

Comments on the Paper

**INTERPRETATIVE MODELS FOR SELECTION  
OF NUTRITION PRIORITIES\***

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**INTRODUCTION**

A socio-economic model is just a simplified system of relations meant to explain the functioning of a given reality in order to consider it as a whole, and act upon it. It is assumed that this reality, which is limited by one or several phenomena, operates according to the system of relations adopted in each case. Hence, the need to have a hypothesis "based on either actual or rationally constructed relations." To verify these hypotheses it is necessary to gather information, pertinent to the subject and object of the model, resulting in a limitation of the number of variables to be considered. Observation of the direction of the relations existing among them, and of their linking will indicate which ones are dependent, which ones are independent and, in general, their degrees of interdependence.<sup>1</sup> The identification of the strategic variables and the clear distinction of whether the model is to be employed for static or dynamic analysis, is of great importance for action.

Before commenting on the interpretative models, the subject of this document, it seems convenient to define, as indispensable point of reference, the meaning of a food and nutritional surveillance (FNS) system to which said models would be applied.

Food and nutritional surveillance is understood as the permanent and continuous process of compiling, analyzing and distributing information needed to maintain an updated knowledge of production, supply, distribution and consumption of foods, and on the nutritional status of the populations; identify its changes, causes and tendencies; predict their possible variations and recommend, according to the case and

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at the right moment, the indispensable preventive or corrective measures.<sup>2,3</sup> The information gathered *describes* reality; the analyses of causes, changes and tendencies, *explain* what is going on and why; the prediction of probable evolutions of the situation *foresees* and, on those bases, *recommendations* according to priorities and resources can be made. In summary, an FNS system describes, explains, foresees and recommends based on a rapid and permanent flow of information provided by very sensible indicators.

According to the previous elements, appropriate models for an FNS should permit - within the geographic area under consideration - to describe the food and nutritional situation, to explain it, to foresee its evolution and variations, and to recommend appropriate, rapid and timely measures at reasonable costs.

The following comments refer to the document "Interpretative Models for Selection of Nutrition Priorities".

#### COMMENTS ON THE MODEL FOR USE AT LOCAL LEVEL

The relations system which supports this model is based on the interaction of three major variables: health status, nutrient consumption and nutritional status. The first influences the second through the nutrient needs and their conjunction gives rise to the nutritional status which, in turn, influences the health status. On the other hand, the consumption of nutrients is a subsystem of the same model which follows the flow of food from its production or importation to its consumption. The model becomes dynamic by the application of the so-called communal, family and individual gaps theory (requirements-consumption) and by the employment of the mechanism called "decisions tree." Also, sets of ordered variables to measure both the nutritional and the health status are presented in a separate picture.

In considering the flow of foods up to the consumption phase, quantities that do not reach a family because of its low purchasing capacity relative to the community, and those that do not reach the individual because of poor intrafamily distribution, are called "losses." This name, not altogether appropriate, can give rise to confusion. The same happens with the expression "nutritional requirements", equivalent in the model not only to the recommendable amounts of nutrients for each person according to sex, age, weight and other biological conditioning factors, but also to those other indispensable to compensate for vomits, diarrhea, parasites, etc., which contradicts that concept as expressed by recognized nutritional authorities.<sup>4,5</sup>

Nutritional status is the first variable measured. It would therefore seem that it refers only to protein-calorie malnutrition. Being so, consideration of other nutritional problems very common in the Region would be excluded, such as nutritional anemias, hypovitaminosis A, endemic goiter. Undoubtedly, recognition of all of them implies greater research, information, costs and time. Their exclusion should be the object of specific decisions in each case.

If the malnutrition level found justifies it (the tolerance limits not specified), the nutrient consumption gaps are measured. According to the results of these measurements, the way in which certain variables operate is explored, and explanations of malnutrition at community or family level are searched for, whether through failure in consumption or on the basis of the medical-sanitary conditions; and orientation for interventions is deduced from them.

Several points merit special comments: i) it is not clear whether information is gathered all at once or if it is obtained according to the requirements of the analytical process of the so-called "decisions tree"; ii) in the analytical process of nutrient consumption, emphasis is placed mainly on offer, losses and availability of foods, and it seems that insufficient attention is paid to income, prices and purchasing capacity, which are strategic variables in a market economy. Nothing is gained by increasing the availability of food without a parallel improvement in the effective demand; on the contrary, by doing so prices fall, losses increase, and producers are discouraged. That underestimation of the demand leads to the omission of very valuable and explanatory calculations such as the relation between income and food costs. iii) It appears also that insufficient attention is being paid to education both in food and nutrition and in health and hygiene. iv) The influence of governmental measures, sometimes a variable of strategic value, is not considered. v) It is not clear how the application of the model at a local level would be linked to the intermediate and central levels. vi) The amount of human, financial and technical resources that the application of the model would require is unknown. If the cost is high, its generalized use in a great number of localities would be limited, and vii). The model does not permit the dynamic analysis that would be needed.

In spite of these comments, the model *describes* a nutritional reality, although not completely; *explains* the causes of malnutrition according to its analytical mechanism, but not all of them, and consequently, it *recommends* interventions only in certain directions. It would not be said to what extent it *foresees* and *alerts* on the probable evolutions of the situation because it neither includes permanent indicators nor does it make it clear whether all the information is gathered for a given time or for a period. It does not state how to establish economically a permanent system capable of providing with fluidity and at a reasonable cost, all of the data indispensable for the use of the model.

