

SCN News, Number 07 – Supplement

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UNITED NATIONS

NATIONS UNIES

ADMINISTRATIVE COMMITTEE ON COORDINATION – SUBCOMMITTEE ON NUTRITION

The overall role of the ACC/SCN is to promote harmonizing policies and activities in nutrition in the UN system. Supporting this, the SCN has compiled information on trends in nutritional problems in the world, and on resources available to deal with these. A range of specific issues has been examined and conclusions published in our State-of-the-Art series. Recently, the SCN decided to review actions that had been taken to address the major problems of underconsumption and malnutrition especially among the poorest, to point the way for renewed efforts in the 1990s. A meeting was held in November 1990 among members of UN and certain bilateral agencies most concerned with nutrition, drawing upon others with wide experience. The meeting reviewed the lessons and decided that a summary of the conclusions should be published – hence this document.

This supplement gives a review of the historical development of policies and actions for dealing with malnutrition before grouping nutrition issues so as to facilitate the correct choice of actions. With reference to this latter purpose, nutrition is considered as an outcome. The actual policy-making process, being situation-specific, has not been considered here. Rather, the options presented under each heading should be seen as "building blocks" for policies aimed at nutritional improvement.

Formulating a nutrition policy, as an expression of what a government intends to do in order to improve the nutritional status of people on the bases of nutrition-relevant actions through a sectoral approach, is regarded by many as a valuable undertaking, but unfortunately seldom practiced.

Dr A. Horwitz
Chairman, ACC/SCN

This brief stems from ACC/SCN's *Ad Hoc* Group on Policies to Alleviate Underconsumption and Malnutrition in Deprived Areas, which took place in London on 12–14 November 1990, supported by GTZ. The list of participants is annexed. The paper is constructed from the rapporteurs' reports, as agreed at the meeting, and has been circulated to participants. Comments have been incorporated. At the ACC/SCN 18th Session in February 1991, it was decided to issue the document after circulation to SCN members and incorporation of final comments received. This has now been done, hence the present version. A second product of the exercise will be a revised version of the background paper ("Nutrition-Relevant Actions: Experiences from the Eighties and Lessons for the Nineties" by S. Gillespie and J. Mason) which will be finalized and issued during 1991

A. INTRODUCTION

This summary is intended to be useful for international agencies concerned with certain major nutritional problems in poor societies, and through them for governments making decisions on policies to alleviate these problems. It aims to provide a view of the state of current knowledge, based on recent experience, emanating from a meeting convened by the ACC/SCN in November 1990, and reviewed by the UN and bilateral agency representatives at the ACC/SCN 18th Session in February 1991.

Nutrition itself is seen as an *outcome*, a result of access to food, dietary intake, care of the individual, and health. Access to adequate food and to health are among the universally adopted human rights¹. It is therefore the responsibility of those whose actions affect the nutrition of the deprived to assign priority to protecting this central aspect of their rights. Adequate nutrition is also a pre-requisite for most other human aspirations. From conception through old age, adequate nutrition is essential for individual development, activity, good health, and self-fulfilment. For societies and nations, adequate nutrition is required for their function and success. The concerns range from day-to-day meeting of basic needs, including survival especially in infants and children, through lagged effects on performance of individuals and societies, even to inter-generational influences notably through women's nutrition.

The aims of socio-economic development include preventing inadequate nutrition. But this objective will not be reached unless actions different or additional to those presently undertaken are pursued. One aim of this paper is to outline the scope of possible actions that now, at the beginning of the 1990s, should be considered as feasible options under different circumstances.

Inadequate nutrition encompasses a set of issues with biological and social dimensions. In the child, it concerns survival, growth, health or sickness, activity and cognitive development. In adults, it particularly concerns health, biological function, and productive activity. Nutritional status might be assessed by a number of these outcomes; most often in practice it is estimated using growth in children and thinness in both children and adults (for protein-energy; other measures are used for micronutrient deficiencies). Poor nutritional status of the individual results usually from a combination of inadequate dietary intake and infectious disease.

Malnutrition is extensive in the world. There is (by definition) no single measure. Some widely quoted indicators of the present status do however give a usable picture, for example: some 150 million children are underweight²; around 500 million women anaemic due to iron deficiency³; over 20 million low birth weight infants born each year⁴; some 40 million children are estimated to be vitamin A deficient, and over 1,000 million people either suffering or at risk of iodine deficiency⁵. In this context the trends are particularly relevant. During the 1980s, although in all regions except Sub-Saharan Africa the average proportion of the population malnourished may have declined or at least remained static, the numbers affected – whether assessed by growth in children or as underfed in the whole population – continued to increase. Moreover, where the average proportion has declined, the rate is nowhere near rapid enough that maintaining current policies offers the prospect of an acceptable nutrition situation in the foreseeable future. A judgement based on the continuation of present trends would be that numbers malnourished may substantially increase in the 1990s. Goals proposed for the Fourth Development Decade by the UN⁶, by WHO/UNICEF⁷, at the World Summit for Children⁸ and in a number of international contexts recently⁹ include such aims as: virtually to eradicate severe malnutrition, and to reduce mild/moderate malnutrition by half. Such goals will only begin to be met with a great deal of deliberate action. Again, one purpose of this paper is to suggest a possible scope for this action.

Although global and regional trends of malnutrition, and their implications for the future, are cause for concern, success in improving nutrition has been seen within a number of countries from all regions. In some cases nutrition has improved more than might be expected from the economic situation, or has been protected during recession¹⁰. It is on this basis that specific actions can be proposed. The causes of improvement are often multiple. They range from favourable macro-economic policies through improved service delivery to direct nutrition interventions. Although nutrition may not be the primary motivation for all such policies, the fact that success is possible encourages the preparation of this statement.

Since the Second World War the view of nutrition has evolved, and it is hoped that the present view of problems and their possible solutions is appropriate to the time. While there have been different schools of thought over the years, a consensus is now emerging. It may be worth looking briefly at the history to set the context.

In the 1940s and 1950s, freedom from hunger and prevention of famine were seen as global priorities – e.g. the constitution of FAO¹¹. At the same time malnutrition itself (at least in children, and for micro-nutrients) was regarded as largely a medical problem. (Starting even earlier, attempts were made to conquer such vitamin deficiency diseases as beri-beri, pellagra, scurvy, and xerophthalmia.) Kwashiorkor – more visible in children than thinness – was widely reported, as was its cure by high-protein foods; as well, protein requirements were over-estimated. Consequently, protein deficiency came to be seen as the most extensive nutrition problem. This perception led on the one hand to attempting prevention and treatment by providing protein to individuals (by technical means); and on the other hand to a global supply concern for the "protein gap".

The reappraisal of protein requirements in the early 1970s and better understanding of protein-energy interactions, combined with the temporary food supply crisis at the time of the World Food Conference of 1974, swung the pendulum the other way: overall food energy supply became the issue. Analysis soon revealed (e.g. FAO's Fourth World Food Survey¹²) that *distribution* of food, or access to food for the poor, was crucial. Poverty was then established as a major cause of malnutrition. The inference drawn however was that addressing poverty as a whole was the only way to prevent malnutrition, which was over-ambitious, and often set nutritional concerns in potential competition – or anyway interfering – with virtually all other aspects of socio-economic development. It also tended to lead to unworkable schemes for integrated policy-making and programmes. In turn, this led to a sector-wise view of nutrition – in agriculture and in health especially – with emphasis on introducing nutritional considerations into sectoral planning. An issue here was that these sectors essentially retained their own priorities, and considered what they were doing as that which was

necessary anyway to improve nutrition, so that specific nutrition considerations were often regarded as rather superfluous.

A number of national governments however confronted this problem more directly. Measures such as food price stabilization, social security, and special health services for women and children, gradually took root. One result is that today, whatever the theory, there is experience to build on.

An opportunity is also provided by the convergence between policies advocated internationally for poverty alleviation¹³, and those for nutrition. Emergence of household food security (as opposed to national) as a concern, with the emphasis that 60–80% of the expenditure of the poor is for food, sets household food issues centrally in concerns for poverty¹⁴, and within social security as short–term measures for support. Prevention of the malnutrition–infection complex¹⁵ – still the most prevalent public health problem in the world – is a major objective of primary health care. The crucial role of women in all aspects of nutrition (here especially in caring for their families) is increasingly recognized¹⁶.

