



Healthy food, unhealthy food: Indigenous perspectives on the nutrition transition

Maria Amalia Pesantes^a, Mariella Bazán Macera^b, Sabine Mercier^c and Pamela Giselle Katic^d

^aDepartment of Anthropology and Archaeology, Dickinson College, Carlisle, USA; ^bSalud Sin Límites Perú, Lima, Peru; ^cInstituto de Investigación Nutricional, Lima, Peru; ^dNatural Resources Institute, University of Greenwich, London, UK

ABSTRACT

Amazonian Indigenous Peoples are undergoing drastic changes in their ways of life including the quality and availability of food and its impact on their health and well-being. Indigenous populations have their own perspectives and interpretations of dietary changes unfolding in their communities. Based on in-depth interviews, observations and validation workshops we explored the way Awajún describe and problematise the concept of healthy and unhealthy food in the context of the nutrition transition. We learn that the characteristics of 'good food' are informed by their capacity to give strength, protect health and enable them to be hardworking people. On the contrary, food that comes from the city weakens the body and may result in health problems. For the Awajún, chicken with hormones, fish preserved in cans, and powdered milk negatively affect their health. We argue that the dichotomy 'healthy' and 'unhealthy' used to classify food provides information not only about Indigenous conceptualisations of health and die, but is also a critique of broader structural processes affecting their well-being. The terms, explanations and idioms used by the Awajún to talk about food, provide an insight into Indigenous perspectives and knowledge key to informing global health interventions in culturally appropriate ways.

ARTICLE HISTORY

Received 19 July 2023
Accepted 6 March 2024

KEYWORDS

Indigenous perspectives;
health policy; Amazon;
nutrition transition; Peru

Introduction

The concept of nutrition transition refers to changes in patterns of dietary intake and energy expenditure that affect both nutritional outcomes and body composition (Popkin, 1998). The most recent nutrition transition, characterised by the increased consumption of processed and ultra-processed foods initially affected primarily high-income countries. However, the negative health effects of such a transition are currently also being felt in low- and middle-income countries at a faster pace (Popkin, 2001, 2004). These health effects are not equally distributed among the population and some groups, such as Indigenous Peoples, experience changes in very specific ways, such as food and foodways (the cultural, social and economic practices relating to the production and consumption of food) (Dwyer & Freitas, 2013) which are intimately connected with their identity.

Food is an important way in which Indigenous Peoples maintain connections with their environment, their traditional knowledge, their physical, emotional, mental and spiritual health as well as

CONTACT Pamela Giselle Katic  P.G.Katic@greenwich.ac.uk  15A Henrietta Chase, Chatham, ME4 3SZ, United Kingdom

 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/17441692.2024.2329210>.

© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

their culture; all important components of their identity (Kuhnlein & Burlingame, 2013). This paper focuses on the way the Awajún, a Jivaroan Indigenous group from the Peruvian Amazon, classify their traditional food vis-à-vis new food options, make sense of both the health implications of dietary changes, as well as the structural factors driving such changes. We argue that the dichotomy of healthy and unhealthy foods proposed by Indigenous Peoples in the communities we visited constitutes an idiom through which they provide a social and political critique of the implications of the nutrition transition in their lives and bodies.

Indigenous Peoples from the Amazon are undergoing drastic changes in their ways of life as a result of multiple processes enabled by a neoliberal economic model. Such a model has been systematically promoting large-scale deforestation for agribusiness and cattle ranching, use of agro-chemicals, fossil fuel extractivism and rapid urbanisation, resulting in land degradation, water pollution and illicit economies (timber, gold and coca and land grabbing) (McGrath et al., 2021). The job opportunities from both illicit economies and state-sponsored economic activities, as well as the presence of state services (public health facilities, schools, police stations, etc.) and the penetration of market-based economies, have increased the influx of non-Indigenous people into Indigenous territories reducing the availability of land for both subsistence farming practices and hunting grounds (Houck et al., 2013a). Migration into the Amazon has also facilitated the introduction of new cultural patterns that have weakened, modified and even decimated Indigenous Peoples' traditional subsistence practices, their livelihoods and their food and nutrition environments (Rumrill, 2015; Soares Leite, 2007). Several studies, among Indigenous Amazonians, have documented the rapid shift of food choices from traditional, more plant-based diets to processed and industrialised products such as rice, vegetable oils, sugar, salt, wheat and meat from farm animals (Dufour et al., 2016; Houck et al., 2013b). This has resulted in worsening nutritional patterns among various Indigenous groups in the Amazon (Piperata et al., 2011; Piperata & Dufour, 2007; Sarti et al., 2015; Welch et al., 2009, 2021), affecting their well-being in multiple ways as traditional food systems are rooted in historical continuity with their land and their ancestors (Kuhnlein & Burlingame, 2013).

Indigenous Peoples are not passive actors in the changes in their food systems. They both want to become integrated into the market economy and purchase foreign goods and services while fighting the often-violent way in which market penetration occurs. Ethnographic accounts show that throughout the Amazon basin, there is dependence on the commercial market and Indigenous Peoples are eager to acquire products, medicines and services from the nearby urban centres that have become essential in their daily lives (Belaunde, 2019). There is often a preference and desire to consume foreign products, that symbolises increased wealth, education and upward mobility (Belgharabi, 2022). Possessing foreigners' goods are for Indigenous Peoples in the Amazon, a symbol of the prestige of being in contact with outsiders and being able to deal with them (Hugh-Jones, 1992). Although the desire to be integrated into the market is not the rule amongst Indigenous Peoples, many foreign goods have become important necessities for them (Morsello, 2002), and in some cases, such goods might have helped reduce food insecurity.

In the face of increased migration into their territories, as well as the presence of licit and illicit economic activities, Indigenous organisations throughout the Amazon have responded by denouncing the detrimental effect of such activities on their well-being (Chase Smith, 1994; Espinosa de Rivero, 2009; Javier Romero Dianderas, 2015). In our study, we documented Indigenous families' perspectives and interpretations of these processes. In this article, we present the explanations that Indigenous Awajún Peoples from the district of El Cenepa in the Peruvian Amazon provide when discussing the characteristics of healthy and unhealthy food. We also discuss the relevance of such explanations vis-à-vis the accelerated nutrition transition unfolding in their territories. We propose that these local understandings provide information not only about Indigenous conceptualisations of health but also about the significance of broader structural processes affecting their well-being, which are essential to address food-related health problems. By paying attention to the terms, explanations and idioms that Awajún Peoples from these communities use to talk about the quality of their food, they are providing a social and political critique (cf. Van Hollen, 2022).

