

Food and nutrition security and environmental pollution: taboo and stigma

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Abstract *This qualitative approach study seeks to understand the meanings of Food and Nutrition Security (FNS) and environmental contamination by shellfish gatherers in the municipality of Santo Amaro, Bahia. Solid and industrial waste (mainly lead) and biological waste are released in the Subaé river and in the mangrove, compromising food resources, life and health of the population. Shellfish gatherers selling their mangrove-derived products are stigmatized by people of this municipality, as well as other cities in the Recôncavo Baiano, and, as a result, do not reveal the origin of shellfish sold in the market. Silence and contamination denial are understood as ways to ensure the FNS, the naturalization of social inequality and in favor of survival. These observations portray the daily life of this poor population living amid heavy metals' and sewage contamination.*

Key words *Social stigma, Environmental pollution, Food and nutrition security*

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Introduction

This paper aims to understand the meanings of Food and Nutrition Security (FNS) to shellfish gatherers subjected to the environmental contamination of heavy metals (Lead-Pb and Cadmium-Cd) and sanitary sewage in the municipality of Santo Amaro, Bahia, Brazil.

We considered the political meaning of FNS, as described in the Brazilian Organic Law¹ as a pivotal point for understanding issues addressed here. This concept is transdisciplinary since it involves biological, economic, environmental, social and cultural individual and collective issues. FNS-related issues are symbolically evident in the everyday world through culture: at work, in the purchase of food, in cooking, in children care, etc. Thus, we analyzed the FNS situation in this location based on food meanings in the daily life of men and women.

In Santo Amaro, people have been victims of the social and environmental liabilities left by the Brazilian Lead Company (COBRAC) since 1993 through the liquid effluents of pulp and paper mill on the Pitinga River, a tributary of the Subaé River, as well as biological contamination of domestic sewage in mangroves.

Among the by-products of the metallurgical process of the production of lead ingots were arsenic (As), antimony (Sb), copper (Cu), zinc (Zn), cadmium (Cd) and lead (Pb). These made up the slag abandoned by the factory and later used for paving streets and houses of the municipality. The carcinogenic effect was reported by Baxtel² and in the protocol of the State Health Secretariat³.

Research⁴⁻⁷ and official records⁸ on this environmental tragedy that contaminated the location revealed lead, cadmium, copper and zinc concentrations at levels higher than the limits established by the World Health Organization (WHO).

In addition to chemical contamination mentioned, Subaé riverbank dwellers have been continuously exposed to biological contamination since the 1970s⁸. Often, foul odor and the presence of rats attracted by domestic solid waste cause disgust, fear and diseases.

The fear of getting sick from lead contamination has been in place since the onset of the news in the press on the matter. This led to a shellfish consumption and sale ban, shrinking the income of anglers' and shellfish gatherers' families and generating more food and nutritional insecurity in this population. These residents, called "*Suru-*

ru eaters"⁸, were prohibited by sanitary authorities to capture, consume and market mangrove products, ensuing social, economic and cultural damages.

Anglers and shellfish gatherers are still stigmatized to this day as they live and work in the contaminated region. The term stigma described by Goffman⁹ and later, with greater reflexive rigor, by other authors¹⁰, indicates the evil condition of a social group when discriminated and consequently devalued, similar to that observed with the Santo Amaro shellfish gatherers, called "mangrove people".

Taboo of the word "contamination" emerges as a survival strategy to sell shellfish. This fear of talking about the subject leads to complete silence on the chemical contamination of the Subaé River, the tide and the mangrove. According to several studies^{3-5,8}, this is one of the largest lead contaminations ever recorded in the country.

In these established connections, the term taboo refers to the fear of talking about what horrifies¹¹. From the observation of the daily life of this population and its discourse and silence, we could understand some of the meanings of FNS in relation to contamination by heavy metals (mainly lead) and sanitary sewage in the mangrove and river.

Methodology

This is a qualitative study carried out through interviews, participant observation and recording of information in field diaries and discourse analysis. Shellfish gatherers of African descent collaborated in this study and discussed chemical and biological contamination and domestic FNS¹².

