

Food vulnerability in rural households and its relationship with food policy in Mexico

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Abstract

The objective of this essay was to identify food vulnerability starting from the origin of the concept of 'food security' and at the same time to describe Mexican food policy. The question that guided this work was: the situation of vulnerability to food that is lived in rural Mexican households is related to the food system of recent years?, under the context of households in rural communities with subsistence agricultural activities, poor soils in nutrients, with high migration rate, scarce or null sources of employment and with craft activities for the local market. Through a literature review it was identified that the term food security was coined for the first time in the 1970s, it has four dimensions availability is used in global and national scales, access at the household level, use in the individual and stability is the crossing of the previous ones. Among the findings mentioned that in 2010 about 49.9 million people suffering from food insecurity, the new rural dynamics made transformations in agricultural activities that became complementary, there was a loss of identity with the change of diets and the high consumption of external products, with an importation of at least 35% of domestic consumption in the country and that has caused serious health problems such as overweight. It is concluded that vulnerability is the exposure of rural households to food insecurity due to lack of resources to buy them and quality in the diet product of a global food system with local effects, in this sense the system must be rethought Mexican food with complex organizational structures and put emphasis on phenomena such as vulnerability due to its dynamism at the household level.

Keywords: food policy, food security, vulnerability and rural households.

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Introduction

Food security (SA) exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Swaminathan and Bhavini, 2013), this definition is an international reference since 1996, which emerged as a proposal of the United Nations Organization for Agriculture and Food (FAO), in the Declaration on Food Security held in Rome (World Food Summit, 1996). For the understanding of this concept from its origin, antecedents and implications in the Mexican local food system, the following revision was made.

Historical context of food security

The SA is a term that was coined for the first time in the 1970's (Larochez and Huchet, 2016) and that currently has international relevance to the possible risks of insufficient food production (Vázquez *et al.*, 2018). At the same time there is another term of equal importance, which is the food system.

On the one hand, Maxwell and Slater (2003) conducted an analysis of the old and new food policy globally to identify some important changes in the system and the emergence of the term SA, for them both concepts are important and suggest that the countries in of development should focus on food policy. Fawole *et al.* (2016) support this approach and affirm that the concept of SA has had important changes in this constant evolution.

From the food crisis (1972-1974), the decade from 1970 to 1980 was marked by the special interest in the availability and access to food, the assessment of an interdependence between supply and demand and through the application of economic analysis, all this involved a series of events that defined the course of that decade, in 1974 the World Food Conference was held, in 1975 the International Food Policy Research Institute was created, for 1976 the Food Policy magazine had been established, in 1981 the book of Food Policy Analysis was approached from the economic point of view (Maxwell and Slater, 2003).

Table 1 summarizes these important events. However, from 1981 there was also a change of direction that Maxwell and Slater (2003) call it 'assembly', which started in the European Union with the action plan to fight hunger and at the same time, in that the same year, Sen began a transformation in the discourse towards a focus on law and access to food, beginning in 1980, the idea of SA began to prevail and the interest in food policy was left behind. In this change of decade, in 1989 the SA began to be addressed at the national level, in 1992 the first International Conference on nutrition and the World Food Summit was held, in 1993 there was talk of an 'emerging' World Food System and finally in 2002, a consensus was reached on this change of course (Table 1).

Table 1. Changes in world food policy.

Food system	Event	Source
Availability and access (global-national)	First food crisis between 1972-1974	Maxwell and Slater (2003)
Low-income countries	World Bank Working Paper on Food Policies	Clay <i>et al.</i> (1981)
Approach to the right and access to food	Sen's speech	Sen (1981); Timmer <i>et al.</i> (1981)
Change to food security (SA)	The idea of SA began to predominate at the beginning of 1980	Reutlinger (1985); World Bank (1986); Dreze and Sen (1989)
	SA planning at the national level	Maxwell (1990)
	Structural adjustment. Poverty planning	Hindle (1990)
	World Food Summit in Rome (consensus)	World Food Summit (1996)

Source: adaptation based on Maxwell and Slater (2003).