Our research focuses on the local perceptions of food, their value, meaning and changes in dietary practices from the perspectives of families with small children and key social actors. Our goal is to try to understand the nutrition transition from an Indigenous perspective by recognising that communities themselves have a specific knowledge around food and health, as well as a particular understanding of the drivers of these issues that are often not taken into account when nutrition policies are designed at the national and international level. We aim to contribute to current debates that promote the recognition of the existence of a system of ideas about food that are logical, coherent, legitimate and articulated with other dimensions of life and thought (Soares Leite, 2007). Understanding this complexity is mandatory in global health efforts to reduce under- and overnutrition, not just for the success of externally-designed programmes and interventions but as a way of recognising the value of Indigenous knowledge and perspectives to address the problems that are affecting them. Our findings provide entry points to promote culturally respectful nutrition policies, crucial to decolonise global health. As other authors have highlighted, strategies to overcome food insecurity require meaningful engagement with—and recognition of—the centrality of Indigenous Peoples' knowledge systems, ontologies, worldviews and perceptions of changing social and cultural values as well as the implications of such changes in their ways of living (Arotoma-Rojas et al., 2022; Johnson et al., 2022; Rivera Andía & Vindal Ødegaard, 2019).

Materials and methods

Setting

The Awajún people, also known as Aguaruna, inhabit different regions of the Peruvian territory and represent the second most numerous Indigenous Amazonian people in Peru, after the Ashaninka (Ministerio de Cultura, 2019). The research was conducted in the community of Huampami, the capital of El Cenepa district, in the Amazonas region where the Awajún are undergoing an accelerated nutrition transition. According to information provided by the municipality during fieldwork, 95% of inhabitants of Huampami are considered extremely poor, which is based not only on their income level but also lack of access to key services (i.e. education, health, water and sanitation). Most families in our study were beneficiaries of social programmes specifically targeted at families below the poverty line.

Outsiders have encroached on the Awajun territory since colonial times, but the process of slowly integrating this Indigenous group into the Peruvian Nation-State is more recent mostly from religious and state institutions. Such processes have led to population increase as a result of the conglomeration of Indigenous families in towns where the national government built schools, health posts and other facilities. This was accompanied by the influx of non-Indigenous people looking for better opportunities in those areas. According to our participants, population growth is at the root of the limited availability of land for families to be self-sufficient. They stated they used to have a more scattered settlement pattern, which allowed families to practise shifting cultivation that ensured higher and better yields. Population growth has also translated into a reduction of available game animals to hunt and fish. These processes have been exacerbated by illegal gold miners that began to flood the area in 2018 when there was an increase in the international price of gold (Vera, 2023). Illegal gold mining operations have not only brought insecurity to the communities but also an increase in sexually transmitted diseases as a result of transactional sex practices, land-grabbing schemes and pollution from the mercury dumped in the river to obtain gold, making the water unsafe to drink and contaminating the fish people relied on for their diets (Inoach, 2022). The changes in local diets are noteworthy; in 2009, a study in this same area found that the traditional food system of the Awajún was threatened by mineral and petroleum extraction initiatives (Creed-Kanashiro et al., 2013), but that they still relied mostly on their traditional foodways (Creed-Kanashiro et al., 2009). Now, however, the dependency on market-procured goods is obvious, as we will discuss in the next section.

The community of Huampami, where the research took place, was originally a small set of families grouped around the school that the Jesuits established in the 1950s and currently, has approximately 190 families. Now, it has a Primary School, a Primary Health Care facility and electricity service twice a day (7:00 am – 3:00 pm and 6:00 pm – 10:00 pm). Therefore, although there is satellite internet service, it is not regular since it only works when there is electricity. Mobile phone service is also available but affected when heavy rains occur. Access to Huampami is by river in boats that provide public transportation once a day. It takes between 4 and 6 h to reach Huampami from the nearest town. We found that most families had some type of income-generating activity. This shows an important change from 2009 when a previous study found that few Awajún families had access to cash and generally did not sell their produce as it was mostly for consumption within the families and communities (Creed-Kanashiro et al., 2009).

Methods

This was a qualitative study conducted in three phases (Table 1) that was part of a broader interdisciplinary project that aimed at elucidating the pathways between agroforestry and nutrition outcomes and the factors that mediate these linkages (Project: ‘Intercultural models to improve nutrition and health of indigenous populations through gender-sensitive agroforestry practices in Peru’). The focus was the perspectives of families with children under 5 years who are the target of anaemia reduction policies in Peru, a major focus of the umbrella research project. This project was approved by the IRB of the Instituto de Investigación Nutricional (IIN) in Peru [PROY.347-SM] and the University Research Ethics Committee of the Natural Resource Institute of the University of Greenwich in the UK.

First field visit: Fieldwork in Indigenous communities

During October and November 2021, we conducted semi-structured in-depth interviews with 23 key actors, which included community leaders, government officials, schoolteachers and primary healthcare workers. We also collected data through dyadic interviews where both husband and wife participated intermittently for two-day visits, as well as informal conversations and participant observations of 21 families who were generous enough to allow us to visit their homes and their agricultural plots (*chacras*).

Three local Indigenous researchers (R1, R2 and R3) received a preparatory 3-day workshop in which several topics on research activities were covered such as the steps to request informed consent in a culturally respectful way, as well as the importance of confidentiality (See Table 2). All Indigenous researchers had completed a professional or technical degree, self-identified as Indigenous, spoke the local Indigenous language and were familiar with the community to different degrees. R1 had been a schoolteacher in a nearby community, where he lived and had a leadership role. His father was a well-known healer (*‘sabio’*), who sadly, died of COVID-19 in 2020. R2 had a college degree in environmental management and although he did not live in Huampami, his grandfather did. When he

Table 1. Phases of the qualitative study.

Phases	Goal
Phase 1: First Field Visit	Collect information from families and key stakeholders through intensive fieldwork.
Phase 2: Validating data with the research team	Interpretation meetings: We presented the preliminary results to the teams of the other components of the GANA Project, that is, to the nutrition and agroforestry components, in such a way that they helped us analyse and clarify some confusing elements as well as being able to collect doubts from them, requests for greater depth and reflections on its components.
Phase 3: Second Field Visit	Share results with local authorities and complement and validate interpretation with local families.

Table 2. Topics covered in the training of Indigenous local researchers.

