

Food insecurity as measured by individual perceptions

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THE RESEARCH was carried out between April 2003 and December 2004 and it is the result of a great effort by five Brazilian research institutions. Besides the team with which I work at the Department of Preventive and Social Medicine of Unicamp, researchers from the Food Security and Nutrition Policies Observatory of the University of Brasília, the Federal University of Paraíba, the Amazon National Research Institute and the Federal University of Mato Grosso also participated.

It is the validation of a direct food security measurement instrument originally developed at Cornell University (Radimer et al., 1992), as a qualitative and quantitative research, and that later, together with other projects for the nutritional evaluation of children in the United States (Wehler et al., 1992), underwent several adaptations, which generated the scale used by the American census for food security evaluation (Bickel et al., 2000).

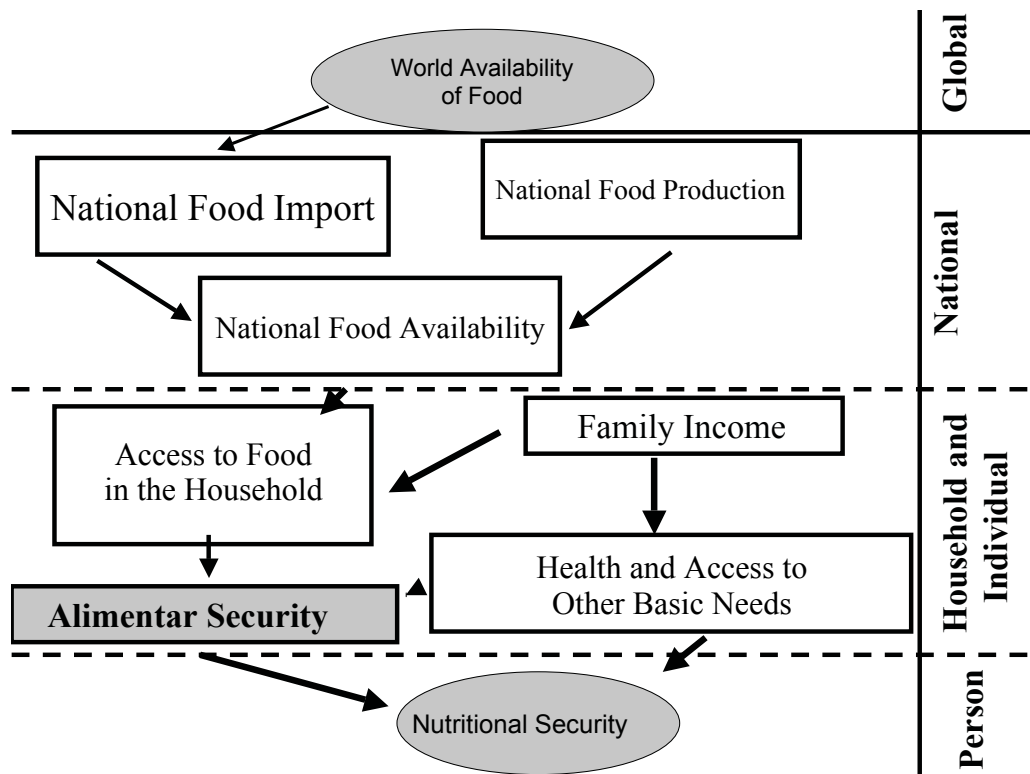
We took the original scale, which included eighteen items, and carried out a validation work that was both qualitative and quantitative for the Brazilian reality, in the context of the States where the institutions I mentioned are located (Segall-Corrêa et al., 2004; Perez-Escamilla et al., 2004). That is how the Brazilian Food Insecurity Scale emerged (EBIA). We wish to share some of our experience in the project, mainly in the qualitative investigation stage. We organized focus groups both for urban and rural population and, therefore, were able to listen, to hear people living in very needy areas of those Brazilian regions. Our presupposition was that they experienced food insecurity or hunger, that they had experienced it in some moment of their lives and that, therefore, they could make significant contributions to develop an instrument to measure food insecurity (FI) adequate to the Brazilian reality.