The main income of shellfish gatherers families consists of shellfish species such as Sururu (*Mytella sp.*) and Mapé (*Teria sp.*) and income supplementation through government welfare programs, such as the *Bolsa Família* (Family Grant) and the Fishing Unemployment Insurance in the closed season.

Fieldwork took place on non-consecutive days between January and October 2014 and we recorded daily life observations in field diaries. We chose subjects through the snowball technique¹³, often used in similar studies¹⁴. Individuals chosen were shellfish gatherers aged over 19 years and residing near the mangrove. Thus, we interviewed 13 women during their domestic chores, shellfish gathering work and while at rest and in their leisure time.

Interviews followed a script of questions on the object of study^{15,16}: stigma and the linguistic taboo of contamination and the FNS. Each interview lasted on average 60 minutes, with returning individuals for additional information or verification of new questions related to the object of study. Next, discourses were carefully transcribed, compiled and significant ones that imprinted the notion of taboo and stigma of living amid environmental contamination and the relationship with domestic FNS highlighted. Discourse and field observations analysis adopted techniques used by Michel Pêcheux¹⁷ and Eni Orlandi¹⁸, and in greater depth, studies by Paul Ricoeur¹⁹ and Cecilia Minayo¹⁵.

French school discourse analysis links linguistic aspects to the social and historical context. It works on meanings produced instead of text content and has a historical and ideological relationship with it. Pêcheux and collaborators say that discourse arises from the interaction between interdiscourse, collectively constructed knowledge, and intradiscourse, the spoken by the subject (speech), where the interpreter or analyst is responsible for the interpretation of given meanings²⁰.

It should be noted that this research followed the norms set forth in the current legislation²¹ and was approved by the Research Ethics Committee, Nutrition School, Federal University of Bahia, through process nº 730.144, with the establishment of pseudonyms to preserve the identity of participants.

Data analysis feedback derived from the conversation with shellfish gatherers and dwellers following investigation, and publications generated in the form of papers will be forwarded to schools of the municipality.

The selected themes, or meaning units for analysis, were: a) The linguistic taboo of shellfish contamination; and b) The stigma of living in the contaminated place.

The linguistic taboo of environmental contamination

The sentence *Just don't come and say that my shellfish is contaminated* shows the issue and the linguistic taboo of shellfish contamination in the region. Labeling, prejudice and classification associations, since contamination in Santo Amaro was confirmed in 1996⁸ have negatively affected the product's image, which is very much alive in the minds and daily life of shellfish gatherers and local merchants.

To this day, the ban on consumption and marketing has resulted in fear to talk about the problem of chemical contamination. This taboo in the imaginary of dwellers is like an attractive force for bad omens, damaging situations that harm the shellfish gathering and produces the deprivation of daily activities of these people. However, despite this fear, they continue to produce, consume and market the products.

We observed that no one mentions the true origin of shellfish at the municipal fair. This veiling is the taboo. To this day, people conceal the place contaminated by industrial material waste in order to sell their products. The unnamed fends off these people from the evil caused by its mention. So, nothing else is contaminated if people do not talk about it.

Regarding biological contamination, there are those who do not consider it harmful to health because they "are accustomed to" and understand that tide cleans the mangrove. Others, on the contrary, deem that they are contaminated and can get sick. However, this type of contamination is for them the social brand of poverty, in which the lack of infrastructure is justified by the social condition.

Bodily semiotics significantly denounce the annoyance caused by the approach to mangrove and shellfish contamination. Silence reveals facial expressions such as deviant gaze for fear of chemical and biological contamination. It is the fear of hunger if people fail to sell mangrove products. Thus, we see downcast people at several stages of the research when asked on the subject and witness an explicit denial about chemical and biological contamination.

Shellfish contamination is a forbidden subject among shellfish gatherers and is best avoided. Biological contamination is evident in the mangrove, but still, in general, considered a better situation compared to five years ago. On the other hand, local dwellers' or "known" sanitary sewers are not something serious like the chemicals widely publicized by the media. As such, there was absolute silence when addressing mangrove and native species.