Día 1	
Hora	Actividades
9:00am - 10:00am	Presentación del programa de capacitación y reglas de convivencia
10:00am - 11:00am	Presentación del equipo del estudio: Dinámica de presentación: Nombre, profesión, actividad principal ¿Qué esperan de la experiencia de este trabajo? ¿Este trabajo les genera alguna preocupación?
11:00am - 12:00m	Presentación del Proyecto GANA y del Estudio del Componente 1.3
12:00 m - 1:00pm	Conceptos generales de métodos de recolección de información cualitativa
1:00pm - 2:30pm	Almuerzo
2:30pm - 3:30pm	Consideraciones claves sobre el consentimiento informado: importancia, características. Práctica sobre su aplicación.
3:30pm - 4:30pm	Técnicas de investigación: La Entrevista
4:30pm - 5:30pm	Técnicas de investigación: La Observación
Día 2	
Hora	Actividades
9:00am -12:00am	Presentación del instrumento de la Guía de entrevista y Ficha de datos de grupo familiar del estudio.
12:00 m - 1:00pm	Pautas para el uso de la grabadora de voz
1:00pm – 2:00pm	Almuerzo
2:00pm – 4:00pm	Presentación del instrumento de la Guía de observación del estudio
4:00pm – 6:00pm	Traducción de la guía de entrevista y guía de observación a idioma awajún
Día 3	
Hora	Actividades
9:00am - 11:00am	Consensos para la traducción de la Guía de entrevistas y Guía de observación al awajún.
11:00am - 1:00pm	Juego de roles los dos equipos. Retroalimentación de las dudas y ajustes a realizar.
1:00pm – 2:30pm	Almuerzo
2:30pm – 4:30pm	Logística y gestión del trabajo de campo: cronograma de actividades, procedimiento para la selección de las familias, pautas de transcripción de entrevistas, procedimientos para la toma de fotografías, pautas de organización interna del equipo, pautas para el autocuidado por el Covid, procedimiento para la entrega del kit de agradecimiento, otros.
4:30pm - 6:00pm	Coordinaciones finales para salida a campo

introduced himself to the families, they immediately recognised his last name, some remembered him as a child and was welcomed into people's homes.

R3 had completed a technical degree as a secretary and had never been to Huampami before. Her father is a well-known Awajún leader in the area so when she mentioned her last name, people knew which family she belonged to. One of the families selected for the study was able to trace a kinship connection, offered to host her and helped her become acquainted with the community. Having local young Indigenous researchers fluent in the Awajún language and familiar with the area was an asset to ensure the interview process was culturally sensitive. They were able to build rapport and trust and were welcomed to stay in people's houses and visit the *chacras*.

Interviews with families were done in Awajún, based on an interview guide that was translated and back-translated during the training period, by the local Indigenous researchers (See Appendix 1). Oral and written informed consent was obtained from participants before beginning the interviews. The research topic (dietary habits) was not a particularly private issue, and families were quite willing to be part of the research. However, if we had been focusing on a more intimate health topic such as sexually transmitted diseases, further training around ethical considerations would have been necessary and local research assistants might not have been the best option.

To understand the perspectives, experiences and conceptions about nutrition, within the families, we deemed it important not only to interview the head of the household but also to include the perspectives of other adult family members (especially wives) who were present. Based on our previous experience conducting research among Indigenous Peoples, we knew women feel more

comfortable sharing their opinions in the context of group conversation rather than in a one-on-one interview structure. The use of local Indigenous research assistants for 2 days with each family allowed us to document the interconnections between family members and their family dynamics around food and economic activities.

All interviews and conversations were recorded and transcribed verbatim and, the interviews done in Awajún were translated by the interviewers who were also responsible for the transcription. All transcripts were coded using Atlas-ti 8.00. One research assistant coded all the family interviews having meetings twice a week with the principal investigators to ensure consistency in the coding process, addressing doubts regarding the selected codes (See Appendix 2) and reporting the progress. One co-author coded all the interviews with key stakeholders.

After an initial organisation of our data, we held two virtual meetings with the rest of the research team to receive feedback and insights about our findings. These meetings enabled us to improve our methodology for the second field visit.

Second field visit: Sharing results and validating data

To better comprehend the results and analysis and ensure a more nuanced understanding of the research topics around nutrition and food perceptions we considered it essential to present the preliminary results to the actors who provided us with the information (leaders and families). This allowed us to validate our results and interpretations and provide opportunities for them to correct, clarify or contest our findings. Were we correctly depicting their experience and perspectives? What other issues did we need to take into account to correctly interpret their opinions? Doing a second visit to share the research results provided an opportunity to discuss them with local communities.

In May 2022, after we analysed the information from the interviews, we returned to the area to facilitate five workshops (Table 3) aimed at both sharing our findings and validating and further exploring some of the ideas around dietary practices. The findings were discussed with Indigenous local leaders, local district municipality authorities, the 21 families who participated in the first field visit, the Indigenous regional organisation and primary health care workers. Additionally, we held four focus groups with men and women divided by age groups (18–35 and 36–60 years old) who had not participated in the first phase of the research process. These focus groups specifically revolved around the dichotomy that emerged in the first round of analysis regarding healthy and unhealthy food. The results we present in this paper focus on the perspectives of Indigenous actors around these two concepts.

Results

Families

The average family size of the families we visited was five members, and most of the adults were between 19 and –35 years old (See Table 4). Most families are beneficiaries of at least one

Table 3. Focus group and workshop participants.

Characteristics	Number of participants
Focus group with females (18–35)	6
Focus group with males (18–35)	4
Focus group with females (36–50)	5
Focus group with males (36–60)	4
Total	19
Workshop with families from the original sample	17
Workshop with local indigenous leaders	9
Workshop with authorities and workers of the local district municipality of El Cenepa	10
Workshop with the indigenous regional organisation: ORPIAN	5
Workshop with primary health care workers	8
Total	49

Table 4. Characteristics of Families.

Characteristic	Details	
Family Size	1–3 people:	5 families
	4–5 people:	9 families
	> 5 people:	7 families
Economic Activities	Agriculture	18/21 families
	Cattle raising	1/21 families
	Farm animals (chickens)	16/21
	Traditional activities: hunting and/or foraging	9/21
	Services (bodega, handicrafts, shoemaking)	3/21
Beneficiaries of state-sponsored social programmes	Juntos (conditional cash transfers)	8/21
	Qaliwarma (school meals)	17/21
Number of people per age group	0–5 yrs	32
	6–11 yrs	15
	12–18 yrs	15
	19–35 yrs	23
	36–45 yrs	14
	46–59 yrs	3

governmental state-sponsored social programme such as *Qali Warma* (free breakfast and lunch provided at school), *Vaso de Leche* (municipality-supported food programme) and *Juntos* (Cash conditioned transfer programme).

