

Geophagy in Panama

A Diagnostic Study

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With the Patronato de Nutrición



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I. Executive Summaries

English Version

Geophagy in Panamá ***A Diagnostic Study***

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Introduction

Human geophagy is described as the compulsive habit of ingesting non-nutritive materials such as earth, clay, stones, ash, chalk, soap and coffee grounds. It is a common behavior in pregnant women and children and can be found in various parts of the world, including North and South America, Africa and Latin America. The behavior has many possible causes cited from religion or cultural tradition and social ritual to hunger, curiosity, presence of intestinal parasites and nutritional deficiencies of macro- or micro-nutrients, and has commonly been associated with a lack of iron. In some areas, the practice is an open and publicly accepted activity within the social community, while in other countries it is highly stigmatized and therefore a private act. In addition, there is no consensus in the scientific community as to whether this behavior has overall harmful or beneficial effects on human health. Because of all this, geophagy clearly has strong effects on social interaction and behaviour patterns as well as having substantial and pertinent implications for maternal and peri-natal health in mostly poor, rural communities.

Objectives

This project was developed as a broad comprehensive diagnostic to assess the causes, social aspects and biophysical impacts of geophagy with a focus on pregnant women to understand its general context in Panama, where it has been previously unstudied.

Study site

Data was collected from ten Grandes Pasos farms: eight in Veraguas and two in the Ngöbe-Bugle Comarca. The Patronato has a strong, well-established presence in this area, allowing the researchers of this study greater access to the communities. Additional interviews were conducted at the Hospital Ezequiel Abadía in Soná, Veraguas, and at 'Nuestra Señora del Camino' en San Félix, Chiriquí.

Methods

Field methodology at the farms began with a concise, neutral introduction to

geophagy including a description of the behaviour, a brief history and summaries of both possible benefits and risks to maternal and child health, given to all members of a farm as a group and time was allowed for public sharing of stories or opinions on the topic if freely offered. This was followed by private structured interviews with female volunteers. Data collection at the farms generally required approximately a full day spent in each community. Additional semi-structured interviews were conducted with health care workers in the province of Veraguas and Chiriquí. Five soil samples were taken for laboratory analysis, collected in locations indicated by confirmed geophagists and analyzed in a laboratory for mineral composition available through a simulated human digestion and for parasite eggs that would affect humans.

Results

- Women with a personal story of geophagy by a friend/neighbor: 65.9%
- Women who admitted to having the desire to engage in geophagy: 34.1%
- Admitted to geophagy during childhood: 14.6%
- Admitted to geophagy during pregnancy: 14.6%
 - 16.7% of these women received monthly medical attention during pregnancy
- **Total cases of geophagy: 22.0 %**
 - Materials consumed: red clay and soil, yellow dry soil, termite mounds, uncooked rice, gravel, wet ash, coffee grinds
- Soil samples tested for parasite eggs revealed no presence of parasites that affect humans.
- Results regarding the mineral composition have not yet been received.

A comparison of levels of education, poverty, access to health care and nutritional status between geophagous women and the average for all interviews suggests a higher instance of geophagy is associated with high poverty, low education, minimal health care and low quantity and variety of food. Health care workers of the area are generally of the opinion that the behavior is very dangerous to human health and either believe it is a thing of the past and nearly does not exist at all anymore or they are aware it is more common and go to length to discourage it.

Discussion

The first and perhaps most important finding is that geophagy does in fact exist in rural Panama. Almost a quarter of women actually talked about having done it and more than 40% talked about having felt a strong desire to do so. Interestingly, though the behavior is present, it carries a strong stigma and women almost exclusively practice in private, usually without addressing the fact with a health care professional if they have access to one. This stigma within the community is exacerbated by the fact that the medical centers and the personnel that work within them view the behavior as archaic, unhealthy and undesirable. The negative perceptions of geophagy of the health care system increases the stigma and secrecy of the practice, further widening the gap between the rural poor of Panama and the health care system serving them. In addition, the fact that geophagy is higher among women with higher poverty, lower education and poorer nutritional status suggests

that the practice is associated with lower levels of education and access to economic assets and nutrition.

Conclusion

In conclusion, this broad, diagnostic study has uncovered several important facts. Primarily, it has been proven that geophagy does exist in modern day Panama among the rural poor. The behavior is highly stigmatized and is carried out in private among children and pregnant women. Collected samples of confirmed geophagous materials such as clay, earth and stones indicate no presence of parasites but mineral composition analysis was not completed. The multifaceted nature of this topic now described to be present in Panama calls for in-depth studies on the different avenues of research on the subject, including anthropology, geography, pedology, biology and physiology in order to effectively evaluate its social causes, prevalence, and potential physiological health impacts on humans.

Versión española

Geofagia en Panamá *Un estudio de diagnóstico*

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Introducción

Se describe la geofagia como un hábito de ingerir materiales no comestibles como la tierra, arcilla, piedras, ceniza, tiza, jabón y granzas de café. Es lo más común en mujeres embarazadas y niños y se puede encontrarlo en varias partes del mundo, incluyendo América del Norte y del Sur, África y Latinoamérica. Este comportamiento tiene muchas causas posibles, de religión, rituales sociales y tradición a la curiosidad, el hambre, presencia de parásitos y deficiencias de macro- y micro-nutrientes, y frecuentemente es asociada con una deficiencia de hierro. En algunas áreas la práctica es una actividad abierta y aceptada por la comunidad social mientras en otras áreas es estigmatizada y por eso a veces es una actividad privada. Además no hay un consenso en la comunidad científica si es una cosa beneficiosa o perjudicial para la salud humana. Por todo eso, es claro que la geofagia tiene efectos fuertes en las pautas de comportamiento y la interacción social así como los impactos substanciales y pertinentes en la salud maternal y de niñez en las comunidades pobres y rurales.

Objetivos

Este proyecto fue desarrollado como un diagnóstico amplio e integral para evaluar las causas, aspectos sociales e impactos bio-fisiológicos de la geofagia para comprender el contexto general en Panamá, un lugar sin estudios previos.

Sitio de estudio

Los datos fueron recogidos de diez granjas de Grandes Pasos: 8 en Veraguas y 2 en la comarca Ngöbe-Buglé. El Patronato tiene una presencia fuerte y bien-establecida en esta área, lo cual permitió los investigadores de este estudio un acceso bueno a las comunidades. Entrevistas adicionales fueron realizadas en el Hospital Ezequiel Abadía en Soná, y en el centro de salud de 'Nuestra Señora del Camino' en San Félix, Chiriquí.

Métodos

La metodología del campo en las granjas empezó con una introducción concisa y neutral al sujeto de la geofagia. Se dio la introducción a la gente de una granja en grupo y después había tiempo para la gente compartir historias o opiniones en público si las ofrecieron libremente. Se sigue con entrevistas estructuradas y privadas con las voluntarias femeninas, usando un cuestionario desarrollado de acuerdo con el código de éticos de la Universidad de McGill. Entrevistas adicionales se realizó con trabajadoras médicas en la provincia de Veraguas y Chiriquí. Se analizó cinco muestras del suelo recogidas en lugares ubicados por geófagas confirmadas. Se las median en el laboratorio por huevos de parásitos que afectan los humanos y por la composición mineral disponible al sistema de digestión humano.

