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Original Research

African migrant women acquisition of clay for ingestion during pregnancy in London: a call for action

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ABSTRACT

Objectives: This study aimed to explore how African migrant women go about acquiring clay for ingestion during pregnancy in London against a backdrop of restrictions and warnings by the Food Standard Agency and Public Health England due to the potential health risks to expectant mothers and their unborn babies.
Study design: This was a qualitative study using an interpretative phenomenological approach.
Methods: Individual in-depth interviews and a focus group discussion were used for data collection. Data collection took place between May and August 2020.
Results: Participants acquired clay from African shops and markets in London, countries of origin and online/social media platforms. Due to official restrictions and warnings, transactions were conducted under the counter based on trust between sellers and the women underpinned by shared community identities. However, clay was acquired, social networks emerged as crucial facilitators. The current top-down approach, which is also lacking a regulatory policy framework, has pushed clay transactions underground, thereby leaving pregnant women potentially ingesting toxic clay with little chances of dictation by authorities.
Conclusion: We call on the UK Health Security Agency (UKHSA) and public health practitioners to collaborate with communities to design multilevel/multisectoral interventions as well as the Food Standards Agency (FSA) to consider an appropriate regulatory policy framework.

Introduction

Pica has a slippery definition. It is defined as a disorder that manifests in eating behaviours involving ingesting non-food products such as clay.[1] Clay ingestion (CI), also known as geophagy, is a socially and culturally embedded practice practiced by women during pregnancy in many African countries.[2,3,4,5,6,7,8] Against a backdrop of migration, CI among migrant African women during pregnancy has been identified in the UK, Austria, the Netherlands and Belgium.[9,10] Scientific evidence suggests that some clays intended for human ingestion contain high levels of lead and arsenic, which can lead to low child birth weight, impaired intrauterine growth, impaired neurodevelopment and intestinal blockages.[5,4,9,2,10] Lower levels of exposure to lead is known to affect children's brain development, resulting in reduced IQ and attention span, antisocial behaviour as well as reduced educational attainment.[11] Furthermore, CI exposes pregnant women to potential helminthic infections caused by various parasitic worm species.[12,13] Despite these risks, CI is associated with health benefits under certain circumstances.[14,15,16] However, because clay chemical composition differs depending on the source, it is difficult to assess the potential dangers or benefits to health of all clays. Nevertheless, Madziva and Chinouya[8] have argued that a blanket approach to discouraging CI risks marginalizing the 'other' at the behest of western scientific tradition,[17] hence the call to integrate indigenous and biomedical knowledge, with recognition of the harmful impact of environmental changes to clay.[2] In the absence of this integration, appropriate policy responses and interventions which enable women to make informed choices are required.

In the UK, the discovery of high levels of lead and arsenic in clays intended for human ingestion led the FSA to issue repeated warnings[18,19,20,21] to pregnant and breast-feeding women.[22] Over the past 20 years, the FSA's responses have included placing clay on the

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banned or restricted products list,[23] engaging retailers to ensure compliance with the law, i.e. either removing clay from sale or marking it unsafe for human consumption as well as seizures by environmental health officers.[10] The then Public Health England (PHE) (now UKHSA), which views CI as a 'dangerous practice', admonishes GPs and other medical professionals to dissuade pregnant and breast-feeding women from CI.[24] Despite these measures, pregnant women continue to ingest clay.[8] This suggests the top-down approach is of limited impact. Crucially, evidence of pregnant women continuing to ingest clay points to its availability in a context where it should not be sold for ingestion.[20,23] This raises questions regarding how pregnant women go about acquiring clay in this restricted context. Despite official concerns regarding the practice, there is a remarkable dearth of studies that engage with clay ingesting women in this context.[8] Previous studies[10,34] on CI in this context have focused on sample testing and alerting relevant government agencies in relation to clay toxicity. On this note, understanding women's contextualized experiences will be a starting point to closing the knowledge gap as well as informing policy responses and interventions by relevant agencies, mostly community groups, the FSA and the UKHSA against a backdrop of potential health risks.