Agricultural work was the main economic activity for 18 out of the 21 families, five raised small animals such as chickens and hens, while nine mentioned they hunt and forage regularly. Most families have diversified their economic activities to be able to have some cash income. Based on the conversations during home visits, we learned that income is sporadic and is a source of worry as the cash economy is rapidly penetrating the community. Some families have *bodegas* (small stores), some women sell their fruits when they are ripe, others prepare fruit juice or food to sell (one lady told us she prepares *juanes* which is traditional rice-based *tamal*) and some men work making bricks. Only two families mentioned working or having worked in artisanal gold extraction. None of these activities provided a regular source of income. What was evident is that they are always looking for opportunities to generate cash, which has become increasingly necessary to buy from the *mestizos* non-indigenous population that has migrated from the urban areas) goods such as clothes, school supplies or food for their chickens. They have no control over when they are going to be hired to weed, open a farm, load gravel to the port or other cash-generating activities, but there are always ways to generate some small income.

Food perceptions and dietary changes

During the interviews and conversations, one core topic was the local diet and dietary habits. We wanted to document not only what families ate on an everyday basis but also their perceptions of the quality of their diet and the changes they might be experiencing because of the progressive influx of non-Indigenous Peoples (called '*apach*' or '*mestizos*' by Indigenous Peoples).

As we were reading the transcripts, two important themes emerged regarding dietary habits. The first one was that the interviewees established a qualitative difference between 'local/Indigenous' food and 'foreign/mestizo/outside' food. The second one was the changes in dietary practices as a result of an increased presence of *mestizos* and a greater reliance on 'outside' food. Participants explained that population growth translated into less availability of food sources from their traditional activities: hunting, gathering and fishing. Wild animals are hiding deeper in the forest (due to noise pollution) and the fish are becoming scarcer due to an increase in fishing, as well as water pollution from unregulated gold mining activities using mercury.

The different family members interviewed stated that local, 'natural' food was better than food from 'outside' They explained that 'natural food' refers to food that was locally produced (planted in

their *chacras*) or procured by them through hunting, foraging or fishing. These foods were what their ancestors ate. When we asked participants to explain what they meant by ‘natural’ food, they contrasted the food they planted and grew in their *chacras* with the one that comes from ‘outside’ or from ‘the city’ or from places they did not know and was the basis of ‘mestizo’ food. A natural food did not require the use of any chemical fertiliser to grow or preserve it. Furthermore, unlike the local food, ‘outside food’ was not good for the body, as we can see in the following explanation:

[‘Natural products] are the ones that grow naturally, without fertilizers, they grow without ‘*abono*’. They are quality products, with lots of nutrients. For example, ‘chapo’¹ is better than milk. *Chapo* is natural, does not have any chemical products and is good for your body. It fills you up, it gives you will to work (‘*ganas de seguir trabajando*’) and prevents you from feeling hungry after a short time. Milk on the other hand, is not thick and does not help your body sustain hours of work ... what I mean is that when you drink *chapo*, you can work without taking any breaks until the afternoon.’ (Focus Group, Female participant)

Just as this participant used *chapo* as a counter-example to processed, canned milk, another participant used *masato*, a traditional fermented beverage made with *mandioca* and corn, that is traditionally made by chewing and spitting the *mandioca* to promote fermentation. This process is only undertaken by women.

‘*Masato* is a food that allows us to work without feeling hungry until noon. It protects our stomach even if we leave our homes without breakfast’ (Focus Group, Female participant)

These testimonies connect natural food, ‘good food’, with food that gives you strength, which enables you to sustain the hard work in the *chacra* or the forest (‘*monte*’) without feeling tired or sleepy, as shown in Figure 1. Being a hardworking person is an important value among Amazonian groups, being lazy is a very negative quality and -among the Awajún- it is something that you can purge using medicinal plants.² Even young children who are lazy or who do not listen to their parents’ orders or advice, have to take a concoction that will make them vomit and get rid of laziness and lack of respect for their elders.

Participants not only talked about what makes a particular food ‘healthy’ but they also mentioned the importance of having a diverse diet. To achieve a diverse diet, one needs to be willing

Comparison between Indigenous vs mestizo food

	
<p>Indigenous Food</p> <ul style="list-style-type: none"> • Local. Used to be part of their ancestors diet. • Natural: Planted or gathered by them, in/from their own land or river, without using chemicals. • Good for the body: Gives you strength to be hardworking. Fills you up so that you do not feel hungry. Protects you from disease. 	<p>Mestizo Food</p> <ul style="list-style-type: none"> • Comes from "outside": Processed and packaged in unknown ways. • Has chemicals: Fertilizers, hormones, artificial preservatives. • Detrimental for health: Weakens your body. Processed food is too sweet, does not satisfy your hunger or quench your thirst. It is unhealthy, and makes you susceptible to diseases.

Figure 1. Comparison between indigenous and mestizo food.

to put effort into your *chacra*, you need to ‘dedicate’ yourself to your *chacra* and plant different types of fruits and vegetables for the well-being of your family. This takes hard work, which is also an important component of good food: food produced with effort and goodwill.

The connection between good food and food that makes you strong was reiterated in the testimonies of other participants when they talked about the health of their ancestors:

‘Our ancestors (*nuestros viejos*) ate game meat, and they did not fall sick as often as we do. They hardly had any health problems. They ate Ungkush, Eep, Tsemancham, they would make broth out of game meat (...) and they rarely became sick. Not like now. Look at our children: they are sleepy when we talk to them. How come our ancestors worked hard? How were they able to live? Because they fed themselves well.’ (Focus Group, Male participant)

‘[Before] they brought *chontas* and they ate well, so they were healthy, strong, they had no health problems, they had no dizziness.’ (Family #6)

‘In the past, when parents went out [to hunt], they would bring home animals from the forest, birds, and feed them [to their families]. That is why the children were strong, fast. But now there are no more [animals], most of the men go to play soccer and their women go to catch fish and feed their children with whatever little food they have. The old life no longer exists. (Family #4)

‘Before they used to go hunting, now there are no more [animals]. Our ancestors ate good food, but now we eat tuna, chicken, mackerel, egg, rice ... soda too. Our ancestors never consumed soda ... they drank *chapo*, *masato*. Likewise, their children were brave and strong, they never ate ripe plantains, sugar cane, sweet things.’ (Family #16)

These testimonies bring another important element: that the health and dietary practices ‘before’ were better than the ones now. They did not consume ‘sweet’ or processed food which makes the body more susceptible to diseases. There is a nostalgic outlook of a past when the Awajún were eating ‘natural’ foods that they grew themselves with a lot of effort. Awajun used to eat more game meat and fish that was progressively getting harder to find due to an increase in the population, and environmental pollution.