Resultados

- Mujeres con una historia personal de geofagia en una amiga/vecina en la comunidad: 65.9%
- Mujeres quien han tenido un deseo de hacerlo alguna vez: 43.1%
- Mujeres quien admitieron la practica de geofagia durante el niñez: 14.6%
- Mujeres quien admitieron la practica de geofagia durante el embarazo: 14.6%
 - 16.7% de estas mujeres recibieron atención médica mensual en el embarazo
- **Casos de geofagia en total: 22.0%**
 - Materiales consumidos: tierra y arcilla roja, tierra amarilla, termiteros, arroz crudo, ceniza mojada, cascajo y granzas de café
- Muestras del suelo no tuvieron huevos de parásitos que afectan los humanos
- Resultados de la análisis de composición mineral todavía no son terminados

Una comparación de los niveles de la pobreza, la educación, el acceso a la atención médica y estado nutricional entre las geophagas y el medio por todas las entrevistas sugiere que una instancia de geofagia más alta es asociada con alta pobreza, bajo educación, mínimo de acceso a la atención médica y bajo cantidad y variedad de la comida. Trabajadores médicas que tratan de las mujeres embarazadas en el área tienen la opinión que es un hábito muy indeseable y perjudicial. Ellos creen que ya no existe en Panamá o se dan cuenta que es común y la desalentar mucho.

Discusión

El primer y tal vez lo más importante es que la geofagia existe en Panamá rural. Casi un cuarto de las mujeres dijeron que lo hacen ellas mismas y más que 40% dijeron que han tenido el deseo de hacerlo alguna vez en sus vidas. Aunque el comportamiento es presente, tiene un estigma muy fuerte y mujeres casi exclusivamente lo practican en privado, usualmente sin mencionar nada a los médicos. La estigma en la comunidad es exacerbado por el hecho de que los centros de salud y los trabajadores creen que el comportamiento es arcaico, insalubre, u indeseable. Las percepciones negativas de la geofagia que tienen los profesionales de salud aumentan el estigma y el secreto de la práctica, aumentando la desconexión entre los pobres rurales de Panamá y el sistema de salud que les sirve. Además, el hecho de que la geofagia es más alta entre las mujeres con la pobreza más alta, la educación más bajo y el estado nutricional peor sugiere que la practica está asociada con menos acceso a la educación, activos económicos y la nutrición suficiente.

Conclusión

En conclusión, este estudio diagnostico amplio ha descubierto varios hechos importantes. Ante todo, se ha demostrado que la geofagia existe en Panamá moderna en las áreas rurales y pobres. Este comportamiento tiene un estigma fuerte y se lo hacen en privada las mujeres embarazadas y los niños. Muestras recogidas de materiales de geofagia como la arcilla, la tierra y las piedras indican una falta de los huevos de parásitos que afectan los humanos, pero el análisis para la composición mineral todavía no está terminado al tiempo de escribir este documento. Este tema de investigaciones multifacético, que ahora esta descrito en Panamá, pide más estudios en los aspectos diferentes del sujeto, incluyendo la antropología, la geografía, la pedología, la biología y la fisiología para que evaluar efectivamente sus causas sociales, prevalencia y los impactos fisiológicos posibles en la salud humana.

II. Host Organization



The Patronato de Nutrición is non-profit organization established by Law 17 on November 19, 1990. It is made up of members from governmental and non-governmental organizations, such as the Panama Kiwanis Club, the National Medical Association, the Catholic Church, and the Ministries of Agricultural Development, Health, Social Development and Education. Their mission is to diminish the incidence of poverty and extreme poverty in the rural areas of Panama and therefore, the incidence of child malnutrition, through development and implementation of the “Programa de **Granjas de Desarrollo y Producción Auto Sostenible - GRANDES PASOS**”.

The Patronato carries out many different projects in order to promote better nutrition and sustainable food production throughout Panama. Their programs include creating new sustainable farms, improving existing farms, organizing farms into Cooperatives and associations, and ensuring sustainability and social development among the associated communities. Currently, the Patronato supports over 259 communities by having created up to 318 farms all over rural Panama. Farms are

obligated to use collective management practices, with an emphasis on participation and collaboration of all members. Farm size ranges from five to twenty hectares, and the farms are designed to support an average of nine families. All farms are designed primarily as subsistence farms, but surplus produce is sold for profit. In order to increase awareness and raise funds for these projects, the Patronato organizes annual art auctions and raffles, corporate sponsorship programs, and educational awareness campaigns.

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III. Context

Introduction

The desire to eat nonfood substances, known in the literature as pica, is a phenomenon that has been documented for centuries dating back to Hippocrates in 4th century B.C (Young, 2008). Geophagy, the practice of eating earthy substances such as soil, clay or stones, is one of the most common types of pica and is found among human and animal groups on all continents in a variety of forms (Abrahams and Parsons, 1996;

Geissler, 1997; Hunter, 1984). Animal geophagy is considered by most scientists to be a normal adaptive behavior and has been documented among rats, mice, birds, elephants, cattle, and most primate species (Krishnamani R and Mahaney WC, 2002). Despite its worldwide prevalence and a long history of documentation, very little concrete information is known or agreed upon by the academic community about human geophagy.

It is widely accepted that geophagy is most prevalent in tropical climates, and that it is possible to define high-risk groups (Abrahams and Parsons, 1996). In particular, populations more likely to engage in geophagy include those that live in rural areas, take part in 'indigenous' or 'traditional' culture, and that have little or no access to modern healthcare facilities (Corbett et al., 2003; Horner et al., 1991). At the individual level, geophagy is most common among young children and pregnant women who have a family history of pica (Callahan, 2003; Homer et. al., 1991).

Theories

There are many theories developed to explain the etiology of geophagy. The wide variety of these explanations reflects the complexity of the behavior and the many different forms it has taken on worldwide. These theories fall into two major groups: functional and cultural. Functional hypotheses focus on the biological reasons one would crave earthy substances, and the physiological explanation for this behavior, whereas the cultural hypotheses focus on the close relationship between the earth and rural or indigenous people and what rituals or traditions involving earth-eating have evolved as a result.

Functional

Many scientists have chosen to focus on a scientific explanation for the practice of geophagy. The simplest explanation put forth is that people consume soil or clay because they do not have any food to eat (Castro J and Boyd-Orr J, 1952). Certainly, incidents of geophagy have been documented in times of famine or food insecurity (Hunter, 1973). However, geophagy has been found among populations that have food security. A more common theme in the literature is the link between micronutrient deficiencies, particularly anemia, and geophagy, with the assumption that humans eat earth in order to obtain necessary minerals such as iron, zinc, or calcium (Young, 2008; Wiley and Katz, 1998). This theory is supported by the observation that children and pregnant women are the primary geophagists, as their heightened nutritional needs may account for a higher incidence of geophagy. The problem with this theory is that although many studies have outlined a correlation between mineral deficiencies (specifically iron) and geophagy, the physiology of soil absorption is largely unknown and thus it is difficult to ascertain causation (Lopez et. al, 2004). Some scientists feel that nutrient deficiency causes a desire to engage in geophagy, whereas others argue that geophagus materials, such as clay, can block absorption of minerals such as iron and zinc into the bloodstream, thus causing the observed nutrient deficiency (Geissler, 2000; Horner et al., 1991). It is also possible that both theories are correct, and that eating earth serves to exacerbate already existing micronutrient deficiencies, reinforcing the behavior and worsening the nutritional status of geophagists. In order to understand the implications of geophagy, it is absolutely essential that the process of soil absorption in the intestinal tract is determined.