Methods

Study design

Interpretative phenomenological approach (IPA) aims to uncover the meaning and key structures of participants' lived experiences with a phenomenon as well as the contextual forces that shape it.[25] IPA was chosen for this study owing to its suitability to address research questions relating to individual experiences regarding clay acquisition for ingestion during pregnancy among African migrant women in a particular restricted context. Applying IPA enabled researchers to fully uncover and accommodate participants' lived experiences. The analysis followed the four-stage process outlined by Willig[26] as follows: (1) encountering with the text, (2) identifying themes, (3) clustering themes, and (4) producing a summary table.

Data collection

Thirty individual interviews, each lasting 40 min to 1 h, and one focus group discussion (FGD) with seven participants lasting 1 h and 45 minutes were conducted. Semi-structured in-depth interviews were utilized due to the combination of structure and interaction this affords, which was crucial to gaining in-depth insights into participants lived experiences as told in their language.[27] Utilizing a FGD enabled collection of data generated between participants as they presented their shared and unique lived experiences.[28] Participants were purposively selected to 'represent' those self-identifying as 'black African' woman, over 18 years old, living in a London borough, and having engaged in CI during pregnancy in England in the last 10 years. Recruitment utilized a combination of purposive sampling, which resonates with IPA[29] snowballing and quota sampling. Snowballing enabled recruitment of a hard to reach small and dispersed group.[30] However, given the risk of sample heterogeneity with snowballing, quota sampling was introduced to improve diversity.

Study context and participants

The study was conducted in London with 30 participants drawn from 15 London boroughs, as listed in Table 1. Participants' ages ranged from 29 to 45 years. The table shows participant demographics.

Data analysis

All recordings were transcribed, and transcripts were anonymized and printed for IPA. After the manuscripts were printed, they were read for familiarization, followed by re-reading for coding. Major themes and subthemes were identified and categorized, followed by selection of quotes.

Ethical issues

In line with ethical requirements, participants were briefed on the aims of the study, issues of consent, confidentiality, voluntary participation and right to withdraw from the study. Informed consent was obtained from participants, and to ensure confidentiality, all participants were anonymized, and the areas where clay was acquired are presented in pseudonyms with epithets of the larger context in brackets.

Results

Clay acquisition experiences are divided into three broad themes: 'African shops and markets', 'back home' and 'online social platforms'. Language, identity and trust emerged as important subthemes in facilitating transactions, with social networks playing a facilitatory role whichever way clay was acquired.

Table 1
Participant demographics.

Number of children	Occupation	Boroughs of residence from which participants were recruited	Countries of origin
2 Participants – 1 child each	3 Hairdressers	Newham	Zimbabwe
10 participants – 2 children each	8 Nurses including managers	Barking & Dagenham	Uganda
14 participants – 3 children each	5 Social workers including managers	Redbridge	Cameroon
4 participants – 4 children each	9 Support workers/Health care assistants	Havering	South Africa
1 participant – 5 children	2 Marketing & finance workers	Richmond upon Thames	Ghana
	5 Others	Waltham Forest	Republic of Congo
		Hackney	Nigeria
		Bromley	Congo Brazzaville
		Greenwich	Guinea Bissau
		Lewisham	
		Croydon	
		Enfield	
		Tottenham	
		Westminster	
		Chelsea	

African shops and markets 'where they sell African stuff'

Despite official warnings about risks, most participants reported acquiring clay from African shops and markets: A Nigerian mother put it this way:

> *We get it [clay] from some African Shops … in Storelands [East London] where they sell African stuff, they know there are people who eat it, it's on demand (Nigerian Mother P8)*

The idea of acquiring clay where African stuff is sold was reinforced by another mother who noted:

> *… If you go to Larksenhill and Stenswan [South London] especially where they sell African stuff, you can get it. It might not be, as you know, the same quantity as you would have access in Africa (Nigerian Mother P17)*

The notion of 'African stuff' also reinforces the association of clay with African cultural products sourced from the continent. Another mother reported acquiring clay from 'proper black areas', which alludes to areas with a higher concentration of black communities. She put it this way:

