

Women and Nutrition – Nutrition policy discussion paper No. 6

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Women and Nutrition – Nutrition policy discussion paper No. 6

Papers from ACC/SCN Sessions

UNITED NATIONS



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ADMINISTRATIVE COMMITTEE ON
COORDINATION/SUBCOMMITTEE ON
NUTRITION

ACC/SCN SYMPOSIUM REPORT

October 1990

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UNITED NATIONS ADMINISTRATIVE COMMITTEE ON COORDINATION – SUBCOMMITTEE ON NUTRITION (ACC/SCN)

The ACC/SCN is the focal point for harmonizing the policies and activities in nutrition of the United Nations system. The Administrative Committee on Coordination (ACC), which is comprised of the heads of the UN Agencies, recommended the establishment of the Subcommittee on Nutrition in 1977, following the World Food Conference (with particular reference to Resolution V on food and nutrition). This was approved by the Economic and Social Council of the UN (ECOSOC). The role of the SCN is to serve as a coordinating mechanism, for exchange of information and technical guidance, and to act dynamically to help the UN respond to nutritional problems.

The UN members of the SCN are FAO, IAEA, World Bank, IFAD, ILO, UN, UNDP, UNEP, UNESCO, UNFPA, UNHCR, UNICEF, UNRISD, UNU, WFC, WFP and WHO. From the outset, representatives of bilateral donor agencies have participated actively in SCN activities. The SCN is assisted by the Advisory Group on Nutrition (AGN), with six to eight experienced individuals drawn from relevant disciplines and with wide geographical representation. The Secretariat is hosted by WHO in Geneva.

The SCN undertakes a range of activities to meet its mandate. Annual meetings have representation from the concerned UN agencies, from 10 to 20 donor agencies, the AGN, as well as invitees on specific topics; these meetings begin with symposia on topics of current importance for policy. The SCN brings certain such matters to the attention of the ACC. The SCN convenes meetings on inter-sectoral and sector-specific topics. Ten-year programmes to address two major deficiencies, vitamin A and iodine, have been launched.

The SCN compiles and disseminates information on nutrition, reflecting the shared views of the agencies concerned. Regular reports on the world nutrition situation are issued, and flows of external resources to address nutrition problems are assessed. State-of-the-Art papers are produced to summarize current knowledge on selected topics. As decided by the Subcommittee, initiatives are taken to promote coordinated activities – inter-agency programmes, meetings, publications – aimed at reducing malnutrition, primarily in developing countries.

FOREWORD

Women, throughout most of the world, have the major responsibility for their families' nutrition. Their own nutrition is often impaired, under the social and biological stresses they face. Developments that improve women's position in society are likely to improve nutrition overall, and are essential for this. Equally, any activities aimed at preventing malnutrition depend substantially on women's activities, indeed on their empowerment. At the same time, more attention must be paid to improving women's own nutritional status – perhaps an under-recognized problem – and many of the necessary technologies are now well known. Finally, it is becoming increasingly clear that protecting women's nutrition, notably during pregnancy and lactation but in fact throughout the life-cycle, is necessary to safeguard the nutrition of infants, children and indeed future generations.

The decade of 1976–85 was designated the United Nations Decade for Women. Following this, within the United Nations system the relevant bodies were encouraged to give heightened consideration to furthering developments favouring women in their own work. The ACC/SCN was requested in May 1986 to regularly include women's issues on its agenda. I requested the Advisory Group on Nutrition to recommend on issues and approaches, with a view to beginning a series of symposia on this topic. The SCN's annual symposium in 1989 was therefore on "Women and Nutrition". With the AGN's advice, this first symposium intended to describe a number of the major issues concerning women's role in nutrition, as well as beginning to highlight nutritional problems of women themselves. The SCN commissioned a background review, which is included as the first paper in this document, by Drs McGuire and Popkin: this introduced the concept of "The Zero Sum Game" to stress the difficult, sometimes impossible balance that many women have to achieve in use of their resources of time, energy and income with social, biological and cultural obligations. The symposium drew on experiences from a number of countries, as reflected in the following five papers. The second discussion on this topic was held at the SCN's Session in February 1990, under the title of Women and Household Food Security; we include here the two papers presented at that time.

The SCN is compiling information on women's nutritional status, based on considerations at the "Women and Nutrition" symposium, and this will be regularly included in the SCN's programme for reporting on the world nutrition situation. The symposium in 1991 is on "Nutrition and Population" with topics concerning breastfeeding, women's nutritional status, and nutrition and family planning programmes; the proceedings will form a further publication in 1991.

We hope that publication of this collection of papers from the SCN meetings will give a useful basis for wider discussion of these issues.

A Horwitz
Chairman ACC/SCN

ACKNOWLEDGEMENTS

The ACC/SCN much appreciates the contributions to the Symposium on Women and Nutrition in 1989, of those presenting papers, and providing comments and discussion. Drs J. McGuire and B. Popkin wrote and presented their paper on "The Zero Sum Game", which introduced many important issues. Drs A. Steel and N. Youssef introduced the discussion. Drs M. Chatterjee and J. Lambert presented information on India and Pakistan, and Dr Chatterjee summed up the conclusions of the Symposium at the end. Dr Quanine provided a paper on Bangladesh, and Dr Bajaj on India. Dr Kisanga presented information on Tanzania. Dr Ghassemi gave an overview of issues for a global perspective; the SCN gratefully acknowledges permission from the Family Health Division, WHO, to reproduce his paper. UNICEF provided funding support for a number of participants in the 1989 Symposium, and a grant to allow the publication of this book. These contributions,

essential to this publication, are gratefully acknowledged.

At the 1990 SCN Session, papers were presented by Drs M. Buvinic and N. Kabeer, for which the SCN expresses its thanks. These papers, edited by them from the transcript, are included here.

The daunting task of assembling material in the computer and producing copy for direct reproduction (which is how this book is produced) was achieved through the persistence of Ms P. Jamieson, J. Hedley and V. Elliot.

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ACC Sub-Committee on Nutrition
December 1990

BACKGROUND AND INTRODUCTION

¹ Prepared by Rosemary Kevany, Mahshid Lotfi, and John Mason.

Background to Symposium on Women and Nutrition

Recognition that women's position in society and their well-being were disadvantaged gathered momentum particularly in the developed world in the post-war years and led to considerable changes in their position. This recognition was pushed by certain crucial underlying social and technological changes, as well as a liberalized political environment. Women were part of a rapid increase in the extent and quality of education during this time. In the United States the civil rights movement, affirmative action, and consciousness-raising resulted in a political renaissance for both black people and women. Access to higher education and training, as one direct result, improved the bargaining position of black and white women in the job market. Technical advances and their acceptance, notably birth control, but also technological means of freeing them from drudgery thus providing time for self-development, coincided in time and were essential parts of the changes. This emancipation led to, and was supported by, important changes in societies' attitudes, and was underpinned by legislation.

These major changes provided women particularly in the wealthiest societies with almost similar social, political and economic rights to those of men in these countries. Although further progress is still to be made, by the 1980's women were increasingly seen as nearly equal partners in the workforce at all levels of developed society. This liberation movement, evolving at different rates in various countries, was an important factor in the global concern for issues affecting women, with a leading role coming to be played by the United Nations. With advances in industrialized societies under way, the position of women in developing countries, and the equally compelling case for concern for their position, came increasingly to the fore. Acceptance of civil rights had helped bring in support for women; human rights was now seen as a worldwide issue, and lent weight to concerns for women's position in developing countries.

The United Nations Declaration of Human Rights of 1948 and the UN Committee on the Status of Women at that time codified the ideal of equal rights for men and women; during the subsequent four decades attitudes, customs and laws in favour of women were gradually modified. The International Women's Year, the UN Conferences on Women in Mexico in 1975 and in Copenhagen in 1980 were some of the important events in the calendar. The year 1975 was International Women's Year "to be devoted to intensified action to promote equality between men and women, to ensure the full integration of women in the total development effort and to increase women's contribution to the strengthening of world peace" (UN, 1985). The period 1976-85 was designated the United Nations Decade for Women: Equality, Development and Peace.

The changes in developed societies in favour of women's status were seen almost universally as signs of progress in society, beneficial not only to women, but to communities as a whole. The driving forces for these changes were partly feasibility, and partly moral. The status of women in a society was seen as "a significant reflection of the level of social justice in that society" (WHO, 1984). Official statements about the equality of the sexes, however, could become controversial and uncomfortable when the substantive intent was to change the accepted structures of society. Changing concepts of women's rights collide with religious and cultural norms in many societies. Nevertheless, it has become more and more widely accepted that many concepts of women's rights are universal, and should reach all women whose lives are blighted and foreshortened by discrimination inherent in cultural attitudes and economic practices.

Transforming these concerns into a global issue led directly to the movement for women in development. This was seen both as a means of improving the lot of women worldwide, but also soon justified by the view that any reasonable assessment of development objectives must include all of society; and further than that, that successful development would have to involve women, and indeed would be more successful the more women were involved. Although the processes required much working out, the *objective* of improving women's conditions was given increasing prominence on development agendas.

These ideas are articulated in the Report of the World Conference to Review and Appraise the Achievements of the UN Decade for Women: Equality, Development and Peace, presented at the Nairobi Conference in 1985 as proposals for 10 years follow-up. Here, eight thousand women from diverse nations and backgrounds came together on common ground, motivated by their shared inequality of opportunity. The Report contained many proposals for radical changes in women's access to education and health services. It specifically endorsed women's right to control fertility. Roles played by women in different sectors of the economy were analyzed and ways of improving and strengthening women's contribution in each sector were discussed.

Nutritional issues were discussed under the headings of food, agriculture and health to which 15 paragraphs were devoted. While women contribute significantly to agricultural development as key food producers in many regions of the world, substantial *increases* in poverty and landlessness among rural women were projected by the year 2000. This was specially true for Africa. The Nairobi Forward-looking Strategies for the Advancement of Women gave a set of recommendations in order to stem this trend. These were basically concentrated on promoting productive capacity of rural poor women in agricultural production, creating employment opportunities, improving access to health care and education and reducing their work-load, by means including the establishment of adequate child-care facilities, improving traditional knowledge, and introducing modern technology (UN, 1985).

The inter-agency mechanisms in the UN system asked that co-ordinating bodies such as the ACC/SCN ensure that issues described in the Nairobi report be regularly on their agendas. This led to the SCN exploring the question of "women and nutrition", and to some of the ideas put forward at the SCN's symposium. Here we continue with some of the thinking involved in defining issues for the meeting.

Women's Status in Developing Countries

In many developing countries, the majority of women have inferior social status to men, occupying the lowest paid and most insecure positions requiring the least skill. Women are given less educational opportunities than men in the same society, reflected in lower literacy rates for adult female populations compared to male: for example globally it is estimated that 32% of women are literate, vs. 52% for men (UNESCO, 1987). The gap is much wider for some parts of Africa and Asia. Female children may receive less nutritional and health care, with consequent higher mortality rates (WHO, 1987) – although in some societies, in Africa for example, female children may be favoured. Cultural preference for boys in many such countries further reduces the social prestige of mothers of only female children (Simpson-Hebert, 1982). Large numbers of women remain children in the eyes of the law throughout their lives. They are guided legally always by a male member of the family, depriving them of control over the most basic matters. Such historical cultural, social and political norms have resulted in a lack of self-confidence and self-respect in women. This is particularly ironic since illiteracy and poverty do not imply lack of intelligence – on the contrary, intelligence may be sharpened by threats to survival.

Ample evidence documents that in societies with preference for boys, female children receive less nutrition both quantitatively and qualitatively and have inferior nutritional status. A review of this subject concludes that "sex discrimination in nutrition and health care appears to increase girls' vulnerability to infectious diseases" (Waldron, 1987). This increased vulnerability to infections affects and is affected by the severity of malnutrition (Tomkins and Watson, 1989).

Attitudes within households are responsible for part of the situation. At an extreme, the husband may see his wife as virtually "disposable" after the early years of marriage. If she falls ill, less, if any, resources are spent on health care to ensure her prompt recovery. If she dies, she can be replaced by another spouse often accompanied by a second dowry. The second spouse, like the first, comes with the same inherent cultural and social disadvantages. She is traded as a piece of property between families; she had no rights as a dependent child and will have none as a spouse. Her neglected health during childhood and adolescence leaves her short of stature and malnourished at the outset of reproduction – reproduction that may be initiated before she has completed her own growth. Her domestic training has taught her to be subservient and to expect no role in decisions about how income will be spent – this despite the fact that she is a major

contributor. Her low status leaves her little opportunity to demand participation in decisions on family resource allocations. When she does have control of resources, as in female-headed households, evidence suggests that she copes more efficiently, with less resources, for the nutrition and health maintenance of her children, and possibly herself.

The conditions of the world's 2.5 billion women are far from homogeneous. The fact that women in many developing countries have to face social and cultural disadvantages in a much broader sense than that experienced by women in developed countries is clearly reflected in their largely inferior health, nutrition, education, and economic status compared to women in wealthy countries, as well as vis-à-vis men in their own societies. The life expectancy of women in northern countries – such as Iceland, Japan or Scandinavia – is thirty years more than that of their sisters in Ethiopia, Afghanistan or Nepal. Half a million women die annually of causes related to delivery, and most of these deaths are preventable (Wallace, 1987). Thus for example maternal mortality rates are estimated as 8.74 per 1000 live births in rural Andhra Pradesh, India compared to 0.02 in Sweden (Royston and Lopez, 1987); according to these authors, there are "more deaths in India (from causes related to pregnancy and childbirth) in one week than there are in the whole of Europe in one year". Hundreds of millions women mainly in developing countries experience extreme stress resulting from their children's death, disabilities and various diseases.

Such discrepancies can be attributed to a range of social, cultural and biological factors; however deprivation of formal economic status is probably the single most important influence in determining variation in health and well-being of both women and their dependent children. The significance of this economic disenfranchisement is rarely identified in analyses of women's status, yet it has direct and serious consequences for all aspects of their lives and those of their family.

That women produce much of the food in many regions of the world, that they rear most of the children and provide for the eating of their families, has been known for a long time, but only relatively recently has the significance been fully understood. Women are responsible for a large proportion of the world's food production. Women's economic importance in terms of their contribution to global food production was only officially recognized in 1974 during the World Food Conference. Women are central in determining levels of living – and nutrition – for the child, the adult, the household, and the community. Why then has women's economic contribution been so little recognized either by the husband or the economic planner?

Women's work in the developing world is almost exclusively classified as "informal" by current procedures of national accounting. This practice persists despite universal evidence that women contribute substantially to national economic output, as entrepreneurs, consumers, underpaid and unpaid workers. This contribution is particularly evident in small-scale production and service provision which form a major part of economic activity in low-income countries. They are the major service providers of health and child care, informal education, household management and routine procurement of food and fuel. Nevertheless this work is not categorized as "formal" economic activity, and consequently is not identified specifically in estimates of gross domestic product, for instance. The situation needs to be better quantified, as a basis for policy.

Not specifying these major contributions by women to economic performance and development has important consequences. At *household level* the failure by the male heads of household to recognize the economic value of these functions results in the low social status of the mother and the neglect of her health, nutrition and social well-being. This effect is institutionalized and has been incorporated in the traditional gender role of women.