Strategies for addressing malnutrition can be based on these considerations. UNICEF's nutrition strategy focuses on the three underlying issues of food, health, and care¹⁷. FAO/WHO, in preparing for the forthcoming International Conference on Nutrition, use a similar structure¹⁸. This framework has guided the structuring of the strategies and policies discussed here.

At the same time, two other issues of emerging importance should be noted, although they are not treated in detail here. First, the priority of tackling specific micronutrient deficiencies is now being reemphasized, particularly since the technical feasibility of preventing them through focused and relatively inexpensive programmes is now clear¹⁹. This applies particularly to iodine and vitamin A deficiencies. Control programmes for iron deficiency – the most prevalent – while effective technically are more dependent on service delivery infrastructure and may take longer to develop. A short section on control of micronutrient deficiencies is included here, as section E. *

* While it is recognized that micronutrients relate to the qualitative aspects of household food security (as defined), this section is separate for ease of presentation and added emphasis.

Second, the contribution of incorrect nutrition to chronic disease is being more firmly established as research progresses. Aspects of nutrition policy, initially in industrialized countries, are addressing this issue. The concern extends to developing countries – nutrition contributes to chronic disease among poor in many societies – and actions to head off or reverse trends in diet are needed. These issues are not gone into here, which in no way reflects their priority but results from the need to limit the scope.

Nutrition and Development Policies

The principles for development policies in the 1990s are widely put forward – most recently by World Bank and UNDP²⁰ – as including three tracks. First, economic growth that deliberately involves participation of the poor is the long–term solution to poverty. Second, social security is required to maintain a basic level of living ("safety net") for the poor; sustained access to adequate food ("food security") is a central feature of this. Third, development of human resources is an essential underpinning of the first two.

The options put forward here in the technical areas related to nutrition are entirely consistent with these principles and are aimed at achieving nutritional goals for the 1990s.

A number of points influencing their application to nutrition should be made concerning these principles. First, allocation of resources to poverty–oriented growth may or may not involve trade–offs with total economic growth: under many national circumstances deliberate decisions are needed as to how far investments are made that benefit the income of the poor specifically. Second, the financing of effective social security for the poor depends on adequate economic growth: the first two principles are linked. Third, the effects of growth policies that fail to involve the poor cannot sustainably be rectified through social security.

A related issue is that policies must address both underlying trends, and short–term fluctuations or "shocks". There is some distinction between shocks that affect whole societies, and those affecting individuals. For example, in drought–prone areas a safety net mechanism may be appropriate for preventing effects of occasional drought on the population; somewhat similar considerations apply to seasonal effects. Buffer stocks or price stabilization are examples of appropriate policies. On the other hand, individuals require social

security against sudden illness, or unemployment. This may be developed in communities, but generally needs resources from more central levels.

A specific concern at the present time is for the effects of structural adjustment policies on nutrition, particularly in the short-run. This concern is likely to continue in the 1990s, and is discussed below under "household food security".

Grouping Issues

Malnutrition, especially in women and children, is the problem to be solved. The immediate causes at an individual level are inadequate dietary intake and infectious disease (viral, bacterial, parasitic). Certain actions can address these directly, as will be discussed later, while measures addressing underlying household-level causes are often more practical. Nutrition issues are grouped here into three clusters: household food security, nutrition and infectious disease control, and caring capacity, with their detailed definitions being given in respective sections later. Briefly, their interaction is as follows.

Household food security is clearly a pre-requisite for adequate dietary intake of all household members, which in turn is one (of the two) requirements for preventing *malnutrition/infection*, disease prevention being the other. However, dietary intake is influenced by many within-household factors, especially to do with women's roles; this applies particularly to infant and child feeding. At the same time, exposure to infection in the household environment is greatly affected by care of the individual which includes provision of adequate hygiene, clothing, care when sick and recovering, etc. Thus the cluster of problems concerned with "care", affecting both dietary intake and infection, has been included as central to policies to address malnutrition.

The problem clustering has, it should be emphasized, been defined pragmatically for operational purposes of grouping policies, rather than on a rigorous analytical basis. This applies particularly to women's issues, which are important in all three policy areas.

Choosing Options

The policy options and experience described in the next sections are not prescriptive. It is not implied that, even under given circumstances, one particular set of actions is always recommended. They are intended as "building blocks" when policy options are considered for alleviating malnutrition. They provide examples of actions that have been considered effective sufficiently widely that their serious consideration is advocated. Further, it should be stressed that this paper does not address the *process* of deciding on actions – or policy-making – but rather the potential content and results of such decisions.

Usually a judicious *mix* of policies – within the cluster of problems/options such as household food security – is appropriate. Reliance on one option has been seen to be less effective: only public works employment, or only food subsidies (even if targeted), for instance.

The relative priority assigned to each of the three clusters of problems/options is likely to vary country-by-country. In some countries household food security is relatively assured, but malnutrition persists for reasons encapsulated in the other clusters; in others, this factor may be of overriding importance. But it is stressed that adequacy in *each* of the areas is required: each is necessary but not of itself sufficient.

Inter-sectoral policies or interventions are nevertheless not considered essential to address nutrition problems *. Experience has shown that complicated plans involving many different possible actions have been difficult to implement. Often a better approach is to decide on currently feasible sectoral actions. Because nutrition problems have multiple causes does not mean that all causes have to be addressed at the same time. Equally, as for many other development interventions, flexibility in nutrition policy and interventions is desirable. Lessons may be learned from an evolutionary process of planning as opposed to the less flexible "blueprint" planning. There is thus no absolute need for governments to develop all-embracing statements which constitute a "nutrition policy". Such a document may promote the notion that a centralized inter-sectoral planning approach is required (although developing such a policy can in some cases give focus to commitments to nutritional goals, and a framework for deciding between options). Decisions and actions however are more important than statements.

*A distinction has been drawn between "inter-sectoral", meaning "measures of different sectors integrated with each other for a coordinated effort", and "multi-sectoral", meaning "several sectors taking part".

Characteristics of nutrition problems, their causes and options for solutions, vary by country. In theory, suggestions could be made for relative priorities of options based on typology of problems and situations; attempting this could be a future step, but was not undertaken for this review. Such a typology might link problems and options with (a) characteristics of countries, e.g. by income level, government expenditures especially on health, education, and social security, population factors (density, growth rate, urbanization); (b) specific factors relative to household food security, such as dietary energy availability, dietary patterns, proportion of income spent on food; (c) nutrition and infectious disease, including infant and child mortality rates, access to health services, sanitation, disease patterns; and (d) assessment of caring capacity, perhaps using such data as female literacy rates and other measures of women's status.

Prioritization of policies and interventions cannot be done in a general manner. Just as the preconditions for successful actions differ between countries, so do the chances that any particular intervention will be appropriate and feasible. Furthermore, the success of interventions depends on the existence of other policies e.g. infrastructure, access to markets. Policy priorities are thus, to a large extent, country-specific and cannot be decided without full consideration of the social and economic context in which they would be implemented. Again, the *process* of deciding options could be considered as a future step, but was not part of the present review.

B. HOUSEHOLD FOOD SECURITY

Food insecurity continues to threaten large proportions of households in low income countries. It is common among the absolute poor in middle income countries, and even in some rich countries. The problem is widespread, and is not confined to any one sector or group of nations. Even when hunger is avoided, families suffer from its threat. The entire society benefits when people feel their access to food is secure.

An operational definition of household food security is proposed as follows. *A household is food secure when it has access to the food needed for a healthy life for all its members (adequate in terms of quality, quantity, safety and culturally acceptable), and when it is not at undue risk of losing such access.*

Food insecurity, as a household-level issue, can be addressed by a wide range of alternative policies and combinations of policies and programmes. Policies for food security should aim at attaining required food consumption levels and reducing the risk of the poor losing access to food. Access to food and purchasing power are central, and both transitory (e.g. seasonal) and chronic food insecurity problems are of concern.