> *We get it from African shops…I would say in Shallowston or Sparowsten, Larksenhill [South London] as well as the proper black areas (Cameroonian Mother P15)*

Language, identity and trust: 'you have to ask for it'

The process of acquiring clay was however complex, with participants reporting having to ask for it. One mother who travelled some distance explained:

> *I buy it [clay] from an African shop…Larkenshill [South London]. I live in East London then I will travel all the way to Larkenshill … to get the clay. That's crazy you know. But you have to ask for it, it is not something you find it easily. (Nigerian Mother P10)*

However, asking for the clay was not sufficient to facilitate a transaction. Familiarity also played an important role as noted below:

> *There is an African shop in Larksenhill [East London]… You have to ask. Even when you ask if they don't know you, they say they don't have it …so, if there is a new face, the shop owner says they don't have it. Except it is someone like me or somebody they know … (Congolese Mother P9)*

Language appeared to play a prominent role in transactions as a Ugandan mother put it this way:

> *It [clay] wasn't always displayed. It was behind the counter, and you have to ask for it, can I please have some 'emumbwa' and they will tell you they have some, they don't have some, come back someday I will have some for you…. (Ugandan Mother P11)*

Asking for clay in a native language seemed to work as a code that signaled a genuine potential customer was a community member and hence could be trusted. Thus, a shared identity through language emerged as an important aspect in facilitating transactions. A Nigerian mother explained it this way:

> *Once you go there (the shop) you have to ask for it [clay]. Sometimes you have to speak their language for them to know that you are one of them… so if you don't speak their language… they won't sell it to you… also even if they don't know you, but if you speak their language and you speak friendly to them, like you have been coming to them regularly, they might sell to you but the truth is that if they are not sure, they might not (Nigerian Mother P23)*

A shared identity through language played a central role in trust building with shop keepers most likely to sell to their 'own' community members as well as those already familiar to them. 'Community' outsiders had to rely on friends who could speak the relevant native language as one mother put it this way:

> *So, if there's African shops around, they wouldn't specifically sell it to me because one I didn't speak the language and secondly they were not too sure who I was and whether they could trust me and sell it to me. So I had to make sure that whenever we went into the shop , I was with her [friend] so she would then speak in her native language saying do you have A, B, C, D (South African Mother, P14)*

When queried further as to why clay was only sold to those who spoke the native language, she noted:

> *I think maybe because of restrictions… But because I wanted it so badly, those rules and regulations didn't really apply because you know, when you do want something, you want it … Also, when I think that something that was just costing me a pound or two pounds (South African Mother P14)*

Similar to other participants, awareness of the restrictions had not deterred this mother from acquiring clay, and moreover, the cost was no impediment. Some participants observed changes in how clay was sold, which likely resonates with the onset of the restrictions. A Cameroonian mother explained it this way:

> *I would get it [clay] here from Larksenhill [East London]… I used to ask for it because they told me that they were not selling it freely so they didn't display it. But before then … they would just put it in front of their counter but later on I realized that they were not putting it out … I would ask for it and they would take it from their drawer and sell it to me. (Cameroonian Mother P13)*

Probed if she knew why clay was no longer displayed as before; she noted:

> *They said by law they are not allowed to sell it anymore (Cameroonian Mother P13)*

Another mother who observed this change put it this way:

> *After 2014 we noticed that they [shop keepers] were hiding it when we went to buy it [clay]. They will take it from the chest drawers, the cupboard and give it to you… they don't expose it anymore as before …So I asked one of the guys about it; he said they [government) don't allow them to sell the clay anymore… (Congolese Mother P5)*

While this mother was keen to understand why this was the case, not all participants cared to know. A mother who preferred clay from her home country Cameroon explained it this way:

> *I would travel all over London to look for it [clay] … if they sold it I would get it, even if it was not the good one. And you would not see the clay unless you ask. I remember going to Larksenhill [East London], I went to every single shop in the whole market because I was looking for the Cameroonian one… they mostly have Nigerian, Ghanaian, and Congolese, it's difficult to find the one from*

Cameroon. It was not displayed; you have to ask (Cameroonian Mother – P28)

Probed if she knew why it wasn't display she responded:

I don't really know, that's not really my problem (Cameroonian Mother P28).