Another theory involves geophagy as an adaptive behavior to enhance immune system function—both in the short and long term. In the short term, geophagy can serve to prevent immunological response to ingested toxins or pathogens. This is supported by the observation that geophagy is often carried out in response to gastrointestinal distress (Young S, 2008). In particular, women often eat clay to cure nausea and vomiting during early pregnancy (Lopez et al. 2004). It is postulated that clay and soil have the ability to absorb pathogens and toxins and thus prevent their absorption by the gut or intestinal endothelium (Young S, 2008). In fact, kaolin clay was the original active ingredient in Kaopectate, an over-the-counter drug to treat nausea, vomiting and diarrhea (ibid). Furthermore, calcium carbonate, a common substance found in rock, is a common treatment for hyperacidity (Bodkin, 2010).

In the long term, there is a theory that exposure to mycobacteria present in dirt or soil helps to develop a strong, functional immune system. This is supported by the finding that animals, such as rabbits, guinea pigs and rats, raised in completely sterile environments fail to develop normal immune systems, resulting in abnormally shaped lymph nodes and gut-associated lymph tissue (GALT) unable to instigate a normal immune response to pathogens (Paul W, 1999). Thus, early infection of animals with outside pathogens and bacteria is essential for development of a fully functional immune system. It is impossible to repeat this experiment in humans, but there is evidence that supports a similar process occurring in humans. Children exposed to more illness at a young age tend to have fewer health problems than those that are not (Wiess ST, 2002). Therefore, one can extrapolate that early infection by bacteria may promote a stronger immune system, and the desire to eat soil or clay may be an

adaptive response to this need. This is further supported by the fact that geophagy in children tends to correlate with the drop in maternal antibodies in breast milk that occurs at around one year after birth (Callahan, 2003).

Cultural

There are also many 'cultural' explanations to justify why people, particular women, take part in geophagy. Eating of the earth is often associated with and incorporated into rituals, traditions and religion. It has been speculated that geophagy in East Africa extends back over 40 000 years (Vermeer, 1979). Hunter (1979) suggested that geophagy spread to the Americas during the slave trade, and the activity then disseminated all over North, Central and South America. Early reasons for soil eating include a belief in the magical powers of soil and its ability to ensure fertility and healthy pregnancy (Gelfand, 1945). The close relationship between early people and the earth, and a perceived fertility of soil could explain this phenomenon.

In modern times, geophagy has largely disappeared from temperate zones (Abraham and Parsons, 1996). However, in many parts of the tropics, earth-eating is still a widespread and open practice and is deeply ingrained in traditional culture (Hunter, 1973). In the latter half of the 20th century, geophagy has been documented in India, Saudi Arabia, throughout Africa, Guatemala, Honduras, Venezuela, and many other areas (Lopez et. al, 2004). For many rural or tribally oriented people, it is still common practice to purchase special prepared clay and other geophagus materials at local marketplaces for consumption. In Africa, baked clay tablets, special pieces of shale, and other products from the earth are widely available in rural areas (Abrahams and Parsons, 1995). In African societies, geophagy is often carried out collectively in groups

of women, but hidden from men of the community (Vermeer, 1966). Thus, it is a social activity that forms part of their feminine identity.

In Central America, the 'cult of the Black Christ' has resulted in commercially traded white clay tablets available throughout Guatemala, Honduras, El Salvador, Nicaragua and Costa Rica (Hunter and Kleine, 1984). Pilgrimages to holy sites associated with the 'Black Christ' to purchase tablets blessed by the Roman-Catholic Church are made at special times during the year, with tablets brought back as presents for those who could not make the trek (de Borhegyi, 1954). Women eat as much as six small tablets of '*tierra santa*' per day in order to ensure easy pregnancy and childbirth (Hunter and Kleine, 1984; de Borhegyi, 1954). In this incidence geophagy is clearly deeply ingrained in religious practice.

It is important to note that this strong cultural link is not inherent in all cases of geophagy. In many parts of the world, the practice is highly stigmatized, and geophagists carry out the behavior in solitude (Vermeer, 1971; Young, 2008; Lopez et al, 2004).

Culture-Nutrition Hypothesis

Ultimately, cultural and functional reasons for geophagy are inextricably linked, and it is highly likely that they feed into each other. The high incidence of co-existing geophagy and iron deficiency led to the development of a 'culture-nutrition hypothesis'. This theory states that physiological need often subconsciously determines behavior. As a result, this behavior is often integrated into cultural practices (Hunter, 1973). Thus, Hunter proposes that the practice of geophagy is an instinctual behavior, borne out of a biological need for essential minerals, and then incorporated into cultural practices.

Geophagy: good or bad?

Even if one could determine the cause of geophagy, it remains a contentious issue whether the behavior is positive or negative for human health. Although there seems to be a general consensus within the scientific community that nonhuman geophagy is a normal adaptive behavior, few scientists feel the same way with regards to human geophagy (Reid 1992). It is often painted in a negative light among the scientific community and defined as a pathological behavior, an eating disorder, or a mental illness. It is likely associated with a Westernized notion of soil and earth as unclean, and the general acceptance of 'germ theory' which depicts dirt as the vector for the spread of disease (Henry and Kwong, 2003).

In fact, there are few available studies that have managed to find a direct causative link between geophagy and negative health effects. Much of the literature on health impacts of geophagy is geared towards healthcare workers, and are thus not pure, scientific studies. These documents offer possible consequences or complications that may arise if a patient presents with geophagy, often citing single, isolated case studies as evidence. As geophagy is primarily a behavior of the rural poor, it is clear that there are many other confounding variables of health status that need to be taken into consideration before any conclusions based on these case studies can be drawn.

However, one cannot discount the widespread opposition to geophagy among many respected scientists and healthcare workers, and the documented negative health impacts that are associated with this behavior. The most widely accepted potential consequence of geophagy is an increased risk of ingesting infections parasites. Two

organisms found in many soils and clays that are of particular concern during pregnancy are hookworm, which is associated with malnutrition, and toxoplasmosis, a protozoan that can damage the nervous system of a developing fetus (Anderson, 2001; Luoba et al., 2005). Probably the most dangerous consequence of geophagy that has been proposed is lead poisoning. There have been numerous reported case studies of the co-occurrence of lead poisoning and geophagy (Erdem et al., 2004; Hackley & Katz-Jacobson, 2003; Mills, 2007). Lead exposure can lead to kidney damage, encephalopathy and impaired cognitive function in both the mother and fetus (Mills, 2007). Other possible health impacts of geophagy include constipation, bowel obstruction, hypokalemia, poisoning due to other toxins present in the environment and exacerbated malnutrition (abid.).

Furthermore, it has been proposed that geophagy could have adverse effects on a developing fetus. Among geophagists, there have been documented cases of lower birth weight, premature birth, and higher incidence of peri-natal mortality (Lopez et. al, 2004). The physiology of this is largely unknown, but is likely associated with maternal malnutrition leading to underdevelopment of the fetus. Thus, the causative direction of malnutrition and geophagy needs to be determined before conclusions can be made on this observed phenomenon.