Body languages and silencing reveal the force of words that compromise their food security, as described by the re-elected mayor of the municipality: *Our city is suffering and poor. We have lived with this situation for decades. I think that today, after so many studies, we have reached a conclusion, that we have a damned inheritance.*²²

According to Andrade and Moraes⁴, recurrent research over the last forty years and the

poor quality of information available to dwellers about health risks due to intense chemical contamination in the region are portraits of the distorted relationship between the use of scientific knowledge and its social and ethical consequences. This situation causes distrust among dwellers, because they feel cheated by researchers who do not always return the results of the investigations on this contamination.

There is also apprehension in showing shellfish contamination, as this information could interfere with the commercialization of products. The fear of any study about contamination in the region may be news in the television media and jeopardize longings for a good sale. *When research about lead here in Santo Amaro mentioning contaminated shellfish was conducted, this simply ended our hopes altogether. People did not want to buy shellfish anymore (Ana).*

According to Almeida²³, silence about contamination is one of the ways residents in this region cope with the issue without causing them any harm, since they are subject to continuous exposure to lead and other heavy metals. Thus, without concrete alternatives, these people abstain from talking about it.

Silencing may be timely depending on the interests of who or what is to be concealed. As in Adrianópolis-PR, stigmatized as “lead city”, where dwellers suffered prejudice, shame and economic losses with news of the contamination¹⁴. Who is interested in news about chemical contamination? This is veiled due to economic and/or political reasons. These social and economic damages also concern Santo Amaro residents, especially shellfish gatherers.

The threat affects the life of the place and shellfish gatherers’ way of being. With the news, they feel also contaminated and, therefore, suffer discrimination, as if they carried a contagious disease by living in a place condemned by heavy metals, sanitary sewers, solid waste and sewage. The idea of contagion is associated with stigma and the attraction of the problem “soils” survival. Thus, contamination is understood as an evil that can be spread.

Nevertheless, the idea of contagion is contiguous with the temporal aspect. According to the interpretation of the statements of shellfish gatherers, there is an association between the causal factor and the effect or the disease. We cannot understand the environmental problem without factory running and symptoms of disease. The time of getting sick from lead contamination is not the time of science. In the emetic field, cause

and effect are immediately connected to each other, as are the most common diseases related to them (flu, leptospirosis, diarrhea, dengue, etc.). The lack of evidence of sickness due to chemical contaminants generates a dissociation between causality and effects.

As for biological contamination, shellfish gatherers say that illness can be generated by contact with rat urine, since it gets people sick and kills them, as it indeed happened, according to Gina: *Here everyone built walls to prevent sewage and rats from entering their homes. People have died from rat urine here.*

Shellfish gatherers eat and prepare tide-derived food for the family with the certainty that there is no more contamination. To ensure food for the children, they must deny the existence of contamination to themselves and others and, thus, believe that food is clean and hazard-free. In addition, silence about contamination symbolizes the forgetfulness of a series of disorders arising from this problem, as already mentioned previously.

Another feature of shellfish chemical contamination’s linguistic taboo is ambivalence. There are times when they feel satisfied with capturing, benefiting and selling shellfish resulting from their work, and other times when derogatory denominations bring uncertainties and issues about shellfish quality. This causes conflict between shellfish gatherers and merchants. When fair consumers question the product’s origin, shellfish gatherers deny the place of capture. Thus, this idea refers to the conceptual denomination of stigma, as shown below.

The stigma of living in a “contaminated” place

In an official report⁸, anglers and their families living in areas close to the mangrove and affected by chemical contamination are named “shellfish eaters”. Used initially to quantify and identify risk exposure, this labeling is the source for the analysis of the situation described as the characterization of stigma in this group of people affected by chemical contamination of heavy metals for over twenty years.

This labeling is relevant from the social standpoint for this group and plays a central role in the differentiation of the main people affected. We note that, in general, some people believe in harm to health³ (even if they are silent) and some other who do not, even if, for some, conflicts and doubts on this subject is in the back of their mind.