While this mother was rather indifferent, knowledge of the restrictions left another irate. She narrated it this way:

I went to the shop to buy it and they said they are not selling… you see, the demand for clay is very high and when women become pregnant, they go to the African shops… they said they did not have it … if they have the clay, they have to hide it and I said, "why do you have to hide it?" They said "because the system in this country does not allow it" I said "but they are not eating it, we are eating it, it's good for us, so why are they banning something that is good for us? (Ghanaian Mother P29)

The belief that CI is good for pregnant women perpetuates demand for it, with shopkeepers likely perceiving their role as helping their communities away from the prying eyes of authorities. However, equally concerning is that some participants did not know about the restrictions, which potentially points to a lack of health risk awareness. Some participants also reported acquiring clay from 'Asian' shops, as this mother explained:

I found several shops selling it … even Indian shops as well because Indian people also eat the clay… I used to buy the clay from Pakistan and Indian shops in Hornbilton, Peacoston [East London] … but last month, I went to Larksenhill [East London] and I asked for the clay, they had it hidden under the counter, they looked at me, maybe they were trying to assess me …. they took it out of the counter (Cameroonian Mother P20)

The availability of clay in Indian and Pakistan shops alludes to CI among some Indian and Pakistan communities as well.

Clay from 'back home': "she brought me bags [of clay] …"

While most participants reported acquiring clay locally, some had it sent from 'back home' via family and friends, as well as personally bringing it when they travelled. A Zimbabwean mother explained it this way:

When I got pregnant, the cravings just became more and more, I remember during that time I had a family member coming from Zimbabwe… I asked my mum to get it for me during my early pregnancy days …I had that [clay] until at about 12 weeks (Zimbabwean Mother –P3)

Another mother who perceived clay from 'back home' of good quality put it this way:

… my mum would send me, if there is someone coming from Uganda… they [back home] know where to get the good quality one[clay]. It's not like going to the shops here and you get any kind. There is a difference. (Ugandan Mother – P11)

The comparison also suggests a dual reliance on clay from back home as well as locally. A Cameroonian mother also reinforced this point:

… when my mum heard I was pregnant she sent me the clay; I think she sent me all of what was in the market … so every time I saw it, I was eating it … I didn't like the one from this country [sold locally] … the taste wasn't quite like the one I get from Cameroon. (Cameroonian Mother P22)

Those who relied on clay from 'back home' appeared to acquire it locally as a last resort. Clay acquirement from back home via family and friends indicates the existence of social networks that pregnant women tapped into. One mother expressed surprise at the amount of clay her acquaintance was able to bring from back home. She explained it this way:

When I discovered that I was pregnant, I was saying …where am I going to get clay …so I asked my mum… she said if anyone is coming to the UK then she would send them with the clay… the person who came from Zimbabwe, she brought me bags [of clay] …(Zimbabwean Mother – P19)

Some participants relied on postal services as one mother put it this way:

When I was pregnant here… when I started to feel it [morning sickness], I called my mum to tell her I needed the clay. She posted it. I started eating it and it stopped. I did that for the second one [pregnancy], for the third one [pregnancy] … (Congolese Mother P24)

The idea of pregnant women relying on their mothers to send them clay points to the crucial role they play as sources of support. In one case, clay from 'back home' was taken away by customs officials, as a Congolese mother narrated it this way:

I asked my friend who went to Congo to bring it [clay] for me because I am from Congo. When she brought it here, they [immigration and customs] threw it away at the airport, you know at Heathrow. They did not allow it to enter the country (Congolese Mother – P5)

While this was the only reported case of confiscation among participants, it indicates that officials do take action.