As we guided the research, we took on a definition adopted in Brazil since the Second National Food Security Conference, which took place in Olinda, in Pernambuco State (Consea, 2004). According to recommendations made in that conference, *food security* is the guarantee of the right of all people to have access to adequate quality food, in sufficient quantity and permanently, based on healthy eating practices, in such a way that this access

does not jeopardize other needs considered to be basic and that it takes place in a sustainable manner. That means that it is not admissible, for example, that people have to resort to illegal acts, such as stealing; it also means that it is socially unacceptable for them to live for long periods of time subsisting on basic-needs grocery packages, on other kinds of help or other arrangements.

The elements of that definition raise the need for us to identify indicators that measure from the *right* of access to food to the *concrete conditions* of that access, it's worth saying: no indicator, by itself, is able to deal with its multiple dimensions.

In fact, when food security is discussed, what is implicit is that there are adequate life and nutritional conditions. Table 1 shows, in a synthetic manner, how food security occurs and the path towards nutritional security. For each level – global, national, household and individual, person – certain indicators are traditionally used; beginning in the late 1980's, and more intensely from the 1990's on, family evaluation also began to be based on a direct indicator, that is, we began to obtain information on the security or insecurity condition by interviewing a member of the family itself.



Source: Unicef, Frankenberg et al. (1977).

Table 1

Graphic model of the determination levels of the nutritional status, beginning with food availability in the world, going through the determinants of the food availability and of food security in the household

Thus, according to the nutritional security determination logic, going through the mediation of food security, in the global level there are the indicators that measure food availability, in general transformed into *per capita* calorific availability, and that are also used nationally. The household food availability indicators, often gathered in a family expenses research, in the same way as the income indicators, are indirect estimators of food security in the household or of the individual. Also within the scope of the household there is the indicator for food security/insecurity perception, which is the direct measure of that condition in the family or in the household. In turn, the anthropometric indicators constitute direct measures of the nutritional status, being, nevertheless, indirect to measure food security or insecurity.

Calorific availability, an indicator calculated according to the availability of food in the country, evaluates what is produced, imported and exported, what becomes animal food and even the estimated waste. It's an availability examination, which is compared to the number of possible consumers of the food, the country's population. It's a very useful indicator to study food availability historical series. The only problem is that it often provides information of a national scope, and for that very reason is inadequate to define the most vulnerable groups to food insecurity and to hunger within the scope of specific regions, municipalities or population groups of the country.

A similar observation can be made concerning the household expenses to buy food – therefore, in a determination level of the food security centered in the families. That indicator provides very important information since it measures how much of the family income is used to buy food, which allows us not only to estimate how much the family consumes, but also to suppose the quality of the diet, according to the kind of purchase. In Brazil, there is already a historical series of the Family Income Survey, FIS (IBGE, 2005). A disadvantage of that indicator is the fact that it analyses the availability in the household and not necessarily the food intake, nor its distribution within the family. It should also be pointed out that the FIS are very expensive. The income indicator, which is very useful to define those who will benefit from the social programs, also has problems. In general, poverty lines are defined according to the income and to basic need items to establish cut-off points, below which the socially vulnerable individuals or families and, therefore, under risk of food insecurity or hunger, are located. However, there are families which, despite being below the poverty line, for some reason have food security – and the opposite is also true.

The anthropometric measure is an important nutritional status indicator, even though it evaluates food security indirectly. It suffices to remember a very current discussion topic in Brazil: the association of poverty with overweight and even with obesity. We can obtain normal figures for weight, height, and Body Mass Index (BMI) in families that live in FI

situation. We can find both malnourished and obese children in food security situation. In other words, even if there is no calorific restriction, the diet quality is jeopardized and, in that case, food security as well, which confirms the limitations of anthropometry for estimating food security or insecurity (Drewnowski & Specter, 2004).

