

**VILLAGE NUTRITION IN LESS DEVELOPED COUNTRIES:  
THE NUTRITION PROJECT OF THE  
VILLAGE STUDIES PROGRAMME**

Sue Schofield\*

Data on rural nutrition are available for less developed countries in many forms (national food balance sheets, state and regional food consumption surveys etc.). However, where diet survey methods require study of several households, these are more easily accessible in a single village, which therefore often forms the locus for a nutrition survey. But convenience is not the only reason for this. Most villages are still in important respects closed communities; the majority of the villagers live by exploitation of the village lands and their contacts and hierarchies are formed within their village of residence. Hence it is reasonable to expect many factors affecting nutritional status – notably land/man ratio, income distribution and urban contact – to be specific to the village of residence.

In the initial stages of the Village Studies Project at IDS, the author retrieved approximately 470 nutrition/health-specific village surveys providing data for 870 villages in the less developed world. These are available in six annotated bibliographies (Schofield, 1971) and are distinct from general village studies which contain a minimal amount of data on nutrition. More nutrition/health<sup>1</sup> specific surveys are available for Africa (188) than any other area: India (119); Latin America (60); South East Asia excluding India (45); Oceania (29) and the Middle East (28). The following are the number of villages in each area for which nutrition data are available: Africa (134); India (108); Latin America (61); Oceania (42), rest of South East Asia (42); and the Middle East (6). For the purposes of the Village Studies Programme (VSP) the number of villages for which useful nutrition data are available in India was limited to 47 because the household samples in many surveys are often unrepresentative of the village and

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\* Since September 1970, Sue Schofield has been attached to The Village Studies Project at IDS.

<sup>1</sup> Health data includes physical data used for the assessment of nutritional status e.g. height and weight measurements.

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many surveys provide data for a specific, vulnerable group only (e.g. pregnant/lactating women or preschool children). On the other hand, far more Indian village surveys were project oriented and conducted before or after the instigation of nutrition improvement programmes. Because the sample of villages from each less developed country is non-random the results of the analysis are not statistically representative. These are available in a series of area case studies (Schofield, 1972 b & c, and 1973a).

The Village Studies Programme hoped to find types of village where people would be most likely to respond well to various forms of efforts at improvement, and to formulate ways to simply and quickly fill gaps of knowledge about nutrition in a village so as to use scarce resources most effectively to fill the gaps in villagers' stomachs. In so approaching the nutritional studies, an enquiry was mounted into the methodological problems posed by nutrition surveys in order to assess their reliability and comparability (Schofield, 1972a). Survey aims were rarely found to be elucidated and often had to be inferred from the types of data found in the reports; and secondary aims (which specify the intended use of the data after collection) were frequently absent, implying the existence of a vast amount of information which looks as if it will not be 'used'. This calls for a closer link between nutrition policy planners and survey conductors to ensure that all survey results are distributed and made available for planners or that surveys should not be conducted without the approval of planners.

It was found that methods of collection and interpretation of survey data have remained stagnant for a long time; the same methods are too often employed for the nutritional assessment of a situation where the gains from exact quantitative data do not justify their costs. Why conduct detailed, precise measurement surveys where subsequent nutrition inputs in a village such as school lunch programmes or special infant weaning foods are not geared to a precise filling of nutritional gaps in the affected groups? An analysis of the types, limitations and costs of methods available for the assessment of nutritional status readily indicates the potential variability and manipulation of the methods to produce various combinations within a cost-benefit framework dependent on other constraints and aims. Ideally we should move away from expensive, exact methods for detecting sizes of problem to cheaper, quicker

methods for locating types and indicating size, effects, causes and rough costs and benefits of cure: cheaper, nutritional assessment could be achieved through extended use of improved qualitative methods such as recall and diet histories especially in conjunction with anthropometric data.

In general, survey resources could be used more efficiently to establish indicators of nutritional risk, for use by clinical or other staff which would facilitate the distribution of curative and preventative treatment. At-risk families (Schofield, 1973b) have one or (usually) several of the following characteristics: low status or caste; landlessness; illiteracy; large size, or small per capita income. Such families have few resources to meet the nutritional needs of working family members, let alone the special needs of vulnerable infants or pregnant women. Children from stable backgrounds of united marriages are often less at risk than those whose parents have separated or father migrated and failed to send remittances. There are advantages of childhood in polygamous and monogamous families but family size alone is an important factor if competition for food and other family resources is high for the vulnerable groups. Illiterate, overworked and underweight older mothers are less able to fairly distribute resources and may be less successful in child care than younger, healthier, literate mothers.