Although there seems to be a scientific consensus, at least among Western researchers, that geophagy is an abhorrent behavior, many anthropologists and geographers argue that clay or soil consumption is a normal human dietary behavior among many traditional cultures (Wiley and Katz, 1998). Certainly, it is becoming more apparent that ingested substances provide more health benefits for humans than their

nutritional value would suggest. Antioxidants, and other nonfood components may have positive impacts on health and nutrition, and thus it is possible that clay or earth eating is beneficial for human health in a form that researchers do not entirely understand yet.

Furthermore, it is entirely plausible that geophagy has direct positive impacts on micronutritional status. Many researchers believe the behavior is a result of a physiological need for micronutrients as a result of an inadequate diet or an increased nutritional requirement, during pregnancy or childhood (Young, 2008). This is supported by the fact that the types of soil most commonly used for consumption tend to be high in calcium and iron (Wiley and Katz, 1998). In times of famine, dirt or soil is often used as a substitute for food (Johns, 1990). Among other groups, dirt or soil may be used to supplement a limited diet. Although the physiology behind soil absorption in the intestinal tract is currently unknown, it is certainly possible that geophagists receive nutrients from the soil.

It is also important to recognize the cultural significance of the behavior among many communities. Earth-eating is often a social activity carried out among groups of women, thus facilitating female bonding and camaraderie. Finally, there is a theory that consumption of the earth can help the development of a healthy immune system by exposing the body to mycobacteria in order to build up antibodies. Thus, there are many potential benefits of geophagy that cannot be discounted, and must be explored further in order to understand the implications of this behavior.

Complexity of the issue.

It is obvious that there are many components of this behavior that make it a very complicated area of study. In order to fully understand geophagy, it is necessary to consider aspects of anthropology, geography, pedology, psychology, physiology and public health. Thus a multi-disciplinary approach is absolutely essential to the study of geophagy.

Research on geophagy is further complicated because the practice of geophagy is very different in different parts of the world. In some countries, the practice is open and widely accepted within the community, and in other countries the practice is highly stigmatized. Thus the reasons for and the implications of taking part in this behavior may differ greatly among cultural groups. Furthermore, researchers vary drastically in their approaches to this topic. This is particularly evident in the literature, as geophagy has been variously described as a behavior, a habit, a vice, a disorder, or a pathology. The use of words such as vice or disorder automatically suggests a bias on the part of the researcher, and could certainly affect their results and their reception into a community. Due to the embarrassment and guilt that some women feel in reporting geophagy, it is important that a nonjudgmental and culturally sensitive approach be taken when investigating this subject in order to prevent misinterpretation and obtain accurate subjective data.

Because geophagy takes on so many different forms, it is exceedingly difficult to make any generalizations on the subject. Different populations eat different soils that have different mineral components and levels of toxicity. Furthermore, the problem of environmental contamination of soils has increased the risks of geophagy among communities that have been taking part in this behavior for centuries. Despite the

complex nature of geophagy, it is a topic that has fascinated researchers all over the world. Comprehensive studies on the topic have been carried out in the United States, Australia, India, Saudi Arabia, Jamaica, throughout Africa, Venezuela, Honduras, Guatemala and Mexico, but there has been no previous study of geophagy in Panama.

IV. Objectives

Given the variation in geophagic practices across the globe and the multitude of hypotheses for the behaviour, it is clear that geophagy is a complex topic with many possible avenues of research to explore. First, it is evident that the study of geophagy contains a biophysical aspect concerning environmental composition of the soil and its impacts on maternal and peri-natal health that may affect the physical development of the child and maintenance of the well being of the mother. Second, the study of geophagy also includes a socio-cultural aspect, concerning the specific reasons for engaging in the practice, the prevailing attitude towards it and the repercussions within the community, its health care system and beyond. The objective of this project is to cover these broad aspects. It was developed as a diffuse comprehensive diagnostic to assess the causes, social aspects and biophysical impacts of human geophagy during pregnancy. The physical approach uses laboratory analysis of soil composition and discussion of how ingestion of these materials would affect human health, while the social approach uses structured individual interviews, informal interaction and observation within the community.

V. Justification for Question

The grounds for pursuing this project objective is that the practice of human geophagy clearly has substantial and pertinent implications for maternal and child health as well as effects on social interaction and behaviour patterns in mostly poor, rural communities. It is a topic with widely varying observations and implications and has been studied in countries all over the world, including many countries in Central America, yet to this date no such study has been carried out in Panama.

It is especially interesting to study the impacts of the behaviour now as the use of agrochemicals in Panamanian agriculture is extremely high (Nicholls & Altieri, 1997) leaving high levels of potentially dangerous chemicals in the immediate environment. This will have direct consequences for those practicing geophagy in rural farming communities. Livestock ranching is another activity with consequences for geophagists as the life cycle of some parasites can use both animal and human hosts. An increase in livestock populations in rural areas increases exposure of humans to animal waste through geophagy thus facilitating inter-species transfer of parasites. These potential trends may have effects on the overall impacts of geophagy. This diagnostic study is designed to determine its existence/prevalence and effects on human social and physical well-being.

VI. Study Area

Interviews were carried in eight farms in the Province of Veraguas, and two farms in the nearby Ngobe-Bugle Comarca. The Patronato de Nutricion chose Veraguas

for the study because it is the poorest and most malnourished province in Panama.

Furthermore, the Patronato has a strong and well-established presence in this area, thus allowing greater access into the communities. All of the farms visited were subsistence farms, cultivating crops such as yuca, plantains, bananas, beans and rice. Three of the farms raised chickens, but there were no other animals on the farms.



Figure 1. Map of Panama

(Veraguas Province in yellow)

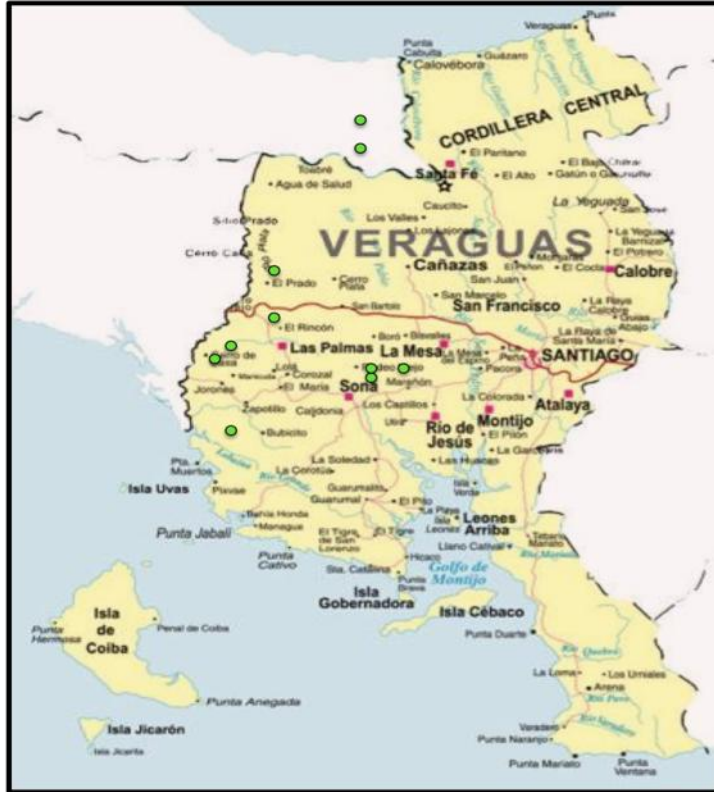


Figure 2. Map of Veraguas

(green circles demark farms visited.)