Adequate global and national level food supply remain necessary but insufficient conditions for household food security. High levels of food self sufficiency in low income countries have no necessary relationship to their households' food security, which has to be addressed by specific policies. Households should be viewed in the context of their community, and not in isolation. Many of the problems considered below have an important community and local government dimension and cannot be addressed by the central government alone.

The nature and scale of the food security problem differs a great deal among and within countries, and also between urban and rural areas. Wise policy needs to take account of this, and therefore has to be country- and region-specific and problem-oriented. Food security cannot be achieved free of charge in terms of fiscal resources. Public capabilities for problem identification and policy design and implementation are required to help to find ways to eliminate the unacceptable human misery caused by food insecurity, or by extreme efforts that households may take to avert it. In addition to humanitarian considerations, food secure households are a precondition for a modernizing and healthy society whose members concern themselves with investment in a productive future (e.g. education) rather than scrambling for adequate food today. Governments have an obligation to enable families and communities to achieve long-term food security and to provide a safety net to prevent destitution.

Food is such a high priority for poor households that many may be tenuously "secure", but at great sacrifice – for example spending almost all their money or time on securing food. Thus not only must current food security itself be tackled, but also both the vulnerability and the disadvantages from enforced concentration on acquiring food, to the detriment of other needs like education or housing. Moreover increases in income even

among the lowest income groups do not necessarily go entirely to increasing food energy intakes, but also towards better quality in terms of a more palatable and diversified diet. This represents an important aspiration not captured by dietary energy intakes alone, and is another objective of improved food security.

Setting for Action

A first step for improved food security that applies universally is to develop government and district-level capacity to assess, analyse, act, and evaluate actions relating to malnutrition in general and food security in particular. Community participation in this process is essential to successful capacity building at all levels, just as community mobilization must be a key feature of implementation. The ability to implement policies and monitor their effect is at least as important as the ability to design policies. Integrating all these activities into a continuous process will help to ensure that initial mistakes in policy conception are corrected, and that adjustments are made as circumstances change.

The general development strategy of a country greatly influences the food security of its households. A development strategy supportive of sustainable agriculture and rapid growth in labour-intensive output will enhance food security. So too will a macro-economic strategy that builds upon stability to encourage growth. This type of management reduces economic insecurity caused by sudden large devaluations, drastic budget cuts, sharp curtailment of credit, and shortages of goods. These fluctuations hurt food security in the short- and long-run.

Household food security is substantially influenced by macro-economic adjustment policies. The situation typically preceding adjustment includes such factors as overvalued currency, price policies negatively affecting agriculture, inefficient market interventions and government expenditures; these tend to depress production and incomes (particularly rural), and reduce the access to food of the poor. However, adjustment programmes, although necessary, usually lead to at least short-run insecurity especially among the urban poor and net consumers (wage-earners, landless) in rural areas. Reasons include increasing food prices, rising unemployment, and reduced budget allocations to social sectors. These should be cushioned by compensatory measures. Adjustment programmes are aimed in the long-run to lead to sustainable development, which will benefit nutrition, and considerations discussed later for development strategies are relevant.

Support for sustainable agriculture implies fair prices for farm output and inputs, and concern with resource mining, and spill-over and dynamic biological effects of agricultural inputs. (More plainly, problems such as erosion, groundwater depletion, pollution from fertilizers and pesticides, and problems of pest resurgences are addressed.) Labour-intensive growth implies avoiding subsidies to capital via overvalued exchange rates, cheap credit, tax holidays, and low tariffs on capital goods; and also avoiding artificially high wages. Improvements in marketing, distribution, and agro-industries, as well as promoting the contribution of the private sector in job creation, all have important roles. Food safety and food quality must be assured by appropriate legislation, consumer protection and information.

Appropriate macro-economic management must recognize the lessons of the 1980s: growth and equity will be faster and smoother in a stable macro-economic environment. Avoiding large fiscal and current account deficits, high levels of inflation, rapid credit growth, or unchecked public enterprise losses will allow higher levels of productive investment, fewer recessions, and less unemployment. Arriving at a favourable macro-economic situation can be painful, but must be managed so as to allow food security for all families.

Measurement of Household Food Security

While the basic concept of household food security is clear, and an ideal measure of it is easy to describe, it is surprisingly difficult to gauge it in practice. This difficulty does *not* mean waiting for years of academic research. It does suggest that operational research and evaluation should be built into food security activities, so that confidence in the precision of actions will grow as the decade progresses.

An ideal measure of household food security includes the *measurement of household food availability and average household food consumption levels over a period of time, in relation to need*. For various reasons, this is all but impossible to achieve at a reasonable cost in a reasonable time period: there are problems with measuring both availability and consumption, and need itself. It is sufficiently difficult that it is best regarded as

an ideal rather than practical measure. The *proportion* of available resources required for achieving food security may also be assessed; for example, households with adequate food security but spending almost all their income on food should clearly be distinguished from those only needing to spend a moderate proportion on food. This proportion is indicative of the stress on households' well-being, and reflects on their capacity to cope and indeed survive.

There are a number of other variables that might help to indicate trends, or serve as proxies for, food security. The best general indicator is probably real income, although still hard to assess; more fundamental measures, such as landlessness, should be included. Research is needed to see which groups of indirect indicators are best used under which conditions. In general, more weight has to be placed on indirect indicators where local government is weak and participation in the policy process is low; and also where investigative journalism is suppressed. Examples of potential indicators are changes in food production by region, changes in price ratios (e.g. crop/livestock or crop/wage price ratios), migration, assets; priority data from household surveys conducted for this specific purpose include; food consumption, the perceived risk of food insecurity, use of famine foods, and anthropometric measurements.

In relation to causality, none of these indicators are reliable on their own. All should be used in conjunction with other information. Emphasis should be on changes from normal levels, as many indicators will change for reasons unrelated to food security. For example, migration may rise in response to urban job opportunities, and weight-for-length indices may drop due to a rise in infectious disease. In general, careful analysis is needed before inferring changes in food security. However, there is often adequate data available or easily gathered to allow judgements about food security – lack of precise data is no excuse for inaction.

Scope of Options

The purpose of the policies discussed below is to improve household food security. This is done, in part, by having a social safety net. A government has an obligation to ensure food access for all, extending especially to women and children. But true security comes from raising the level of production and earned income and improving asset ownership. If food prices are stabilized, and food availability assured, this will help families realize an acceptable minimum livelihood, food security, and adequate energy intakes.

As stressed above, appropriate policies can only be identified in a specific country context. The listing of major policy options for food security can therefore only be indicative of a government's choices. Conclusions regarding their impact and cost-effectiveness must remain at a very general level. A large body of research and experience exists for each policy and use of this will help guide decisions in specific contexts. Not every policy will fit every country, but most policies – if well applied – have the potential to improve food security in many countries. A brief list follows.

i) Promotion of small-scale agricultural production remains central to food security in most poor countries, to provide food and income for those at risk. Agricultural growth for employment expansion and food supply is important because many of the food insecure live in rural areas and are directly or indirectly linked to agriculture. Sustainable technology improvements in agriculture can increase the productivity of labour without diminishing employment. There are potential gains in food, cash crops, and in livestock. Traditional food crops and collected foods must be given systematic attention. Central elements of this policy include research and extension linkages, drawing upon indigenous knowledge, and improved input supply.

ii) Income generating projects including livestock and non-farm activities will allow rural families to use time previously spent on low productivity work to switch to jobs with higher returns. Non-farm work generates incomes not closely connected to farm income, thus helping to stabilize household incomes. Income generation is equally or more important in urban areas, although often the investments may differ from those in rural areas – urban families are usually more reliant on purchased foods.

iii) The initiation of credit programmes is one way to allow the rural poor access to loans, both for consumption and especially for production. Loans can make it possible for the poor to acquire assets, which both increase their income-earning capacity and provide buffers against disaster. Women should have equal legal and effective access to credit (see section D), as its availability allows higher incomes to be earned, and improves the resilience and flexibility of the household's income base. Lending to micro-enterprises using non-traditional and unregulated intermediaries has proved effective in reaching the poor; such schemes could now be expanded. (The success of credit programmes for the poor does not in general hinge on an interest rate subsidy, so decisions on subsidy to credit can be made depending on local conditions.)