At the *national level*, economic planners perceive no immediate advantage in recognizing the contribution of women to economic growth. Women's production is principally subsumed under that of men and thus does not merit any specific attention nor the allocation of scarce resources for investment. International procedures for national accounting do not demand that production be identified by gender. One reason may be that specific identification could mean that resources would have to be diverted from short term growth and applied to longer term investments including women's education, better training facilities, equal employment opportunities and conditions, facilities such as day care centres, maternity leave, etc. None of these yield benefits in the short term. It follows that, at the national planning level, women's health, education, training and employment are not perceived as important components of economic development and they are consequently assigned a low priority for capital investment. As a result, the establishment of legislation, institutions, services and facilities that would assist in developing women's potential and status are neglected.

Relations between Women's Issues and Nutritional Issues

Enhanced women's status benefits nutrition

Programmes intended to improve nutritional conditions for women and their families can be more successfully designed and implemented if there is a greater understanding and awareness of the specific roles that women play. This is because women's status and their health (and nutrition) are intricately entwined (Lyons, 1985) so that for any meaningful improvement one must first deal with those ways in which health and nutrition of a woman are affected adversely by the existing social, cultural and economical systems. "A sound nutrition programme needs to go beyond the provision of health and nutrition services and to recognize that nutritional problems often have their origins in social and economic systems, and that these problems can be solved only by bringing about changes in these systems, particularly at household level" (Rogers and Youssef, 1988).

Many women in poor societies are overworked by too many calls on their time and have too few resources to adequately cope with their circumstances. Women's fatigue is now recognized as a social disease – hidden behind the barriers of traditional norms – affecting not only their own health and well-being, but also their ability to care for the nutrition of their families (Ahoja-Patel, 1980). Nutritional objectives may often best be achieved through measures that enable such women to more effectively cope and better fulfil the roles that they identify for themselves – provided that the necessary resources are also available.

Women's access to productive resources affects food availability at the household level. Increased access to productive resources itself can be an outcome of many complex interrelated factors such as: increased income and more importantly increased control over it (both women's income and total household income); enhanced educational opportunities, social knowledge and decision-making power; increased time available and devoted to productive tasks as well as enhanced efficiency of production. In other words social, cultural and political empowerment of women must be regarded as prerequisites to solving any nutritional problems.

Improved nutrition benefits women's issues

Much of the information available on nutrition of women relates to their nutritional status during pregnancy and lactation and its effects on delivery and child bearing functions. Malnourished women are particularly vulnerable to pregnancy and childbirth complications which can end in loss of their lives. Low weight and/or immature and malnourished infants born to such women are themselves vulnerable to life-threatening disease and nutritional problems. Deficiency of energy, protein and micronutrients like vitamin A, iron and iodine have well-recognized health consequences. It is thus obvious that by concentrating on proper nutrition throughout the life-cycle of a woman, she would have a much healthier life to pursue her multiple responsibilities for production, reproduction and care of family more efficiently, thereby in turn enhancing her social and economic status. Better success in performing such functions – especially in child rearing – brings about self-confidence, an issue of much significance for tackling many problems women have to face.

Improvement in health and well-being of women and their families through better nutrition contributes to reducing their burdens, emotionally and financially, and alleviating time constraints. Gained time and resources which become available in this way can be used for income-generating and productive activities or participating in educational, health or social engagements, from which women and their families can benefit. Further, use of labour-saving technology for food production, processing and preparation would decrease women's workload. When time is of a less constraint, women may use it for self-building and constructive social contacts.

Increased resources are needed for nutrition programmes for women, their children and families, to increase their nutritional knowledge, to give better and more secure access to foods (e.g. through supplementary feeding, using food aid for food for work projects, food subsidies etc), and to ensure better preparation, preservation, handling and distribution of foods.

National food and nutrition policies, plans and regulations focusing attention on nutritional problems of those socio-economically deprived and vulnerable, would directly or indirectly be beneficial to addressing women's issues. In other words, improving women's nutritional status and well-being would, perhaps, be one of the most effective way to physical empowerment and health promotion through which women may find better opportunities to enhance their status socially and politically.

Possible interventions

Clearly women in poor countries have many circumstances that are very different from those in the industrialized world, and which may only change with economic development: they are poorer, after all. Yet there are many parallels, and the ways in which women's status could improve in poor countries are not always so far different. The over-riding need has been called *empowerment*: equality of status in society and in the family; an equal role in making decisions. This would more than anything enable women to realize their

potential to do those things that they decide to do – and this will usually include care of family, children, and themselves. Such empowerment does involve often major changes in attitudes, institutions, and possibly legislation. It may take time and be hard to achieve. But any consideration of women and nutrition issues is at best partial without this recognition.

In viewing the changes in women's position in industrialized countries at the start of this introduction, several factors were noted which both helped bring about these changes, and were themselves part of the improvement. A number of these changes have direct relevance to the present situation in developing countries – for example education, fertility control, and labour-saving technology. In some very basic needs women in poor societies to this day lag far behind, notably in this context in their food security and access to health services.

Emphasis on education for women is so clearly correct that we can only reinforce this priority. It is well established that children of better educated women have better nutritional status, usually even allowing for income and other similar effects. Education here, rightly, means broad education, and is not just specific to health, nutrition, and child-rearing practices, essential as these are. A nutrition perspective would give major priority to women's education, for its direct effects and its role in changing society for the better.

Women's ability to decide on the timing of their reproduction is similarly seen by many as fundamental human right. Here again, a nutritional view may help to reinforce this position, pointing out the convincing case that too-frequent pregnancies, to too young mothers, lead to malnutrition and increased maternal and child mortality; and that the reasons – although intuitive – are well understood. They concern breast-feeding, birth weight, maternal nutrition, child care, and so on. Many agencies are dedicated to promoting access to family planning; those concerned with women and nutrition should lend weight.

Over-commitment of women's time is emphasized as a serious deprivation, and the specific relation to nutrition is gone into in some detail later. It is worth remembering that the rapid expansion of household technology in the past few decades in higher-, and now beginning in middle-income countries, has been a major factor in freeing up women's time. Although washing-machines and refrigerators will be quite some time in coming to poor households in developing countries – but they *will* be consequential – technology can be extremely important for such matters as water supply and fuel for cooking and heating the home. When many hours of a woman's day are spent in fetching water and carting wood, piped water and bottled gas or kerosene for cooking can be literally life-saving. Investment in water supplies may have as much effect through time-sparing as through hygiene. Modern access to energy, eventually by electrification, is needed for environmental reasons: it is hard to think of a more wasteful process than walking miles to cut down scarce trees to carry home to burn, let alone to turn into charcoal and then burn. Better technology here would have multiple benefits, including time-saving for women.

Interventions to improve household food security, health and nutrition can be specifically directed to women, and may often be more effective as a result. Support for women's productive work, in agriculture and otherwise, is likely to have better effects for herself and the household where it ensures more control over more resources. The objective of improving household food security importantly includes enhancing the role of women.

Serious deficiencies in health services for women contribute to the high mortality risk of child-bearing, and their overall health problems. This not only has direct effects on women's health, but contributes to the cycle of poverty. Moreover, children and the next generation are disadvantaged by low birth weight, malnutrition, and compromised caring capacity. A nutrition perspective would strongly support greater emphasis on access to health services for women.

Symposium on Women and Nutrition

The ACC/SCN's annual symposium held in February 1989 at UNICEF headquarters, New York, was entitled "Women and Nutrition", and tried to specify this relationship clearly and to identify topics of concern. Two closely related issues were considered as increasingly urgent: the role of women in determining nutrition of households and societies, and the nutrition of women – throughout their lives – in its own right. The several background papers commissioned for the symposium were intended to deal with the kaleidoscopic nature of women's overlapping commitments.

An analysis of women's time and energy expenditure is essential for any quantification of unpaid domestic and agricultural labour. The concept of the "zero sum game" which is emphasized in the main background paper by J. McGuire and B. Popkin is meant to encapsulate the conflicts and trade-offs most poor women

have to face as part of their daily lifestyle. And many hardly so cope: as the symposium heard, many women are on the edge of being burnt-out while a large number are constantly at risk. One criterion for an effective intervention was stressed to be precisely that it increases women's ability to better cope. Through such measures nutritional objectives could perhaps be best reached. Complementary points on this background paper were provided by A. Steel and D. Benbouzid. The need to find ways to reach women effectively and to deliver what they need is discussed by A. Steel.

The paper by M. Chatterjee and J. Lambert aimed at giving some reflections from India and Pakistan on the subject of women and nutrition in these settings. Among other issues discussed they raised the point that nutritional deprivation resulting from gender discrimination appears to be economically rather than culturally mediated. Thus women's nutritional status may only improve significantly if employment and health care situations are altered substantially to compensate for the disadvantages women have been facing.

P. Kisanga introduced the Tanzania Food and Nutrition Centre's efforts in improving the nutrition of women in Tanzania. Based on these observations rural women should be included more in nutrition and health studies in order to find specific solutions to their particular problems.

Nutrition security systems at household level were discussed by S. Bajaj. In order to achieve nutrition security at family level, some imaginative food distribution systems are required through which vulnerable families can improve their entitlement. Plans have to reach down to the people through a system of linkages in a large country like India. While area planning will help to focus efforts, the rural planning process should play a significant part in programming at the state level.

If there were ways to circumvent women's legal and economic powerlessness, by providing better access to resources for poor women, would they work? A promising example was provided by J. Quanine, on the experience of the Grameen Bank in Bangladesh. Initiated in 1976, the idea has proved to be a successful intervention for empowering women economically. Women form more than 70% of the bank's members and repay more than 90% of their loans on time. Income generation support of this kind provides an original and workable solution which enables women to market a portion of their food resources and control a measure of income.

Women's nutritional status is discussed by H. Ghassemi as an overview of this aspect. Based on limited available data on women's food intake and nutritional status there are indications of higher risk of food deprivation in women and young children among households with chronically low level of food intake.

Recognizing that the two issues – the role of women in determining nutrition of households and societies and the nutritional status of women – are intricately linked, and that women simultaneously exercise roles in economic production, home production and reproduction, often with damaging consequences for their own nutritional status, the symposium recommended actions for direct nutrition interventions for women as well as for the strengthening of their roles as an important route towards improving nutrition for all. In the summing-up of the symposium and related discussion, the following recommendations, among many possibilities, were given priority (ACC/SCN, 1989).

- *Greater efforts should be made to increase specifically women's access to productive resources which directly or indirectly affect food availability at the household level.* These include access to land, water, agricultural technology and extension, training, credit, employment and markets. Efforts to increase women's income must be accompanied by measures to ensure women's control over income, which may lie in the arena of social development. It was stressed that frequently poor women had not benefitted from production breakthroughs (e.g., in agriculture); they remained among the poorest in society. *Women's entitlement is a priority yet to be widely recognized.*
- *More programmes should be directed at improving the effectiveness and reducing the time and energy cost of women's home activities, notably in the areas of food preparation, water supply and fuel collection.* An intervention that saves (or frees) women's time would be an efficient intervention, with linkages to other factors. Importantly, reduction of women's child-care burden should be ensured through provision of adequate child-care facilities and health services for women and children. Programmes should aim to increase demand for such services. At the same time, direct nutrition interventions should be aimed at alleviating the protein-energy malnutrition and widespread anaemia suffered by women at all stages of life.

• *Ensuring the schooling of young girls and increasing young women's functional literacy* could be the most important and effective means of improving women's nutritional status in the long term because of the associated effects on health and nutrition awareness, fertility and social development. It was pointed out that a "second chance" for improving women's growth and hence reducing low birth weight due to small maternal size occurred just prior to puberty; increased attention to nutrition at this age, often through schools, would be well justified. The meeting recognized the key role played by men in societies throughout the world in accommodating women's social and economic advancement. It is frequently crucial to address men in order to enhance the effectiveness of women's programmes.

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BEATING THE ZERO SUM GAME: WOMEN AND NUTRITION IN THE THIRD WORLD

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Introduction

What if we launched a programme and our key target group was so physically overworked, so overcommitted with time demands, and so poor that the intended beneficiary could not participate without sacrificing some other essential function? In agriculture, education, health, nutrition, and family planning, that constrained and neglected target group is women. If a small proportion of the population were excluded from participation, we might shift our focus to slightly better off groups. But if, as is the case here, those left out represent 50–100% of the population needing the programme, we must address ourselves to the obstacles to effective participation as part of programme implementation.

Third World women are, in essence, involved in a zero sum game – a closed system in which time or energy devoted to any new effort must be diverted from their other activities. This situation is particularly true for poor women. To take advantage of new technology, market opportunities, or even social services–benefits we associate with economic development and improvements in the quality of life – often requires an initial investment of women's time, energy, or income, which may not be available without sacrificing their own health or the health and economic security of their families. And it goes beyond 'programmes' – women's participation and productivity in the economic system is also adversely affected by their own malnutrition and their demanding household and mothering responsibilities for which acceptable purchased replacements are beyond their limited economic means.

The challenge before individuals and institutions promoting economic development is to help women overcome resource constraints that limit their participation in the development process and stymie fulfillment of their economic, biological, and cultural roles. A review of statistical evidence, economic analysis, and programme experience suggests that interventions in four broad areas are needed to create a positive sum game for women:

- increasing women's income and control over it
- improving women's access to affordable, good quality child care
- increasing women's efficiency in production of goods and services for household consumption
- improving women's health and nutrition.

Achieving these goals requires policies and projects sensitive and responsive to women's needs, constraints, and resources.

We review women's resources and contributions to family resources, then examine the biological, economic, and cultural roles in women's lives that pertain to nutrition, human growth, and household food security. We discuss ways that role conflicts and resource constraints act together to affect nutrition adversely and decrease women's participation in intervention programmes. We then present programme and policy options for addressing these conflicts and conclude with an overview of research needs and a summary.

Women's Resources and Contributions to Family Resources

Gender and development

Since the mid–1920s much attention has been given to the role of gender–allocation of roles and responsibilities between men and women–in economic and social change. As the analytical framework shifted from welfare or equity to economic efficiency, it became apparent that women's exclusion from development policies and programmes was counterproductive. Women now constitute one–quarter of industrial workers and 40% of agricultural and service workers [1]. Moreover, women are the major actors in human resource development–assuring the proper nutrition, health, and cognitive development of children during their crucial preschool years.

Recent analysis suggests that women are overrepresented among the poor [2] because of their reproductive roles, cultural expectations, and lack of access to economically productive assets. Hard data are lacking,

however, because of the failure of most cross-sectional socioeconomic surveys to disaggregate demographic, income, and employment data by sex. Although we know that women as a group are not homogeneous, it is difficult to disaggregate the scant data even further by class, urbanization, age, or ethnic group. Hence, impressionistic and anecdotal data predominate in the literature. We don't know, for instance, whether the recent economic recession and attendant policy reforms have created a new group of poor women with different needs from chronically poor women. Implementing agencies urgently need such data.

For poor women as well as poor men, income and material resources are inadequate. Food, water, clothing, housing, and social services are insufficient to guarantee an adequate quality of life. Women's economic, biological, and social roles present conflicts when resources are inadequate. Women usually live in families with parents, in-laws, husband, or just with their own children – and as such they must balance their own needs and desires against those of higher status household members, nutritionally vulnerable children, guests, and so forth. In most societies, food carries with it social and religious values that transcend nutrient composition in determining how it is divided within the household.

Women head nearly one-third of the households in low-income countries, *de facto* or *de jure* [3]. Dissolution of marital or consensual units accounts for some of this phenomenon, but short- and long-term migration and impoverishment represent growing sources of *de facto* female headship [4]. Female heads are more prevalent among the poor in urban and rural areas [5, 6]. Data for five Latin American cities show that, except in Bogota, households headed by women are much more prevalent among lower than higher income groups (Fig. 1). In lower income groups, the percentage of households women head ranges from 22% for San Jose, Costa Rica, to 38% for Lima and Callao, Peru, a phenomenon common to all of Latin America. Studies in five African countries (Botswana, Ghana, Kenya, Lesotho, and the Sierra Leone), found over 40% of rural households headed by women [4]. Youssef and Hetler feel there may be a recent increase in the rate of women heading households in rural areas.