VII. Project Development and Ethical Considerations

In order to ensure ethical investigative methods for this study we drew on multiple resources. To begin with, we consulted the McGill University code of ethics for research. We then held discussions with professionals from the institution of McGill University, the Smithsonian Tropical Research Institute and the affiliate NGO Patronato de Nutrición in Panama. Finally, authors of similar studies done in other countries were contacted for their advice to be used as a reference for the development of our methodology.

This project was developed as a diffuse comprehensive diagnostic with a focus on pregnant women assessing the causes, social aspects and biophysical impacts of geophagy in order to understand its general context in a country where it has been previously unstudied. Because the investigation began with very little pre-existing knowledge of the context, it began with a preliminary assessment whether geophagy even existed in Panama and survey of the prevailing attitudes on the topic. The preliminary survey was carried out in three farms of the Grandes Pasos project of the Patronato de Nutricion: two in Veraguas and one in the Ngöbe-Bugle comarca. Subjects were gathered as a group and the topic introduced and discussed with all participants present. The introduction we gave included technical information on the possible negative health impacts of the behavior and its possible associations with a lack of certain nutrients due to a limited diet.

Interestingly the members of the farm communities did not appear to take it seriously, treated the discussion trivially and dismissed the idea of geophagy as an uncommon vice that is both dangerous and foul. The men spoke more than the women, who mostly remained silent and looked away. Although there was an obvious social barrier to be broken, the survey participants did offer few stories of geophagy in surrounding communities, years ago. This at least meant that it did exist to some extent in Panama. We also directly observed the difficulty of having open group discussions, suggesting a more private nature of the activity in this area than in some communities where it has been documented as more open and acknowledged publicly.

Upon reflection after the survey, we focused on modifications of our methodology. Most importantly, we decided to modify the introduction speech to

make it a much more neutral overview of the topic as opposed to a description of its consequences and possible roots in malnutrition. This was because we felt we had unwittingly caused the farm members to have an even more negative impression of geophagy than they had had before our visit. For us, this was an ethical issue because we, as first time researchers, certainly do not have the knowledge to make conclusions or impressions on the members of the farms one way or another. We understood that our position as foreign researchers in affiliation with the Patronato de Nutrición created unequal power dynamics between us and the members of the farm. Thus, we had to be meticulous about our choice of language in order to avoid biasing the perception of geophagy within the community. We replaced words like 'disorder' and 'vice' with 'habit' and 'activity', and spoke about its possible health benefits such as a strengthened immune system and acquisition of lacking minerals alongside its possible negative associations. Furthermore, we realized that the language we used for the introduction speech was too complicated and technical, and the people we were talking to were unable to understand many of the words we used in the introduction. Thus, we decided to write up a new introduction that was easier to understand, and more neutral on the topic of geophagy (See Appendix 2).

Furthermore, we planned to conduct private anonymous interviews with the women of the farms after a brief introduction to the topic in group. If geophagy were in fact a private, stigmatized behavior for which one would be judged, women would be more likely to open up if not in the presence of their peers and family. We developed a questionnaire in accordance with the McGill code of ethics to use for the interviews, covering background and socioeconomic info, then opinion and experience with

geophagy (see appendix 3). In addition we were sure to inform the participants exactly for what the information we were collecting would be used and how they could obtain the final report of our study if they desired.

With these changes to our field methodology, we embarked on the second part of our study in which we visited three more farms (two in Veraguas and one in the comarca) and carried out individual interviews. The members of the farms responded much better to the modified introduction, and the interviews allowed for a much more genuine interaction between the participants and researchers. During the second tour we began to learn from the women that geophagy does not only exist but it is in fact quite common in children and pregnant women in rural Veraguas. We learned that women who had done it had received medicine from a local health centre to help them to quit the habit that the health care workers said was dangerous and undesirable. Three soil samples were taken from a sites located by confirmed geophagists. This sample would be analyzed in the laboratory for eggs of a parasite that affects humans and for its mineral composition and bioavailability to the human body.

Due to the fact that during the second tour the women were offering interesting information about the opinion of the health centers on geophagy, for the third tour of the last four farms (all in Veraguas), the questionnaire was modified to include more investigation into the relationship between the extent and quality of health care and human geophagy. Because private interviews with women of the farms is a very intimate setting, we also changed the wording and approach to some questions to ease the tension and make the participant feel more comfortable with the topic and with giving answers. Two additional semi-structured interviews were conducted with health

care workers that serve in the study area. The first was with Señora Juana, the head obstetrics nurse of the Hospital Ezequiel Abadía de Soná, which is one of the only health centers available for much of the rural population of the province. The second health professional interview was with Beronica Gall, a nurse in the maternal care section of the health center of the Organization Nuestra Señora del Camino en San Félix, Chiriqui, where many women of the comarca are attended during pregnancy.

Our finalized methodology consisted of a brief, neutral introduction to geophagy to all members of a farm followed by individual, private interviews with women of the communities. We were sure to inform the members they were not obliged to participate, and if they did choose to interview with us they were able to stop the interview at any time, omit questions or retract any statement, and that they would have full access to the final results of the study through the Patronato de Nutricion.

VIII. Methodology

Interview Methodology

Data was compiled from 41 interviews carried out at ten farms of the Grandes Pasos project of the Patronato de Nutrición; eight in the province of Veraguas and two in the Comarca Ngöbe-Buglé. Data collection generally required approximately a full day spent in each community. The finalized methodology used in the field consisted of a concise, easy to understand, neutral introduction to geophagy including a description of the behaviour, a brief history and summaries of both possible benefits and risks to maternal and child health. The introduction was given to all members of a farm as a group and time was allowed for public sharing of

stories or opinions on the topic if they were freely offered. This was followed by individual, private structured interviews with women of the communities who volunteered using a questionnaire in Spanish developed for the purposes of this study in accordance with the McGill University code of ethics. Additional semi-structured interviews were conducted with health care workers in the province of Veraguas and Chiriquí. Questionnaires are included in Spanish and English in the Appendix.

Laboratory Methodology

A total of five material samples were taken for laboratory analysis:

1. Red clay from beside a home
2. Red clay from beside a home
3. Soft, wet river stones
4. Dry yellow soil along a footpath
5. Dry red soil beside a home

Samples were collected in locations indicated by confirmed geophagists, refrigerated for preservation and analyzed in two separate laboratories. The University of Panama department of Parasitology analyzed the samples for eggs of parasites that affect humans. INDICASAT laboratories analyzed the samples for their mineral composition that would be available to the human organism after digestion.

Parasitology

(Parasitology department of the University of Panama)

To analyze the samples for parasite eggs they were subjected to a 3-step process of 1. simple sedimentation, 2. treatment with formolether, and 3. flotation.

1. To begin, each of the 5 samples were placed in containers overnight with an amount of water double that of the weight of the sample. After 5 minutes of agitation and simple filtration to separate large particles, each sample was separated into 6 test tubes of 5mL soil solution each, which were then centrifuged at 3000rev/min for 5 minutes at ambient temperature and the water fraction removed.