Those who believe that chemical and biological contamination can affect people's health refer to it as evil, and that they may be contaminated, since they have had direct contact with lead particles through air, soil and from other sources, as reported by shellfish gatherer Eva: [...] *My husband was bringing back the overalls and I washed them. I may even have this lead stuff (in my body).*

However, other dwellers do not believe they are sick from chemical contamination through contact. They say that most common are work diseases and accidents sustained in the tide and mangrove. The shellfish gatherers interviewed complain of pain related to musculoskeletal disorders and mention work-related accidents, such as drowning, cuts and stings of venomous animals, as per studies in similar areas²⁴⁻²⁶. These studies state that chemical contamination is invisible or is limited to Pitinga and Subaé rivers. *This contamination is from here to there (she points to the river towards the city), from here onwards it is sea territory, it is not contaminated by sewage, nor factory (Flor).* As a result, since COBRAC waste's contamination lacks color or smell, they do not conceive it, although they understand the importance of research carried out. They say this contamination is different from paper industry waste, which has changed the landscape, with the disappearance or reduction of several shellfish species. *In the past, it was easier to find shellfish, now we have this (Pulp) factory pollution (Eva).*

Marked by stereotype, residents of the studied area feel stigmatized by the impacts caused by chemical contamination directly and indirectly in their lives. This deprecating stigmatization by others suggests deterioration of the identity of these dwellers, in general by Santo Amaro's fair consumers. They feel their survival is permanently threatened. They know nothing about studies' findings and only heard that the press reported the impact of chemical contamination in the region. As if stranded, many residents do not understand the labeling of products that affects their identity as shellfish gatherers and anglers of this place. They are rejected; some sell their production cheaply or travel to other municipalities to see it off. In general, this is not a condition that affects only dwellers of this place, but also the population of Santo Amaro.

At various times, we observed inhabitants' uneasiness in showing their feelings about the contamination. A member of the local Shellfish Gatherers and Fishermen Association says that it is not appropriate to introduce fishery products in school meals because he recognizes contam-

ination and knows the risk of children shellfish contamination. However, they consume it at home. This may indicate that, at school, they would be free from contaminated food, but that there is no other choice at home.

In addition, in another study in the municipality²³, the discourse a resident illustrates the poor information she has about the type of a chemical contaminant and its action mechanisms. *We did not know that which contaminated us. That ore entered into our blood stream (Antonia)*²². Contamination is synonymous of disease and antonym of FNS and health. There are those who deny and others who confirm contamination of the place where symptoms are mixed with everyday fatigue and other forms of contamination, such as the biological one that is not valued, as it is widely naturalized in people without access to public sewage services.

Another characteristic of the stigma observed refers to separation between stigmatized and stigmatizers, or according to the analysis, between "us" and "them"¹⁰. Recognizing contamination is contiguous with the identification of contaminated and non-contaminated people. Shellfish gatherers believe that former COBRAC workers and individuals identified by scientific research⁵⁻⁷ and technical reports⁸ are those contaminated. These are stigmatized by the identification and risk of illness. *My father worked at the factory ... Some families were called, only people who worked at the factory (Diana).*

The moral experience gained by the socialization of stigma gives rise to a stigmatized identity. Goffman⁹ defines this phase as the moment of consciousness in relation to the point of view of the other (who does not have the problem). In this respect, because of the chemical and biological contamination, shellfish gatherers and mangrove dwellers feel isolated in the municipality. As per the stigma concept review¹⁰, the separation between "us and them" is thus reflected. That is why there is a need to hide the origin of the product and say that it originates from elsewhere in order to sell it. *People [merchants] here began to make up a story saying that shellfish was from Acupe (Ana).* Therefore, a rational connivance among shellfish sellers is apparent, as if there were an agreement to omit the origin of the product.

Santo Amaro is marked as a place of chemical contamination and therefore there may be difficulties in selling the products. By keeping the product's origin secret, they try to ensure the sale and certainly their survival and that of their family.

The fear of dwellers' social loss is relevant. As a rule, shellfish gatherers and their families have different access opportunities to education, health and income when compared to urban population. Therefore, experiences related to products' undesirable features such as chemical and biological contamination can lead to loss of social and economic status and discrimination of shellfish and, by association, to producers. In connection with the discrimination they feel through environmental contamination (both chemical and biological) that affects the life of the place, there are also other forms of discrimination. *We suffer discrimination from the people from up there, if we say that it is from here, they look strange, it speaks of something distant, of shellfish and violence (Gina)*. In affirming discrimination, the shellfish gatherer expresses a feeling of devaluation and disadvantage in relation to "them" (the people from up there), which reinforces power relations between groups, typical of the stigma process¹⁰.