iv) *Public investment in infrastructure* will have a number of benefits. Labour intensive construction creates jobs. Better roads lower marketing costs, thereby allowing *both* better prices to farmers *and* lower consumer prices in cities. Roads also improve the flow of information and reduce the power of local monopolies. They allow the easier movement of labour out of low wage or drought-struck areas, and cheaper movement of food into them. If irrigation and greening are investments, continued gains in employment and incomes can be enjoyed.

v) *Public stockpiling of food* has sometimes efficiently improved food security by assuring physical supplies and stabilizing prices. In general, however, if transport costs are low, stockpiling will not be the best way to ensure access to food. Use of futures markets and international trade would provide a cheaper alternative. If transport costs are high, national, regional, or even community stockpiling in excess of normal commercial stocks may be needed. If a nation's demand can raise the price of its imports, stockpiling may be needed, even with low transport costs.

vi) *Food price stabilization* can benefit farmers by allowing more confident investment in inputs, and consumers by reducing extreme fluctuations in real wages. This policy may sometimes involve driving a wedge between local and world prices, but these should not deviate too far from average world prices for too long.

vii) *Food price subsidy and rationing policies* are widely used. An important distinction is between *targeted subsidies* which are aimed mainly at households facing food insecurity and *general subsidies* aimed at most or all households. Targeting can be done by means-tested food stamps, ration books or coupons, by type of staple (e.g. cassava rather than rice), by geographic location of shops, or by restriction of the subsidy to certain groups, such as pregnant and lactating women and young children. Targeted subsidies face lower food costs, somewhat higher administrative costs, and, sometimes, a lack of widespread political support. General subsidies are very costly, popular, and hard to stop.

viii) *Public works for food security (including food-for-work)* continue to play an important role in Asia. Their potential in Africa appears to be increasing as there is rising population concentration, resource conservation opportunities, and infrastructure needs. If wages are set somewhat below normal levels, this intervention has the highly desirable feature of being self-targeting for the poor. Women are often attracted to these public works, although questions of child care, preferably near the place of work, should be addressed. The dual effects of short-term employment and long-term asset creation are described under infrastructure.

ix) *Free distribution of food to selected groups* is useful in emergency situations, such as famines or floods; and in chronic situations where poor pregnant and lactating mothers or underweight young children are at risk. *Supplementary feeding programmes* are common in this category. These may be aimed at households, such as food-for-work (section viii above), or individuals such as school-children, preschoolers or mothers. They can be successful where the service infrastructure and budgetary resources are adequate for sustained application. The benefits go beyond correcting growth failure to include child health and development (e.g. immunity and activity, school feeding for educational performance), and they should be considered and assessed in these terms. This type of distribution should be limited to those who will clearly benefit from the food; food distribution to the *general* population is seldom a cost effective way to intervene to improve household food security.

x) *Food quality and safety control* are important to reduce food contamination from chemicals (e.g. pesticide residues), mycotoxins (e.g. aflatoxin) and bacteria, both during storage and preparation (e.g. "street foods"). Attention to storage is important not only to prevent post-harvest losses but for reasons of palatability and acceptability. Certain foods need specific processing to be safe and acceptable (e.g. cassava, soya) and investments in this area can contribute to a safe and inexpensive food supply.

xi) *Timely warning and intervention systems* integrate local levels of data gathering, analysis and response. In some situations, this can prevent serious food security problems from developing, by increasing the availability of public works or subsidized food before real deprivation sets in. These systems require a fairly sophisticated local government which is not always available, but can be built up over time.

xii) *Specific micronutrient programmes* should be considered among the options for improving household food security. These are discussed in a separate section (E).

Related Policies

The above listed indicative policies all need to be examined in terms of the extent to which they are consonant with policy priorities in a given country. They cannot be evaluated or advocated in isolation from the policy and development strategy framework of a country. Most of the policies mentioned can include community participation and should to a large extent involve the private sector in actual implementation – e.g. privately run licensed ration shops, or privately bid infrastructure construction.

Given the essential contribution of women to household food security and adequate food intake of specific household members, especially women and children, part of any process for policy and programme choice needs to be the assessment of the likely impact of policy on them. Many policies create losers and gainers, and these should be identified.

Food security policy must be sustainable in the broad sense, i.e. in terms of fiscal resources, the preservation of natural resources, and in terms of a conducive political support base. Erratic changes in policy misguiding food insecure households can do more harm than doing nothing. While in any specific country and at any specific time, the best mix of policies may not be clear, this is no longer an acceptable excuse for delayed action.

C. NUTRITION AND INFECTIOUS DISEASE CONTROL

The interaction of infection and nutrition as a cause of mortality and severe morbidity in children is well documented, and has a disproportionately high impact on lower socio-economic groups. Addressing infectious disease is thus a second essential part of actions to improve nutrition. Malnutrition and infection form a cycle. Here, nutrition actions as they affect infectious disease in terms of prevention and management are discussed in some detail. Infectious disease control itself is so important – both in its own right and in relation to nutrition – that it is also included under this heading.

Because malnutrition and infection interact and are closely linked, it is relevant to talk about a "malnutrition-infection complex". Of the about 13 million infants and children who currently die each year in developing countries, most of the deaths are due to infections and/or parasitic disease, and many if not most of the children die malnourished. The malnutrition and infection complex remains the most prevalent public health problem in the world today²¹.

The principles underlying malnutrition and infection can be summarized as follows. Inadequate dietary intake leads to low nutritional reserves, which are manifested as weight loss or failure of growth in children. Depleted nutritional reserves are associated with a lowering of immunity, probably with almost all nutrient deficiencies. Particularly in protein-energy and vitamin A deficiencies there may be progressive damage to mucosa, lowering resistance to colonization and invasion by pathogens. Lowered immunity and mucosal damage are the major mechanisms by which defences are compromised. Under these circumstances, the incidence, severity, and duration of diseases may be increased. The relative importance of these three factors is not fully worked out under all conditions. The disease processes themselves exacerbate loss of nutrients, both by the host's metabolic response, and by physical loss from the intestine. These factors themselves worsen the malnutrition, leading to further damage to defence mechanisms. At the same time, many diseases are associated with a loss of appetite, and other possible disabilities, cycling back to further lower the dietary intake. While other relationships play a part, these are some of the most important, and account for much of the high morbidity and mortality under circumstances of high exposure to infectious disease and inadequate diet, characterizing many poor communities.

Control of infectious disease, and dietary/nutrition interventions to promote this process, are thus of major importance in cutting into the cycle of malnutrition and infection. Controlling infectious disease through primary health care is a major priority of the health sector. Concern for nutrition only reinforces this priority. It is worth noting that prevention and management of infection is particularly important in malnourished communities: for example, measles immunization would be expected to save more lives in malnourished communities than in those better off.

Dietary interventions during and immediately after infectious disease can affect the course and effects of the disease, and reduce the extent to which nutritional status suffers. Nutrition is thus relevant to disease *management*. Adequate nutrition maintains immunity and other protection against disease, so that nutritional or dietary interventions can be important in *prevention*; indeed, it has been claimed that longer-term trends

(over decades) towards improved health in many countries are basically due to the preventive effect of better nutrition²².

Interventions during management of infection often fall naturally within the existing concerns of the health sector – as examples in combating anorexia, and in maintaining dietary intake during persistent diarrhoea. Nutritional interventions for prevention may or may not be through the health sector; for example the social services are responsible in some countries.

In sum, policies to improve nutrition necessarily include control of infectious disease. Often, they will reinforce priorities that are already accepted: for example, the prime importance of breastfeeding needs to be promoted through the health and other sectors. Equally, nutrition considerations would support the priority given to environmental sanitation, housing, as well as measures such as immunization, oral rehydration, parasite control, etc. Within these conventional health measures, nutrition considerations may have a part to play in terms of targeting and monitoring and evaluation of outcomes.