Time allocation

Poor women lack many resources, but one that stands out in nutrition studies is time. The overall level of active work of low-income women is tremendous. In general, studies find women in low-income countries have much less leisure time than men, manage most home activities, and also are active in economic work.

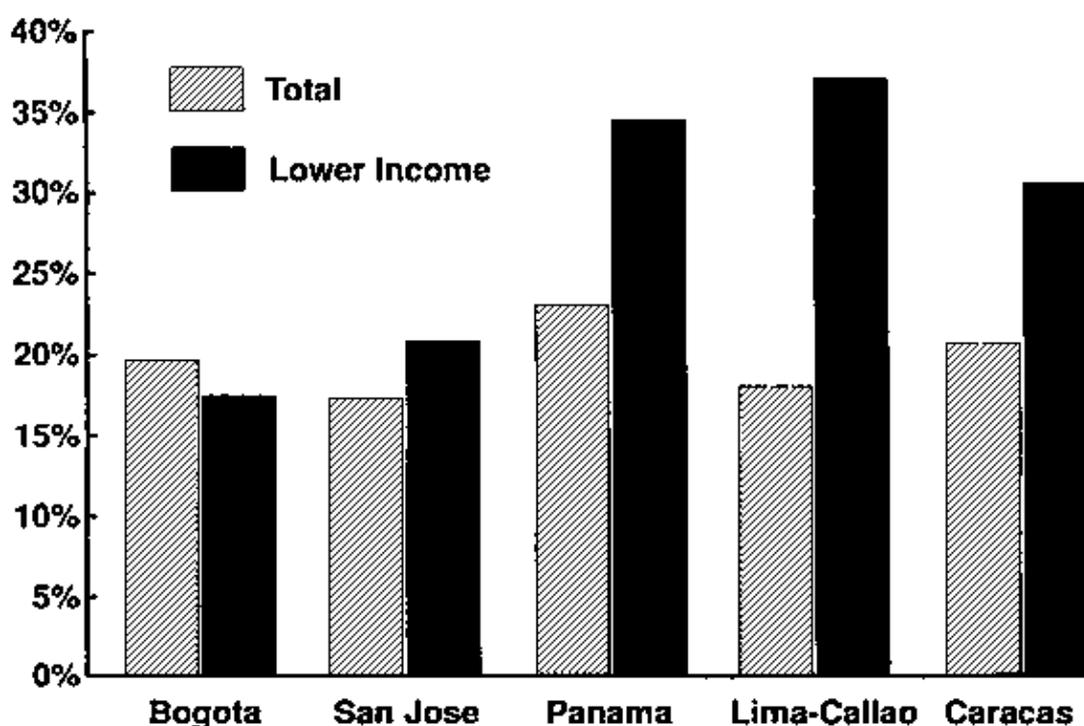


Figure 1. Percentage of Woman-headed Households of all households in selected cities by class

Source: (Ref. 7, Table 10).

Time-allocation studies have been conducted around the world. In Table I we present the overall pattern of time spent in market and home activities and the ratio of these activities for women and men.¹ These studies focus on rural women. Little is known about relative urban/rural differences in women's and men's absolute time commitments.

Women engage in more total productive time than men. Although the amount of time spent in paid activities is less for women, sometimes considerably less, women spend a disproportionately large amount of time in home production relative to men. As a result of women's double workday, they usually spend at least as much time as men at work. Studies which examine men and women separately find that employed women often spend the same amount of time as men at 'work' [17, 18]. When women increase market work, loss of leisure time and domestic work are the main changes in their time-allocation patterns. In Argentina employed housewives decreased domestic work by about 17 hours a week compared with unemployed housewives [19]. Much of the domestic work load is determined by the life-cycle stage of the family. In Chile, domestic work varies by employment status and the presence of children under age 6 in the home. Employed women spent 57 hours per week in domestic work if they had children under 6 but only 29 hours a week if they had no children under 6. Unemployed women spent 100 and 49 hours, respectively, in domestic work [19].

When we disaggregate women's activities, we find that the largest and most invariant category relates to food preparation (Table II) [23]. In all cases women spend at least two hours per day preparing food for themselves and their families. Child care consumes much less time than would be thought if we based our conclusions on studies from higher income countries [e.g., 24, 25]. Women often view child care as a residual (or leisure). Time studies systematically underestimate child care because it is usually simultaneous with other household activities (those recorded in studies). Only prolonged, exclusive attention to children (understandably rare) is of adequate duration and intensity to be recorded as 'child care'.

Table I. Time allocation patterns of women and men (hours)

Location ^a	N		Market production		Home production		Total		Ratio women/men
	Men	Women	Men	Women	Men	Women	Men	Women	
ASIA									
<u>Bangladesh</u>									
Caldwell et al. [12]									
urban	42	38	3.80	1.74	0.63	5.40	4.43	7.14	1.61
rural	48	36	6.97	4.73	0.34	6.20	7.31	10.93	1.49
Cain et al. [11]	138	174	7.04	1.61	1.29	6.68	8.33	8.29	0.99
<u>Java</u>									
Nag et al. [16]	31	33	7.90	5.94	0.72	5.14	8.62	11.08	1.28
<u>Nepal</u>									
Nag et al. [16]	135	171	7.96	7.41	2.12	5.02	10.08	12.43	1.23
Acharya [8]	152 HHS		5.81	4.62	1.70	6.19	7.51	10.81	1.44
<u>Philippines</u>									
King & Evenson [14] ^b	99 HHS		6.85	2.57	1.30	7.42	8.15	9.99	1.22
AFRICA									
<u>Botswana</u>									
Mueller [15]	957 HHS		3.70	1.80	1.43	4.38	5.13	6.18	1.20

<u>Central African Republic</u>									
BDPA [10]	25 ^c		4.56	3.65	0.26	2.93	4.82	6.58	1.36
	30 ^d		5.02	3.67	0.14	3.36	5.16	7.03	1.36
<u>Ivory Coast</u>									
Berio [9]	720 HHS		2.52	1.42	1.40	5.03	3.92	6.45	1.64
<u>Tanzania</u>									
Kamuzora [13]	105	105	5.85	4.96	1.79	4.56	7.64	9.52	1.25

Note: HHS = households

^a Rural in all cases except Caldwell [12] in Bangladesh.

^b Joint activities were measured separately, thus total daily activities may exceed 24 hours.

^c Modernized village (in terms of agricultural technology and other signs of modernity).

^d Traditional village.

Theoretically, it is possible to increase overall efficiency of time use – to 'gain' time—but women's home responsibilities (particularly where small children are present) involve short periods of time devoted to a large number of activities, many of which are carried out simultaneously. Moreover, efficiency and concentration are limited by the intermittent and insistent demands of children.

Table II. Rural women's daily work patterns (hours)

Location ^a	N	Home Production				Market Production	
		Child care	Food activities	Fuel/H ₂ O hauling	Other	Agriculture	All other
<u>ASIA</u>							
<u>Bangladesh</u>							
Caldwell et al. [12]							
urban	38	0.74	–	–	4.66	(1.74)	
rural	36	0.40	–	5.80		(4.73)	
Cain et al. [11]	174	0.80	3.52	0.36	2.01	0.28	1.33
<u>Java</u>							
Nag et al. [16]	33	1.02	2.71	0.07	1.33	1.44	4.49
<u>Nepal</u>							
Nag et al. [16]	171	1.32	2.60	0.12	0.98	4.73	2.68
Acharya [8]	192 HHS	0.06	3.02	1.05	2.06	2.74	1.88
<u>Pakistan</u>							
Anwar & Bilquees [20]	63	0.50	3.25	0.50	3.75	3.75	2.75
<u>Philippines</u>							
King & Everson [14]	99 HHS	2.06	2.06	0.07	3.23	0.85	1.72
Ho [23]	488	1.58	3.44	–	3.31		2.01

AFRICA							
<u>Botswana</u>							
Mueller [15]	957 HHS	0.54	2.14 ^b	0.78	0.91	1.00	0.80
<u>Kenya</u>							
Hanger & Moris [22]							
Dry season	21		2.52	0.60	1.55	4.15	–
Wet season	–	–	2.12	0.32	2.40	3.92	–
<u>Sudan</u>							
Fruzzetti [21]	8 villages ^c	2.00	2.23	3.48	–	–	
<u>Tanzania</u>							
Kamuzora [13]	105	–	3.09	–	1.47	4.94	0.01

Note: HHS = households

^a Rural except for the Caldwell study [12].

^b "Housework" includes other housework activities in addition to cooking.

^c Data are averaged over the eight villages.

Women's economic contributions

On a global basis 42% of women over age 15 are in the labour force; they comprise over one-third of the total labour force [1]. African women's contribution to the family farm as well as their hired agricultural labour is well documented (Table III). Holmboe-Ottesen *et al.* [27] cite evidence of women's high work load in the Middle East (Table IV) and Asia (Table V) where women's work outside the household is not held in high regard.

Table III. Work input by women and men in African agriculture

Country in which sample villages are located		Percentage of women in family labor force in agriculture	Average hours worked per week on own farm by active family members		Female hours as percentage of male hours	Percentage of work on farm performed by active family members	
			Female	Male		Female	Male
Cameroon		62	13	16	81	56	44
Central African Republic ^a	{A	55	15	15	99	55	45
	{B	58	20	13	150	68	32
	{C	61	10	12	85	57	43
Congo (Brazzaville)		57	24	15	160	68	32
	{D	67	28	15	193	79	21
	{E	61	20	15	136	68	32

	{F	53	18	4	450	45	9
Dahomey		2	24	8			
Gambia ^b	{G	51	19	11	168	64	36
	{H	52	20	9	213	70	30
Kenya		23					
Nigeria		57	3	21	15	9	49
Senegal		53	8	15	53	29	66
Uganda ^c	{I	54	13	13	100	45	37
	{J	53	13	8	163	56	19
	{K	61	16	14	114	53	29
	{L	50	13	15	87	39	52

Note: Some of the sources from which the information was collected failed to specify the length of the workday, or the type of activities classified as agricultural (for instance, it was sometimes not clear whether threshing and transport to and from the field were included). Where workdays per year were given without specification of their length, the total number of hours worked per year was calculated on the assumption of a six-hour day; this figure was then divided by 52 to give average number of hours worked per week. The assumption of a six-hour day may well be on the high side, since shorter hours were recorded in many of the samples, and days of more than six hours were recorded only in a few cases and then in the busiest seasons only. For these reasons, the figures in the table can convey only a broad picture of the input of work in African farming and it must not be assumed that the table gives a satisfactory picture of differences in work input among the localities mentioned.

Source: Boserup [26], table 1.

^a The A sample refers to a village where traditional methods are applied, the B sample to a village where improved techniques are used.

^b The two samples refer to the same village in the years 1949 and 1962, respectively.

^c In the Congo F and Uganda I–L samples, respectively, 31, 11, 14, and 9% of the work was done by children who were not classified by sex.

Women contribute more than 40% of agricultural labour in 52 developing countries and more than 50% in 24 of them [27]. A significant portion of women's high work load relates to unpaid household production [14, 19, 28–31].

Women's economic contributions should include home production of nonmarketed goods and services which support the economic participation, health, and well-being of all family members. Where it has been measured, women's portion ranges from 10–58% of full household income (Table VI). Full income includes cash income, income in-kind, and the value of labour devoted to unpaid activities carried on, by, and for its members, which might be replaced by market goods or paid services, if circumstances such as income, market conditions, and personal inclinations let the service be delegated to a person outside the household [30].

Table IV. Percentage of female labour by agricultural activity in Jordan

Agricultural Activity	Percentage
Ploughing and land preparation	10
Planting	30

Weeding	60
Harvesting	70
Transporting crops from the field	20
Processing crops	80
Storing crops	60
Marketing crops	10
Pruning trees	5
Animal care	70
Dairy production	80

Source: Holmboe–Ottesen et al. [27], table 4.2.

Sivard [31] estimates that women's household production is worth 25–40% of the world's gross national product (GNP). Most of this labour and its output is not marketed and so is not counted in standard production estimates like GNP.

Role in food production, marketing, processing, purchasing, and preparation

As labourers for hire and on the family farm, women play a major role in food production. As heads of household they are increasingly becoming farm managers, especially in food production. Women throughout the world also contribute to the household food supply through kitchen gardens which provide vegetables, tubers, and seasonal dietary supplements. Holmboe–Ottesen *et al.* [27] comprehensively review women's roles in the overall food system, highlighting how they are an integral part of the food production process.

In all postharvest activities related to food, women play a major role that includes marketing, processing (in homes or factories), street vending, purchasing, and preparation in the home [33]. Postharvest grain processing is traditionally in the domain of women. Women thresh, winnow, dry, and parboil grain as part of household production and as employment [34, 35]. As mechanical power replaces human power, and increases the returns to labour, the responsibility for postharvest processing (as well as many agricultural activities) has devolved to men [26, 34, 35].

Table V. Sexual division of labour in India

Activity	Men		Boys		Women		Girls		Total hours recorded
	Hour	%	Hour	%	Hour	%	Hour	%	
Agriculture	2.3	17	0.6	5	1.1	9	0.6	5	222.4
Animal husbandry	1.4	10	2.4	19	1.5	12	3.4	27	297.4
Food processing	0.3	2	0.2	2	1.3	10	0.7	6	113.9
Food preparation	0	0	0.2	2	2.5	20	1.0	8	178.7
Collecting water and firewood	0.1	1	0.6	5	0.6	5	0.3	2	67.1
Eating and drinking	0.5	4	0.5	4	0.5	4	0.4	3	87.3
Wage labor	4.2	31	0.3	2	0.4	3	1.6	13	290.8
Child care	0.1	1	0.5	4	0.5	4	1.1	9	49.3
Leisure	3.7	28	4.2	34	3.1	24	2.8	22	577.0

Total	13.3	100	12.4	100	12.7	100	12.4	100	2103.6
Total number of days: 39									

Source: Holmboe–Ottesen et al. [27], table 4.3.

Food–marketing chains vary tremendously within and among countries. Food systems in most urban areas 'comprise fragmented, dispersed marketplaces and large numbers of specialized shops and vendors' [33, p. 413].

Marketing and distribution of foodstuffs in urban regions of developing countries generate relatively large amounts of income and employment. ... [They] are heavily dominated by informal–sector participants and small enterprises.... Women operate many food–vending and food–preparing activities in Third–World cities. These activities are a source of employment... and are noticeably dominated by women in Asia and Africa [33, p. 415].

At the same time, such activities are often barely viable economically, giving their proprietors a poverty–level income, somewhat offset by greater compatibility with child care (flexible hours, potential to bring the child to work, convenience), availability of surplus for home consumption, and social networks [36].

Women are often responsible for **purchasing** food as well—they decide what kinds of food to buy, in what amounts, and of what quality. Except where women are secluded, they are generally responsible for selecting and transporting food from market to home. In periurban areas, women may have poorer access to food markets and as a result pay higher prices. Musgrove [37] finds no price differential among food retail store prices in various urban poor and nonpoor communities in northeast Brazil. Alternatives to household–based food purchasing and preparation—community kitchens, cooperative buying – can lower costs of food and free women's time but they require scarce organizational skills and management. Women universally play a major role in home food preparation and serving. They also feed children until they are deemed old enough to feed themselves. Mothers' persistence in encouraging children to eat is positively correlated with good nutrition in Mexico [38]. Women play the central role in transmitting eating patterns and many cultural norms related to food.