Social networks and reciprocity: 'when you got it [clay] you want to share it'

Social networks were important in acquiring clay as well as getting information on where to obtain it. Reliable sources of clay were shared within networks and utilized as this mother noted:

This is like a Zimbabwean community group on Facebook, so here and there people will be posting, "is there anyone selling clay, I am really craving for it", and then someone will be like yeah there is so and so, who is selling it… (Zimbabwean Mother P30)

Some participants perceived CI as a social activity shared with friends, and as highlighted earlier, the cost was no barrier. One mother put it this way:

… sometimes, my partner I'll ask him to go to Olwstopple [North London] and buy clay for me. I'll buy it for £5. It's a lot. And then I'll call a friend to say; I've got some clay. This is like cigarettes. When you got it you want to share it… I can also go to my friend's house and say I have just come to take some clay …(Congolese mother P5)

The similarity drawn with cigarettes is indicative of a social activity that is underpinned by some level of reciprocity.

Furthermore, sharing clay amongst friends appeared to denote compassion to their need for it, as narrated below:

> *… a friend came to visit me and she was talking about it saying; "oh I want some clay", and I was like "oh I have a surprise for you." I went to bring it and she was so happy… (Guinea-Bissauan Mother P27)*

While another's participant husband went to great lengths to find her clay in the local 'mountains', the taste fell short and a friend came to her rescue. She explained it this way:

> *I usually vomit in all my pregnancies … Before or after the food I eat the clay, I will not vomit. But in this case, I couldn't find it [clay] so I would just eat and throw up, eat and throw up…I could see my husband going around to the mountains here, but he couldn't find the clay that I wanted… I had a friend whom I told about it and she said that she can buy online. She ordered it for me but it was a small packet and I had to eat small pieces everyday just to have that taste… (Zimbabwean Mother P26)*

Another participant explained how her cousin helped her to acquire clay from a local farm as follows:

> *I have my cousin… so immediately she knew I was pregnant she said listen; I am going sort you out … She said where she is in Henston [South England]… there is a farm where they have got some clay … I actually paid 50 pounds for it … (Zimbabwean Mother – P19)*

While most clay sold locally appeared imported, the quote above suggests of a local source. Though the quantity was unclear, the reference to a £50 payment was the highest mentioned in the study. Overall, participants exploited and benefitted from their social networks to acquire clay.

Discussion

This study aimed to explore how African migrant women go about acquiring clay for ingestion during pregnancy in a restricted context. Clay was acquired from across London, with Larksenhill [East London] and Storelands [South London] frequently cited. Indeed, there is evidence of environmental health officers seizing clay from some of these areas.[31,32] Home to many African Communities, East and South London multicultural shops and markets stock products reflective of diverse needs, including African cultural needs;[33] hence, it is not surprising some participants travelled quite some distance to acquire clay for their needs. It was, however, highlighted that clay was not openly sold but hidden under counters, including 'drawers' and 'cupboards', hence the need to ask for it. This suggests the current top-down approach has pushed transactions underground, which raises questions of effectiveness. Previously, clay sold openly enabled accessibility to researchers (see Refs.[10,34]) and environmental health officers via compliance checks for sample testing. It was through sample accessibility that toxic clays were discovered, warnings issued and restrictions put in place. Under the counter transactions have left pregnant women potentially ingesting highly toxic clay with little chances of dictation by authorities.

Since issuing a warning and memo to public health practitioners as well as producing an educational leaflet in 2013.[24] PHE's (now UKHSA) efforts to tackle CI have been halfhearted. In 2016, the agency aptly acknowledged that education and awareness raising is probably the best way to prevent health risks, hence engagement in multi-agency work to produce educational materials to warn expectant mothers regarding the dangers of ingesting clay.[35] However, to date, no such additional educational materials have been identified. Furthermore, framing CI under 'pica'[35] in the context of a cultural heritage that considers it the norm[8] is unhelpful. Knowledge and awareness of CI's cultural dimension is pivotal in designing effective interventions. African migrant women are overrepresented in poor maternal health outcomes, including low birthweight,[36] and potential contributing factors such as exposure to toxic metals through ingesting contaminated clay deserve appropriate attention.