That situation made the researchers from the United States Department of Agriculture think about other methods to evaluate or to measure food security. In that context the idea of a measurement scale of the FI perception emerged that today is used in many countries, including in the Third World, and it represents a highly reliable and consistent indicator. It's a low cost and easy to use resource to identify families under risk of FI.

It's worth recalling that food insecurity originates from a lack of both food quality and quantity, but I would like to call the attention to an aspect that Rosana Salles da Costa addressed in the article she published in this issue: food insecurity also involves important psychological elements, such as the worry, the uncertainty if the family will have food in the next month or not. For us, this is a highly significant aspect, and it can be verified that it shows up in a remarkable way when people talk. We're undergoing great social instability, with a very high unemployment rate. For that reason, even those who have never experienced insecurity or hunger situations can, under such circumstances, feel on the brink of having that experience, which may lead to depression and anxiety, among many other problems.

There's also the fact that in the family, food competes with other basic needs. When only income is studied, one does not pay attention to the circumstance that the people may choose to pay the rent, electric power or transportation first and only buy food after that. That situation has often been verified in our qualitative studies.

We prepared a survey report which, despite being very concise (the goal was for it to be read by decision makers), gives an idea of what the questionnaire used in the project is all about and of how the validation process was carried out. (The report is available on the Internet, at the *website* of the Pan-American Health Organization (Opas) www.opas.org.br/). We kept fifteen of the eighteen questions included in the original American survey. The American version was a series of statements such as "We worried whether our food would run out before we got money to buy more.", followed by four response categories related to the frequency of this event occurring, or a yes/no response. Experts and participants of the focus groups in Brazil preferred a direct question format.

The scale evaluates worry in the first place (Graph 1). Then, there is a construct that evaluates above all the quality of the family eating habit. Next, the survey evaluates the deficiency in quantitative terms. This is divided into two subgroups: food deficiency or insufficiency for the family adults and for the children.

According to the article written by Rosana Salles da Costa, there is another interesting way to treat the data, but there's a certain routine in that kind of analysis, that is, from the establishment of cut-off points, levels of severity of food insecurity are set. It thus happens that the questions of the survey are in order, they follow a sequence of concepts already tested in several studies, including the Brazilian ones, which don't recommend the analysis of isolated questions. However, we are undergoing an initial phase of that scale's utilization, and it is certainly very useful for all analysis possibilities to be explored.

There are four levels in the scale:

- Food security.
- Light food insecurity.
- Moderate food insecurity.
- Serious food insecurity.

In the security level, all the questions are answered negatively, with zero positive answers. In the light insecurity level, between one and five questions are answered positively, and in that level the most affected aspect is the quality of the eating habits, together with the worry that food might run out in the near future. In the moderate insecurity level, between six and ten answers are positive; it starts to have quantitative food restriction for the adults of the family. Finally, in the serious insecurity level, between eleven and fifteen answers to the survey are positive – this is where quantitative deficiency and even hunger among adults and children of the family show up.

In the qualitative phase of this study, we fostered exhaustive debates with experts and, right after that, with the focus groups, which had the participation of people who, due to their social situation, could have experienced food insecurity. In that stage we evaluated the domestic validity of the questions, their domestic consistence, the understanding of their meanings. After that, we developed a quantitative stage, with a pre-test of the questionnaire and comparison of the obtained results to the income and food intake pattern strata. That procedure permitted the external validity test of the scale.

Now we intend to show why the perception may be considered a valuable measure for food security analysis. Perception is a subjective phenomenon, but it can be objectively quantified and used as a monitoring resource. To clarify this, we will present some examples of what people said in the focus groups. Altogether, considering both the rural and the urban areas, there were eleven groups, with an average of ten people in each of them. It was a very exhaustive activity, and it was very heterogeneous in relation to the place and to social and cultural contexts. These quotes make clear that the people are aware that the right to eat is part of their daily life (Sampaio et al., 2006). Unfortunately, we will not be able to explore them here, but I believe that the examples are significant by themselves.



Children begging along BR-020 highway which unites Fortaleza and Caridade, in Ceará State.