2. To each test tube of soil sediment was added 4mL each of 97% ether and 37% formolin. The mixture was similarly agitated and centrifuged to separate further fractions for removal.

3. Each test tube of soil sediment this time was filled halfway with hypersaturated solution of NaCl, agitated to mix and then filled to a reverse meniscus with the same NaCl solution so that any eggs present will float to the top. The tubes were covered with a microscope cover slide and left for 5 minutes to let the eggs stick to the slide. The cover slides were then mounted to base slides using lugol as an indicator and analyzed individually for parasite eggs.

Elemental composition (INDICASAT laboratories in Panama city, Panama)

The samples were subjected to a simulated digestion and analyzed by ICP spectrophotometry for levels of 62 periodic elements (Hunter, 1984).

IX. Limitations

One of the biggest barriers to break with this project was the public stigma surrounding human geophagy. It was necessary to adapt our methodologies to overcome the aversion to talking about it, while remaining ethical and not pressing participants for answers or creating any discomfort. A desirable situation would have been that the study had a sufficient time course for us to integrate into the communities and become comfortable with the members of the farms. Another limitation was our complete reliance on the Patronato for our data collection. Due to the nature of the farms, it would have been unacceptable for us to visit the farms on our own without the supervision of a member of Patronato de Nutrición to help with transportation and introductions to participating members of the farms. Finally, the laboratory analysis for the mineral composition of the five soil samples required more time than originally believed and therefore the evaluation of the possible effects of geophagy on human health could not be included in the discussion as some results are still pending.

X. Results

Farm Interview Results

- Women with a personal story of geophagy by a friend/neighbor: 65.9%
- Women who admitted the desire: 34.1%
- Admitted geophagy during childhood: 14.6%
- Admitted geophagy during pregnancy: 14.6%

- 16.7% of these women received monthly medical attention during pregnancy
- **Total cases of geophagy: 22.0 %**
 - Materials consumed: red clay and soil, yellow dry soil, termite mounds, uncooked rice, gravel, wet ash, coffee grinds

	Documented Geophagy	All Interviews
Average age	49.1 years	42 years
Average # children	6.1	5.5
Meat > 1/week	11.1%	26.8%
Literacy Rate	55.6%	80.5%
Average # years of education	3.44	5.0
\$\$ to buy necessities	22.2%	24.4%

Healthcare Worker Interview Results

	Juana	Beronica Gall
Job Title	Director of Obstetrics, Hospital Ezequiel Abadía de	Primary Health Care Worker, Fundación Nuestra Señora del

	Soná	Camino
Area Served	Soná and surrounding area	Ngobe-Bugle Comarca
Self-identified Cultural Group	Urban Panamenian	Indigenous
Does geophagy exist?	It used to, now it's very rare	Yes, very common
Materials Consumed	Soil, coffee grinds, insects	Ash, earth, salt, soap
Perception of Geophagy	Bad habit	Bad habit
Health Impacts	Very dangerous for health (did not specify why)	Premature birth, malnutrition, perinatal complications
Treatment	Replace undesirable substance with fruit or cookies; folic acid; tell them desire will pass	Vitamins; explain to the women it is dangerous for the baby and they must control it
Cause	Hunger; Body missing nutrients	Desire
Estimated Prevalency	<0.1%	Almost 100%

Soil Analysis

- **Analysis for Parasites:** no parasite eggs in any of the soil samples
- **Analysis for Materials:** pending
 - Red color of samples indicates high level of iron

XI. Discussion

The most important component of this project was the discovery that geophagy is, in fact, present in Panama. This is the first documented report of geophagy in the country and the first attempt at describing the nature of the behaviour in Panama. As the study of geophagy encompasses so many different aspects, we were able to make several important observations that will hopefully contribute to an overall understanding of the issue and potential areas for further research.

Unlike many other documented cases of geophagy, it seems that there is not a strong cultural component to the behaviour in Panama. Earth-eating does not appear to be a social, traditional, or religious activity. This is supported by the fact that all respondents indicated they carried out the behavior in solitude. For many respondents, the formal interview was the first time they had told anyone about the behavior. For others, they had admitted it only to close family members and medical professionals.

Furthermore, there is very little public discourse on the activity, and any that does exist is very negative. In every community we heard accounts of people with severe medical complications due to geophagy. The stories included people turning yellow, swelling up, and then dying because they ate dirt. Yellow skin discoloration and abdominal swelling are both common symptoms of liver failure. Liver failure is an indicator of infection from a parasite or heavy metal poisoning (Bodkin, 2010). What was interesting was that these stories were never first-hand accounts; they were always very vague and about people from other communities a long time ago.

It seems that in Panama, geophagy has taken on a dangerous, mythical quality and is shrouded in mystery and stigma.

The general perception of geophagy in the community is thus, highly stigmatized. This is exacerbated by the fact that the medical centers and the personnel that work there view the behavior as backwards, unhealthy and undesirable. Many of the interviewees expressed a desire to engage in geophagy but insisted they had never taken part in the activity because they were told it was dangerous and unhealthy. There are many problems associated with this. If geophagy is truly a response to a physiological need, and doctors are telling women not to take part, then they are merely treating the symptom and not the root of the problem. Until the cause of geophagy and its impacts are determined, it is risky to make judgment calls on whether it is a desirable or an undesirable behavior, especially among the rural poor who may have limited access to healthcare and a sufficient variety of nutritional food.

Another important aspect of the study was the observed disconnect between the rural, poor women that we interviewed and the Panamanian medical system. This was particularly evident when interviewing the primary healthcare workers, both in the Sona Hospital and in the Healthcare centre in San Felix. The head of Obstetrics in Sona informed us that geophagy was a thing of the past, and that it was absolutely not a problem anymore. She admitted that some women still craved coffee grinds during their first trimester, but that this desire was easily controlled with cookies and fruit. She suggested a similar treatment for women engaging in geophagy. This was in direct contrast to what we observed in the field. When we

informed some of the campesino women of Juana's statement, they were unsurprised. They said that the medical system does not know about its existence because it is something that no one wants to talk about it. Women that engage in this behavior feel ashamed and embarrassed and thus are very hesitant to admit it to a medical professional.

Furthermore, Juana told us that the Hospital never discusses geophagy with their pregnant patients, as they do not see it as a concern anymore. This is confirmed by our interview results, as the majority of women told us that when they went to the health clinic for prenatal care, no one spoke to them about this issue and its potential health impacts.

There was certainly a vast difference between the interview at the Hospital, and the interview carried out in San Felix, with Beronica Gall, a primary healthcare worker with pregnant, indigenous women. She told us that almost 100% of women in the Comarca engage in geophagy during their first trimester. In fact, geophagy is so common that it is used as a form of a pregnancy test. When a woman eats dirt for the first time, it is assumed she is pregnant and brought to a nearby centro de salud as soon as possible for confirmation. Despite this increased awareness of the behavior, she did not view it any more favorably than Juana. She felt geophagy could lead to complications during pregnancy such as low birth weight, premature birth, and mortality. In order to control geophagy, the health centre gives the women vitamins and informs them of the dangerous nature of this behavior.