Concern with nutrition improvement may be particularly usefully translated into action by emphasis on feasible, usually incremental, actions incorporated within services. These are stressed here, not least because of their obvious relation to nutritional concerns, and the fact that they may get lost sight of in sectoral planning. The scope for action is discussed later as specific strategies for tackling malnutrition and infection in the context of primary health care and its support systems, under three main headings:

- dietary *management* of infection
- dietary *prevention* of infection
- infectious disease control to improve nutrition.

Growth monitoring is important for all three aspects and should be promoted for individual problem detection, for communication with mothers and communities, for assessing progress, and for other reasons²³.

Setting for Action

While the control of infectious diseases is accorded a high priority within health departments, effective programmes are complex, costly and difficult to implement. Furthermore, to be most effective they require substantial contributions from sectors other than health. Financing of the health sector is traditionally assigned a low priority in developing countries with market economies. Within limited health budgets, a high proportion of funds is allocated to hospital-based curative care, involving major capital and recurrent costs and leaving only minor resources for the development of preventive programmes. Limitations of health infrastructure result in low overall coverage which in turn limits the reach of primary health care programmes and their infectious disease control components.

The control and prevention of infection should be central to health policy in developing countries where infectious disease morbidity is the major component of hospital admission. Primary health care programmes give clear priority to a range of services and activities designed to reduce the incidence and severity of common infections. While infectious disease is a clear priority for the health sector, a number of the principal interventions for its control are the responsibility of other sectors. Adequacy and safety of water supply, sanitation and housing are usually substantially determined by public works departments and local authorities.

The interaction between infection and malnutrition has an overwhelming impact on those who are poorest in social, economic and environmental terms and is the major cause of death, sickness and disability in infants and young children as well as being an important contributor to ill-health and reproductive problems of their mothers. Its occurrence is the single most powerful expression of the biological consequences of poverty and disadvantage. Reduction of the frequency and severity of infection in the long-term requires addressing poverty and deprivation within the broader framework of economic growth and social development. In the context of this paper, such an approach includes the improvement of household food security, environmental hygiene, child caring capacity, and the empowerment of women. These are discussed in sections B and D. Micronutrient deficiency control programmes are covered further in section E.

Dietary Management of Infection

Dietary management seeks to modify the course and outcome of infection by the improvement of food intake during disease and recovery, particularly in young children. This is applied principally through education programmes enabling mothers and carers to acquire and apply the necessary food resources and skills in an effective manner. The education may be formal, through the school system for example, but importantly includes information and counselling through health care workers. Under a number of circumstances, supplementary food, micronutrient supplements, and technologies such as for fermented and amylase-rich foods may be supplied as part of the services. A brief list of possible actions, related as appropriate to specific common diseases follows.

i) Continuation of breastfeeding during infections This applies to all infections, but with particular force to diarrhoea, measles, respiratory tract infections, and malaria. In children up to four to six months of age, exclusive breastfeeding is recommended. During episodes of diarrhoea, continued exclusive breastfeeding (with increased frequency and duration of feeds if possible) is the most important nutritional aspect of management. If such infants nonetheless become dehydrated, rehydration therapy may be required. When breastfeeding is maintained during diarrhoea, the growth faltering commonly associated with diarrhoea is rarely seen, and the risk of death is minimized. Continued breastfeeding, as required with increased frequency, is also central to the management of other acute infections, such as measles and acute respiratory tract infections, of which pneumonia is the most serious. In children older than four to six months, continued partial breastfeeding is of similar importance, and its continuation during episodes of infection should be emphasized.

ii) Maintenance of diet during infection, especially persistent diarrhoea, including both active and recovery (catch-up) phases Maintaining supplementary foods in young children (above four to six months of age) during the course of infection, and increasing intake during the recovery period, is essential. This is made more difficult by the anorexia that commonly accompanies infectious disease, and by the low energy density of many weaning foods. The mistaken view that is still prevalent in some communities that dietary intake should be restricted during infection is particularly pernicious, and needs to be vigorously counteracted. In this context, not only is encouragement to continue feeding required, but promotion of methods that increase the energy density of palatable diets should be stressed – there is considerable potential for use here of fermented foods (often along traditional lines) and use of amylase-rich flours to reduce bulk. Supply of supplementary foods may also be a means of increasing food intake during these critical periods.

iii) Administration of vitamin A in the management of measles, acute respiratory infections, etc.²⁴ In areas where vitamin A deficiency exists particularly during and in the immediate post-infection phases of measles and respiratory tract infections, vitamin A supplementation has been shown to be effective in reducing case-fatality, preventing further infection and promoting recovery. This may be accomplished by counselling for vitamin A-rich foods in the diet, and often can also be effectively achieved by direct provision of vitamin A supplements.

iv) Use of oral rehydration therapy in treatment of acute diarrhoea This intervention is well known and widely applied, and has relevance to nutrition not only in the management of the disease itself, but very possibly in counteracting anorexia, thus enabling more successful application of the interventions mentioned here. Home-prepared fluids (e.g. gruels) for treating dehydration may be considered.

v) Dietary support in chronic infections With diseases such as tuberculosis, leprosy and AIDS, attention to maintaining adequate dietary intake forms an important part of the management. Methods in young children are similar to those discussed above, including continuation of breastfeeding, and provision of higher energy density and palatable foods, and emphasis on frequency of feeding.

vi) Iron and malaria Malaria is frequently associated with iron-deficiency anaemia, and the interactions are complex. However, current evidence is that *oral* administration of iron during the treatment of malaria, in moderate doses, is valuable. This will help enhance immunity, and the benefits of oral supplementation are considered to outweigh the risks which are peculiar to malaria since the parasite requires iron for multiplication.

vii) Other micronutrient deficiencies Multiple micronutrient deficiencies are commonly associated with infectious disease and have particularly been implicated in acute respiratory infections (notably zinc, iron, and possibly vitamin D). Due attention to micronutrient status during management is appropriate.

viii) *Intestinal parasites* Infection with intestinal parasites is frequently associated with malnutrition, and the potential for integrating parasite control and nutrition programmes is clear. In this context, where intestinal parasite infestation is prevalent, parasite control programmes may usefully include food supplementation, and *vice versa*.

ix) *Effective nursing/caring during sickness in the family* In effect, many of the interventions discussed here depend upon family members and helpers. To be effective these may need counselling and support to care for sick children during infection, and importantly in the nutritional context to promote their rapid catch-up during the recovery phase. Emphasis on providing the appropriate information through all available channels is required, because this aspect is frequently overlooked in the delivery of health and nutrition programmes.

Dietary Prevention of Infection

Dietary prevention seeks to reduce the frequency and severity of infection by ensuring a safe and nutritionally adequate diet and limiting energy expenditure, to protect nutritional status. Good nutritional status prevents infection by a number of mechanisms, notably through the immune system and maintaining the integrity of epithelial tissues. Again, education and information are important means of implementation. Specific interventions through the health system may also be needed. Dietary prevention of infection includes promoting or ensuring the following.

i) *Exclusive breastfeeding for four to six months* Exclusive breastfeeding helps to prevent diarrhoea by minimizing the infant's exposure to diarrhoeal pathogens, which are common in other foods and in water. At the same time, breast milk provides anti-bacterial activity in the infant's gut, reducing the risk of disease if contaminants should be ingested. Similarly, breastfeeding has direct benefits in preventing other diseases, from acquired passive immunity from the mother. It also probably prevents malnutrition, not only secondarily to diarrhoea, through the cycle of suckling promoting production of maternal milk.

ii) *Continued breastfeeding into the second year of life* Continued breastfeeding promotes prevention of disease through protection of nutritional status, as well as some continuing direct protection against infectious disease. Indirect effects are also important, through birth spacing.

iii) *Satisfactory quality and intake of complementary foods* A number of issues arise here, concerning energy density, nutritional value, and food hygiene. It is essential to promote frequent feeding of foods of adequate energy density (including use of amylase-rich flours). Microbial contamination may be reduced using fermented foods. Good feeding practices may be promoted through education, and in some circumstances, perhaps notably in urban areas, special weaning foods may be marketed.