In addition to the implications for health, not consuming their products is seen as a manifestation that the new generations are forgetting ancestral practices and knowledge.

‘As someone said, I think it is good to emphasize and also recognize, identify and also know and try to assess what our ancestors have experienced, how they worked, how they kept their health in check, what we are currently not doing and what we are eating. Because unfortunately that [the poor nutritional status of children] worries us.’ (Key Informant, #18)

People were aware that the dietary practices in Huampami had been undergoing great transformations with the arrival of social programmes and *mestizos* and greater interactions with larger towns. The perceived changes in diet are associated with greater access to *mestizo* food because there is greater traffic of boats that transport goods products from Nieva to Imaza and stop in the communities along the river. *Mestizos* have opened stores and bodegas and Indigenous peoples have occasional paid jobs that enable them to buy food ‘from outside.’

Outside food vs local food

As participants state what are the characteristics of good food and a good diet, they are simultaneously commenting on the social changes that their communities are experiencing. More than one participant referred to the governmental social programme called ‘*Qali warma*’ implemented by the Ministry of Development and Social Inclusion. The goal of this programme is to guarantee ‘the good nutrition of students in public schools every day of the school year’ (Zevallos León, 2021) usually by providing breakfast and lunch. Although *Qali warma* states that the food is adapted to the characteristics and the areas where students live, our respondents mentioned that *Qali warma* was responsible for introducing poor-quality canned fish and canned milk in the area. These two products are considered unhealthy.

Indigenous Peoples are suspicious of the quality of the food that is sent to their communities. The rationale behind the way food is preserved is not considered as something that could be good for one's health. As one participant explained

'What I see is that ... when a person dies, they put formaldehyde on them, so they don't rot, that's the way those fish that come canned are made. Canned fish, what is it? It is fish mixed in formaldehyde. Do you think what they put in a can is something one day old? Preserved food is a year, two years old! So much time passes since the moment they are canned. The same with milk. Milk also comes with formaldehyde so it doesn't go bad. Try it! Empty the milk into a tank and leave it ... it will go bad quickly, in two days, three days it will go bad. But why doesn't milk go bad when it's in the can? They put chemicals so that it doesn't go bad. Do you think that could do good to our bodies? That's what I wonder (...) The canned food that come [to our communities, are not good] If you eat a lot of canned food, anaemia will also develop. You know why? Because of the stuff used to prevent it from spoiling or rotting.' (Focus Group, Male participant)

This participant is adding another layer of complexity to his understanding of why canned food is not good for one's health: the chemical used for preserving it. In communities where refrigeration is still a luxury, they are used to eating fresh food and they are aware that fresh food such as fish or milk goes bad very fast. Thus, it does not make sense to think that food is of good quality after it has been stored for so long in a can. There is suspicion about the products sent through governmental programmes, and this has been seen among the Awajún, who strongly distrust governmental interventions, for other products such as Powdered Micronutrients (Medina-Ibañez et al., 2019).

This testimony also touches upon the local understanding of what food does to the body, or what it ought to do. Food from an Amazonian perspective is conceptually a 'medicine': it strengthens the body and gives you energy to run, to play, to work. On the contrary, food that comes from 'outside' damages the body, weakens the body and causes diseases that did not exist before in the area such as diabetes, hypertension, cancer and anaemia:

'Strong diseases come [in the food from outside]. Diseases were not like that before. Because we have started to eat all the food from the *mestizos*, is that we are starting to suffer from unknown diseases. Diseases were not like that before. (...) We should not eat [*mestizo*] food, food that we don't know where it is coming from, because nobody has given us that information. We could eat canned tuna, but it is full of chemicals and that is why we cannot eat them regularly.' (Focus Group, Male participant)

'Seeing, comparing, I notice that discomfort also comes from that. [By consuming *mestizo* food] Awajún are harming themselves (...) from eating so much [*mestizo* food] we have harmed ourselves. We don't have a good memory, we cannot think well and we have also harmed the children. They are not interested in studying, some have even turned into gays. Before there weren't so many of them (...) Now we are getting diabetes just like *mestizos*, an Awajún person should not have diabetes, an Awajún cannot be diabetic ... You know why? Because the *mestizo* when he's just born, he grows up eating a lot of sweets as he grows. But the Awajún doesn't grow up eating sweets. Then ... why do they now have diabetes? We don't know where it comes from. Why we are getting sick, from that? But now the person with diabetes, loses weight and becomes very skinny but the *mestizo* who has diabetes looks so fat. But because the Awajún who has diabetes becomes thin that is what we must see, it is the disease that makes them lose so much weight, we need to find out why that happens.' (Focus Group, Male participant)

'Food from our farm gives us more strength, it fills us with energy. Instead, outside food makes us weaker and sicker.' (Focus Group, Female participant)

A recurring idea is that products from outside, from the city do not constitute a good diet, it does not benefit them, and instead of strengthening them, it makes them weaker and tired.

'... there are many foods in the city. When they bring chicken ... people eat that, then, they become anaemic. People should not change their [local] diet [and introduce foreign food]. [The problem is that] here there is no meat, no fish. So, people only eat chicken, only chicken and, there it is, they come out anaemic. That is what I think.' (Key informant #12)

Chickens are perceived as very bad food, in fact, some participants stated that anaemia was a result of a chicken-based diet. Chickens are full of hormones and are probably fed with chemicals that end up weakening their bodies which are different from *mestizo* bodies, used to that type of food.

However, it is important to acknowledge that participants also mentioned certain advantages of having access to ‘outside products’. One of the advantages is the fact that they have added variety to the local diet and complement local products that nowadays are limited to plantains, *yuca* and some fruits. They mentioned onions and tomatoes as ‘outside’ foods that were good. The problem is that people are slowly becoming dependent on outside products. While these do not require you to work for hours in the *chacra*, they do require access to cash to buy them. This proved critical when COVID-19 reached the communities since some of the public health measures implied blocking the entrance of people and goods from outside which they have become dependent on such as pasta and rice.

Although there is a recognition that some outside products are good, they also argue that the products that arrive in Indigenous communities are of poor quality. The canned products that they have access to are not the same as those consumed by people with money.

‘Millionaires don’t eat these products that are sent to us, those who don’t have money. When we eat that, that’s where we, those of us who are poor get sick. The soda that cost one sol ... is that what millionaires drink? [soda] of one sol? No, they drink sodas worth 10 soles or 8 soles. What they sell here is made of water from the drain; as they say: ‘it is only to quench thirst’. And so, it is what we drink.’ (Focus Group, Male participant)

This last quote is clearly critiquing the inequalities suffered by Indigenous Peoples who have to accept low-quality food products because they are poor. There is an awareness that the food and products that the government sends or that people sell in their communities are of poor quality and can cause health problems.

