

Comments on the paper

AGRICULTURAL, LIVESTOCK, METEOROLOGICAL AND SOCIOECONOMIC
INDICATORS' SOURCES, COLLECTION AND FLOW OF INFORMATION*

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INTRODUCTION

In the present document the indicator is defined as the empiric representation of a given variable. Therefore, the definition of an indicator supposedly requires at least two steps:

- 1) The theoretical definition of the concept
- 2) The operational definition of the variable

The first implies the selection of analytic categories derived from the concept to be defined, and the second, the identification of the measurable components of the variables or attributes of the subject.¹

In this case, indicators refer to those variables which affect the supply and demand of foods destined to satisfy the nutritional needs of a given population. In his paper, Engineer Martínez exemplifies this situation for the Central American population.

The purpose of this presentation is to offer an explanation of the use of such indicators in the nutritional epidemiological surveillance. The following assumptions are the basis to achieve this objective:

1. That indicators represent the operational definition of the variables.

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2. That the variables herein studied may be classified within four analytical categories:
 - a) the ecosystem
 - b) the food production subsystem²
 - c) the food processing and distribution subsystem² and
 - d) the food consumption subsystem².

3. That knowledge of these variables is necessary for the adequate instrumentation of the planning process, especially in:
 - a) the identification and quantification of the problem in the diagnosis phase
 - b) the quantification of objectives in terms of goals and the design of concrete programs and projects
 - c) the subsequent evaluation of the execution of plans, programs and projects.

4. That the real understanding of the problem requires the analysis of the inter-relationship among the four analytical categories identified, since they influence the interplay of food supply and demand.

The paper herein commented deals first with the indicators as referred to the ecosystem, since behavior of climate and other variables decisively affects the production factors. Subsequently, the variables intervening in the food production, distribution and commercialization phases are identified, and ends with those elements that contribute to determine food demand, herein identified as the consumption subsystem.

THE INDICATORS OF THE ECOSYSTEM

By indicators of the ecosystem we should understand those related with climatic variables that allow to define:

1. Climate typologies, and
2. Climate influence on
 - a) soils
 - b) forest and vegetation

- c) agriculture
- d) health
- e) work capacity, and
- f) physical capital.

Gunnar Myrdal³ in his well-known work on the underdevelopment problem in South-East Asia examines their impact as conditioning factors of development, and warns that their interrelationships have not been sufficiently studied. For example, he cites the fact that in spite of the luxuriant vegetation of the humid tropical forests, in the majority of the cases the soil is not apt for agriculture. He also states that the rainy and dry seasons imply the development of systems for the control of floods and irrigation, but that the latter two are plagued with problems such as the frequent cleaning of ducts because the climate favors the rapid growth of underbrush that obstructs the flow of water in the dry season. On the other hand, the humid climates not only affect the health and productivity of the laborer but also the herds and other animals are affected by parasitic diseases and fungus. Finally, some inputs necessary for the commercial agricultural production such as tractors and collection and storage equipment, deteriorate more rapidly than in temperate climates. This example serves to illustrate the importance of the climatic factors in food production, since supply will be basically constituted by the availability of products of vegetable and animal origin which form an important part of the daily diet.

Hence the need to establish procedures which permit the systematic collection of information, to favor the interdisciplinary work of ecologists, biologists, geographers and other experts, in the analysis and interpretation of data to supply planners with coherent and reliable information on the subject. Thus, the planner will be able to design feasible strategies aimed to overcome some of the above-mentioned problems, a fact that, on the other hand, should be closely related to the development of suitable technologies.

INDICATORS OF THE FOOD PRODUCTION SUBSYSTEM

The paper we are commenting on identifies the following indicators as representative of the subsystem, considering:

1. Agriculture production specified by products, by geographic origin and by destination (internal or export consumption).
2. Inputs utilized in the production, such as fertilizers, manure and use of machinery and equipment.
3. Land tenure and other indicators on the agrarian structure

4. Technology used
5. Labor or employment generated by the sector
6. Price of the factors

The information supplied by these indicators must be sufficiently specified so that the planner may clearly understand which is the situation of the supply, that is, of the actual availability of foods at a given moment and, more important still, how and in what manner the different factors will interrelate to explain the availability.

In his paper, Engineer Martínez demonstrates how these factors are interrelated to explain the production volume of some products in case they are a limiting factor for the growth of certain given crops, and points out how abandonment of traditional crops, especially of legumes, finds itself related to land tenure. On the other hand, he indicates that prices play a fundamental role as incentive or lack of stimulus for the cultivation of certain crops in a market economy. This information must be analyzed by the food and nutrition planner, so that he may be able to prepare clear strategies directed towards the increase of agricultural production.