iv) *Vitamin A status in relation to measles and respiratory tract infections* Vitamin A supplements are indicated in all populations at high risk from measles where vitamin A deficiency exists. Measles precipitates vitamin A deficiency, and the disease is worsened in the deficient individual. There is also accumulating evidence that vitamin A deficiency increases risks of developing respiratory diseases, and that children who are vitamin A deficient are more likely to suffer from chronic ear infections. Thus prevention of vitamin A deficiency is particularly important to reduce the incidence and severity of respiratory tract infections, of which pneumonia is the most serious. In general terms, preventing vitamin A deficiency by dietary improvement, fortification and/or supplementation is expected to ameliorate infectious disease, through effects on immunity and on epithelial tissues.

v) *Prevention of low birth weight* Improving women's nutritional status, especially pre- and during pregnancy, is important not only for the nutrition of women but in preventing low birth weight (especially intra-uterine growth retardation) and subsequent likely higher risks of malnutrition, morbidity and mortality in the offspring. A number of interventions to improve women's nutrition are mentioned in section D, and those that are particularly relevant in this context include maternal supplementation, reduction of energy expenditure, and family planning, with particular reference to adolescent mothers. Low birth weight infants are considered to be at particular risk of respiratory tract infections, thus reducing low birth weight may have this specific benefit of reducing RTIs.

vi) *Iron and malaria* As for management of malaria and anaemia, there are complex issues concerning iron supplementation in malaria endemic areas. In general, *oral* iron should be administered to all pregnant women under malaria chemoprophylaxis; however this issue does not arise for the population in general, since malaria chemoprophylaxis is no longer recommended on a population basis, at least for young children, in

situations where there is inadequate assurance that it can be maintained in the long-term. Where malaria chemoprophylaxis cannot be administered systematically, it is nonetheless expected that iron supplementation under these conditions would be of benefit, due to the immune effect relating to malaria, as well as through improving anaemia. In general, assuring adequate iron status will have widespread public health benefits, reducing anaemia and improving immunity.

Infectious Disease Control

Control of infectious diseases which will improve nutrition and have other benefits, is widely described²⁵. The main point to emphasize here is that concern for nutrition inevitably includes priority for infectious disease control.

Controlling infectious diseases involves improving the health environment, and assuring access to adequate health services – indeed all the factors encompassed under the concept of primary health care. In the context of child malnutrition, particular emphasis may be appropriate to programmes of immunization (EPI), controlling respiratory infections, malaria, schistosomiasis, and intestinal parasites. At the same time, promoting the early diagnosis and treatment of infection in children and mothers (especially during pregnancy) by primary care services has a central role. Of the specific disease programmes in relation to malnutrition and young children, those that address diarrhoeal disease, not only acute diarrhoea for which rehydration is important, but also persistent diarrhoea for which dietary management is of particular importance, must be stressed.

Measurement Issues

Malnutrition and infection can be measured by well-established methods, including anthropometry often as growth monitoring²⁶. Assessing the processes outlined in this section is also relatively straightforward in principle, from service or administrative sources in some cases, otherwise from household surveys. Some relevant indicators are proposed below; those generally only available from household surveys are designated (S), although data availability (and reliability) from service or administrative sources will vary greatly and may also require special surveys.

For assessing *management* of infectious diseases, the following indicators (usually as percentages) may be important: case fatality rates by disease (e.g. diarrhoea, pneumonia, measles; measles cases given vitamin A; individuals with chronic diseases given food and/or micronutrient supplements; proportion of mothers breastfeeding during child's illness (S); feeding patterns and frequency during child's illness (S); aspects of child care during illness including use of oral rehydration therapy (S).

For assessing *prevention*, the following indicators should be considered: incidence of low birth weight; age at first pregnancy; proportion of short birth intervals (e.g. less than 24 months); contraceptive prevalence rates. Other important information may be obtained from such data as: proportion of infants exclusively breastfed for four to six months (S); feeding frequency, weaning food preparation, with respect to both quantity and quality (S); vitamin A supplementation and disease-specific mortality (S).

Infectious disease control is assessed by a number of standard methods, generally involving household or individual surveys, which would include: immunization coverage rates; coverage of programmes for control of diarrhoeal disease, acute respiratory infections, parasites; proportion of individuals receiving effective primary treatment of infections.

Related Policies

The prevention and control of malnutrition/infection requires substantial inputs from other sectors than health to be effective. The priorities of those sectors may not be compatible with those of the health sector in terms of nature, area, targeting or timing; some examples follow. Physical planning and housing policies determine the adequacy of the physical (and often social) environment and the degree of overcrowding. The re-development of urban slums is a costly and sometimes disruptive process, and the extension of water and sanitation to temporary settlements often conflicts with longer term plans for permanent developments. Crowded education curricula may not permit the introduction of health education within official school hours

and teaching staff may not live in the community. Agricultural policy which encourages commercial cash cropping may have adverse effects on nutrition if income increases are not translated into improved diet and better quality care. Irrigation schemes can markedly extend the distribution of schistosomiasis. Changes in agricultural patterns resulting in greater involvement of women and children can affect health care and exposure to infectious diseases (e.g. malaria, hookworm). Development of a more stable society and infrastructure can have a direct effect on infectious disease transmission (e.g. STDs).

D. CARING CAPACITY

A major factor in determining nutrition in poor households is the use of available resources, especially for provisioning food, and maintaining of health in the face of unsanitary conditions. This applies with particular force to children and mothers. Another way to say this is that, given certain levels of household food security, health environment and access to services, much depends on how the individuals in the household, especially the women, *cope* with their situation. Many of the underlying factors (e.g. women's education, skills, and time) and immediate linkages with nutrition (e.g. maternal health, breastfeeding) can be addressed by public policies, and must be to successfully alleviate malnutrition. Others lie in the realm of social organization, role patterns, and the division of labour in the individual household. This series of issues has been grouped under the heading of "caring capacity". The definition suggested is as follows.

"Care" in general refers to the provision in the household and the community, of time, attention and support to meet the physical, mental and social needs of the growing child and other family members. It leads to the optimal use of human, economic and organizational resources. At an extreme, lack of "care" is neglect. In the context of nutrition, most importantly it facilitates:

- optimal use of household food resources for child feeding;*
- optimal use of parental (or other) resources to protect from infection, and care for the sick child, or other vulnerable members of society (e.g. the disabled, elderly).*

More generally it includes nurturing the full psychological and emotional well-being, which are goals in themselves, and which in turn may benefit nutrition and health.

The underlying theme of "care" has above all to do with women's role and resources – although "parental" care including that of the father and other relatives should be included. The major underlying issues affecting "care" are for women, knowledge, time, and control over economic resources, including income. At the same time, caring capacity at the level of family and community needs to be stressed; the priorities suggested here can apply at different levels.

Issues specific to maternal and child nutrition include breastfeeding and infant care, complementary feeding practices including energy density of foods, food quality, feeding frequency, etc.; as well as direct interventions to improve women's health and nutrition.

A good example of the levels of care and support that may be required are those needed for optimal breastfeeding. Breastfeeding women need: i) emotional support and appropriate information from family, community and/or health workers if any problem with breastfeeding occurs, ii) appropriate support and information any time they have contact with the health care sector: prenatally, at the time of delivery, during the early weeks of lactation, and even during the second year of life and beyond, iii) maternity benefits appropriate to their working situation, in many cases including paid leave for at least four months and a creche near the place of work.

Setting for Action

Caring capacity mediates the effects of household food security and the health environment on the nutritional status of women and children. Again, all the relevant factors in this context are objectives in their own right. In this case setting priorities depends completely on the current situation: if, for example, women's literacy is low, it needs to be improved for many reasons including nutrition. So does access to family planning, for example. It is not the aim here to suggest priorities *between* such factors – where there is a need, it should be met for reasons including nutrition, although methods will depend on local circumstances. This contrasts with, for instance, options in the household food security field, where, say, targeted food subsidies may be an

alternative to public works employment.

Constraints to adequate care can be viewed in general terms as lack of knowledge, lack of time, and lack of control over resources. Some specific options are suggested later in this section. Their relation to nutrition, and certain indicators, is introduced here.