Table VI. Women's contribution to full household income

Country	Percentage
Cameroon, 1974 ^a	58.1
Lebanon, 1984 ^b	10
Pakistan, 1975–76 ^c	17.6
Philippines, 1975 ^d	42 mother 34 father 23 children
Chile, 1983 ^e	
With children <6	
Employed housewife	24
Unemployed housewife	28

Without children <6		
Employed housewife	15	
Unemployed housewife	18	
Napal, 1970 ^f		

^a Goldschmit–Clermont [19], p. 87.

^b [19], p. 136, median value.

^c [19], p. 151.

^d [19], p. 154.

^e [19], p. 179. Total household income in pesos in parenthesis.

^f Acharya & Bennett [32], p. 43.

In recent years, the poor in the heavily indebted developing countries have had to adjust to increased unemployment, reduced social programmes, and rising prices by employing a number of survival strategies—eating lower quality, status, and priced foods; increasing female employment; and relying on charity [e.g., 39]. The poor are already in such a marginal economic and dietary situation, however, that these coping strategies may not be adequate to avert nutritional deterioration [40].

Reproduction

Over their reproductive life span, Third World women conceive and nourish with their own bodies six to eight children. Because of the high energy and nutrient demands of pregnancy and lactation, women spend a large proportion of their reproductive years under possible nutritional stress (Fig. 2, Table VII).² Women in low-income countries spend much more time lactating than being pregnant. As a result, the largest variations in the period of potential nutritional stress from reproductive activities are based on differences in the mean length of lactation.

Table VII. Calculation of percentage of reproductive life under physical and nutritional stress

Country (1)	Cumulative fertility (2)	Number of Months Pregnant			Lactation mean duration (in months) (6)	Total months lactating (7)–(2)×(6)	Total months pregnant and lactating (8)–(5)+(7)	Percentage of reproductive life in stress (9)
		Live births (3) ^a	Miscarriages (4)	Total (5)				
AFRICA								
Kenya	7.88	69.10	3.61	72.71	15.70	123.72	196.43	46.77
Cameroon	5.18	45.42	2.37	47.79	19.30	99.97	147.76	35.18
North Sudan	6.30	55.24	2.88	58.12	15.90	100.17	158.29	37.68
Lesotho	5.44	47.70	2.49	50.19	19.50	106.08	156.27	37.21
Senegal	7.20	63.14	3.30	66.44	18.50	133.20	199.64	47.53
ASIA and NEAR EAST								

Jordan	8.60	75.41	3.94	79.35	11.10	95.46	174.81	41.62
Syria	7.80	68.40	3.57	71.97	11.60	90.48	162.45	38.68
Bangladesh	6.70	58.75	3.07	61.82	28.90	193.60	255.42	60.81
Nepal	5.70	49.98	2.61	52.59	25.20	143.64	196.23	46.72
Pakistan	7.50	65.77	3.43	69.20	19.00	142.50	211.70	50.40
Sri Lanka	5.94	52.09	2.72	54.81	21.00	124.74	179.55	42.75
Fiji	6.50	57.00	2.98	59.98	9.90	64.35	124.33	29.60
Indonesia	5.20	45.60	2.38	47.98	23.60	122.72	170.70	40.64
Korea, Rep. of	5.60	49.11	2.56	51.67	16.30	91.28	142.95	34.04
Malaysia	6.30	55.24	2.88	58.12	5.80	36.54	94.66	22.54
Philippines	7.00	61.38	3.20	64.58	13.00	91.00	155.58	37.04
Thailand	6.80	59.63	3.11	62.74	18.90	128.52	191.26	45.54
AMERICAS								
Colombia	7.30	64.01	3.34	67.35	9.20	67.16	134.51	32.03
Peru	6.99	61.30	3.20	64.50	13.10	91.57	156.07	37.16
Costa Rica	6.70	58.75	3.07	61.82	5.00	33.50	95.32	22.70
Dominican Rep.	6.80	59.63	3.11	62.74	8.60	58.48	121.22	28.86
Mexico	7.10	62.26	3.25	65.51	9.00	63.90	129.41	30.81
Panama	5.90	51.74	2.70	54.44	7.40	43.66	98.10	23.36
Guyana	6.90	60.51	3.16	63.67	7.20	49.68	113.35	26.99
Haiti	6.02	52.79	2.76	55.55	15.50	93.31	148.86	35.44
Jamaica	5.60	49.11	2.56	51.67	8.10	45.36	97.03	23.10
Trinidad and Tobago	5.90	51.74	2.70	54.44	8.00	47.20	101.64	24.20

Note: Refer to accompanying text for explanation of procedures used and for sources of raw input data.

^a Column 3 values are derived by multiplying column 2 values by 8.769.

The proportion of time women spend under total nutritional stress during a 35-year reproductive period varies from .227 in Costa Rica to .608 in Pakistan. Women in most African and Asian countries fall in the .35-.48 group while in the Americas, most fall in the .23-.33 group. These findings are as expected because of lower incidence and duration of breast-feeding in the Americas [see 41, 42].

Pregnancy during the adolescent years constitutes an additional risk for mother and child. Teenage physical growth demands compete with those for fetal growth resulting in much incidence of low birth weight and high neonatal mortality. Teenage pregnancy has always been the norm where child marriage is prevalent. In urban areas where marriage age is higher, however, teenage pregnancy is increasing as are out-of-wedlock births. In 28 of 37 developing countries with available data, births to teenage women account for 10% or more of all births [5].

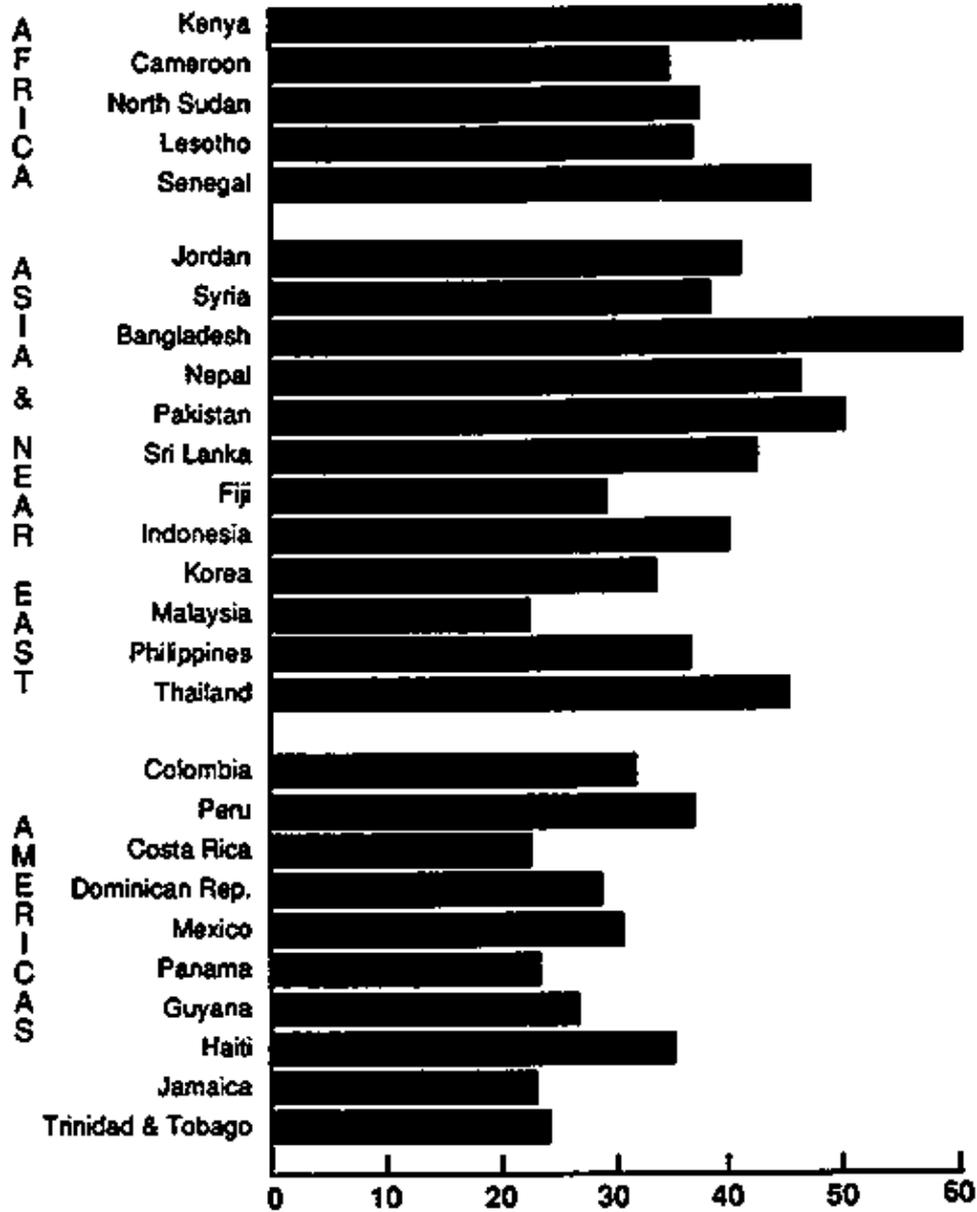


Figure 2. Proportion of reproductive life in stress related to pregnancy and lactation

Health care

Women are responsible for a large number of activities related to the production of good health—purchasing, preparing, and serving food; providing a clean and safe environment, water supply, and personal hygiene (e.g., bathing and hand washing); and procuring preventive and curative health services. Women are the crucial link between the family and the traditional and modern health systems. One study of health-seeking behaviour in 16 countries found women most often make the initial decisions about health care use (including self-care) except in crisis situations involving substantial sums of money. In the latter case, the male head of household becomes involved [43].

Women are expected to implement the child survival revolution by:

- bringing children to be immunized four times during the first year of life
- procuring or producing oral rehydration solutions and administering them to the sick child many times over the course of each day of every bout of diarrhea
- breast-feeding their babies on demand until the child is six months to two years old and processing and feeding proper weaning foods in frequent meals to small children

- bringing children under age five to a weight surveillance programme monthly.

The time costs of these activities, particularly the repetitive ones, may deter effective, sustained participation in health programmes as well as income-generating activities [44]. Few studies have been conducted on the role of time in the use of preventive health services such as immunizations [45, 46]. Research has usually found time costs an important determinant of health service demand (reviewed in Akin et al. [45] and Leslie [44]). Women's time constraints have also limited breast-feeding [47, 48] and participation in a village-based vitamin A delivery system [49, 50]. Time costs of prenatal care in the Philippines are its chief deterrent to use [51].

Women's time costs and constraints appear to be either undervalued or ignored in the design of most primary health care systems. Clinic hours, long waits, and the need to go to a clinic (rather than a community worker) for certain services are factors to be considered.

Women's nutritional status

Women are often exhausted by the combination of reproductive demands, heavy work load, and inadequate diet [52]. Maternal depletion over the course of numerous or closely spaced pregnancies is an often hypothesized but little measured phenomenon [53, 54].

Careful, systematic analyses of women's diet and nutritional status are rare. Data from small and infrequent studies of women's anthropometry, iron status, and dietary intake suggest that they are at high nutritional risk but better surveillance of women's nutrition is needed [52]. Assembling data based on various methodologies and sampling procedures leads to problematic interpretations. Moreover it is very difficult to interpret these data without a clear understanding of standards [55].³

ANAEMIA. Of particular importance is iron-deficiency anaemia which reduces work capacity, increases fatigue, and elevates risks of hemorrhage and death in childbirth [56, 57]. A majority of the world's women are anemic, largely because of iron deficiency resulting from inadequate iron intakes and excessive blood losses from parasites or menstruation and closely spaced births. Nutritional anaemia ranks among the four most prevalent, serious nutritional problems in the world. Anaemia is generally defined as a significant reduction (below a standard level) in hemoglobin concentration and/or red blood cells (hematocrit). It occurs two to three times more frequently in nonpregnant women than in men, and up to 20 times more frequently in pregnant women [58]. Data on women in developing countries indicate that fewer than half the nonpregnant women and nearly two-thirds of the pregnant women have hemoglobin concentrations indicating anaemia. The overall proportion of women and pregnant women with below-standard hemoglobins is highest in South Asia and Africa, followed by Oceania, East Asia, and then Latin America (see Fig. 3). Extensive information on anaemia prevalence among women by country is available elsewhere [59, 60].

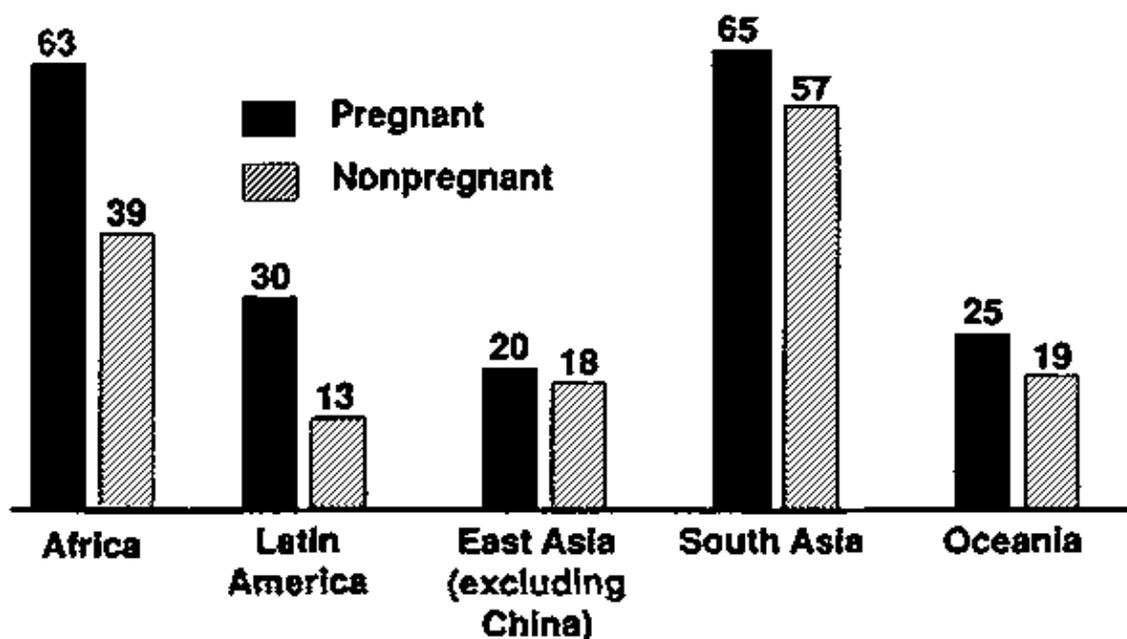


Figure 3. Percentage of women with low haemoglobin levels (WHO standards)

DIETARY INTAKE. An undernourished woman is at increased risk for giving birth to a low birth weight baby who faces greater mortality risks. Poor nutrition also affects her activity level and overall physical performance.