On the guarantee of all people to have access to food:

- “I’m not certain that by the end of the month I will have money to shop.”
- “I believe that any citizen should have enough to sustain him or herself. I have some friends who say: ... I work all day, all week, and in the end there is not enough for me to eat!”
- “That’s right, I believe that [food security] is all that, a right to have those things...”
- “When it’s necessary to ask for help, it’s a sign that the situation is worse.”
- “The worse is situation is not having a job, a home, without a husband, and the children begging in the street because their parents have no money.”

The understanding about the access to food can also be verified:

- “Many people have no security. For example, I have enough for this month, but how about next month? I believe that security has to do with being secure. For example, those who have land to work in are secure with it... the land being the food... having nowhere to...”
- “I’m worried everyday, even if there’s something at home, I think oh, my God, will it run out? I’m worried everyday, I get out of bed worried.”

On the basic-needs grocery package (the phrase was heard in the Northeast):

- “I receive a basic-needs grocery package, we all do here, but I don’t want to receive it, I want to have a job.”

On quality eating:

- “So there is also every kind of food, rice, beans...”

On enough quantity:

- “May it not run out, may it be enough for all, just a little bit for each. Then it will be enough until the end of the month.”

On the meaning of “basic”:

- “It does not mean enough. We can bear with the basic, but we need some more.”

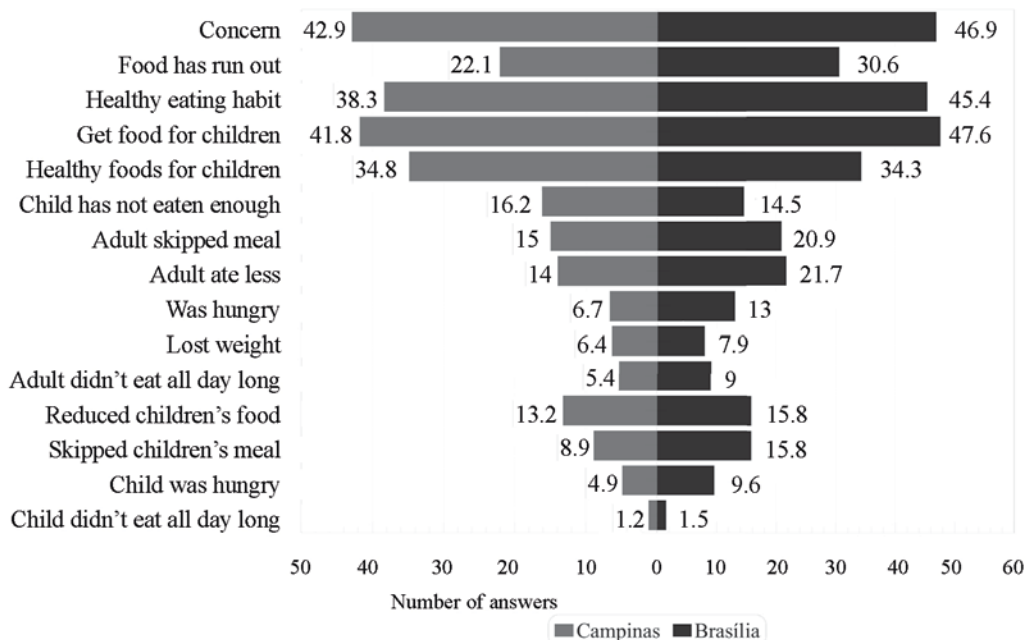
Hunger is expressed as a social situation, according to the goal of the measurement scale:

- “Hunger hurts, pan turned upside down, empty refrigerator, not even an egg to feed the stomach.”
- “I believe that hunger is the saddest thing...”
- “It’s the worse kind of violence.”
- “I have already experienced it and I know how sad it is.”

wo other aspects called great attention. The people are also aware of “food safety” as an issue of the food insecurity condition. Besides, the access to food and the sustained way to obtain it are also included in a much broader

context: “We are hungry – hungry about not having the means to live, about not having somewhere to work, of not being able to send the children to school”.