Lack of knowledge is attributable to inadequate access to formal and informal education (including nutrition, health and family planning), and vocational training. The overall policy is clear: ensure access to all channels of knowledge and improve diffusion of new knowledge and awareness of new innovations. This is addressed in item (i) below. Several indicators could be used, including school enrolments, levels of adult literacy and vocational training, visits by extension agents and health workers, knowledge of family planning, child feeding practices.

Lack of time – or excessive work burdens – is another major problem which has worsened over time in some countries as population densities have grown and available resources such as fuel wood and water have decreased. For child nutrition, lack of time is a principal constraint to breastfeeding and effective child rearing practices (e.g. feeding frequency). Several policies could help ease pressures on women's time. These include those relating to appropriate labour-saving technologies for domestic work (e.g. fuel and water collection, food preparation and cooking) as well as policies on family planning and child spacing, child care arrangements for working women, maternity leave, etc. These are mentioned in items (ii), (iii) and (vii) below. Time allocation studies at the household level are a principal means for measuring the work efforts of women. Other indicators such as proportion of households with access to services and infrastructure (e.g. piped water) could be used.

Lack of assets and control of resources both within the family and outside. Evidence suggests that control of household incomes by women tends to have a favourable impact on child health, education and clothing. Female access to resources usually leads to overall improvements in family welfare. Around the world there are successful experiments (e.g. the Grameen Bank in Bangladesh) that widen women's income-earning opportunities. Policies and legislation should aim at improving access to land and livestock ownership. Social security including pensions, maternal benefits to landless, etc. can also be valuable, although these are more difficult to establish in poor societies. Items (iv) through (vii) below refer to this aspect. Assessments should use social and economic data, disaggregated by gender, from surveys (e.g. household budget) and administrative sources.

The relative importance for new policy decisions in these areas will depend both on the current situation and existing policy priorities and budget allocations. In some countries, for example, literacy may be high but women's economic and social security have not yet been addressed.

Scope of Options

The following brief list groups possible interventions that should be considered under different circumstances to alleviate constraints on family – notably women's – coping and to improve the nutrition of all household members.

i) Education and literacy Women's education and literacy affects almost all aspects of their coping or caring capacity. In this context, it determines much of their ability to benefit from all the other policies listed here. While adult education/literacy classes should be a priority, carefully tailored education on child feeding/child care can begin to close the gap created by lack of formal education. Teachers and trainers themselves need access to up-to-date information; better training in nutrition, and investment in the relevant institutions is required. Educational efforts, if designed with the mothers intended to benefit, can improve the understanding and practices of non-literate or low literacy mothers (in areas such as breastfeeding and complementary feeding) to the levels of better-educated mothers.

Although other factors – such as an enabling environment, appropriate legislation, and social security – influence breastfeeding and complementary feeding, perhaps the latter are most importantly affected by women's education and best seen under this heading. Thus, communicating the importance of exclusive breastfeeding in the early months of life (four to six months), increasing the energy-density of complementary foods (e.g. through use of germinated flour), decreasing contamination (e.g. through fermented foods), maintaining frequent feeding, and similar factors, all depend on education, access to information, and public awareness. In the long run, improved education will contribute to lowered fertility, and better employment

opportunities; and these in turn will enhance household food security, health, and caring capacity.

Investments in education particularly of the girl child would have large long-term returns because of her pivotal role (both reproductive and productive) in the future of her own family. Putting back the emphasis on the science of home economics and improving the quality of nutrition education taught at the secondary and tertiary school levels will generally improve the state of knowledge and future caring capacity of the girl child.

ii) Access to health and related services Women's own health and nutrition requires adequate access to publicly-provided services, notably:

- pre-natal and obstetric services
- family planning services
- health services in general.

Family planning services need to be seen as having multiple benefit for individuals' health and nutrition. Adequate birth intervals benefit both the youngest child and the unborn baby: too close spacing may result in low birth weight, and in inadequate capacity for care of the new born and other young children. Equally, the previous child, for example abruptly weaned, is at greater risk. The mother herself may be both biologically depleted from too-frequent births, and burnt-out by too many tasks, including excessive demands for child care. Education on the value of family planning needs to be targeted also towards men, who often wish for more children than their spouses. The benefits of breastfeeding in contributing to longer birth intervals can be stressed in this context.

iii) Technology and infrastructure Demands on women's time are a major constraint. Some of these may be relieved by investment in improved infrastructure and technology. Domestic chores need to be seen as productive work, to be made more efficient. In fact, most feasible labour-saving technologies for unremunerated work will be beneficial. Important examples – depending on local circumstances –include the following:

- supplies of fuel and water: enormous amounts of women's time could be spared by reducing the burden of collecting water (by improving water supplies) and of gathering fuel (by provision of more efficient stoves, fuel for cooking, etc.);
- access to health services is usually extremely time consuming: better service outreach, more mobile clinics – as well as improved transport – must be considered; somewhat similar considerations apply to access to markets;
- technical solutions exist for some hygienic problems – e.g. supplies of cleaning materials; piped water and sanitation; and technologies for food storage (including refrigerators where appropriate), etc. – these all free time and improve the household health environment.

iv) Women's property and income rights Legislation to ensure equitable access to property and productive resources is lacking in many societies. Without this, women are not able to care adequately for themselves and their families. Particular issues concern female-headed households (increasing in many communities) and families with migrant bread-winners. Ensuring access to potentially available household resources often requires legislation.

v) Access to credit Growing experience confirms that providing credit facilities to women, even without traditional collateral, is feasible and effective as a means of improving the situation of women and their households. Micro-enterprises which are in the hands of women have been shown to have good credit repayment records in a number of credit schemes in Asia and Latin America. Knowing that women's resources preferentially benefit their children means that this is an important way of enhancing their caring capacity. Expansion of women's access to production-oriented credit, and development of the required institutions, must be pursued in this context.

vi) Employment, home productivity and control of resources It has been quite widely established that the income controlled by women has greater benefit for the family's nutrition than general, or male-controlled, income. Women's control over the household income needs to be enhanced through fostering opportunities for women's employment, and for remuneration of production from household assets. Policies here range from wage employment opportunities, enforcement of minimum wage legislation, to home industries, cropping policies in agriculture, and again education. Such policies should, however, also take into consideration the balance of work outside the home which can conflict with the capacity to provide adequate care for the family.

vii) Social security for women Some aspects have been considered under point ii). It is worth noting that programmes specifically aimed at enhancing food availability and access to health services have been shown to be cost-effective in developed countries (e.g. WIC in the United States). Targeting social security benefits specifically to women is accepted in many developed countries – e.g. supplementary benefits in United Kingdom. Rights to maternity leave are an important policy issue with potentially far-reaching benefits for the health and nutrition of women, and by extension their children. An enlightened evolution of social security policies in countries that can afford them may well usefully consider such specific targeting to women.

E. CONTROLLING MICRONUTRIENT DEFICIENCIES

The priority now being urged for specific programmes to prevent deficiencies of iodine, iron, and vitamin A comes from, first, the increasing understanding of their extent and far-reaching consequences. (Certain other micronutrient deficiencies e.g. those of vitamin D, zinc, fluoride and folic acid may be important problems in certain areas for certain population groups, but are not discussed here.) Mental retardation caused by iodine deficiency; the contribution of iron deficiency to anaemia, hence debilitation and excess mortality particularly in childbirth; and the effect of vitamin A deficiency in causing blindness, and on increased incidence and severity of infection, and possibly mortality – all these have led to a view that the modern world should not tolerate the persistence of these deficiency diseases.

At the same time, the existence of proven and low-cost methods²⁷ for preventing these deficiencies adds powerfully to the case for controlling them widely and without delay. These options are briefly outlined below.

Iodine

In the long run, iodine deficiency can be prevented (and has been for many years in most industrialized countries) by fortification of salt with iodine. This normally requires legislation, a centralized salt supply, and the necessary equipment, funding, and distribution systems. This method is being adopted in a number of developing countries, and requires sustained support and trouble-shooting technical problems.