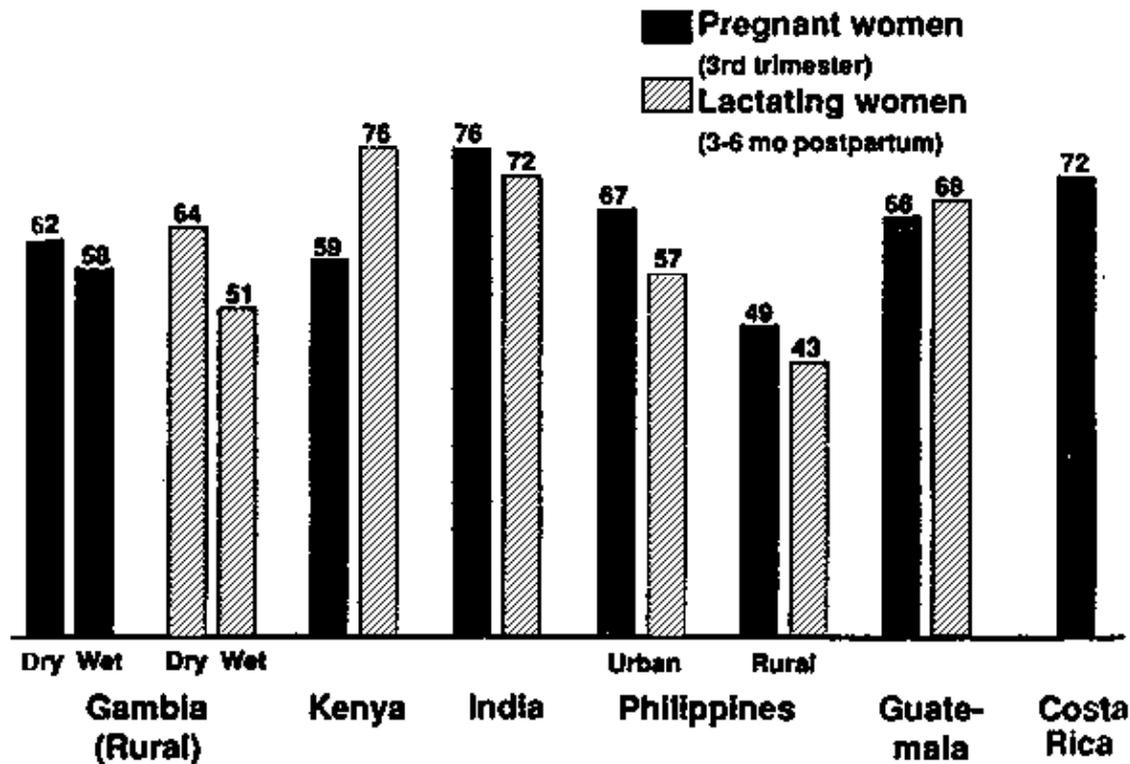


Figure 4. Energy intake of women as a percentage of WHO RDAs

Caloric intake is often low among women (Fig. 4; Table VIII), although a few populations show adequate intakes (Korea) or excessive ones (Micronesia). Deficiencies in caloric intake are common, regardless of physiologic status.⁴ In a few studies, pregnant women consume less than nonpregnant women. In other countries they consume more, but their diets are still deficient in calories. Lactating women generally consume more than their nonpregnant counterparts, but still not enough to meet the daily recommendations. Where intakes are reported by income, low-income women appear to consume less than their middle- and high-income counterparts. Women generally meet a smaller percentage of their current recommended daily requirements than men [65, 67, 70].

Table VIII. Summary of studies on dietary intakes of women in developing countries

Study	Sample ^a	Year/season	Calories (kcal)	% WHO RDA	Protein (g)	% WHO RDA
WHO RDA for energy & protein [86]	Women aged 18–60					
	55 kg	1985				
	NPNL		2100		41.0	
	PW		2385		47.0	
	LW (1st 6 mo)		2600		58.5	
	LW (p–6 mo)		2600		54.0	
AFRICA						
Ethiopia [71]	PW: 3rd trimester		1539	59.2	41.2	70.4

		Low SES (20)				
		High SES (10)	2963	114.0	81.5	150.9
Gambia [80]	PW (156 PW and LW)					
		Dry season				
	2nd trimester		1452	60.9		
	3rd trimester		1478	62.0		
		Wet season				
	2nd trimester		1459	61.2		
	3rd trimester		1381	57.9		
	LW (156 PW and LW)					
		Dry season				
	0–3 mo		1772	68.2		
	3–6 mo		1658	63.8		
	6–9 mo		1674	64.4		
	9–12 mo		1648	63.4		
		Wet season				
	0–3 mo		1471	56.6		
	3–6 mo		1314	50.5		
	6–9 mo		1392	53.5		
	9–12 mo		1421	54.7		
Kenya [75]	Rural NPNL (50)	1977–79	1765	84.0	59.0	143.9

	Pregnant—trimester					
			1602	67.2	51.0	108.5
	1st (109)					
			1623	68.0	50.0	106.4
	2nd (165)					
			1406	59.0	45.0	95.7
	3rd (92)					
	Lactating (10–23 mo)	(244)	1978	76.1	63.0	107.7
Upper Volta [65]	Farmers:	Dec./Jan.	1515	72.1	0.8 animal	1.95
	Nonpregnant (14)	End of harvest			44.8 vegetable	109.3
ASIA AND OCEANIA						
India [79]	Low SES:					
	Pregnant (100)		1815	76.1	44.0	93.6
	Lactating (70)		1858	71.5	42.7	73.0
	Same women before pregnancy (100)		2152	102.5	49.8	121.5
India [73]	LW:	very poor (54)	1439	55.3	39.6	67.7
		poor (50)	1872	72.0	46.1	78.8
		middle (57)	1906	73.3	47.2	80.7
		upper middle (49)	2279	87.7	55.0	94.0
India [83]	LW (39):	4 wk	1702	65.5	35.0	59.8
		16 wk	2090	80.4	42.6	72.8
		52 wk	1711	65.8	35.6	65.9
Korea [74]	Avg. SES, rural Pregnant (93)	Winter 1976	2635	110.5	77.5	164.9
Micronesia [81]	Women on wealthy, recently Westernized Nauru Island (43)	Jan. 1976	5223	248.7	184.0	448.8
Hew Guinea [69]	Subsistence farmers:					
	Coastal:				animal	
			1414	59.3	3.6	
	Pregnant (9)					

	Lactating (13)		1412	54.3	3.0	
	NPNL (14)		1402	66.8	3.1	
	Highlands:					
	Pregnant (7)		2001	83.9	10.8	
	Lactating (14)		2133	82.0	9.2	
	NPNL (14)		2068	98.5	10.4	
Papua, New Guinea						
Wopkaimin [84]	Adult women (47) ^b	1975	1345	64.0	28.5	69.5
	Nonworkers wives (33)	1984	1491	71.0	27.3	66.6
	Workers wives (27)	1984	1743	83.0	35.9	87.6
Philippines [70]	Urban household survey:		81.7% ^d		81.4% ^d	
	Housewives (94)					
	Adult offspring (31F)		75.1%		78.2%	
Philippines [64]	URBAN	1983–86				
	Pregnant:					
	3rd trimester (2555)		1595	66.9	51.0	108.5
	2 mo postpartum (2177)		1675	64.4	53.8	92.0
	6 mo postpartum (2036)		1483	57.0	48.5	82.9
	14 mo postpartum (1971)		1382	53.2	43.2	80.0
	RURAL	1983–86				
	Pregnant:					

		3rd trimester (772)	1159	48.6	38.3	81.5
		2 mo postpartum (696)	1242	40.3	40.3	68.9
		6 mo postpartum (669)	1121	43.1	35.8	61.2
		14 mo postpartum (669)	1039	40.0	31.6	58.5
Singapore [63]	Random clinic patients					
		1st & 2nd trimester (14)	2386	100.0	57.1	121.5
		3rd trimester (23)	2487	104.3	69.0	146.8
	NP (24)		1927	91.8	53.2	129.8
Taiwan [61]	PW (112)		1211	50.8		
		1st trimester	1228	51.5		
		2nd trimester	1151	48.3		
		3rd trimester				
	LW (112)		1319	50.7		
		0–2 mo	1288	49.5		
		3–5 mo	1366	52.5		
		6–8				

		mo				
		9–11 mo	1398	53.8		
Thailand [68]	Urban (15)		1547	73.7	56.0	136.6
	Rural (21)		1292	61.5	46.0	112.2
		Pregnant (11)	1980	83.0	39.0	83.0
LATIN AMERICA						
Brazil [67]	Semiurban migrant workers (94)		1068	50.9	28.0	68.3
Colombia [77]	PW: 2nd trimester (207)		1587	61.0	35.6	60.9
Costa Rica [78]	Rural–Pregnant	1979–80				
		1st trimester (12)	1472	61.7	42.8	91.1
		2nd trimester (46)	1587	66.5	47.7	101.5
		3rd trimester (46)	1718	72.0	51.2	108.9
Guatemala [62]	(20)		1418	67.5	39.0	95.1
	PW: 2nd trimester (57)		1723	66.3	50	85.5
	PW: 3rd trimester (57)		1819	76.3	54.0	114.9
	LW (36)		1599	61.5	58.0	100.0
Guatemala [82]	NPNL (6)		1876	89.3		
	LW (18)		1929	74.2	47.6	81.4
(both groups supplemented)						
Guatemala [85]	Pregnant–2nd half (720)	1969–70	1562	65.5		
	Lactating:					
		3 mo (520)	1766	67.9		
			1764	67.8		

	6 mo (385)		1795	69.0		
	9 mo (381)		1708	65.7		
	1 y (372)					
Mexico [76]	Pregnant (42)		2020	84.7	53.1	129.5
	Lactating (12)		2030	78.1	54.2	115.3
	NPNL (54)		1750	83.3	47.1	80.5
NEAR EAST						
Iran [72]	Outpatients at 2 urban hospitals; 3 mo postbirth					
	low SES (15)		1840	70.8	61.0	104.3
	mid SES (28)		2270	87.3	82.0	140.2
Iraq [66]	Urban, low SES PW at MCH clinic	Fall 1963				
	< 5 mo (97)		1815	79.0	57.6	74.0
	> 5 mo (60)		1996	85.0	57.4	74.0

^a NPNL – Nonpregnant, nonlactating; PW – pregnant women; LW – lactating women. () is sample size.

^b Sample size refers to number of days of intake.

^c 1980 NAS recommended daily allowances.

^d As percentage of RDA.

Protein intakes appear to be more adequate than caloric intakes in most countries. The reported figures do not consider, however, that when calories are deficient protein will be used for energy. Another problem is that protein quality is not usually reported. Women often consume lower quality vegetable protein while men receive the larger share of whatever animal protein is available. This situation has been shown in Burkina Faso (then Upper Volta), where women consumed 0.8 grams of **animal** protein compared with men's consumption of 10.3 grams daily (women also ingested a lower proportion of the **gross** protein requirement than men). Vitamin and mineral intakes of women show similar inadequacies absolutely and relative to men's diets [52].

ANTHROPOMETRIC DATA. Studies on anthropometric measurements of women in developing countries are even fewer than dietary studies (see table IX).⁵ Although women in some countries have weights far below the WHO 'reference woman' of 55 kilograms, women's weights appear to be more adequate than their dietary intakes. Women in Africa and Asia are more deficient in fat stores than are Latin American and Near Eastern women. Women's chronic undernutrition is reflected also in extremely low stature. Two studies show low

weight for height to be less common among women than men (Brazil, Upper Volta) although in both studies women consumed a smaller percentage of their recommended intakes than men. The explanation for this apparent contradiction may be that women's energy expenditure is lower than men's or metabolic efficiency higher. Whether this pattern holds true for other countries is not known. However, it does point out the weakness of evaluating nutritional status on the basis of dietary intake measures alone.

The amount and pattern of weight gain during pregnancy has been shown to be a critical indicator of pregnancy outcome. The average pregnant woman in Europe and the United States gains 10 to 12 kilograms. Yet, studies in several low-income countries report average pregnancy weight gains of only two to seven kg [96–98]. Inadequate weight gain during pregnancy is an important cause of low birth weight [99].

Maternal skills and efficiency

To optimize her own or her family's welfare, a woman must manage efficiently the resources under her control. (Her **lack of control** over many resources contributes to women's low productivity and adverse outcomes but that is discussed later). Some families are more successful than others in producing well-nourished children under poverty conditions [100, 101]. Many studies show that maternal literacy and schooling are associated with improved child nutrition after controlling for the effect of education on income and fertility [102]. Bairagi [103] found in Bangladesh that increased income had a greater impact on the nutritional status of children of literate mothers than those of illiterate mothers.

The mechanism through which education is presumed to act is through women's better management of household resources. Rosenzweig and Schultz [104] found in Colombia that maternal education can, to some extent, compensate for lack of access to public health and family planning services. In rural areas, maternal education—but not health institutions or public expenditures—was associated with reduced child mortality. Another study in Nicaragua, however, found that the impact of women's education on their health and on child nutrition disappeared after controlling for community and material endowments [105].

Women's education is also associated with lower fertility [106] which constitutes management of reproductive resources. Lower fertility by itself has been associated with improved maternal and child health.

In Mexico, Le Vine and others [107] found educated women more aware of the larger world and with higher use of health care services (prenatal care, well-child care). Most importantly, they found that with more education, women changed their behaviour toward their children: they became more child-centred. Tucker and Sanjur [108] found in Panama that maternal 'differentiation' (which incorporates nutrition knowledge, formal education, frequency of reading, and participation in home production) is consistently related to better diets and improved nutritional status of her children even when employment is taken into account. On the other hand, increased maternal education is associated with decreased breast-feeding, which increases infant morbidity and mortality.