The stigma that surrounds this activity makes it very difficult to study and obtain accurate results. Although 22.0% of respondents admitted to the behavior, it

is highly likely that this is an under-documentation. Most researchers who study geophagy feel that it is vastly under reported, and estimate much higher prevalence than observed in interviews (Lopez et. al, 2004; Young, 2008). Many women seemed uncomfortable talking about the issue, and it oftentimes felt like they were not being completely honest with their answers. However, in the interest of remaining ethical and culturally sensitive, no effort was made to press the issue among women that seemed hesitant to share their stories. Thus, we feel the prevalence of geophagy among rural women in Panama is much higher than the observed 22.0%.

Unfortunately, until the stigma surrounding geophagy is lifted, and women feel comfortable talking about the behavior, it is highly likely that there will continue to be a disconnect between healthcare workers and the rural poor on this issue.

One particularly troubling observation was the correlation between socioeconomic factors and geophagy. Women that admitted to geophagy had more children, lower literacy rates, fewer years of education, and less access to economic means than those that did not. Furthermore, of the 14.6% of women that admitted to geophagy during pregnancy, only 16.7% of them received regular medical attention while pregnant. When compared to the national average of Panama, the disparity is even more striking. The documented literacy rate for Panama is 91%, whereas among confirmed geophagists it was only 55.6% (CIA World Factbook, 2008). Over 88% of Panamanians complete 8th grade, whereas the average number of years of education among geophagists was only 3.44 years (UNICEF, 2008). Furthermore, 9/10 of geophagist women ate meat less than one time per week, and most had only rice and beans for all other meals. Many of these women did not have

enough food to eat three meals a day. It is clear that women taking part in this activity have low education levels and under nutrition, which may contribute to their participation in geophagy.

The result obtained from the soil sample analysis of the Parasitology department of the University of Panama is interesting because it shows there were in fact no eggs of parasites that affect human hosts found in the soil being chosen by geophagists. This could be because parasite eggs survive better in moist, porous soil protected from direct precipitation, yet the study was done during the dry season with the samples mostly being extracted from dry sites surrounding homes without vegetation, exposed to precipitation. It is also possible that this preference evolved as an adaptive method of geophagists- the fact that the preferred soils are those in which parasite eggs don't survive as well.

The results from the INDICASAT laboratory that analyzed the soil samples for mineral composition available to the human body after digestion have not yet been received and are therefore still pending results at the time of submission of this document. It is worth mentioning, however, that most of the soil samples were mostly a deep red in colour, indicating a high iron content. It is impossible, however, to infer the effect on the human body from this because different minerals contained within a sample may have very different bioavailability to the human body after digestion.

XII. Conclusions

In conclusion, many important revelations have been made as a result of this broad, diagnostic study. Primarily, it has been proven the geophagy does exist in modern day Panama among the rural poor. The behavior is highly stigmatized and is carried out in private, primarily among children and pregnant women. Collected samples of confirmed geophagus materials indicate no presence of parasites. Data regarding the mineral composition of samples is pending. The multifaceted nature of this topic of research necessitates an interdisciplinary team of researchers in order to effectively evaluate the prevalence and potential health impacts of geophagy in Panama.

XIII. Acknowledgements

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XV. Appendices

1. Time Spent

Activity	Days (Hours)
Secondary Research	14 (112)
Farm Tours/ Interviews	10 (80)
Preparation for Informal Presentation	1 (8)
Preparation for Final Symposium	3 (24)
Writing up of Final Report	6 (48)
Total	34 (272) 2 people = 544 hours

2. Introduction of Topic

Original

Somos dos estudiantes de la Universidad de McGill en la ciudad de Montreal en Canadá. Nuestras licenciaturas son en las facultades del desarrollo internacional y las ciencias del medioambiente y la salud. Estamos aquí en Panamá por cuatro meses para hacer un estudio sobre algo que se llama la geofagia. La geofagia está conocida como un deseo o un hábito de ingerir materiales que usualmente no son ingeridos, como la tierra, la arcilla, el hielo, las piedras y otras materiales que principalmente no son nutricionales. Es un hábito muy común en varias partes del mundo como América Latina, África y Norte América y hay estudios en el sujeto en varios países en estas áreas. Sin embargo en América Latino se llevó a cabo estudios solamente en México, Argentina y Venezuela. No hay datos para la prevalencia en Panamá. Eso es porque queremos aprender más en el sujeto específicamente aquí en su patria.

Para hablar un poco más sobre la geofagia: como dije, es un comportamiento comer cosas usualmente no comido. A veces es asociada con una deficiencia de nutrientes en el cuerpo, más notable el hierro. Otros estudios indican que es la más común en mujeres embarazadas y en niños. La teoría para eso es porque estas personas tienen un requisito nutricional más alta de varios minerales y nutrientes. Entonces si una persona falta de hierro u otros minerales en su dieta, a veces los busquen, conscientemente o no conscientemente, en materiales como la tierra o arcilla. Otras razones para este comportamiento son para razones religiosas o tradicionales, para asegurar un nacimiento de niño saludable y fácil, para sentir lleno, para curar un malestar de estomago y otras razones no conscientes.

En cantidades pequeñas la tierra y otras materiales que son ingeridos con la geofagia no son perjudiciales para la salud, y es posible que haya beneficios. Pero los riesgos de impactos negativos están creciendo. Especialmente es verdad ahora a causa de la aumentación de la polución en el medioambiente con el uso de las pesticidas, herbicidas e insecticidas en la agricultura, los efectos ambientales de la minería, la polución de las ciudades y los vehículos, la eliminación de la despilfarro impropio, y más. Los efectos advérsales pueden incluir bloqueos de sistema, la reemplazo de alimentos nutritivos que actualmente contribuiría a las deficiencias de minerales y nutrientes, y efectos tóxicos de químicas perjudiciales.

Por todo eso, creemos que la geofagia es un comportamiento con impactos significativo en la salud humana y es importante que los evaluamos. Ya hacemos una encuesta preliminar en unas fincas en Veraguas para determinar si existe aquí y para observar la actitud popular hacia el comportamiento (si hay un estigma o si es un comportamiento reconocido y aceptado). Hablamos con la gente de unas fincas y aprendemos que es presente en formas varias y en personas de edades variadas. Ahora queremos investigar más profundo en el sujeto para

Eventualmente apuntamos responder a las grandes preguntas Queremos estimar la prevalencia e investigar los impactos para la gente aquí en Panamá

- Existe la geofagia en Panamá
- Cuáles grupos muestran este comportamiento
- Hay ventajas o efectos adversos para la salud
- Cuál es la prevalencia
- Cuáles son las razones/causas para el comportamiento
- Cuáles son los materiales consumidos
- Cómo afecta la composición de material a la salud
 - Ventajas nutricionales
 - Nutrientes disponibles para el adsorción
 - Elementos perjudiciales
 - Enfermedades resultandos posible

Improved

Hola y gracias a todo por estar aquí. Somos dos estudiantes de la Universidad de McGill en la ciudad de Montreal en Canadá y estamos aquí por cuatro meses con la Patronato de Nutrición. Estamos estudiando un hábito que se llama 'geofagia'. La geofagia es cuando una persona come los materiales como la tierra, la arcilla o las piedras. Estos son los materiales que no se comen generalmente. Es un hábito muy común en varias partes del mundo, como Norte America, África, y muchos países en America Latino como México, Guatemala, Honduras, Argentina y Venezuela. Pero, no hay datos o estudios en este hábito en Panamá. Esta es la razón porque queremos aprender más en el sujeto aquí en Panamá.