On the other hand, the evolution of the SA concept has gone hand in hand with changes in food policy. According to Fawole *et al.* (2016), the first concept of SA was announced in 1974 by the United Nations in the World Food Conference, in the 1980s it was considered to include in the concept people vulnerable to SA, for the 90's advanced in the levels of analysis of the SA at the same time in the nutritional value of the foods and in the decade of the year 2000 it was approached the dietetic diversity and a social access based on alimentary preferences (Table 2).

Table 2. Evolution of the concept of food security (SA).

Approach	Definition	Source
	Availability, at all times, of adequate supplies of staple foods to have a constant food consumption and compensate for fluctuations in production and prices	United Nations (1975)
	A basket of food, nutritionally adequate, culturally acceptable, obtained in accordance with human dignity and lasting in time	Oshaug (1985)
	The access of all people, at all times, to enough food for an active and healthy life	World Bank (1986)
National	A country and people have food security when their food system works efficiently to eliminate the fear that there will not be enough to eat	Maxwell (1988)

Approach	Definition	Source
Global/national/ regional/home/ individual	Food security exists when all people have, at all times, physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life	FAO (1996).
Social aspect	Food security exists when all people have, at all times, physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life	FAO (2001)

Source: adaptation based on Maxwell and Slater (2003); Swaminathan and Bhavani (2013); Fawole *et al.* (2016).

Dimensions of the SA

For this conceptual historical antecedent is that at present the concept of 1996 continues to be used and that it stands out for its dimensions or pillars. Several authors (Swaminathan and Bhavani, 2013; Carletto *et al.*, 2013; Bvenura and Afolayan, 2015; Mahadevan and Hoang, 2016; Fawole *et al.*, 2016; Wineman, 2016; Rossi *et al.*, 2017; Ike *et al.*, 2017) agree that availability (physical), access (physical and economic), utilization (biological) and stability (also called stability or vulnerability) are the main dimensions of this phenomenon and are becoming increasingly complex.

Availability is the starting point (Swaminathan and Bhavani, 2013), is established in terms of its physical presence in a given country or region (Wineman, 2016), covers a range of options such as production, the supply of products through of the market, imports and food aid (Mahadevan and Hoang, 2016), in broad terms also implies having sufficient quantities of food (Fawole *et al.*, 2016).

Access is expressed in the ability to obtain food (Wineman, 2016), which are appropriate and available for a nutritious diet (Fawole *et al.*, 2016). In a household, access depends on income to buy them, prices in the market, having enough land and resources to produce them, as well as being able to receive help from programs and other unofficial networks in times of need (Alam *et al.*, 2017).

The third dimension is the use or appropriate use of food and nutrients in the body (Mahadevan and Hoang, 2016), at the same time it is a biological capacity to obtain benefits of food towards personal health (Wineman, 2016). This dimension involves having the right environmental conditions, for example water and sanitation for a healthy life (Fawole *et al.*, 2016).

Stability means having adequate access to food permanently or constantly (Wheeler and Von Braun, 2013); that is to say, that the three previous factors of availability, accessibility and use are sustainable, by their own means and in a record period (Fawole *et al.*, 2016), independently of shocks or cyclical patterns (Wineman, 2016).

The pillars of the SA are independent among them and the fulfillment of one does not necessarily mean to comply with the others (Fawole *et al.*, 2016). They also show certain levels or hierarchies (global, national, home and individual) between the dimensions (Carletto *et al.*, 2013).

Levels and approaches to food security analysis

Following Carletto *et al.* (2013), the Figure 1 synthesizes the levels of analysis of the SA and its priority for determined dimensions, it is observed that at a global and national level the objective is availability (with its various ways: production, import, aid), in the spheres of the home and the individual are particularly interested in access (which include: access roads, resources, gifts or loans) and there is a difference between having a food security and a nutritional one. For the terms of the present essay, the home level will be addressed.