Discussion

In this paper, we have presented how the Awajún from the Northern Peruvian Amazon make sense of their current nutritional status and its connection with changes in the availability of both traditional and outside foods in their communities. Through an analysis of the ideas and characteristics associated with ‘healthy’ and ‘unhealthy’ food, we show their complex understanding of the nutrition transition and its interconnectedness to broader structural processes that translate into a lack of land, poor availability of local food sources and increased dependency on processed food from the cities.

This study adds to the literature on Indigenous Amazonian perspectives of what makes food good and healthy, which differ from Western conceptions of nutritious food as it draws from Indigenous cosmology that connects food, morality, the body and well-being. Our findings complement ethnographic data on food classification and the relevance of the concept of ‘strength’ to understand such classification among Amazonian groups. The Xavante who live in the Brazilian Amazon, categorise food as either strengthening or weakening (Welch, 2009). Strong foods include local traditional foods such as wild yams, traditional Xavante maize, wild game meat and other food that has been collected or gathered as well as their traditional horticultural foods. On the other hand, Welch (2009) found that ‘weak foods’ include what the Awajún would classify as foreign food: rice, pasta, sweets, alcoholic beverages and other introduced industrial foods. Ayoreo leaders from the Paraguayan Amazon have described the effect of foreign food in Indigenous bodies using a similar conceptual framework related to the weakening effect of non-Indigenous food. Mateo Sobode Chiquenoi and Aquino Aquiraoi Picanerai, reflect on the impact of consuming *mestizo* food: ‘Today, we Ayoreo eat pasta, sugar, bread, but this is not Ayoreo food, and one cannot be satisfied by it. This is why, nowadays, the Ayoreo elders say: ‘[Without our food] their bodies start becoming weak, and very quickly they turn into old people, men and women, because the food which is natural to them is missing’ (Glauser, 2011, p. 27). Even studies, among non-indigenous Amazonian dwellers in Brazil, have identified the relevance of these concepts to classify food. Dufour et al. (2016) found that among *caboclos* (the Brazilian term for *mestizo*), food is either ‘*forte*’/‘*reimoso*’ (strong), or ‘*fraco*’ (weak). *Reimoso* food can be dangerous and make you sick as

the behaviour or physical characteristics of the animal you consume can affect your health (Dufour et al., 2016). The danger is rooted in the idea of ‘substance sharing’ or consubstantiality found in many Amazonian cosmologies (Shepard & Daly, 2022), by which qualities, capacities and subjectivities of plants, animals and other non-human beings can be acquired by bodily incorporation (Santos-Granero, 2012). This is particularly important when understanding the complexity and intensity of the nutrition transition for Indigenous Amazonians as several food-related practices stem from the idea of consubstantiality, in particular, the practices that require dietary restrictions. What a person eats, or the way they behave, can impact the well-being of other people who share the same substances (Walker, 2013). For example, among the Urarina, herbal medicines are given to babies to speed the learning process but mothers also have to follow a series of dietary restrictions for that to happen (Walker, 2013). Similarly, among the Huaruani, when a family member is sick, all residents of the same longhouse, must respect the same food prohibitions to help the patient recover (Rival, 2016).

Our study adds to discussions around the intertwining between food practices, health, behaviour and substantiality among Indigenous Peoples from the Amazon and connects it with local critiques to social processes. Drawing from Van Hollen’s (2022) work among poor women with cancer in India, we show that as the Awajún reflect on the food available in their communities and its characteristics, they also reflect on the world around them. Thus, the dichotomy of healthy and unhealthy food provides an idiom to critique the political, economic and social changes unfolding in their communities and that harm their bodies/substance and their health.

Our findings on Indigenous views around the characteristics of food, the changes in food consumption and its impact on Indigenous bodies show important differences with Western views regarding food that are at the basis of nutritional policies targeted at Indigenous Peoples. Global Health efforts aimed at preventing and/or addressing the negative impacts of the nutrition transition among Indigenous people would greatly benefit from a more nuanced understanding of Indigenous perspectives on food. Furthermore, such efforts ought to be grounded in Indigenous knowledge, even if they appear to be at odds with Western approaches.

There is an increased emphasis in the fields of Global Health and Indigenous Health on the need to design policies and actions that stem from Indigenous understandings of local problems, values and cosmologies. Such emphasis on local Indigenous perspectives would ensure that any action done in the name of Indigenous people recognise Indigenous Knowledge as equally valid to Western approaches (Arotoma-Rojas et al., 2022; Callaghan et al., 2020; Tengö et al., 2014). Often, Global Health interventions reproduce epistemic hierarchies (Gamlin et al., 2021), and there are calls for decolonising the field in terms of making room for non-Western values and knowledge systems that would enable the development of more culturally appropriate interventions (Büyüm et al., 2020; Ji & Cheng, 2021; Kwete et al., 2022). Converging different value systems around food is challenging and we hope that our research can inform policy debates around culturally appropriate nutrition policies that not only take into account Indigenous perspectives on food but also their critique of the processes that enable the nutrition transition in a way that harms their health and well-being.

Notes

1. Chapo is a beverage made out of mashed ripe plantains and water.
2. Personal conversation with a traditional healer in the context of another research process in 2017.

Acknowledgements

We want to thank Dante Manuel Sejekam Espejo, Roty Shacamajo Nugkum, Eugenio Esash Shawit, the people of Huampami and Sebastian Garcia for their invaluable support during the fieldwork. We are also thankful for the support of the Organización Regional de Pueblos Indígenas de la

Amazonía Norte del Perú (ORPIAN-P) and its leaders who despite facing enormous challenges to combat illicit activities in their territories, enabled us to conduct the fieldwork. Finally, we thank colleagues from the Latin American, Latinx & Caribbean Studies Department at Dickinson College who provided very relevant insights to an earlier version of this manuscript and two anonymous reviewers who provided insightful and challenging feedback that encouraged us to have a more thorough analysis, read more ethnographic material, and be more clear about our arguments and conclusions.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the Peruvian National Council of Science and Technology under Grant N°031-2019-FONDECYT, and the United Kingdom's Medical Research Council under Grant MR/S024727/1