Hunt-the-indicator, of course, can be made more accurate. Surveys should seek to discover 'eco-systems', to find what groups of people — and how many — were at how much nutritional risk, in what sorts of village. Villages with highly mono-seasonal subsistence crops, highly unequal income distribution, and (of course) low income levels are the ones where one would expect nutritional risk. Ongoing research<sup>2</sup> indicates that (a) types of diet may be characterized by the main staple; (b) villages which cultivate cash crops are more likely to be deficient in calories and protein than pure subsistence villages (Schofield 1972c, p. 76) and (c) although the data are poor, village location and accessibility appear to affect the type of crop cultivated, crop marketing behaviour and diet patterns (Schofield 1972c, p. 98; 1972b, p. 70 and 1973a, p. 29). Lastly, it was found that, for a small sample of villages, those subject to a bimodal

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<sup>2</sup> The author is attempting to classify villages by their type of diet but the results are not yet available.

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distribution of rain have less seasonal variation in their diets because there is a greater probability that (a) there will be two annual harvests rather than one and (b) the gap between the harvests will be sufficient to bring about more equal seasonal distribution of foods (Schofield 1973b). The difference between the percentage fulfilment of calorie requirements in the wet (100 per cent) and dry (88 per cent) seasons for villages with a unimodal distribution of rain ( $n = 15$ ) was found to be significant at the 0.5 per cent level. Here provision of adequate storage facilities may be a more effective programme than supplementation which should at best be seasonal.

The crucial deficiency of rural nutrition studies is that they are descriptive. They too easily become sterile academic exercises that fail to improve the conditions of the village because they tell us too little about the key village characteristics, and hence about the determinant factors of inadequate nutrition itself. This analysis was thus restricted by the absence of data on the environmental, agro-economic and social factors which affect, via food availability, its use and distribution both food consumption levels and nutrient requirement levels.

The instigators of nutrition studies at village level (whether individuals, teams or institutions) usually conduct them *in* villages but study the nutritional problems not *of* a village community but of individual rural persons. Future studies must be investigations of nutrition in its setting, in the village's total physical and human environment; not studies of nutrition incidentally located in a village. Descriptive studies outline familiar target groups (pre-school children, pregnant and lactating women), do not help identify the ultimate causes of inadequate nutrition, and narrowly confine the existing alternatives for applied nutrition programmes. These programmes are more concerned with increasing supply rather than demand. They are designed to alleviate the nutrition gap by providing more food through supplementing existing food supplies, rarely by stimulating production or increasing effective demand for food. Where there is enough food anyway in aggregate the disadvantaged sections of the village's population, fail to benefit as a result of distributional problems between families, or (less commonly) within families or over time. Without comprehension of the ultimate causes of inadequate nutrition, these new resource inputs will be as prone to their maldistributing or wasting effects as

are food resources already in the village. Notably, problems of intra-household distribution will still be incurred, and food-use habits will destroy any attempts at fortification.

Intra-household distribution of foods in both quality and quantity is often very unequal (Schofield, 1972c). The evidence, though limited and usually qualitative, suggests that adult males frequently receive more than their needs out of the total family food (even allowing for their greater work requirements), while pregnant and lactating females and pre-school children receive much less. Analysis of data from 10 African village studies (Schofield, 1972c) indicated that, in relation to their requirements, adults (excluding pregnant and lactating females) consume more than any other age-group: adult males fulfilled calorie requirements at 101 per cent and protein requirements at 231 per cent, while adult females achieved lower levels of 96 and 136 per cent. Pre-school children fulfilled calorie requirements at a much lower level (80 per cent) than the per caput figure (94 per cent), but the differences were not statistically significant. For a larger sample of 29 Latin American villages, calorie, protein, calcium, iron and thiamine requirements of pre-school children were fulfilled at 80, 84, 70, 135 and 105 per cent respectively. These were lower than the per caput fulfilment levels, which were 90, 99, 110, 158 and 144 per cent respectively. The differences were significant at between 1 and 0.1 per cent. In the pooled Latin American and African sample (39 villages) pre-school calorie requirements were fulfilled at 80 per cent compared with a 91 per cent fulfilment of per caput requirements; these differences were found to be significant at 0.5 per cent. The lower the total food availability the more important is emphasis on better family distribution, to meet (or at worst to do least harm to) the requirements of all rather than a few family members. Nutrition education schemes, should take account of this but if diversion of food from male to other family members leads to reduced productivity, or if overall food insufficiency is the family's main problem, then the costs of increasing aggregate food availability (and in the short term of supplementary feeding) may be inescapable. At best, food would be redistributed to meet the additional *seasonal* demands of *at-risk* sectors of the population, although the rationale for existing systems of food distribution must be understood more fully.