Table IX. Summary of studies of anthropometric measurements of women in developing countries

Study	Sample	Year/season	Measure	Height (cm)	Weight (kg)	Approx. ^a percentile	Triceps Skinfold (mm)	Arm Circum. (cm)
AFRICA	Rural—months pregnant	1979–80						
Kenya [94]	3.1 (x)		×	n/a	52.5		14.2	24.8
	5.3 (x) n = 190		×		54.7		14.6	25.0
	7.5 (x)		×	n/a	56.7		14.6	24.5
Upper Volta [65]	Farmers NP (14)	Dec.–Jan.						
		end of harvest	×	158.0	49.9	15th		

ASIA and OCEANIA

East Java [191]	Random sample – large-scale nutrition survey	1975–76 dry season					
	NPNL (2150)		×	149.0	42.0	5th	23.4
	Lactating (1421)		×	148.0	42.8	10th	23.2
	Pregnant:						
	1st trimester (59)		×	149.0	42.4	5th	22.6
	2nd trimester (63)		×	149.0	45.3	15th	23.2
	3rd trimester (104)		×	149.0	48.2	25th	22.9
Micronesia [81]	Residents of newly Westernized Nauru Island (142)		×	155.4	82.6	>100th	
Philippines [89]	Urban:	1983–86					
	Pregnant:						
	3rd trimester (2553)		×	150.6	52.7	50th	13.1 24.8
	birth (2336)		×	150.6	50.4	50th	12.5 24.7
	2 mo postpartum (2178)		×	150.6	47.8	25th	12.7 24.8
	6 mo postpartum (2038)		×	150.6	46.7	15th	12.5 24.6
	14 mo postpartum (1972)		×	150.6	46.4	15th	12.1 24.5
	Rural:	1983–86					
	Pregnant:						
	3rd trimester (772)		×	150.4	50.9	5th	11.6 24.3
	birth (718)		×	150.4	49.4	50th	11.1 24.3
	2 mo postpartum (696)		×	150.4	47.0	25th	11.3 24.3
	6 mo postpartum (669)		×	150.4	45.7	15th	11.2 24.2
	14 mo postpartum (669)		×	150.4	45.2	15th	10.7 24.1
New Guinea [69]	Coastal subsistence farmers:						
	Pregnant (9)		×	153.0	51.7	50th	

	NP age 18–29 (29)		×	152.0	49.0	25th	
	NP age 30+ (31)		×	150.0	44.4	15th	
	Highlands:						
	Pregnant (7)		×	153.0	53.5	50th	
	NP age 18–29 (28)		×	152.0	51.3	50th	
	NP age 30+ (6)		×	150.0	45.8	15th	
Papua, New Guinea	Adult women						
Wopkaimin [84]	(45)	1975	×	148.9	44.6	10th	6.8
	(143)	1984	×	148.2	44.5	10th	5.8
India [95]	Urban/pregnant						
	1st trimester (408)		×	150.8	44.3	15th	22.6
	2nd trimester (1522)		×	150.1	47.1	25th	21.3
	NPNL (1025)		×	150.1	44.4	15th	23.0
	Lactating:						
	0–6 mo (860)		×	150.2	44.2	15th	23.1
	7–12 mo (609)		×	149.4	42.9	5th	22.3
Bangladesh [91]	Rural/pregnant	1975–78					
	1st trimester (1200)		×		41.0		22.1
	2nd trimester (1023)		×		42.5		22.0
	3rd trimester (825)		×		45.0		21.9
	NP (58)		×		42.4		22.4
	Rural/NPNL						
	Jan (817)	1976–	×		40.2		21.8 (687)
	May (810)	1976	×		40.6		22.0 (808)
	Oct (845)	1976	×		39.9		21.8 (847)
	Rural/postpartum, amenorrheic, most lactating						
	3 mo (1088)		×		41.9		21.5
	6 mo (846)		×		40.9		21.7

	9 mo (653)		×	40.5		21.7	
	12 mo (506)		×	40.1		21.7	
LATIN AMERICA							
Brazil [67]	Random sample, migrant families (85)		×	153.0	57.0	75th	27.6
Costa Rica [78]	Rural/pregnant	1979–80					
	1st trimester (12)		×	155.2	52.1	50th	
	2nd trimester (46)		×	154.6	56.6	50th	
	3rd trimester (46)		×	154.6	60.4	75th	
Dominica [92]	PW (340)	1978					
			×	60.2			
			×	66.4			
Guatemala [83]	Pregnant:						
	1st trimester (265)		×	47.3			
	2nd trimester (274)			50.0			
	3rd trimester (400)			53.6			
	Lactating:						
	3 mo (480)		×	48.4			
	6 mo (496)			47.7			
	9 mo (533)			47.1			
	1 y (552)			46.4			
Mexico [90]	Tarahumara Indians living traditional life in mountains						
	Age 19–30 (29)		×	152.0	56.0	50th	13.0
	Age 31–50 (14)		×	151.0	58.0	75th	14.0
NEAR EAST							
Iran [72]	Urban hospital outpatients, low SES						
	pregnant (36)		×	155.0	62.7	75th	
	postpartum (21)		×	155.0	55.2	50th	
	mid SES						

	pregnant (52)	×	155.0	60.8	75th
	postpartum (36)	×	155.0	52.8	50th
Jordan [93]	NP women, ages				
	20–24 (633)	×	154.7	58.7	75th
	25–29 (1022)	×	155.2	61.2	75th
	30–34 (736)	×	155.3	63.3	85th
	35–39 (527)	×	155.1	65.7	85th
	40–44 (264)	×	155.7	67.4	90th

^a Percentiles of weight for height based on Hanes I and II data for small framed women aged 25–56 and mean height and weights of the population.

^b NPNL – Nonpregnant, nonlactating; PW – pregnant women; LW – lactating women. () Is sample size. NA – not available.

Caldwell [109] maintains that an educated woman is more successful in child-rearing because (1) she is less tradition bound and more likely to try innovative solutions to her problems; (2) she is more 'capable of manipulating the modern world'; (3) she tips the balance of power in the household in her favour; and (4) she is more likely to challenge her husband or mother-in-law and they are more likely to accept her judgment.

Maternal education, behavioural change messages, and technology can positively affect these child outcomes without significantly changing household incomes. A nutrition education project in Indonesia, which modified specific child-feeding and care-giving behaviours, erased the adverse effects of low levels of maternal education on nutritional status [110]. This finding suggests that maternal education acts through maternal-child interactions to improve nutrition. Similarly, evidence from Bangladesh [111] also suggests that education and even appropriate technology (jute playpens) can compensate for or replace child-care behaviours that promote malnutrition.

Little is known of women's management of household finances, food supplies, and labour she controls. One would assume that technology and institutional support (consumer cooperatives, for instance) might improve women's home production efficiency. Numerous studies show that education affects women's agricultural productivity positively [e.g., 112], suggesting that other spheres of work (including market and home production) might be responsive to female education [24].

Women's self-confidence

Women's lack of self-confidence has been cited as a major determinant of programme success in maternal-child health [113]. Lack of self-confidence has also been called 'silence', extreme in self-denial and dependence on external authority for direction [114]. Silence keeps women from seeking help for themselves and their children—whether it is prenatal care, education, or fair wages. Authority figures have been used to persuade women to seek family planning or prenatal care or to continue breast-feeding, but increasing women's self-confidence is needed to facilitate them to change behaviour and use correctly an array of services and commodities.

- Griffiths [113] found in Swaziland that mothers had sufficient self-confidence to persist in feeding their anorectic children, even when the sick children refused to eat. In Cameroon, on the other hand, the mother cedes power to the child and gives in to the its self-destructive behaviour. Differences in maternal self-image are positively correlated with their children's health and nutrition.

- Kagitcibasi [see 115] found in Turkey that to reach children successfully they had to build self-confidence in the mother. To educate women about stimulating early cognitive development, they started by giving women tasks they could successfully complete like feeding the child. Not surprisingly, husbands and mothers-in-law sometimes disapproved of

the programme because it gave women self–assurance, but the programme has been successful in terms of participation rate, educational measures, and broadly applicable maternal skills.

- In India, Griffiths [113] found that mothers felt powerless to undertake independent action. As a result, fathers and grandmothers of at–risk children are educated. Mothers are encouraged to come together to listen to and discuss a radio programme designed to motivate them to change some behaviours.

With self–confidence, women will have greater success in breast–feeding, introducing weaning foods, changing practices, and persisting in recommended behaviours against resistance by the child or by opinion leaders in the household and community.

Roles

During each stage in the life cycle, females have clear–cut biological, economic, and cultural roles. In Table X we present these roles, some of the obvious conflicts, and the adverse effects on women and their families. In numerous cultures, girls are seen as a net drain on family welfare. From birth onward, girls in some parts of the world receive less food, nurturing, and health care than boys with important effects on growth, development, and survival. Socialization of girls to be acquiescent and self–sacrificing adds additional nutritional stress if it reduces their access to food. Older girls experience conflicts over their use of time–instead of playing or attending school they are expected to work at home or on the family farm. At times these tasks cause energy conflicts for girls – carrying water and babies may require so much of their energy that they have none left over for growth or learning from their environment. Heavy disease and parasite burdens limit their available energy, so a heavy work load thrusts a double load on children. While boys and girls tend to be assigned productive work, the long–term nutritional implications are worse for girls. If female growth is stunted, reproductive risks increase. Moreover, boys' school enrollment usually exceeds that of girls which effectively increases the girls' work load and exacerbates their disadvantages in the labour market.

As girls mature their economic contribution to the household increases, but cultural expectations for early marriage and childbearing detract from their economic and biological well–being. Once married, the number of conflicts among women's roles increases.

Table X. Role conflicts in the lives of women that affect nutrition, growth, and development

Stage in woman's life cycle	Biological roles	Economic roles	Cultural roles	Roles & activities promoted by int'l agencies & others	Conflicts (constraining resource)	Adverse effects of conflicts
Birth to 5 years	Survival Growth & development	Minimal household production (older children)	"Daughter" & "female": learn social rules, gender, identity, obedience, kinship rules; respect of age, sex, power, status "Child": play	Play	Possibly tension between socialization & growth & development; female infanticide & neglect; subservience of females & children (access Co food & health care)	Female malnutrition & mortality Inadequate cognitive development Poor growth & development
5 years to puberty	Maturation Growth & development	Increasing importance in agricultural labor,	"Daughter": obedience to parents, transferal of earnings,	Education Play	Education vs. labor In household, on– or off–farm (time)	Low school enrollment, retention, & achievement

		household production, & possibly labor market; assumes greater responsibility for household maintenance & child care	preservation of chastity "Female": learning sex roles	Learn rudiments of reproduction to prevent teenage pregnancy "Self"	Hard labor & deferential female behavior vs. growth (energy) Cognitive development vs. economic & social roles (time)	Stunted growth especially of females Suboptimal development Limited occupational options for females
Puberty to menopause	Pregnancy	Household production: food, fuel, water, child care	"Wife": deference to husband's decisions, sacrifice for husband, obey husband, chastity	Education	Household production vs. income generation (time, energy)	Maternal malnutrition birth weight
	Lactation			Employment		
	Nurturing dependent young children	Income generation: on-farm labor, off-farm labor entrepreneurial	"Daughter-in-law": obey mother-in-law	Family planning	Income generation vs. "wife" "mother" (time, breast milk, energy, resources)	Poor child growth & development Maternal stress
	Maintenance of own health & nutrition			Community development		Leadership
				"Self"	Physical labor vs. pregnancy, lactation, health (energy) "Wife" vs. "mother" (time, resources) "Daughter-in-law" vs. "Bother" (time, authority) "Mother" & "wife" vs. family planning (social rewards, authority) "Self vs. "mother" & "wife"	Closely-spaced high-parity External locus of control: learned helplessness Low economic productivity
Menopause to death	Senescence	Often increased market activities, decreased household production, possibly increased agricultural labor (including control over land inherited from father or	Male equivalent Nonsexual	Midwife or other health worker	Economic survival vs. widowhood (social support)	Older women stress
			"Grandmother": supernatural power, family decision control, discretionary child care "Mother-in-law": control of		Physical strength & health vs. economic	Older women dependence rejection Older women morbidity & malnutrition Low productivity

husband)

daughter-in-law

Exploitation of her
own children &
daughters-in-law

Senior member of
household:
commands labor &
respect of lower
status in
household

"Widow"

Women of childbearing age are under the greatest role stress. In particular, childbearing incurs high costs to the mother (who spends her income disproportionately on children) at the same time that it reduces her income-earning capacity. Collier [116] argues that this situation makes women perfect candidates for savings and credit schemes—borrowing to finance consumption while their children are very young and saving money when their child-care burden decreases sufficiently to enable them to become net earners again. Their management of resources as mothers, wives, income earners, and individuals determines their welfare and their family's welfare. The conflicts they encounter are detailed in the next section.

After they leave childbearing behind, women often gain considerable respect, power, and economic control. Because they are no longer sexually threatening, older women are freer to operate in the markets, manage their own farmland, and make household decisions. In patriarchal societies, widows may have access to productive resources only through their sons, brothers-in-law, or brothers, but usually older widows have sufficient freedom of movement to participate in market activities where younger females are secluded and veiled. The livelihoods open to aged women may barely allow them a subsistence wage. Because women have greater life expectancy than men, they need to be economically competent, but failing health and reduced strength may jeopardize their ability to support themselves.

The Closed System of Women's Time, Energy, and Income

Crucial conflicts face poor women in low-income countries as they try to fulfill their economic, biological, and social roles at each stage in the life cycle, particularly during the childbearing years. Changes in behaviour that enhance their contribution to one role can have crucial negative effects on their other roles and activities. This role conflict relates to the tremendous time, energy, and money resource constraints facing these women. The resources are interchangeable above certain minimal levels of requirements; however, resource shortages and bottlenecks preclude women from making significant substitutions among resources. Conflicts between the economic, reproductive, and cultural roles of women can have detrimental effects on the nutrition of these women and/or their families.

Biological versus cultural roles

The status and quality of life of poor women are inseparable from their reproductive roles in many societies. For example, primary and secondary infertility, important problems in sub-Saharan Africa, carry with them a certain degree of social and economic ostracism [117, 118]. On the other hand, women who give birth to one or more children (preferably male in many societies) gain important benefits. This childbearing role is stressful. Repeated pregnancies, numerous known and unknown fetal deaths, delivery complications, and extensive periods of lactation have significant adverse effects on the energy and nutrient stores of women, as well as their physical performance.

Some researchers postulate the existence of a maternal depletion syndrome related to repeated and closely spaced pregnancies and extended lactation [53, 119].⁶ Under this scenario a woman with inadequate nutrient intake may not be able to replenish energy reserves between pregnancies. Each additional pregnancy and bout of illness thus further compromises her nutritional status. As discussed above, up to 33–50% of a women's reproductive life is spent being pregnant and/or lactating.⁷

An extensive body of literature documents the effects of repeated, closely spaced pregnancies on two key reproductive outcomes, birth weight and child survival. While this research ignores the woman's nutritional conditions, it has found that short birth intervals, particularly under 24 months, are associated with increased

risks for the infant [122–124]. Since the maternal environment is the source of most immediate risk factors, this association of birth spacing with infant health indirectly supports the maternal depletion hypothesis.

Strong positive relationships between maternal mortality, age, and parity also provide evidence of maternal depletion [125]. In general, maternal mortality increases with age, with a sharp rise found after age 30–34. Similar relationships are found with parity increases above three. Some studies have also linked spacing in a crude manner with these age and parity relationships.

Multivariate analysis has encountered methodological problems in confirming those relationships [123, 126, 127]. While these studies have focused mainly on infant health, they have begun to consider carefully the effects on the mother, in particular the conceptual and statistical issues that must be considered to examine these issues adequately.⁸

Economic versus cultural roles

Poor women are expected to play the central role in child care and food processing even when their economic roles also require extensive time and/or physical energy. This responsibility causes several conflicts.

Women are expected to nurture the infant or preschooler and concurrently play a key role in family economic life. Particularly in societies where female-headed households abound or areas where economic roles take the women away from the household and are otherwise incompatible with child care (e.g., many urban settings, selected rural ones), many nurturing roles cannot be fulfilled. In addition to the one-quarter to one-third of households headed by women, a large number of *de facto* female-headed households result from increased male migration in recent years.

A major debate exists concerning the consequences of maternal market employment on the **health and development** of children [128, 129]. The importance of this debate has increased as urbanization and industrialization have increased the proportion of women in the paid labour force—which has risen from 28% in 1950 to 32% in 1985 [31]. Of some concern, however, is the increase in informal sector employment of women, especially piece work done at home which can expose women and children to dangerous chemicals and other hazards [130].

When mothers work away from their children, breast-feeding may be very short or not even initiated, weaning food may be contaminated and of poor nutritional quality, and poor child-care substitutes (or nonexistent ones) leave the infant vulnerable to infection and malnutrition (131). O'Gara [132] and Oppong [133], however, provide examples where working mothers have been able to continue breast-feeding in spite of employment. Leslie [134] summarizes this literature. Women engaged in market work often have malnourished children but it is difficult to unravel a clear causal relationship between women's employment and child nutrition.⁹

The belief that certain kinds of employment (for instance, agriculture, home-based industry, and market work) are compatible with child care because the mother is present may be incorrect [136]. Presence alone does not guarantee that the mother is interacting with her child and the quality of care may be worse under these conditions. It is unclear whether urban low-income women are any less able to engage in work compatible with child care than rural women [41]. For instance, in agricultural fields or public marketplaces, certain health hazards may outweigh the benefits of the mother's presence. Where precision and concentration are important, women may have to neglect their children to gain an income. A major issue related to modifying any negative relationship between maternal work and child nutritional status is the quality of the child-care substitutes (see below).