References

- Arotoma-Rojas, I., Berrang-Ford, L., Zavaleta-Cortijo, C., Ford, J. D., & Cooke, P. (2022). Indigenous peoples' perceptions of their food system in the context of climate change: A case study of Shawi men in the Peruvian Amazon. *Sustainability*, 14(24), Article 24. <https://doi.org/10.3390/su142416502>
- Belaunde, L. E. (2019). *El recuerdo de Luna: Género, sangre y memoria entre los pueblos amazónicos*. CEQUES.
- Belgharabi, I. (2022). Indigenous people's food sovereignty in Ecuadorian Amazon. *Journal of Public and International Affairs*. <https://jpia.princeton.edu/news/indigenous-people%E2%80%99s-food-sovereignty-ecuadorian-amazon>.
- Büyüm, A. M., Kenney, C., Koris, A., Mkumba, L., & Raveendran, Y. (2020). Decolonising global health: If not now, when? *BMJ Global Health*, 5(8), e003394. <https://doi.org/10.1136/bmjgh-2020-003394>
- Callaghan, T. V., Kulikova, O., Rakhmanova, L., Topp-Jørgensen, E., Labba, N., Kuhmanen, L.-A., Kirpotin, S., Shadyko, O., Burgess, H., Rautio, A., Hindshaw, R. S., Golubyatnikov, L. L., Marshall, G. J., Lobanov, A., Soromotin, A., Sokolov, A., Sokolova, N., Filant, P., & Johansson, M. (2020). Improving dialogue among researchers, local and indigenous peoples and decision-makers to address issues of climate change in the North. *Ambio*, 49(6), 1161–1178. <https://doi.org/10.1007/s13280-019-01277-9>
- Chase Smith, R. (1994). *The politics of diversity: COICA and the ethnic federations of Amazonia*. Instituto del Bien Común.
- Creed-Kanashiro, H., Carrasco, M., Abad, M., & Tuesta, I. (2013). Promotion of traditional foods to improve the nutrition and health of the Awajun of the Cenepa River in Peru. In Harriet V. Kuhnlein, Bill Erasmus, Dina Spigelski, & Barbara Burlingame (Eds.), *Indigenous peoples' food systems and well-being: Interventions and policies for healthy communities* (pp. 53–74). Food and Agriculture Organization of the United Nations.
- Creed-Kanashiro, H., Roche, M. L., Tuesta, I., & Kuhnlein, H. V. (2009). Traditional food system of an Awajun community in Peru. In Harriet V. Kuhnlein, Bill Erasmus, & Dina Spigelski (Eds.), *Indigenous peoples' food systems: The many dimensions of culture, diversity and environment for nutrition and health* (pp. 59–81). Food and Agriculture Organization of the United Nations.
- Dufour, D. L., Piperata, B. A., Murrieta, R. S. S., Wilson, W. M., & Williams, D. D. (2016). Amazonian foods and implications for human biology. *Annals of Human Biology*, 43(4), 330–348. <https://doi.org/10.1080/03014460.2016.1196245>
- Dwyer, J., & Freitas, J. (2013). Food culture. In B. Caballero (Ed.), *Encyclopedia of human nutrition (third ed.)* (pp. 289–295). Academic Press. <https://doi.org/10.1016/B978-0-12-375083-9.00118-5>
- Espinosa de Rivero, O. (2009). ¿Salvajes opuestos al progreso?: Aproximaciones históricas y antropológicas a las movilizaciones indígenas en la Amazonía peruana. *Anthropologica*, 27(27), 123–168. <https://doi.org/10.18800/anthropologica.200901.006>
- Gamlin, J., Segata, J., Berrio, L., Gibbon, S., & Ortega, F. (2021). Centring a critical medical anthropology of COVID-19 in global health discourse. *BMJ Global Health*, 6(6), e006132. <https://doi.org/10.1136/bmjgh-2021-006132>
- Glauser, B. (2011). Being indigenous: The concept of indigeneity, a conversation with two Ayoreo leaders. In Sita Venkateswar & Emma Hughes (Eds.), *The politics of indigeneity: Dialogues and reflections on indigenous activism* (pp. 21–44). Bloomsbury Academic & Professional.
- Houck, K., Sorensen, M. V., Lu, F., Alban, D., Alvarez, K., Hidobro, D., Doljanin, C., & Ona, A. I. (2013a). The effects of market integration on childhood growth and nutritional status: The dual burden of under- and over-nutrition