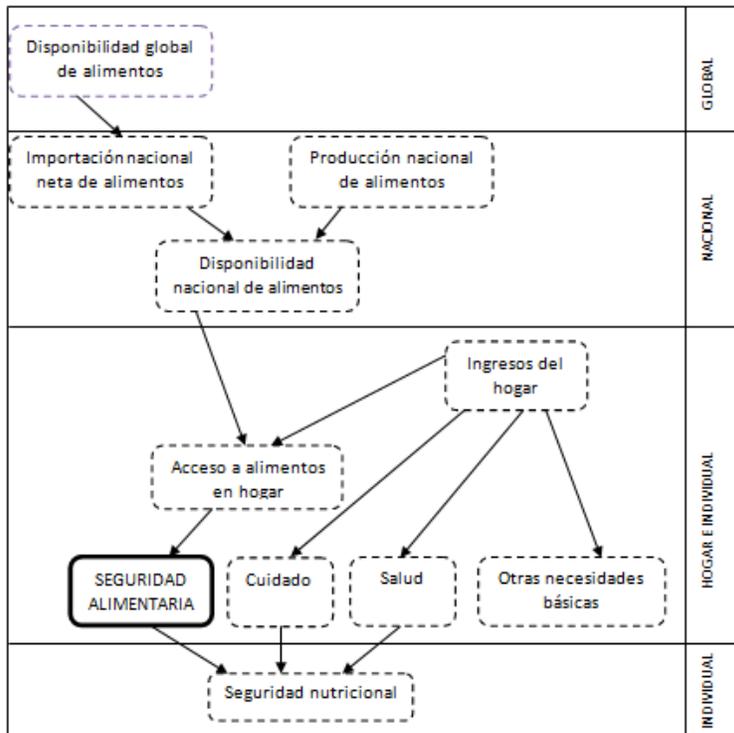


Figure 1. Levels of analysis of food security (SA).

Another key issue is the analysis approach of the SA, Morioka and Kondo (2017) consider four of the most relevant, the first is based on the availability of food, the second income (recommended in countries with economic ideal), the rights (suitable for rural areas) and that of sustainable livelihoods. Sustainable Livelihoods (EMVS) is useful for analyzing in the community context (Gottret, 2011), this approach was first used in Mexico in the 1980s to identify the different strategies used by households to face difficult situations (Arteaga, 2007).

Vulnerability to food insecurity

The definition of SA, as already mentioned, includes the phrase ‘at all times’; however, it has not been able to distinguish duration and intensity (Hart, 2009). On the other hand, if any of these dimensions is not met, food insecurity (IA) occurs, the latter occurs when the availability of nutritionally adequate food or the ability to acquire them (access) in socially acceptable ways are limited or uncertain and this concept makes a distinction in duration or temporality (Anderson,

1990; Hadley *et al.*, 2011). The duration is chronic or transitory. It is considered chronic when food is constantly scarce due to the inability to access it; through, of the own production, donations, purchases or aid and the temporary one is a temporary deficit in the disposition and consumption of food (Kakota *et al.*, 2015).

Vulnerability is a complex phenomenon (Hart, 2009) and vulnerability to food insecurity is determined by those factors that put people at risk of IA (Kakota *et al.*, 2015), it is conceptualized as a vector that has two components that are confronted, the first is attributable to the variables that occur in the environment and the second refers to the ability and willingness both individual and collective to counter them (Martínez and Palma 2016), homes in a state of defenselessness make their evaluations of risks and renew their livelihood models in relation to their perceptions through coping strategies to survive (Musemwa *et al.*, 2015).

The aspects raised up to this moment are the reason for the question to be answered in the later sections of this essay, but this is the precise moment to ask: the situation of vulnerability to food that is lived in Mexican rural homes is related to the food system of recent years?

In order to answer this question, we must address the food policy model in Mexico, consider the moments of transformation, some direct effects on rural dynamics, the implications in agrarian policies and finally its effect on rural households. The following is the dominant food system or policy in the Mexican context of recent years.

The Mexican food system

In the first person, it can be said that Mexico is living a complex situation, where family production units in rural areas have gradually abandoned their agricultural activities and even their identity in search of better opportunities for their members. In this sense, this section is relevant because it has the objective of contextualizing what Mexican rural life has experienced since its incorporation into the globalizing model since 1980-1990.