INDICATORS OF THE FOOD PROCESSING AND DISTRIBUTION SUBSYSTEM

In this case the variables intervening imply the handling of products originating from the agricultural sector, which on the one hand require certain transformation and, on the other, their commercialization. Therefore, the indicators refer to:

1. Processing of foods
2. Specialized enterprises
3. Technologies used
4. Aggregated value
5. Commercialization
6. Transportation and storage facilities
7. Distribution
8. Existence of intermediaries
9. Profit margins, among others.

According to the available literature, one of the basic problems faced in the developing countries by supply, concerns the functioning of this subsystem, which is strongly limited by the transportation and storage difficulties in the development of adequate technologies for the conservation and transformation of local products, in the existence of intermediaries who substantially raise the price of the products, and in the excessive profit margins in the commercialization of certain products, etc. For these reasons, the careful recording of information in reliable and valid statistical series as well as the weight of the institutional factors of socio-political order which definitely affect their development, deserve careful consideration.

The combination of the data provided by the subsystems herein considered will allow the planner to have an inventory which, according to Perissé,⁴ shall be based on the analysis of food balance sheets and on the estimation of the physiological needs prepared by the nutrition specialists. This procedure will permit the planner to estimate future demands based both on the historical behavior of the indicators as well as on their analytic capacity to adequately interpret the combination of variables which explain the availability of foods.

THE FOOD CONSUMPTION SUBSYSTEM

Some of the socioeconomic indicators identified in the proposal may be classified under this category. The majority of these indicators, on the other hand, intervene more in the food demand than in its supply. Among them, the following should be mentioned:

- 1) Demographic indicators such as the rate of population growth, the rates of birth and mortality, their distribution by age and sex, their spatial distribution by regions and by rural-urban areas, among others.
- 2) Characteristics of the labor force, the economically active population, the employed, unemployed and underemployed.
- 3) Distribution of income and structure of remuneration of the production factors.
- 4) The educational level of the population, the number of graduates from primary school, rates of illiteracy, rates of desertion, number of persons with university degrees and how many of them are dedicated, for example, to research.
- 5) Other indicators of life level such as housing, recreation and social infrastructure.
- 6) Habits and values of the population in regard to food consumption, consumption patterns, diet composition, etc.

Some of the above-mentioned indicators determine the food demand; hence the need to identify them. On the other hand, some of them are obtained directly through official statistical sources such as population census, statistical yearbooks, epidemiologic yearbooks, etc. However, in the case of other indicators their registry is not so easy, since they may require direct research. As Engineer Martínez mentions, in this aspect the role of research institutes, universities and other superior education centers is fundamental, since well-oriented research strategies would permit in a given number of years, the availability of valuable information concerning consumption patterns, as well as of habits and of values. This procedure would also allow to measure the impact of the social communication media on these patterns, elements which are necessary to increase the viability of instrumentation, whichever the food and nutrition plan.

SUMMARY AND CONCLUSIONS

These brief comments on the use of indicators in nutritional epidemiological surveillance, intend to underline the importance of the systematic analysis in the collection and interpretation of information. Hence the convenience for the food and nutrition planner to consider the multiple variables which intervene in determining the food supply and demand within a given socio-historical context.

In order to plan, on the other hand, the use of the methodology forces a measurement process of the variables, and hence the need for the operationalization of same in different types of indicators. These indicators must be systematically collected and with similar methodologies in order to permit their comparison in time and in space.

This paper proposes the organization of indicators in four analytical categories: variables of the ecosystem which intervene in the supply and demand of food products; variables which intervene in the production of foods; variables which intervene in the processing and distribution of foods, the two latter adjusting to the availability of food supply which, for planning purposes, must transform themselves into physiological needs, and finally, those variables which define the consumption subsystem, which includes both individuals and family groups needing those foods for their subsistence. Furthermore, emphasis is made on the fact that analysis must cover the interrelation existing among all categories. Emphasis must therefore be placed on the interdisciplinary teams who are to carry out the multivariable analysis.

The performance of better diagnoses, the quantification of problems and the identification of key variables will allow the planner to improve substantially the application of the methodology. The existence of better plans, however, will not ensure the success of instrumentation, since without the political will to carry it out and without the overcoming of the cited institutional obstacles, the plan will continue to be a nice academic exercise but will not solve the problems revealed by it.

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