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Although the type of available village data presented in these nutrition-specific surveys are varied, and often descriptive rather than quantitative, this micro-level analysis has illuminated aspects of village life which have an impact on nutrition. For instance, marginal differences in the allocation and use of female time may be partly responsible for intra-household variations in nutritional status. Of the activities among which women allocate their time (e.g. cooking, cleaning, fuel and water collection etc.), the impact of the quality and quantity of child care, especially where children of one family demonstrate marked differences in nutritional status, is an obvious area for further research (Schofield, 1973b). Sex-selective child care/feeding is another (Schofield, 1972c, p. 115, p. 148 and 1972b). Thus programmes should consider the availability of female labour, and food supplements should be provided (if at all) within the time constraints of the poorer village mothers. The questions which must be asked are: has she time to prepare the supplementary food, and is she available to collect it at the hour, day and season of distribution?

Analogous considerations apply to planning the composition of food output: will those crops giving 'high rates of return' get to the hungry, i.e. in the main, pregnant women and pre-school children in big, poor families? Again, the failure to adopt healthy or hygienic practices (e.g. boiling water for drinking) is at least as often due to lack of labour time as to ignorance or cost. New projects (more home gardens) which further constrain female time will be less effective than other inputs which attempt to alleviate these constraints (provision of water carrying trolleys) or provide services which cannot be provided through redistribution of female time.

Demands on female labour are often highly seasonal (Schofield 1973c) and timing of programmes to coincide with peak female labour inputs should be avoided where possible: education programmes probably have 'more' impact when conducted in the dry season while seasonal day care centres could provide facilities at times of peak agricultural labour input in alternate seasons.

Other variables (diseases and food availability) have a seasonal incidence such that benefits derived from supplementation programmes may be greater if these are seasonally implemented while proper timing of immunization schemes and seasonal curative programmes could improve the allocation of resources. The combined seasonal effect of all these factors affects some groups,

notably the 6-24 month age group, more than others. Season of birth determines age of child (and therefore its vulnerability) at entry to dangerous seasons, a point which has implications for family planning services, timing of education programmes, etc. (Schofield, 1973c). Thus consideration of seasonality factors indicates that (a) programmes attempting to modify their effects (provision of adequate storage facilities) are as important as programmes which mollify them (food supplementation) and that (b) better programme timing may redistribute scarce monetary and labour resources.

### Conclusions

Analysis based on a large number of village nutrition surveys suggests some conclusions important for programme formulation. But as is often the case with analysis of second hand data, recommendations for further research outnumber the proposals for planners. There must be cheaper and longer lasting ways of improving the nutrition of the hungry than provision of food supplements while distributional problems both between and within families needs urgent consideration. Where short term programmes cannot avoid supply problems, the timing of supplementation may be as important as choice of target groups while other factors, not often considered (e.g. allocation of female labour time) can effect programme implementation.

Gaps in the nutrition data are obvious and wide, and what planners now need is data which will permit them to use an analytical framework of analysis,<sup>3</sup> and allow them to assess (a) the

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<sup>3</sup> An alternative to the village diagnosis we have been propounding, but one which naturally follows this causal type of analysis, is the evaluation of typical profiles for any target group, whether a settlement, tribe or district (Schofield, 1973d). Each profile is the result of a combination of ecological variables (villages with severe seasonality or climatic uncertainty are unlikely to achieve smooth growth curves without weight faltering while factors such as crop patterns are a major and neglected factor: maize and cassava monocultures in West Africa produce classic protein deficiency in children), cultural variables (what a child is fed and the method of its food preparation are products of the cultural traditions of the society), and socio-economic and demographic variables. Although several disadvantages are inherent in this type of analysis it has several advantages (Schofield, 1973d). Factors (e.g. female labour constraints) which have a less obvious impact on nutrition can be measured; the process of optation can be closely observed; discrepancies between beliefs and practice becomes evident; the feasibility and effectiveness of the programmes can be assessed and the impact of programmes which indirectly affect nutrition (e.g. sanitation projects) can be evaluated.

feasibility of programme proposals and (b) the need for types of programme. Socio-economic data should be collected along with nutrition data and nutrition surveys should be conducted with reference to an overall planning frame. Closer coordination of measurement surveys and improvement programmes would probably meet with greater success by centralization of data banks with village survey information and greater cooperation between policy planners and research institutes. Where nutrition problems have many causes, a joint approach involving several types of policy maker – agricultural, health and nutrition planners – is usually needed.

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