In the 1940-1975 period, those who were engaged in agriculture were very clear about the cultivation in the plot above non-agricultural activities (Torres-Mazuera, 2008). During this time there was a change of direction, Cabeza (2010) explains that, in the 1980s, there was a transformation process based on the structural adjustment policies established by the World Bank (WB) and the International Monetary Fund (IMF), to facilitate the payment of debt from developing countries, consequently, in Mexico, he initiated the first adjustments to enter the dynamics of free trade.

At the same time, there were transformations in rural dynamics, agriculture activity ceased to be the main activity on the farm and began to be subordinated to other activities that offered higher income, such as pig breeding, informal trade, jarrel and teaching (Torres-Mazuera, 2008). A new decade began, the 90's and with it the consolidation of a new model. In 1994, the Free Trade Agreement with the United States of America and Canada was signed (Cabeza, 2010). On the other hand, agriculture was already totally relegated by other activities and it is only carried out during free time (Torres-Mazuera, 2008).

The change of model had and has repercussions, Baca Del Moral and Cuevas (2017) argue that there are deficits in public policy in support of the productive development of small farmers and peasants. Some examples are the fall of government investment in agriculture, the lack of access to rural credit and the elimination of guarantee prices (Cabeza, 2010). In the case of corn, the national market does not distinguish quality from producers of landraces (which are the ones that drive local markets and food sovereignty) compared to hybrid maize and the latter are the ones that ended up dominated by markets through of the establishment of prices in the international market that (Díaz-Hinojosa, 2008) and where Mexico seems to follow the opposite in the quality of food (Apendini *et al.*, 2008).

As a result of these decisions and taking up the agrifood issue linked to that of the SA, the effects are varied. At the beginning, in terms of IA Magaña-Lemus (2016) estimates that in 2010, 44.3% of the Mexican population, an estimated 49.9 million people, suffered from food insecurity. Second, Villa-Issa and Aragon (2016) indicate that in 2011 Mexico imported 35% of its domestic consumption, when the FAO recommends that a country must be self-sufficient of at least 75% of its total demand. Another point is the change of diets, Baca Del Moral and Cuevas (2017) consider that in the rural area diets have deficiencies with poor nutrition and high consumption of external products, in Mexico there is an epidemiological and nutritional transition (Fernald and Neufeld, 2007), which has reached one of the highest rates of obesity in the world (Kimoto *et al.*, 2014).

This section is based on the premise that food in Mexico is a subject to be debated because there are people who still do not have their food insured at any time of the year. In addition, other rural communities (originally protectors of biodiversity) have been faulted in granting conditions to continue with their ways of life; that is, there is an absence of rights to them. Analyzing in terms of legislation and diet, in 1943, it was elevated to the rank of law and established in article 25 of the universal declaration of human rights (Jusidman-Rapoport, 2014).

In the Political Constitution of the United Mexican States of 1917, the right to food was also established and in article 27 of the same, the state undertook to provide a sufficient supply, according to Villa-Issa and Aragón (2016). Mexico has a Law of Food Security that only focuses on the dimension of availability. After reviewing the levels of the SA agrees with these authors in the sense that the concern of the states lies only in availability and especially in terms of free trade, remember that in the country has the largest number of agreements as a result of the globalization model of recent decades.

On the other hand, it is also important to consider the issue of food in the sense of following up on the consequences of a globalizing system whose effects have permeated the home and individual levels. This is questioned by the number of people who have experienced hunger due to decisions of the actors in the food system. To contextualize it is necessary to recapitulate that in the General Assembly of the United Nations (1996) the goal of reducing the number of hungry people by 200 million per year was proposed (Fawole *et al.*, 2016), this was manifested in the extinct Development Objectives of the Millennium, which in 2015 were modified as sustainable development objectives (SDGs) and that now seek to eradicate poverty and hunger in the 2030 agenda (Gamboa, 2015). These numbers are amazing, because 11 years later the world suffered its second food crisis (Mahadevan and Hoang, 2015) and this was due to the increase in the price of food by around 80% between 2004 and 2008 due to a higher price level in oil and the search for support in biofuels (Grafton *et al.*, 2015).