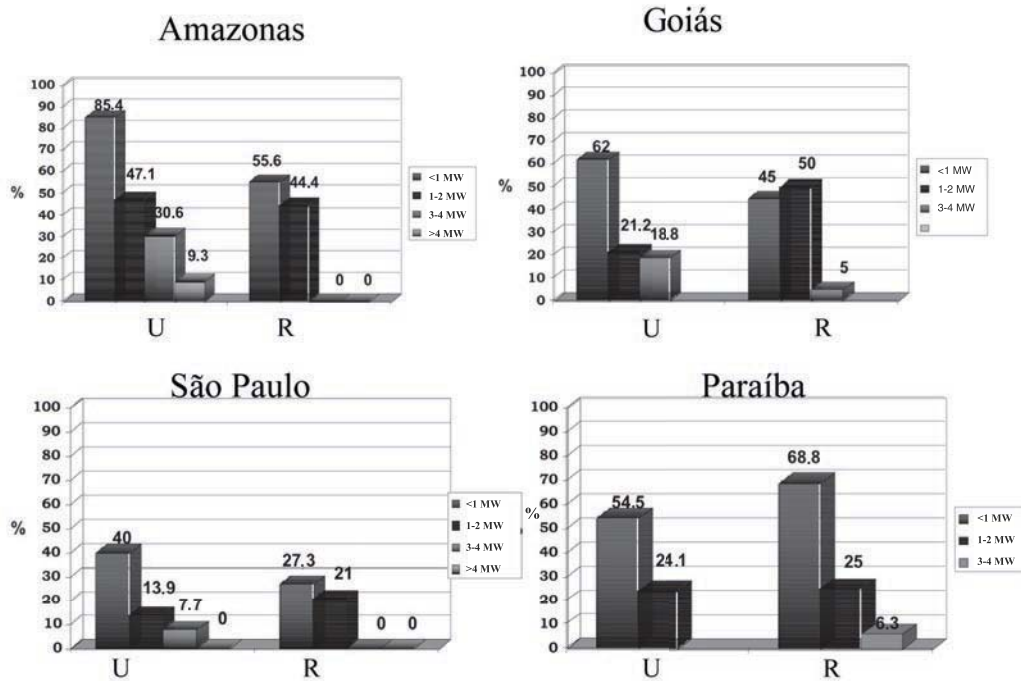
In the scale validation process, we obeyed all the criteria recommended internationally, but we would like to comment on a particularly interesting situation. Graph 1 shows the result of surveys conducted in Campinas and Brasília almost at the same time, with families that include both children and adolescents. These are two cities with very similar social profiles, income profiles and Human Development Index (HDI); their populations are very similar but, even so, we were actually surprised when we verified the homogeneous behavior of the scale in both places. The positive answer percentages are very close to one another, which shows that people respond to the scale in the same way, with the same consistency. That gives us a lot of confidence in our results.



Graph 1
Frequencies of positive answers to the fifteen questions of the survey, comparing the surveys in Campinas and Brasília, 2003.

The samples from Brasília and Campinas are representative of the population of families that include children (Panigassi, 2005; Leão, 2005), unlike the samples investigated in the scale validation process, made up of intentional samples. In the validation we chose areas in which we could be sure that there would be families from several strata – middle class, lower middle class, poor and very poor –, since we wanted to know if the scale would behave as expected as far as income and food intake were concerned. The expectation

was that people with more serious insecurity had a lower income and less adequate eating habits. This is an external validation criterion and, in fact, in the States we studied, we observed that the scale had a very large external validity.