The characteristics of the model indicate that it must have been conceived for programming actions for a given moment or period, rather than as an instrument for a regular and continued process of follow-up, alert and warning in a food and nutritional surveillance system.

The limited space allowed for these comments does not permit to consider in detail the application of the model in Villa Rica, Colombia. Nevertheless, it would be impossible not to observe some contradictions in the gaps analysis, which induce confusion. Also, when presenting the result of the analysis carried out, it is said that "when prevalence of infectious diseases is high, the intake level of nutrients has

*very little relation* with the nutritional status of the children." This conclusion is surprising, considering those of other important studies on the nutrition-infection relationship.<sup>6,7</sup>

### COMMENTS ON THE MODEL FOR USE AT GLOBAL LEVEL

The model is based on a relations system, whose interactions are very well illustrated in the graph (Fig. 5) which accompanies the text. Two are its basic hypotheses: first, malnutrition is due to the amount and quality of the ingested food and to its biological utilization in relation to the requirements; second, both the quantity and quality of the ingested foods as well as their biological utilization are associated to income and education.

Each of these hypotheses has further causal implications: the quantity and quality of the foods consumed depend on the availability of foods at the individual and community levels, and purchasing power and education are interrelated and act on the environment, the health system and the purchasing decisions. This relations system makes it necessary to collect and handle a certain number of variables.

According to the text, the model has already been used in the identification of greater nutritional risk areas of a Central American country, in the selection of the most adequate indicators for such a purpose and in the identification of certain restrictions for the improvement of the nutritional status existing in the same areas. To achieve this objective, detailed maps of the country were used together with indices made from relevant variables.

As the text states, the model has been conceived to identify problem areas in countries with little resources and great needs, where it is necessary to concentrate efforts on the high priority zones and proceed with the least possible complexity. The authors achieved these goals; the first application of the model already shows undisputable achievements.

The model is simple, realistic and pragmatic. Its use, associated with that of maps of the region under study, constitutes a positive contribution to the identification and location of the regional nutrition problems.

But, if the model is viewed as a basis for a food and nutritional surveillance system, it is only a starting point. This is said because the text does not indicate the information dynamics, what indicators would be used for periodic studies,<sup>8</sup> and which for a continuous flow of reports. Which would be the more sensitive indicators, what would be their tolerable variation, and which the critical limits that successfully would imply immediate action? In this sense, a revision of the table of indicators would be adequate. Perhaps it is still too early to do it, but experience should lead to a revision in this direction.

Obviously, the model *describes* the reality and explains what happens and *why*, and possibly permits to *recommend* certain interventions and measures. But, as deduced from the text, the model still does not permit forecasting, due to the lack of a continuous flow of information, and of better-defined indicators to show variations and announce, in time, future aggravation of the situation.

Within a more dynamic perspective, it would seem useful to introduce some not considered variables, such as the influence of governmental measures, alterations of the agricultural calendar for basic products, etc. In the same way, a dynamic analysis would require identification of the sequence of action of the variables considered and of the time that each one of them would possibly take to produce results.

On the basis of the previous considerations, with certain small revisions, this model could be recommended for the initial study propounded by experts for the initiation of a food and nutritional surveillance system.<sup>9</sup>

### SUMMARY AND GENERAL CONCLUSIONS

1. A Food and Nutritional Surveillance System (FNS) requires the use of a model for the integration, organization and interpretation of information to *describe* reality; *explain* what is happening and *why*; *alert* and *predict* probable evolutions of the situation and *recommend* measures and interventions according to priorities and resources. A model of such a nature must permit to proceed with the greatest dexterity, rapidity and opportunity in a continuous way and at a reasonable cost.

2. An FNS system for a given country should recognize and observe continuously the food and nutrition situation at the local, intermediate and central levels; therefore, the model or the models to be used should be adjusted to these needs, be operationally linked to an institutional structure that also operates at the same three levels, and permit a dynamic analysis.

3. Circumstances of the developing countries make it advisable not to establish an FNS system all at once for the whole country, but in a stepwise form in those areas identified as problem areas. Alarm systems are always installed in the points at greater risk.

4. The model for the local level commented herein *describes* and *explains* the local situation although not completely, and would serve as a basis for recommending interventions in certain fields. Its use as an alarm system appears difficult.

5. The model commented for the global level has been conceived according to the needs and possibilities of the developing countries. It permits a good description of the food and nutritional situation and to identify priority areas; to explain the causes and to recommend actions and measures. However, it seems that it could not be employed as yet to predict and alert on variations and changes. For this last

purpose a flowing system and some changes in the way of considering and handling the indicators would be required. Its use is therefore recommended for a study to be carried out prior to the establishment of an FNS system.

6. On the basis of the previous comments, it would seem necessary to give more careful thought to overall aspects of the system, to the handling of continuous information, and to the determination of the more sensible indicators and their margins of variation. It is recommended to take into account experiences of "studies of juncture" which precisely operate as a follow-up and short-term forecasting system of the economic situation.<sup>9</sup>

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