Thus, these dwellers say that one of the ways to survive in this place is to sustain the belief that contamination belongs to the past. Certainty is that time and natural forces like wind, rain and tide flows remove the contamination. In this regard, a resident affirms: *Tide water is renewed every day twice a day; it washes away and renews (Virgílio)*. The belief that tide purifies everything, even chemical contamination²⁵ is here reinforced.

Without a way out, denying is inherent in one's own way of life. Denial of the origin of the product brings benefits to stigmatized and stigmatizing groups, since stereotypes can relate to the inequality of opportunities within the context experienced by these black women. According to studies^{10,27}, the precariousness of life forms allows the maintenance of social hierarchies and the inequality introjection process. So, would not silence also be the result of the naturalization of survival?

The lack of health surveillance actions for the exposed and of subject appropriation strategies among the population in general contribute to uncertainties about the effects of chemical contamination. [...] *He's got lead, but his lead is not exaggerated because he sweats a lot, he works a lot (Eva)*.

According to the belief, there is an elimination of chemical contamination through sweating, as well as of other body impurities through sweat. In addition, it is worth mentioning the fragile and superficial knowledge of dwellers about the real situation at hand: [...] *They took*

different drugs, I don't know if it was to fight the lead in the blood or for prevention (Gina).

Even today, the effects of lead contamination are unclear to residents (they always refer to this metal – lead) and dwellers are skeptical of scientists' findings and technical reports denouncing the severity of the accident in the municipality. [...] *They have done so much research. And nothing came out of it. (Ana)*. Disbelief is alive in the population, due to the discontinuous comprehensive health care protocols actions, the complexity of issues that transcend the health sector and slow compliance with the recovery of contaminated areas^{4,14}.

While studies^{4,14,28} identified the need to adopt procedures for risk governance and health surveillance of the population at risk, only income-generating social projects, donation of staples, few compensations and social housing programs for members of the Association of Victims of Contamination by Lead, Cadmium, Mercury and other chemical elements (AVICCA)¹⁴ have been covered so far. However, it should be emphasized that there are no environmental recovery programs in the natural areas of shellfish production or food consumption studies of this population of shellfish gatherers and anglers identified at risk.

Conclusion

From a semantic network of denials, prohibitions and silences in their speeches, one could understand the stigma and linguistic taboo of shellfish gatherers in relation to environmental (chemical and biological) contamination. When denying, they affirmed the fear of losing the sale of shellfish because of conjugated stigma, as it deteriorates their identities.

Inserted in the narrative intersubjectivity, chemical and biological contamination topics flooding the place appear as taboo, and social and environmental conditions are portrayed as forms of stigma. These issues permanently threaten food and nutritional security.

Concealing, veiling and denying environmental contamination are moral and ethical manifestations of these investigated dwellers in order to keep away from food insecurity in their imaginary, because they do not want to speak or think about "the worst". Thus, the need to feel safe from hunger is imperative, although the body is threatened by diseases due to the excess of heavy metals (mainly lead, according to studies)

and helminthiases. It is worth remembering that previous research that denounced high chemical contamination did not result in any governmental actions to restore the environment.

Some residents prefer to believe that there is no more chemical contamination in the region and that weather and tide have already cleared the whole place. However, one of the signifiers that appears attached to daily life is the feeling of discrimination and stigma. Locals feel isolated and separated as if they were contagious. Thus, environmental contamination mixes with social devaluation, and both are naturalized to ensure survival in that place. These expressions affect food production and compromise FNS.

FNS issues in Santo Amaro are not limited to family income alone, but environmental contam-

ination and social discrimination linked to the status of quilombolas as a social identity. Such situations are in the same semantic web, without separation: poor, black and contaminated. This is the identity that marks permanent food uncertainty, whose hardships are associated with the complexity of living the socioeconomic and cultural dimensions described.

In attempting to relativize the analyzes, this study did not pretend to say what is right or wrong about the identified linguistic traits, since in the counterpoint between scientific analyzes and native taboos, one can produce misunderstandings about the stated meanings. However, the proposed interpretations are meanings consisting of beliefs and experiences of collaborators of this work.

Collaborations

MF Barreto and MCS Freitas contributed fundamentally to the accomplishment of this study.

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