Biological versus economic roles

One conflict relates to women's childbearing roles. Poor women in most societies continue to undertake heavy physical activity during pregnancy and resume this activity soon after delivery of their children. Extreme physical stresses may result in additional fetal loss, prematurity, or low birth weight [137]. In addition, reduction in work time or work productivity associated with childbirth and lactation may adversely affect the family's income and food security.

Pregnant and postpartum women have very heavy work loads in most low-income countries. In a cross-cultural study of 202 traditional societies, 'the most common single pattern of work activity during pregnancy was that of continuing full duties until the onset of labour' [138, p. 173].¹⁰ Women in 66% of these societies worked until labour, and an additional 14% stopped only in the ninth month. Women in about half of the societies resumed work within two weeks of birth. Another quarter of the societies reported women's return to full activity in the fifth or sixth week and in only 12% did women rest for two or more months postpartum.

Extensive physical activity while pregnant may have an adverse effect on pregnancy outcome. A number of components of physical activity can be harmful to the fetus. A major factor hypothesized to have an adverse effect on pregnancy outcome is physical stress [139], which may occur in combination with poor nutrition [140], fatigue [141, 142], or harmful body posture [143]. Various dimensions of low-income women's work in home and market activities may have significant adverse pregnancy outcome effects [137].

Effects of this double burden on women and their offspring are considerable. Roughly 20 million infants worldwide (about 17.6% of all births in low-income countries) are born with weights below 2,500 g [144]. In developing countries about 80% of low birth weight (LBW) is from intrauterine growth retardation, largely a result of maternal malnutrition [121, 145]. The resultant effects of LBW and/or preterm status on growth, survival, and development are well documented [99]. Repeated miscarriages, stillbirths, and fetal losses combine with the LBW-related infant deaths to potentiate the effects of mothers' cultural roles on her nutritional status—issues discussed above.

Second is the conflict between women's economic roles and their own nutritional needs. This issue is affected by changes in energy expenditures and intrahousehold food allocation associated with an enhanced economic role for women. Increased economic participation may increase energy expenditures—for instance, for women engaged in agricultural labour.

A crucial linkage is the impact of women's economic roles on household food security and the intrahousehold allocation of food. The few studies on intrahousehold allocation of food show that women get less food than men in absolute terms and relative to their nutritional needs [52, 146, 147]. There is some evidence that maternal income goes more directly to her child than that earned by the father [148, 149]. In most low-income societies women's roles involve them in food purchasing while male roles involve them in purchases of other types of goods and services.

A woman's access to and control over income and assets would be a major determinant of her dietary adequacy [52]. Income control enables women to decide whether to trade food items within a social or marketing network or consume household food production. Within some cultures, the woman's contribution to household income is a direct measure of her economic influence and social value. Some argue that economic power is the most important determinant of women's relative equality which affects decision making, life-style options, and control of resources such as food [150, 151].

Recent reviews of intrahousehold resource allocation suggest that the nutritional impact of increased household income is a function of income earner, source of income, its periodicity and reliability, and kind of income (cash or goods) [152, 153].

Market work affects personal dietary needs through occupational energy requirements. Poor women, particularly in rural areas, are more likely to engage in strenuous physical labour which increases their energy needs. They have fewer time and energy-saving household assets such as piped water and gas or kerosene stoves. They cannot afford child-care substitutes or labour-saving purchases such as processed or prepared foods. Energy expenditures and needs are thus closely intertwined with income and time allocation decisions discussed below.

Enhancing Resource Availability, Allocation and Efficiency: Programme and Policy Responses

Policies and programmes affecting women and nutrition can be lumped into two categories—intentional and unintentional. All too often actions have unintentional yet detrimental effects on women. Structural adjustment, for instance, may rectify foreign exchange imbalances but may compromise the low-income family's consumption basket. Women as consumers, child-rearers, nutritionally vulnerable people, and income earners are acutely affected by fiscal constraint, economic restructuring, and changing prices of foodstuffs. National policies, even some with positive social outcomes in mind, may have important negative effects on

women.

Deliberate attention to women's multiple roles needs to accompany any analysis of policy change lest economic efficiency and welfare (including nutrition) be compromised.

Women divide their day among three major types of activities: market production, household production, and investment/restorative activities (sleep, learning, fostering social ties). Development programmes and policies often entail some reallocation of time within or among these areas, either temporarily or permanently. To predict the effect of this task reordering on nutrition necessitates examining the direct and indirect adjustments. Fig. V shows how development efforts can positively affect nutrition by changing how women use their time. Each concentric circle represents increased resources for nutrition, with the outermost circle containing more distal effects than the inner circle. The resulting improvements in human resources then enhance productivity, further generating, one hopes, an upward spiral in output and well-being.

Of course we cannot increase the number of hours in the day, but by increasing productivity (through increasing skills, improving technology, or providing access to productive resources, shown inside the arrows on Fig. 3), we can help women either increase their output or decrease the time necessary to produce the same output in market or household production. With this added output (or time) they can improve the household food supply, health, and child care, and their own work load. This in turn results in improved health and nutritional status of all members of the family, reduced stress, and enhanced female status.

To enable women to get more rest or invest in their own human or household resources, they need increased productivity, as described above, but also the motivation and permission to use their newfound time for sleep, for using health or education programmes, or for spending more time taking care of their children. Sleep and rest are productive uses of time to the extent that they reduce nutritional depletion and restore energy stores in the muscles and fat which increase strength and endurance. Reduced maternal energy expenditure (if it is not matched by reduced dietary intake) may also make more nutrients available to the fetus or nursing child. Increased time spent on child care is productive if it enhances the child's health or development, which is promoted through maternal skill-building efforts.

Increasing women's income and control of income

Inadequate productive resources and basic consumption goods are a major determinant of undernutrition in developing countries. At any given level of poverty, however, the nutritional efficiency of resources within the household depends on income control, time allocation, intrahousehold food distribution, and the abilities and skills of those who provide nutrition-enhancing services (cooking, breast-feeding, health care and hygiene, child care).

One way of increasing women's economic influence within the poor household is through increasing their participation in income-producing activities [32]. This tactic has been the focus of most 'women in development' efforts. However, economic activities can compete with production of goods and services for home use. The net effect of greater income and control of expenditures and reduced home production time will depend on the returns to women's labour and the quality and affordability of available mother substitutes.

AGRICULTURAL PRODUCTIVITY

Women farmers. To increase productivity, women farmers need access to agricultural extension, credit, land and livestock, labour, and technology. The benefit from increased agricultural productivity derives from sales and consumption of goods produced. To assure that women benefit requires a careful gender analyses as part of problem identification and programme decision. While men can appropriate women's labour for their crops, women cannot necessarily do the opposite. Since men's responsibilities may not include supplying the household with food, increasing household income can increase women's work load, reduce women's control of income, and adversely affect household food supply [22, 26, 154–156].

At present, agriculture **extension** is far more likely to reach men than women [157, 158] and to be concentrated on men's crops and tasks. Making extension available to women involves more than training and motivating extension agents to address women farmers' problems and their problems on the farm. It may involve adding women extension agents on equal footing with male ones. It also involves rethinking many of the means of communications used in extension: scheduling public meetings at times convenient to women, providing separate accommodations for women and child care at residential training programmes, disseminating information through channels accessible by women, and assessing accurately women's problems and providing demonstrations for them [154].

Credit is less available to women, in part because it is often channeled through extension agents and in part because women have neither cash income nor collateral to put up as loan insurance. Where loans to women have been made, their repayment rates are usually better than men's [159]. Women's savings groups or cooperatives are a promising means for women to qualify for credit as long as they obtain the management skills and autonomy required to maintain control of such organizations.

Usufruct rights to **land** are usually contingent on inheritance or the continued goodwill of a man (household head, chief, father, brother, husband, son) and where agricultural modernization and land value appreciation are rapid, usufruct rights may be withdrawn or transferred to lower quality or more distant fields. Men's control of land extends to control of cropping patterns. Henn [160] notes that in Cameroon and Tanzania, men can prohibit women from growing cash crops on 'women's' fields. The punishment a woman receives for disobeying her husband can be divorce, physical abuse, or alienation from land.

Assuring women's secure access to clan or community land is not easy to accomplish. Legal means often fail and there is no sure way to force households to increase women's land rights. It is possible in resettlement schemes and through land distribution programmes to increase women's access to land but the track record there is abysmal.

Technology is also less available to women. On one hand, the plow—the most widespread technical advance—is used primarily by men and applicable to their tasks of clearing the land and tilling. In fact, the plow can exacerbate women's work load by allowing men to clear a larger parcel with a plow which women have to cultivate without technological advances. Agricultural research on women's crops, their farming methods, and women's tasks (particularly weeding, transplanting, and postharvest processing) is also lacking [161]. Finally, women usually lack the cash or credit to acquire the technology. Moreover, when women's work is mechanized and monetized it is often taken over by men [26].

Examples of successful efforts to increase women's agricultural productivity have been rare until recently because ideology and reality have led more to criticism of existing projects than to success stories. Some recent work [155, 159, 160], however, has provided useful guidelines for successful programmes.

- In Peru a sheep production project was unsuccessful when it worked with a politically appointed all-male community committee or with women's groups set up for other purposes that flourished when it worked with an all-female sheep producers committee [161].
- The agricultural extension system in Kenya, has successfully reached women through working with women's savings societies [162].
- In Cameroon, women farmers who live close to a paved road produced three times as much food as women not on the road. Inaccessibility meant not only that remote women farmers had higher marketing costs but experienced direct conflicts with their husbands over marketing [160].
- In Kenya women used traditional rotating credit societies to buy tin roofs with which they collected rain water. With the time saved (and some money earned from selling water) they increased vegetable gardening and small stock production [163].
- In the Gambia, a women's onion production programme was so successful that men asked to participate. Women refused to work in their husband's garden plots, however, because they were not adequately compensated and so the men's component failed [27].
- A water management project in Cape Verde benefited women significantly even though targeting to women was not its explicit effort. The project, which built bunds, dikes, and wells and reforested land in the catchment area, paid women and men equal wages for this work and every household had to send one worker before any household could send additional workers. This erased the disadvantages faced by women-headed households [155].

Women agricultural labourers. The demand for paid agricultural labourers (often landless women) has increased with the dissemination of high-yielding crop varieties. In India, where over a third of the agricultural labour force is female, women have not experienced a surge in demand for their labour equivalent to that for men's labour in the wake of the green revolution. In fact, women's wage rates have fallen [164]. To give women equal access to agricultural employment, they must have access to new technology and training. Agricultural research must be cognizant of the demand for female labour by developing alternative cropping systems and new plant varieties. Appropriate action should be taken during testing and reproduction of new crops and technologies to include women affirmatively.

Another opportunity for increasing female agricultural labour productivity is through improving women's nutritional status, as shown for tea pickers in Sri Lanka and Indonesia [56, 165].

WOMEN'S NONAGRICULTURAL LABOUR PRODUCTIVITY. For women who earn income from nonagricultural activities, increased returns to their labour are also possible. Many women are involved in informal sector activities, particularly market sales where margins are low and women have low returns to labour [36, 163]. They are forced into the informal sector by conflicts between formal-sector hours and household responsibilities, by lack of education, and by frank sexism on the part of employers [166].

While regulating change and upgrading market structures are likely to facilitate better working conditions and profitability, training and credit are likely to contribute more to productivity. A recent U.S. Agency for International Development (USAID) evaluation found in the Dominican Republic that loans to poor street vendors were successful because they were quickly disbursed, did not require collateral, and were appropriately small [159]. Women employed in the formal labour force are likely to be better off than those on the informal sector and more likely to be young and unmarried women [166]. 'Comparable' wage legislation is less likely to increase women's wages than to exclude women from formal employment opportunities [166]. Educating women and enforcing antidiscrimination laws are more likely to increase women's access to better paid and more productive formal sector employment over the longer term.

The exogenous introduction of women's income-generating enterprises—often handicrafts or small livestock—has been unsuccessful from an economic as well as participation point of view [159].

Reducing women's child-care burden

Mothers are the primary caretakers of children only in early infancy [167]. Older siblings, grandparents, and members of the extended household regularly care for preschool children even when the mother is not employed outside the home. Children's nutrition is often worse with nonmaternal (particularly sibling) caretakers [134, 168]. The quality of child care and the employment conditions matter a great deal.

Several reviews of child-care programmes [135, 169–171] show that formal child care is available only to a minute proportion of families. Instead, women rely on family or neighborhood sources of care. Myers and Indriso [135] point out that existing child-care arrangements are usually good for either the child or the mother but rarely for both. An optimal arrangement is responsive to both generations' needs. Kin-based care is likely to be convenient and affordable (the cost of sibling care in terms of lost educational opportunities seems to be less salient than its low out-of-pocket costs) but may be suboptimal for children. Siblings provide certain kinds of mental stimulation for children but often fail to provide reasonable quality health, nutrition, and infant-directed stimulation [129, 168]. New child-to-child programmes are training children in health, nutrition, and mental stimulation but the participants are not supposed to become full-time care givers [172].

Child-centred care consists largely of nursery schools, providing systematic mental stimulation but often not for the whole workday. Child-centred nutrition and health interventions are usually of short duration and provide no psychosocial stimulation or custodial care. Such programmes are not geared to the hours or labour demands of working women because they end in the middle of the workday or require the mother to attend with her child. Optimal child care provides health and nutrition services plus mental stimulation in a culturally acceptable, convenient, and affordable way.

Myers and Indriso [135] provide several illustrations of such child-care programmes.

- In India mobile creches have been created at the work site for women in casual construction labour. Care is provided by lower middle-class women from the location who are specially trained by the umbrella private voluntary organization (PVO) project. The programme, which covers infants through 12-year-olds, includes nutritious meals, health surveillance, and mental stimulation or schooling, depending on the child's age [169].
- In Salvador, Brazil, a nontraditional training programme for women spun off a child-care programme as a required adjunct to its primary activities. This programme enrolled community women in a caregivers' training course to teach them about children's health, nutrition, and development and gave them practical skills (e.g., making toys from local materials) needed to run a day-care centre. The community built a centre, the day-care trainees staffed it, and the centre is heavily subscribed not only by the training programme participants but by the rest of the community as well [173].
- Organized child care is not just an urban solution. Seasonal and year-round child-care programmes in rural areas have been successfully implemented in many countries. In Senegal, seasonal agricultural demands had relegated small children to inadequate care until a community day-care programme was initiated. The programme includes feeding (the food deriving in part from a community garden attached to the centre and in part from in-kind fees) and custodial care. Mothers rotate responsibility for the gardening and child care. The programme is so successful it has been replicated elsewhere in Senegal and its scope expanded to include other community development activities [135].
- An Ethiopian fruit-growing cooperative instituted day care as a cooperative venture to facilitate women's participation in cooperative activities. Not only does the programme provide custodial care, health care, and nutrition surveillance, but women are given work credit for breast-feeding their infants [135].

These and other examples provide consistent guidelines for setting up day-care programmes: (1) they must be convenient for women, (2) adequate training and supervision of day-care providers is required to provide good quality care, and (3) community fund-raising and participation, as well as outside funding sources are probably required, because costs of such programmes—in facilities, equipment, training, and personnel – often put them beyond the reach of the individual families that need them most.

Increasing women's efficiency in home production

The third area for potential improvement in women's nutritional responsibilities is to improve their efficiency in home production. In this category are postharvest agricultural processing, water and fuel–wood supply, cooking, and cleaning; making soap, textiles, and pottery for use by the household; and health and nutrition activities. If women can save time or their own energy through these improvements, they can use the released resources to generate more income, rest, or take better care of their children.