For Mahadevan and Hoang (2015) the availability is only the starting point, but in an objective estimation, the first thing is to recognize the SA is a multidimensional and complex concept (Carletto *et al.*, 2013), the complexity still covers other aspects between the ones that stand out are access to water and energy for food production (Irani and Sharif, 2016), weather phenomena such as floods, droughts, frosts, heat waves, storms and variations in temperatures (Ortiz, 2012). The aforementioned before a growing population, which is projected for 2050 reach 9 000 million people (De Los Santos *et al.*, 2018), with a 60% supply requirement, increase in income and with changes in diet and type of food consumed (Grafton *et al.*, 2015).

Precisely the key to the guiding question in this essay is the situation of vulnerability to food that is lived in Mexican rural homes related to the food system of recent years? Now it can be seen reflected in the statement by Grafton *et al.* (2015) that this is a trend because the current model is modifying food patterns and as mentioned by Baca Del Moral and Cuevas (2017), the rural diet in Mexico has deficiencies and not necessarily deficient nutrition, rather of cultural causes. Food habits that were previously directly related to the quality of food (Apendini *et al.*, 2008).

Therefore, in a context such as that of rural households with agricultural, livestock and artisan activities for subsistence, where the soils are not suitable for the cultivation of basic grains, which also have no permanent sources of employment and that the access to food is mostly determined by the economic part, where the acquisition of the same is; through, from private and government distribution channels for the purchase of corn for daily food at home, as is the case of households in San Juan Bautista Coixtlahuaca in Oaxaca, food vulnerability can definitely be defined as the risk of the exposure of IA due to lack of income necessary to acquire food products as well as the quality of the diet.

In this sense, this is supported in Baffoe and Matsuda (2017) when they conclude that vulnerability (from human ecology) puts emphasis on social systems and therefore they are vulnerable when the social unit is exposed to structures, economic institutions or policies that govern human lives.

In this sense, Mexico must re-adjust the direction of its agricultural policy. Now the question is: where to start? what to do? Maxwell and Slater (2003) suggest that the current industrialized food system (SAI) food policy has been rethought, which has become dependent on 10 food manufacturers that have concentrated power with food and that only in Latin America, its supermarkets, dominated between 50 and 60% of food trade in 2000, changed our diets to processed products, an increase in fat consumption by at least 50% and that has caused serious problems from production (agricultural waste, pesticides) to consumption with public health problems such as the overweight rate (which in Mexico, Egypt and South Africa is already greater than or equal to that registered in the United States of America).

Following these authors would be added to be integrated into local production systems, it requires an activation of agricultural activities from the territories, with respect for their uses and customs, providing financial, nutritional and not just technical assistance, are necessary the increasingly complex and interdisciplinary approaches to the new social dynamics.

It coincides with Magaña-Lemus *et al.* (2016) when they affirm that IA is still one of the most important public health challenges and in this sense, it must respond with a multifaceted strategy. Therefore, it suggests continuing with SA, IS estimates more focused on the household or individual scale and what is now proposed is to include food vulnerability, the latter is the most dynamic because it not only evaluates the feeding conditions in a specific moment, but it follows a whole cycle and defines the critical points in which assistance policies must intervene to reduce the risk of households falling into IA.

Conclusions

Vulnerability was identified as the exposure of rural households to food insecurity due to the lack of income necessary to access (economically) food and the quality of the typical (culturally acceptable) diet of a specific context like the one lived in San Juan Bautista Coixtlahuaca, Oaxaca. This is explained because households are immersed in a food system that exposes them to the decision making of global economic structures with effects and that govern the lives of people at the local level.

Finally, the Mexican food system must be reconsidered from complex organizational structures (as well as the phenomena of SA, IA and vulnerability), emphasis should be placed on vulnerability analysis due to its particularity of dynamism in a determined context and it must be made from the household and individual levels and from a perspective of law or livelihoods that are specific to countries emerging as the Mexican to have more realistic results that will improve the living conditions of people.

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