Findings indicate that clay transactions between shopkeepers and customers were based on trust built on shared identities and languages. This points to the existence of shared community networks, which could be harnessed in the design of interventions. The diversity of our sample identifying with various parts of the African continent is indicative of the heterogeneous nature of the African community, which is often assumed to be homogeneous.[37] Future interventions need to be co-designed with community as a way of capturing this complex diversity.

Against a backdrop of some shopkeepers admitting to participants selling clay was against official guidance; it can be postulated that there is a need for collaborative intervention approaches that include sellers so they can effectively improve the health outcomes of pregnant women by sharing knowledge of the danger of CI. The language used by some participants alludes to a chasm between 'us' and 'they', i.e. 'us', which can be a powerful tool for designing culturally informed interventions. Informed conversations and interventions with key stakeholders amongst the wider Black and Ethnic Minority populations can help clarify the risk and perceived benefits of CI during pregnancy. Here, 'they', pointing to those in authorities, are perceived as lacking understanding of 'our' cultural heritage, thereby creating an opportunity for co-designing evidence-informed interventions that are led by communities and those in authority. To some extent, the top-down approach that problematizes CI as 'pica' and a dangerous practice without understanding of its cultural roots has contributed to this chasm. Further top-down measures risk consigning the practice deeper underground, hence the call for community-led interventions. Evidence indicates that some pregnant women are most likely to see clay sellers before midwives for the booking appointment,[7] hence the need to design interventions that are led from downstream.

While clay intended for ingestion is on the FSA banned or restricted list,[20] the guidance is advisory with no explicit underpinning regulation. The lack of regulation, as previously acknowledged by the FSA,[20] limits understanding of the risks amongst communities, as clay is not a food product. The ingredients in clay are also unknown, as they are sourced from various sources. Despite evidence of large commercial consignments of clay being seized by officials,[19] this does not offer sustainable solutions to improving health outcomes for women who may ingest clay during pregnancy. Explicit guidance through a joined-up approach between relevant agencies underpinned by a regulatory policy framework and funding of community groups to support intervention initiatives may contribute towards improving health outcomes for women and their babies.

Whether clay was acquired via online platforms, locally or abroad, findings indicate that social networks, including family and friends, played a facilitatory role. Evidence of clay sharing with friends suggests the practice is both an individual and social activity. The social networking theory alludes to health behaviours being partially driven by an individual's network due to the flow of resources.[38] In this study, participants received information support (where to get clay), instrumental support (help in acquiring clay) and material support (being given clay). Against this

backdrop, the inclusion of networks in interventions is pivotal, as a lack of support from these can hinder behaviour change.[39]

CI is also influenced by the larger contextual environment; hence, in addition to the intrapersonal and interpersonal influences, the Socio Ecological Model identifies organizational, community and policy levels of influence on individual health behaviour.[40] With regards to CI influences, the community level can be linked to the African community, which is made up of diverse subcommunities, with the policy level, as already noted, building evidence-informed policies to improve health outcomes for women and their babies. On this note, multilevel interventions that target all identified levels of influence[41] are more likely to be effective. Increasing risk awareness through information and education at the intrapersonal level can be replicated at the interpersonal and community levels while supporting this with an appropriate policy framework. While CI is highly prevalent in many African countries[7] of origin, with studies[2,3,14] equally pointing to potential health risks, to date no official restrictive measures regarding clay sales have been identified in those countries as well as other European countries. This presents potential opportunities for international collaborations among relevant agencies in tackling CI among pregnant women.

In order to boast effectiveness, interventions must be community led, as learned from successful HIV interventions among African communities by Chinouya.[42] On this note, we call upon public health practitioners to collaborate with communities in developing robust, culturally sensitive interventions. We also call on the FSA to engage with other relevant agencies to consider an appropriate policy framework.

The limitation of this study is that women interviewed may not be representative of the experiences of all migrant African women who ingest clay during pregnancy in London. Despite this, the findings provide us with in-depth insight into how pregnant women go about acquiring despite the official restrictions in place.

Author statements

Ethical approval

The study was granted ethical approval by London Metropolitan University Ethics Review Committee (ID-016).

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Competing interests

The authors have no competing interests to declare.

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