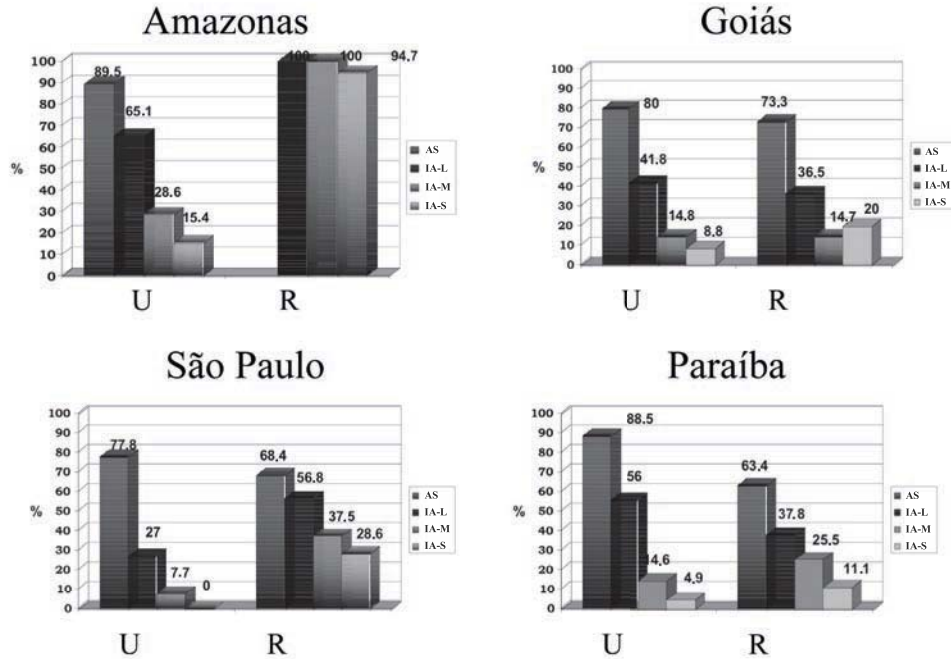


Graph 2

Severe food insecurity according to the income level – external consistency.

There is a single problem concerning the rural areas. Income is too low there and, for that reason, we were not able to form a stratum; that is, the number of people was insufficient to make up heterogeneous income ranges. Thus, mainly in the States of Amazonas and Goiás, we verified a somewhat divergent behavior, or not as linearly distributed as in the urban areas, which suggested that income might not be the most adequate indicator for the rural area. However, in all regions surveyed, we verified a reduction gradient of the serious food insecurity as income increases.

In another example (Graph 3), we verify how insecurity behaves in relation to the intake of certain kinds of food – in this case, only fruit and vegetable intake. It was found that as FI conditions increase, fruits and vegetables intake actually decline. That is a uniform behavior in all regions, except in the State of Amazonas. As Lucia Yuyama always reminds us, in that state the survey was carried out in the abundance period. She claims that if it was carried out in another period, the results would be different. Everything considered, there is the clear emergence of an almost linear relation between food security gradients and fruits and vegetables intake. That pattern is the same for meat, milk and dairy products intake.



Graph 3

Fruit intake according to the food insecurity level – external consistency.

The paper we presented allows us to conclude that today, in Brazil, we have a valid scale to monitor the food security conditions in the country – a scale with high internal and external consistency, easy to apply and low cost. Today there are several ongoing projects that already use it, but it will certainly be improved as it is used, as still happens with the American scale. Therefore, it's very important for more researchers to be interested in applying it, in testing it in specific populations, in defined groups, in small municipalities. It offers many research possibilities.

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ABSTRACT – This paper reports on the validation process of the Brazilian Scale to measure food insecurity (EBIA), which was conducted from 2003 through 2004. It was a collaborative study that took place in five Brazilian States and was carried out initially with a qualitative method, seeking the opinions of four panels of specialists and eleven focus groups to evaluate the comprehension of concepts by participants living in poor communities. The second phase comprised five surveys that used convenience samples of different social strata of the population. The high understanding of the study population about the scale concepts and contents is emphasized, showing it's adequacy to Brazilian reality, meaning that the country can now rely on an instrument to directly measuring food insecurity and hunger with high internal and external validity, easy to use and of low cost application.

KEYWORDS – Food security, Hunger, Scale, Validation.

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