A veces la geofagia ha sido asociada con una deficiencia de nutrientes en el cuerpo, usualmente el hierro. En este estudio, queremos centrarnos en geofagia durante el embarazo porque la mayoría de los estudios dicen que es la más común en mujeres embarazadas y los niños. Es posible que esto sea porque niños y las mujeres embarazadas necesitan más hierro y otros nutrientes para apoyar al bebé creciente. Otras razones para este hábito son religiosas, tradicionales, para comida, para curar un enfermo del estomago y otras razones desconocidas.

Es importante saber que la geofagia es un comportamiento o una actividad, no es un trastorno. Ahora mismo, los científicos no saben si es una buena cosa o una cosa mala. Algunos estudios dicen que hay beneficios o es bueno, algunos estudios dicen que puede ser malo o perjudicial. Para nosotros, sabemos que está ocurriendo este hábito y queremos aprender sobre él.

Ya hicimos una encuesta preliminar en unas fincas en Veraguas para determinar si existe aquí. Hablemos con la gente de unas fincas y aprendemos que es presente en formas varias y en personas de edades variadas.

Ahora, queremos tener una discusión de grupo para hablar de la actividad y cómo usted todo se siente sobre él. Después de la discusión, quisiéramos hacer entrevistas individuales: una a una.

Ustedes necesitan saber que todo la información que nos dan será confidencial y no vamos a usar los nombres en nuestro estudio. También, si usted no quiere hablar de esto, no es necesario. Además si ustedes quieren la información en el final del proyecto, pregunten a Eric y el les dará una copia.

Bueno. Ustedes tienen preguntas para nosotros?

3. Structured Personal Interviews

Versión española

Puede decidir no responder a cualquier pregunta. Puede parar la entrevista a cualquier momento. Le preguntaremos su nombre pero no tiene que darnoslo su nombre ni cualquier información que no quiere. Los datos que nos da estarán usados solamente en nuestro estudio para nuestra universidad en Canadá. La información en la encuesta va a ser completamente anónimo. Si quiere usted, toda la información que recogeremos en las fincas de Veraguas le podemos dar al fin del estudio. Simplemente díganos que usted quiere los datos y cuando hemos terminado, le daremos la información al patronato para dar a usted en su finca. Hay tres secciones, una sobre su trasfondo, una sobre la geofagia, y una para sus preguntas para nosotros, pero puede preguntarnos a cualquier momento durante la entrevista si quiere. ¿Usted está cómoda con todo esto?

Antecedentes

- 1.Nombre
2. Cuántos años tiene
- 3.Cuál es su empleo/responsabilidades en la finca
4. Cuántas personas hay en la finca
5. Cuántos de ellos trabajan.
6. Ustedes usan quimicos para cultivar sus productos de la finca?
7. Tiene la capacidad comprar cosas que necesita su familia cuando las necesitan
8. Asistió a la escuela
9. Cuántos años estuvo en escuela

10. Puede leer y escribir
11. Tiene esposo?
12. Cuantas personas están a su casa?
13. Cuantos embarazos ha tenido en su vida y cuantos niños tiene?
14. Cuando estaba embarazada, fue a un centro de salud (cada embarazo)
15. Cuando apareció el centro de salud en esta área
16. Recibió medicinas del centro de salud para el embarazo?
- 17.Cuál es su dieta diaria normal (hay carne)
18. Practica una religión
19. Hay una iglesia en la comunidad
20. Cómo es su asistencia a la iglesia
21. Tiene rituales tradicionales que hace a fuera de la iglesia

Geofagia

22. Cómo se siente usted sobre lo que hablamos en grupo
23. Ha oído de este comportamiento alguna vez (en el pasado, de sus padres...)
24. Lo ha visto personalmente alguna vez en su vida (en la escuela, su finca, su familia, las fincas vecinas...)
25. Tiene vecinos, amigos que lo han hecho o aún hablado de un deseo para hacerlo
26. En general, qué piensa usted de dónde viene esta actividad: es un hábito muy viejo, tradicional, religioso, biológico, etc (basically why do people do it)
27. Hablan sobre eso sus padres alguna vez
28. Habla sobre eso el centro de salud, que dijeron
29. Ha tenido un deseo para hacer lo mismo alguna vez
30. Lo ha pensado hacer alguna vez
31. Lo ha hecho alguna vez
32. Cuando lo hizo
33. Edad
34. Con que frecuencia

35. Qué tipo de material
36. De donde obtuvo el material
37. Cómo grandes son las cantidades
38. Cómo siente después de ingerirla
39. Cuáles son las razones para hacerlo
40. Lo hizo con otras personas o sola
41. Alguien sabía lo que hacía
42. Lo recoge en el mismo lugar cada vez

Wrap-up

43. Después de la entrevista, cómo siente sobre este tema?
44. Esta cómoda con la información que nos dio?

English Version

You can choose not to answer any questions. You can stop the interview at any time. We will ask your name but you do not have to give it to us or any other information that you do not want. The information you give will be used only in our study. The information in the survey will be completely anonymous. We will provide the Patronato with a copy of our final project. If you would like to receive the results of our study, just ask Eric and he will give you a copy. There are three sections, and you can ask us questions at any time during the interview if you wish. Are you comfortable with this?

Background

1. Name
2. How old are you?
3. What is your job / responsibilities on the farm?
4. How many people are on the farm?
5. How many of them work?
6. Do you use chemicals to grow your products from the farm?
7. Do you have the ability to buy things your family needs? (medicine, etc.)
8. Have you attended school
9. For how many years?
10. Can you read and write?
11. Do you have a spouse?
12. How many people live in your house?
13. How many pregnancies have you had in your life and how many children do you

have?

14. When you were pregnant, did you go to a health center (every pregnancy)?
15. When did the health centre appear in this area?
16. Did you receive medicine from the health center during your pregnancy?
17. What is your normal daily diet (how many times a week do you have meat)?
18. Do you practice a religion?
19. Is there a church in the community?
20. How is your church attendance?
21. Do you take part in any traditional rituals outside of the church?

Geophagy

22. How do you feel about what we talked about in the group discussion?
23. Have you heard of this behavior once (in the past, parents ...)?
24. Have you ever seen someone do it once in your life (in school, in the farm, in your family, neighboring farms) ?
25. Do you have neighbors/friends who have done or even spoken of a desire to do this?
26. In general, where do you think this activity comes from: traditional, religious, biological, etc (basically why do people do it) ?
27. Did you talk about it with your parents ever ?
28. Did the health center ever talk about it?
29. Have you ever had the desire to do it?
30. Have you ever thought about it?
31. Have you ever done it?
32. During what time?
33. Age
34. How often?
35. What type of material ?
36. Where was the material?
37. How large of an amount?
38. How did you feel after ingestion?
39. What were the reasons for doing it?
40. Did you do it with others or alone?
41. Did anyone else know about it?
42. Did you get the material at the same place every time?

Wrap-up

43. After the interview, how do you feel about this issue?
44. Are you comfortable with the information you gave us?