In the interim, vulnerable individuals can be protected using iodized oil, administered by injection or orally. Single injections of iodized oil prevent deficiency for up to 5 years. Administration by mouth probably gives around 12 months' protection. Programmes to provide immediate cover are important while fortification is established, particularly in remote areas – and iodine deficiency often is concentrated in these – with particular emphasis on reproductive-age women to prevent mental retardation at birth, in its extreme form causing cretinism.

Iron

Preventing iron deficiency requires increasing the daily intake and absorption of this micronutrient, in contrast to iodine and vitamin A where periodic supplementation can work. Fortification is a long-term option, again adopted in many industrialized countries, for example using bread or sugar. Dietary change to increase iron intake and – crucial in this case – absorption, can be promoted by various means including public education, and will often gradually occur with economic development, but only slowly. Increased consumption of animal products and sources of vitamin C (to increase absorption) are needed, as well as lowering intakes of absorption inhibitors such as in certain cereal products, which is more difficult.

Distribution of daily supplements of iron tablets (usually ferrous sulphate) is therefore widely necessary to reduce the extent of anaemia, which is immensely prevalent and damaging, particularly in women in poor countries, where prevalences of 50% or more are commonly observed. The success of such programmes on the scale needed depends on a number of factors, many in common with other aspects of health (especially ante-natal) care and distribution of essential drugs. Constraints are common in supply and logistics, access to health posts or other distribution points, training of staff and communicating to recipients, adherence to the daily regime, anaemia diagnosis and treatment, and so on. Overcoming these requires sustained support. But the point is that there are no insuperable problems, the supplement itself is cheap and potentially highly cost-effective, and determined efforts to control iron deficiency can be expected to succeed, with enormous benefits especially for poor women.

Vitamin A

Deficiency of vitamin A can be tackled by periodic distribution of large doses (e.g. as capsules every six months), by fortification, and by changing dietary patterns. Here again, both short- and long-term measures may be indicated, depending on circumstances. The benefits include reducing sickness, preventing blindness, and increasing child survival.

For young children in areas of vitamin A deficiency – particularly those at risk of measles – periodic distribution of oral vitamin A doses generally through the health (including immunization) or social services may be an important option. The doses are inexpensive and straightforward to administer. Here again, what is required is the decision to tackle the problem, supplies and distribution, training, public information, and monitoring.

Fortification is technically feasible – of sugar, for instance – although yet to be widely adopted in developing countries (in industrialized countries there is generally enough vitamin A available in the diet and fortification is unnecessary). Nonetheless, this is an option to be considered.

In many countries the overall food supply is adequate in vitamin A and its precursors (in many plant products). The issues are to do with feeding patterns, notably of young children, and absorption; the latter improves with increased intakes of fats and oils.

Increased income is associated with better vitamin A nutrition. In the interim success has been achieved through interventions such as nutrition education and promoting vegetable production through home gardens. These constitute useful options especially in areas where the deficiency is particularly common.

As results accumulate of studies currently under way on the effects of vitamin A supplementation on child survival – most so far showing a significant response – it can be expected that even greater attention will be directed to preventing this deficiency. The means exist, and need to be implemented.

NOTES

1. Universal Declaration of Human Rights, 1948, Article 25; International Covenant on Economic, Social and Cultural Rights, 1966; Center for Human Rights, Right to Adequate Food, UN, 1989; Convention for the Rights of the Child, 1990.

2. ACC/SCN (1987) *First Report on the World Nutrition Situation*; ACC/SCN (1988) *Supplement on Methods and Statistics to the First Report on the World Nutrition Situation*, Table A III.

3. See DeMaeyer *et al* (1989) *Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care*, p. 9. WHO, Geneva; ACC/SCN (1991) *Controlling Iron Deficiency*, State-of-the-Art series No. 9, p. 4.

4. WHO (1984) The Incidence of Low Birth Weight: an Update. *Wkly Epidem. Rec.* **59**, (27) 202–212.

5. Vitamin A: see ACC/SCN 1987, reference in note 19; Clugston G. (1988) *Proceedings of Regional Meeting on Vitamin A*, Jakarta, p. 54, WHO.

Iodine: see WHO, 43rd WHA, March 1990, doc A43/4, p. 14; ACC/SCN (1987) reference in note 2, p. 40.v]001]001

6. E.g. UN General Assembly Resolution May 1990, S-18/3 *Declaration on International Economic Cooperation*; UN Ad Hoc Committee on the Whole, *International Development Strategy*, August 1990: these stress "eradication of poverty and hunger".

7. *Strategy for Improved Nutrition of Children and Women in Developing Countries*: UNICEF (1990) Policy Review Paper E/ICEF/1990/1.6, UNICEF, New York; JC 27/UNICEF-WHO/89.4.

8. World Declaration and Plan of Action, World Summit for Children, United Nations, New York, 30 September 1990. See also SCN News No. 6 (1990) p. 27.

9. Declarations from: Cairo (World Food Council, 1989); Bangkok (Task Force for Child Survival, 1990) and Bellagio, (1990) are available in *Food Policy* **14** (4) 346–358 (1990).
10. Commonly quoted examples are Chile, Costa Rica, Jamaica, Kerala (India), Sri Lanka. See Dreze J. and Sen A. (1989) *Hunger and Public Action*, pp. 198–199, 221, 227–253, Clarendon Press, Oxford; Cornia G. *et al.* (1987), *Adjustment with a Human Face*, Vols I & II, UNICEF, give further relevant examples, e.g. Botswana, Zimbabwe.
11. Basic Texts of the Food and Agriculture Organization of the United Nations (1980 Edition), quotes the Constitution preamble: "The Nations accepting this Constitution, being determined to promote the common welfare by furthering separate and collective action on their part for the purpose of:
- raising levels of nutrition and standards of living of the peoples under their respective jurisdictions; securing improvements in the efficiency of the production and distribution of all food and agricultural products;
- bettering the condition of rural populations; and thus contributing toward an expanding world economy and ensuring humanity's freedom from hunger."
12. FAO (1977) *Fourth World Food Survey*; Reutlinger S. and Selowsky M. (1976) *Malnutrition and Poverty. Magnitude and Policy Options*. World Bank; World Bank (1986) *Poverty and Hunger: Issues and Options for Food Security in the Developing Countries*.
13. World Bank (1990) *World Development Report*; UNDP (1990) *Human Development Report*; Dreze J. and Sen A. (1990) *Hunger and Public Action*, Clarendon Press, Oxford.
14. *Food Security in Developing Countries*, IDS Bulletin (1990) 21 (3); see also *Poverty and Hunger* referenced in note 12.
15. Scrimshaw *et al* (1968) *Interactions of Nutrition and Infection*, WHO, Geneva; Tomkins A. and Watson F. (1989) *Malnutrition and Infection*, ACC/SCN State-of-the-Art series No. 5; ACC/SCN Report of 16th Session, 1990, para. 12.
16. ACC/SCN (1990) *Women and Nutrition*, State-of-the-Art series No. 6.
17. UNICEF (1990) see note 7.
18. FAO/WHO (1990) *Meeting the Nutrition Challenge*.
19. ACC/SCN (1988) *The Prevention and Control of Iodine Deficiency Disorders*, State-of-the-Art series (SOA) No. 3.
- ACC/SCN (1991) *Controlling Iron Deficiency*, SOA No. 9.
- ACC/SCN (1987) *Delivery of Oral Doses of Vitamin A to Prevent Vitamin A Deficiency and Nutritional Blindness*, SOA No. 2.
20. See references in note 13.
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- Tomkins A. and Watson F. (1989) *Malnutrition and Infection*, see note 15.
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23. Hendratta L. and Rohde E. (1988) Ten Pitfalls of Growth Monitoring and Promotion, *Indian J. Ped.*, 55 (1); ACC/SCN (1990) *Appropriate Uses of Anthropometric Indices in Children*, State-of-the-Art series No. 7. See also SCN News No. 5 (1990) pp. 8–19.

24. WHO (1988) *Vitamin A Supplements: A Guide to their Use in the Treatment and Prevention of Vitamin A Deficiency and Xerophthalmia*.

25. See WHO publications, e.g. in "Health for All" Series; also Bibliography in Tomkins and Watson referenced in note 21.

26. See note 23.

27. See note 19.

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