnant women (63.3%) perceived that eating pica is harmful. Some of the respondents believed that eating non-food items such as white clay, red clay, ice and others could result in anaemia (43.1%), deformed baby (32.0%) and stillbirth (20.5%). This knowledge may not be the case among all pregnant women, it is imperative that health education during antenatal care centre on the dangers of pica use. Pica eating disorders are not usually detected or reported, it is the complications of the behaviour that bring it to attention. These complications vary depending on the type of pica (Ekwenchi, Duru, Ononiwu, & Ezeigbo, 2015). In a study conducted by Khoushabi et al. (2014), findings indicated the association between pica and low maternal haemoglobin levels during childbirth and iron deficiency.

Findings from this present study showed that 82.2% of pregnant women reported they have had an education on nutrition during pregnancy. Education on nutrition remains cardinal to the practices women put in the attainment of positive pregnancy outcomes. In the same facility, it was reported that most (61.2%) women were educated on all the nine topics of the ANC, which include: personal and environmental hygiene, exercise, rest and sleep, birth preparedness and complication readiness, immunizations, malaria prevention, nutrition and danger signs (Konlan et al., 2018). However, this study showed that 77.2% of pregnant women were currently consuming non-food items as prevalence of previous pica use among pregnant women was 47.5%. The practice of pica among pregnant women is an issue of great concern as pregnant women are to practice good eating habits by consuming nutritious foods needed to provide nutrients to foetus and mother. The habit of consuming non-food items among pregnant women is very common and continues to exist in several countries in Sub-Saharan Africa (Nyanza et al., 2014).

The study showed that the prevalence of pica was 47.0%. The pregnant women consume white clay (61.8%) and ice (24.3%). These items have not been identified to be useful to the nutritional needs of pregnant women, yet the use of it is pervasive. In the Kumasi metropolis, it was identified that pagophagia accounted for 41.0%, geophagia (29.8%), amylophagia (7.4%), plumbophagia (6.4%) and trichophagia (3.7%) (Mensah et al., 2010). Another study also conducted among pregnant women in Tanzania showed that 45.6% practised geophagy with 54.8% initiating the practice in the first trimester (Nyanza et al., 2014). A hospital-based study in South Africa also reported 54.0% pica practice among pregnant women (Macheke et al., 2016).

This study shows that most pregnant women practise pica in the first trimester (47.8%), those who took pica more than once a day (59.5%) and most of them consume pica in between meals (43.4%). The consumption of pica in the first trimester could be attributed to the physiological changes that occur, especially during the first trimester pregnancy due to the influence of the human chorionic gonadotrophin hormone. During this period, women develop cravings for many non-food items simply because they have nice smell and appealing to eat. Nyanza et al. (2014) showed that geophagy was initiated at various times during pregnancy: in the first trimester (54.8%), in the second trimester (36.1%) and in the third trimester (9%). It is assumed that within the first trimester pregnancy symptoms are most severe (Aslan et al., 2014); therefore, pregnant women could be drawn to these non-food items by way of their smell and taste with the perception of reducing these pregnancy symptoms they were experiencing. Those engaging in pica practices ascribe varying reasons for the habit. The reasons are crave (50.7%), smell (38.2%), taste (33.1%), to stop nausea and vomiting (32.4%) and some also consume pica as a food substance due to hunger (10.3%). A study conducted in India on the prevalence of pica practice among pregnant women, identified that they consume pica because they enjoy the taste, it smells good, it is visually appealing, quench thirst and it helps in relieving nausea and vomiting (Garg & Sharma, 2010). Mensah et al. (2010) mentioned that apart from the cravings for the taste and/or smell of pica substances, other factors such as hunger, thirst, heat and gestational nausea could trigger the incidence of pica in pregnancy. The cause of pica is not known, but it believed to be influenced by cultural, psychodynamic, socioeconomic factors and nutritional deficiencies (Kaur, 2014).

This study revealed that respondents' religious affiliation is significantly associated with a history of previous pica use ( $p = .02$ ). Interestingly, pica practice in various classes of the society, particularly educated and non-educated ( $p = .59$ ), rural and urban residents ( $p = .31$ ), was not statistically significant, suggesting that the practice of pica in this population is not essentially influenced by the social status of the individual. In Kenya, pica practice was significantly associated with level of education ( $p = .02$ ) and history of child death/stillbirth ( $p = .01$ ) (Kariuki, Lambert, Purwestri, & Biesalski, 2016). In Ghana, certain perceptions in the communities that fuel the believes that pica use cure ailments or provides some form of spiritual protection, may be a contributing factor to pica



use (Mensah et al., 2010). Also, most people overlook the negative effects of pica practices (Mensah et al., 2010). The use of pica in pregnancy remains detrimental to the health of the mother and baby and measures must be instituted by service providers to reduce this menace.

This study was basically a self-report by study participants, and no independent verification was made on the type of pica used. Also, the study was conducted in a health facility where the likelihood of study participants receiving health education on nutrition and the tendency to under report their practices of pica may be high. Nonetheless, we described pregnant women general perspective on pica use.

## 7 | CONCLUSION

Healthcare professionals, especially midwives must intensify health education on the effects of pica among pregnant women especially in all trimesters of pregnancy. While this is done, alternate means of preventing nausea and vomiting should be included as part of antenatal care education in first trimester pregnancy. These alternatives may include the eating of dry bread, biscuits or sweets to reduce the effects of nausea and vomiting during pregnancy. Health workers should intensify health education on pica and its negative impacts on the health of the mother and the foetus.

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## CONFLICT OF INTEREST

The authors declare that they have no competing interest.

## AUTHOR CONTRIBUTIONS

All the authors participated in conception and the design. All authors approved the final manuscript. Abdul-Razak Doat coordinated the group.

## ETHICAL APPROVAL

Ethical clearance was obtained from the Institute of Health Research, University of Health and Allied Sciences, to conduct this study [UHAS-REC A.4 {337}18–19].

## ORCID

Abdul-Razak Doat  <https://orcid.org/0000-0003-4273-5243>

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