- in the Northern Ecuadorian Amazon. *American Journal of Human Biology*, 25(4), 524–533. <https://doi.org/10.1002/ajhb.22404>
- Houck, K., Sorensen, M. V., Lu, F., Alban, D., Alvarez, K., Hidobro, D., Doljanin, C., & Ona, A. I. (2013b). The effects of market integration on childhood growth and nutritional status: The dual burden of under- and over-nutrition in the Northern Ecuadorian Amazon. *American Journal of Human Biology*, 25(4), 524–533. <https://doi.org/10.1002/ajhb.22404>
- Hugh-Jones, S. (1992). Yesterday's luxuries, tomorrow's necessities: Business and barter in Northwest Amazonia. In Caroline Humphrey & Stephen Hugh-Jones (Eds.), *Barter, exchange and value* (pp. 42–74). Cambridge University Press.
- Inoach, G. (2022). *La destrucción del Río Cenepa en Perú*. International Work Group for Indigenous Affairs. <https://iwgia.org/es/noticias/4895-la-destruccion-del-rio-cenepa-en-peru>
- Javier Romero Dianderas, E. (2015). State evocations, affect and indigenous organizations in contemporary Peruvian Amazonia. *Development*, 58(1), 21–30. <https://doi.org/10.1057/dev.2015.21>
- Ji, R., & Cheng, Y. (2021). Thinking global health from the perspective of anthropology. *Global Health Research and Policy*, 6(1), 47. <https://doi.org/10.1186/s41256-021-00233-z>
- Johnson, D. E., Parsons, M., & Fisher, K. (2022). Indigenous climate change adaptation: New directions for emerging scholarship. *Environment and Planning E: Nature and Space*, 5(3), 1541–1578. <https://doi.org/10.1177/25148486211022450>
- Kuhnlein, H. V., & Burlingame, B. (2013). Why do indigenous peoples' food and nutrition interventions for health promotion and policy need special consideration?. In Harriet V. Kuhnlein, Bill Erasmus, Dina Spigeliski, & Barbara Burlingame (Eds.), *Indigenous peoples' food systems and well-being: Interventions and policies for healthy communities* (pp. 3–8). Food and Agriculture Organization of the United Nations.
- Kwete, X., Tang, K., Chen, L., Ren, R., Chen, Q., Wu, Z., Cai, Y., & Li, H. (2022). Decolonizing global health: What should be the target of this movement and where does it lead us? *Global Health Research and Policy*, 7(1), 3. <https://doi.org/10.1186/s41256-022-00237-3>
- McGrath, D., Bebbington, D. H., & Calisto, A. M. D. (2021). The Amazon in motion: Changing politics, development strategies, peoples, landscapes, and livelihoods. *Amazon Assessment Report 2021*. https://www.academia.edu/61713978/Amazon_in_motion_Changing_politics_development_strategies_peoples_landscapes_and_livelihoods.
- Medina-Ibañez, A., Mayca-Perez, J., Velásquez-Hurtado, J. E., & Llanos-Zavalaga, L. F. (2019). Conocimientos, percepciones y prácticas sobre el consumo de micronutrientes en niños Awajún y Wampis (Condorcanqui, Amazonas-Perú). *Acta Medica Peruana*, 185–194. <https://doi.org/10.35663/amp.2019.363.829>
- Ministerio de Cultura. (2019). *Amazonas. Cartilla Informativa*.
- Morsello, C. (2002). *Joining the Global Market: Are Swiss pocket knives or malaria tablets the reason for Amazonian Indigenous People integration?* The Commons in an Age of Globalisation, the Ninth Biennial Conference of the International Association for the Study of Common Property, Zimbabwe.
- Piperata, B. A., & Dufour, D. L. (2007). Diet, energy expenditure, and body composition of lactating Ribeirinha women in the Brazilian Amazon. *American Journal of Human Biology*, 19(5), 722–734. <https://doi.org/10.1002/ajhb.20628>
- Piperata, B. A., Spence, J. E., Da-Gloria, P., & Hubbe, M. (2011). The nutrition transition in Amazonia: Rapid economic change and its impact on growth and development in Ribeirinhos. *American Journal of Physical Anthropology*, 146(1), 1–13. <https://doi.org/10.1002/ajpa.21459>
- Popkin, B. M. (1998). The nutrition transition and its health implications in lower-income countries. *Public Health Nutrition*, 1(1), 5–21. <https://doi.org/10.1079/PHN19980004>
- Popkin, B. M. (2001). The nutrition transition and obesity in the developing world. *The Journal of Nutrition*, 131(3), 871S–873S. <https://doi.org/10.1093/jn/131.3.871S>
- Popkin, B. M. (2004). The nutrition transition: An overview of world patterns of change. *Nutrition Reviews*, 62(7 Pt 2), S140–S143. <https://doi.org/10.1111/j.1753-4887.2004.tb00084.x>
- Rival, L. (2016). *Huaroni transformations in twenty-first-century Ecuador: Treks into the future of time* (p. 339). Scopus. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011024318&partnerID=40&md5=f11aa5214409997fb353ad1fd3caddbb>.
- Rivera Andía, J. J., & Vindal Ødegaard, C. (2019). Introduction: Indigenous peoples, extractivism, and turbulences in South America. In C. Vindal Ødegaard, & J. J. Rivera Andía (Eds.), *Indigenous life projects and extractivism: Ethnographies from South America* (pp. 1–50). Springer International Publishing. https://doi.org/10.1007/978-3-319-93435-8_1
- Rumrill, R. (2015). El conocimiento del libro de la naturaleza como clave de supervivencia de los pueblos indígenas de la Amazonia peruana. In Jaime Taborga (Ed.), *Sistemas Alimentarios tradicionales de los pueblos indígenas de Abya Yala—Volumen I* (pp. 1–51). FAO y Fondo Indígena.
- Santos-Granero, F. (2012). Beinghood and people-making in native Amazonia: A constructional approach with a perspectival coda. *HAU: Journal of Ethnographic Theory*, 2(1), Article 1. <https://doi.org/10.14318/hau2.1.010>

- Sarti, F., Adams, C., Morsello, C., van Vliet, N., Schor, T., Yagüe, B., Tellez, L., Quiceno-Mesa, M. P., & Cruz, D. (2015). Beyond protein intake: Bushmeat as source of micronutrients in the Amazon. *Ecology and Society*, 20(4). <https://doi.org/10.5751/ES-07934-200422>
- Shepard, G. H., & Daly, L. (2022). Sensory ecologies, plant-persons, and multinatural landscapes in Amazonia. *Botany*, 100(2), 83–96. <https://doi.org/10.1139/cjb-2021-0107>
- Soares Leite, M. (2007). *Transformação e Persistência: Antropologia da alimentação e nutrição em uma sociedade indígena amazônica*. Editora Fiocruz. <https://portal.fiocruz.br/livro/transformacao-e-persistencia-antropologia-da-alimentacao-e-nutricao-em-uma-sociedade-indigena>
- Tengö, M., Brondizio, E. S., Elmqvist, T., Malmer, P., & Spierenburg, M. (2014). Connecting diverse knowledge systems for enhanced ecosystem governance: The multiple evidence base approach. *Ambio*, 43(5), 579–591. <https://doi.org/10.1007/s13280-014-0501-3>
- Van Hollen, C. (2022). *Cancer and the Kali Yuga: Gender, inequality, and health in South India*. University of California Press.
- Vera, E. (2023, October 23). *El infierno del oro en el Cenepa: 70 focos de minería ilegal devastan río amazónico y comunidades awajún en Perú*. Noticias ambientales. <https://es.mongabay.com/2023/10/infierno-del-oro-en-rio-cenepa-focos-de-mineria-ilegal-peru/>
- Walker, H. (2013). *Under a watchful eye: Self, power, and intimacy in Amazonia* (1st ed.). University of California Press. <https://www.jstor.org/stable/10.1525j.ctt1ppw18>
- Welch, J. R. (2009). Nutrition transition, socioeconomic differentiation, and gender among adult Xavante Indians, Brazilian Amazon. *Human Ecology*, 37(1), 13–26. <https://doi.org/10.1007/s10745-009-9216-7>
- Welch, J. R., Ferreira, A. A., Santos, R. V., Gugelmin, S. A., Werneck, G., & Coimbra, C. E. A. (2009). Nutrition transition, socioeconomic differentiation, and gender among adult Xavante Indians, Brazilian Amazon. *Human Ecology*, 37(1), 13–26. <https://doi.org/10.1007/s10745-009-9216-7>
- Welch, J. R., Ferreira, A. A., Souza, M. C. D., & Coimbra, C. E. A. (2021). Food profiles of indigenous households in Brazil: Results of the first national survey of indigenous peoples' health and nutrition. *Ecology of Food and Nutrition*, 60(1), 4–24. <https://doi.org/10.1080/03670244.2020.1781105>
- Zevallos León, J. G. (2021). *Impactos de Qali Warma en la Calidad de Vida de los Usuarios de la I.E. 482 en Sacco-Yauli 2020* [Universidad Nacional del Centro del Perú]. https://repositorio.uncp.edu.pe/bitstream/handle/20.500.12894/7662/T010_61788886_T.pdf?sequence=1&isAllowed=y