NEW TECHNOLOGIES. 'Appropriate technology' has often been proposed as a solution to certain household production problems but it has rarely met expectations. The most prevalent target of appropriate technology has been the time and energy–intensive cleaning and pounding of grain. In West Africa, grain milling, cassava processing, and palm oil extraction are all energy– and time–consuming processes under women's control. Efforts to introduce improved technologies in these areas must be responsive to women's needs and technology control [174–176].

- In South Asia, activities such as winnowing, pounding, and parboiling rice were traditionally carried out by women. Although pounding grain is very time and energy intensive and pure drudgery, it is a major source of income to the poorest women in South Asia. Small mechanical mills run by men have made great inroads into the grain–pounding business. The new mills are far less expensive than human pounding but the social cost of the loss of income to poor women is high [177, 178].

- In Upper Volta (now Burkina Faso) in the mid–1970s a programme introduced grain mills, carts, and local wells, which were supposed to alleviate the greatest time and energy burdens on women–pounding grain, and gathering fuel, wood, and water [179, 180]. Yet about half the women did not use the grain mills because of cost (even though a women's group had established the price and had control of the millers). It was suggested that women used the mills only when they were forced to by illness or seasonally high work loads–when their opportunity cost was higher. The carts intended to be used for firewood gathering and water hauling were used by only half the women, once again largely because of cost. The wells were popular but they went dry just at the point when alternative sources of water were least accessible, hence their time savings was minimal. Analysis of time use before and after the introduction of these technologies showed that women indeed gained time and devoted it primarily to spinning cotton or (less frequently) to rest.

- A successful corn mill in Cameroon could be hand operated by women and significantly reduced the labour required for milling. Loans, to be repaid by charging a small fee for use, were made available for women's groups to purchase the mills. The women were also trained in the use and maintenance of the mills [181]. With the time released, women attended classes in soapmaking, cooking, and child health.

- Soap production in Ghana has been greatly improved by a PVO's commercial production of ash. Women no longer need to burn large quantities of wood; they just mix and cook the soap ingredients [181].

Home–based technologies must be appropriate (solar cookers should not require women to cook in the hot sun at midday, for instance); not require large cash outlays; and provide women with the training needed to maintain and repair them [181]. Women, likely users of water pumps, are rarely trained in their operation, maintenance, or repair. Moreover, poor women may even lose income from the introduction of pumps: in Tanzania, women water carriers lost employment when water pumps were introduced. In Kenya, women's self–help labour was found to be more successful than paid male labour in construction and maintenance of dams and catchments. This success was attributed to women's being the chief users of water and thus having the knowledge and skills to maintain the water system [159].

Overall, technological solutions to women's household production problems are likely to be more successful if women are involved from project conception to execution, if they have access to credit to procure the technology, and if they maintain or gain control of the technology and resources transformed.

HEALTH AND NUTRITION ACTIVITIES. Another way to help women become more efficient in their household production is through reducing the unnecessary burden of sickness resulting from improved preventive health care, hygiene practices, and food preparation. The development of 'instant' weaning foods is an excellent example. In Nepal, a dry instant weaning food called Sarbottom Pitho can be made in the home

and reconstituted at the time of feeding to avoid bacterial growth. It is superior nutritionally to the usual 'bacterial broth' and reportedly requires little extra maternal time to make [182].

Reducing the time costs of food procurement and preparation is important for the public and private food sectors. Bread is probably the most widespread time-saving convenience food. It requires no further processing, stores well, and can be eaten throughout the day. Many developing countries artificially keep the price of bread low because it has become a staple of the urban poor. In Sri Lanka, Senauer, Sahn, and Alderman [183] found that as women's wage rates rose, the household consumed more bread and less rice. Dried soups and pasta products are also very popular convenience foods because they require very little preparation time and fit in well with traditional foods and eating styles. Since convenience foods are generally highly refined, they may lack important nutrients found in more traditional foods. Whether the benefits of convenience foods outweigh the costs is virtually unknown. Street foods—often sold by women—are another convenience food that can save women time. These are precooked, ready-to-eat foods sold in rural and urban areas, on streets as well as house to house [41].

Improving women's health and nutrition

Historically, interest has focused on women's health and nutrition largely because of their childbearing and rearing role and because women are at nutritional risk because of reproduction. There is no question that improved maternal health and nutrition directly improves fetal and neonatal health. Much less is known about the impact of improved maternal health and nutrition on women's successful fulfillment of their other productive roles.¹¹

REACHING WOMEN. In addition to the lack of information on women's productivity, we are still very much in the dark on how to reach women with health and nutrition programmes for their own good [52]. Women's nutrition supplementation studies in Guatemala [185] and the Gambia [186] have obtained good participation rates with measurable anthropometric results for women and children.¹²

- A CARE feeding programme in India found women more likely to participate if the food rations were ready to eat and women could pick it up on their way to the fields [187].
- A World Bank project in Indonesia induced women to eat better diets through a nutrition education programme. Behavioural trials determined that pregnant women were willing to increase their total food intake slightly and to eat more greens but were unwilling to eat extra protein or a great deal of additional food. Compliance with iron supplements was good and the negative side effects (of which they were forewarned) did not reduce compliance [188].

This Indonesian work demonstrates that women can be motivated to improve their nutrition so long as it does not conflict with firmly held beliefs.

Efforts to increase food intake of lactating women in Indonesia met with success also and several practices (increased liquid intake and increased food) apparently increased women's breast-milk supply as well. As a result some of them had to nurse their infants more frequently, but they did not mind the extra work because their infants were more content.

- The ICDS programme in India found that it obtained better participation of lactating women and young infants if mother and child were admitted as a unit (perhaps allowing the mother to justify her attendance) and if both participants were given food rations [187].
- Improving prenatal care by training traditional birth attendants in the Philippines has improved care participation rates [189].
- Use of supplementary feeding was associated with greater tetanus toxoid coverage (and antenatal clinic attendance) in India's Project Poshak [190].
- In the Philippines, Wong *et al.* [51] found accessibility (travel time) of prenatal care and health insurance strongly affected participation in antenatal clinics as did women's education.

Sustained participation of pregnant women in supplementary feeding programmes is predicated on addressing the actual or perceived risk of cephalopelvic disproportion which may cause women to restrict food

intake in late pregnancy [52, 121].

The consistent finding of these studies is that to persuade women to use health and nutrition services for themselves, services must be made as cost free as possible by making them convenient geographically, minimizing out-of-pocket and opportunity costs of using them, and making them harmonious with currently applicable beliefs and practices. In addition, women need the authority or permission to seek help for themselves.

COMBINING INTERVENTIONS. To optimize the nutritional effectiveness of these programmes, a combination of the elements discussed above is necessary. Women cannot procure the benefits of household technologies or child care without paying for them, but they are constrained from increasing income by the time demands of home production. If women were healthier and nutritionally better off, they might be more productive economically, but they have neither the time nor the permission (possibly a function of their contribution to household income) to eat more food or obtain health care for themselves. Thus, complementary interventions are needed to break the deadlock on women's resources for nutrition.

Research Needs

Throughout this article, we have noted information gaps and research needs. We summarize here the most urgent issues requiring further research.

WOMEN'S NUTRITION. More information is needed on women's nutrition, food consumption, and nutritional risks, especially changes in nutritional status occurring over their reproductive lives [55]. In particular, the maternal depletion syndrome needs to be investigated and the incidence of cephalopelvic disproportion resulting from improved diet documented [121]. Better information on the effect of improved nutrition on women's productivity in the market and home is also needed.

WOMEN'S INCOME. The impact of increases in women's income on the level of allocation of food expenditures and on their own and other household members' nutritional status needs further exploration.

CHILD CARE. The impact of formal and informal child care on women's productivity, income, and reproductive behaviour; on children's health and mental development; and on community child-care norms and behaviours needs elaboration. Cost-effective and culturally appropriate child-care mechanisms should be investigated in pilot studies.

HOUSEHOLD PRODUCTIVITY. The effect of increased water and fuel-wood supply, reduced food-processing time, and increased efficiency in postharvest food processing on women's income and nutrition, household food security, and on children's nutrition needs careful study. All too little is known at present about household management skills and productivity. Quantitative models of labour allocation and household production need to be complemented with observational studies to determine what women and their families need to know and have to become more productive.

OPERATIONS RESEARCH. Knowing what women need is one thing; delivering it to them and even convincing them they need it is quite another. Research is needed along with service delivery programmes in agriculture, education, health, and nutrition to raise demand, increase sustained participation, and enhance effectiveness. In particular, we need new ways of creating the self-confidence mothers need to adopt new behaviours and participate actively in maternal-child health programmes.

Summary

Women play a major role in producing food, generating household income, childbearing and rearing, and in overall household production. Throughout their life cycles, poor women experience role stress because of conflicting time, energy, and economic demands made on them. Biological roles of pregnancy and lactation often compete with physical labour for women's nutrient intake and reserves. Women's economic activities compete for their time with child care, home production, and other social roles. Women may also find conflicts between their biological needs and the ideal woman defined by culture. Her nutrient needs may be belittled, her need for rest derided, her desire for widely spaced children overridden. Because poor women lack resources, these conflicts engender a zero sum game; any extra effort devoted to one of her roles (economic,

biological, or social) detracts from her fulfillment of other roles. Nowhere is this compromise more apparent than in nutrition—women grow food, women's income buys food, women prepare food and breast-feed, women's bodies nourish the fetus and suckling children, women use their physical energy for work, and women are responsible for prevention and treatment of most illness. To make a positive sum game in nutrition, women need to be able to increase their access to food, reduce the nutritional costs of their role conflicts, and enhance their control over nutrition-related resources.

The programmatic and policy implications of this situation are that to overcome these constraints, women need access to income enhancement simultaneously with access to burden-reducing services and technology. The existence of time lags before income gains are realized implies that women need subsidies, credit, or direct resource transfers during the transition in their income potential. This transition period can be long (in the case of education or institution building) or short (in the case of credit). The most successful projects cited above minimized the conflicts in women's financial responsibilities and time commitments between family and market: providing child care along with occupational training, providing health and child care along with agricultural development efforts, providing for cost recovery and credit along with grain mills. The most successful programmes, in other words, respond simultaneously to women's dual constraints—time and money.

A few key interventions stand out as central:

1. *Promoting good child care.* Through a combination of regulation, training and technical assistance, institutional development, and public subsidies, substitute child care in rural and urban areas should meet women's economic needs and family responsibilities and children's need for health care, nutrition, mental development, and socialization.
2. *Facilitating women's access to credit* through institutional development, supporting savings societies, changing banking practices if necessary, and making loan size and procedures appropriate for women.
3. *Creating demand for women's health, nutrition, and family planning programmes* and harmonizing delivery systems and logistics with women's constraints.
4. *Assuring women's access to and control over technology and other productive resources* through research and development, targeting, training, marketing, and credit. Child survival technology can be a powerful tool enabling women to meet productive and family responsibilities better, but the costs of participation must be appropriate to women's resource availability.

Interventions in these areas promise to help women break out of their time, money, and energy constraints. They create opportunities for a positive increase in available time and energy resources that can improve the nutritional status of women and their families.

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Endnotes

¹ These results represent studies with over 20 women as subjects from low-income countries in Asia and Africa. Approaches for collecting these data vary widely from careful, precise observation of activities to recall of one to seven days of activity. Market work includes all agricultural, wage, animal husbandry, and handicraft activities. Home production includes child care, food marketing/preparation, washing, cleaning, caring for the sick, and other activities traditionally not remunerated. Leisure activities were excluded since their measurement depended on the length of daily observation in each survey.

² Fertility and lactation experiences are reviewed by using nationally representative, comparable surveys conducted in a large number of countries. Results presented here are based on standardized tabulations prepared by the International Statistical Institute in the First Country Report for the World Fertility Surveys. Most of these surveys were conducted in the 1970s. In a technical appendix available on request, we present the methods used to derive the length of time a woman is pregnant or lactating. These results represent a conservative estimate of the number of months of pregnancy because of very low estimates of the number ending in miscarriage or stillbirth. Also we assume that a woman's reproductive life is 35 years, a time longer than the span in many low-income countries. We present results for 27 countries in table 7 and fig. 2.

³ Little is known about the functional significance (e.g., on physical performance in home or market production) of various distributions of dietary intake, weight, or fat composition, *inter alia*.

⁴ A number of researchers, particularly the group involved in a large comparative study of energy requirements during pregnancy and lactation, feel that these RDAs overestimate the women's needs [87, 88]. If their findings are correct, women may not be as undernourished as these data suggest.

⁵ We use weight for height standards for U.S. women with small frames to obtain some sense of the distribution of women in terms of body composition.

⁶ The description of the maternal depletion syndrome began with a broadly based set of factors: physically demanding labour, poor diet, heavy infection levels, and repeated pregnancies. It has narrowed over time [e.g., 120] to a focus on repeated pregnancies and prolonged lactation.

⁷ Brems and Berg [121] hypothesize that many women in low-income countries, particularly those without access to modern obstetrical care, may not adequately increase their diet during pregnancy. In fact, in many cases they hypothesize that they may decrease it because of fear of delivery complications felt to be associated with pelvic disproportionality. 'Eating down' during pregnancy, they feel, may be a rational response. This hypothesis is unexplored. Brems and Berg cite a set of anthropological studies documenting beliefs on food avoidance or reduced weight gains during pregnancy; unfortunately none has documented the impact of these beliefs on dietary behaviour [cf. 52].

⁸ More systematic research on this question following a more comprehensive biological model and using longitudinal research on 3,000 Filipino women is being conducted by Linda Adair, Eilene Bisgrove, and Barry Popkin. Initial multivariate findings indicate a strong relationship between duration of lactation and postpartum weight loss.

⁹ Researchers on this topic ignore some crucial issues, including the sequencing of maternal work and child-care outcomes and the nature of the decision-making processes concerning maternal work and child-feeding decisions. If women make decisions jointly to work and to cease breast-feeding (or other feeding choices), if women go to work because they need to try to improve poor child nutrition, or if women who work away from the home have less concern for infant well-being than those who select jobs compatible with child care-jobs that are lower paying-then poorer child nutrition would be associated with women's work but it would not be women's work per se which has caused these relationships. These issues must be considered before we can understand if and how women's economic roles conflict with child-care roles. These shortcomings and problems must be considered in examining the broad sets of conclusions found by the numerous studies on this topic [cf. 134, 135].

¹⁰ It is not clear if these 202 societies are representative of modern Third World societies. Data came from the Human Area Relations file representing predominantly isolated rural groups.

¹¹ See Pollitt, *et al.* 5 [165] for Indonesian tea pickers and Satyanarayana, Naidu, and Rao [184] for Indian factory workers.

¹² These Gambian women reported having more energy as a result of these nutritional status improvements.

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Comments

Reaching Women: Education and Nutrition

Comments by Dr Adwoa Steel¹

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As McGuire and Popkin's comprehensive paper on the factors affecting women's nutrition makes clear, the determinants of women's nutrition go beyond what is traditionally termed "health" or "medical" concerns. One issue raised is the question of "how to reach women" and the need for research to find out how to deliver what they need and convince them of their need. I will focus my comments on this issue of effectively reaching women.

Poor women, like all women, need to manage efficiently the resources that they have. The fact that their resources are meager makes it even more important that they have the knowledge, understanding, and self-confidence to make choices that are beneficial to their own well-being and that of their children. In many societies making the right choices for themselves and their children means going against tradition and "their place" in their world. Studies in some populations show that men's dietary intake goes much farther in meeting their daily caloric requirements than women's and children's. This finding indicates that the women – who distribute the family food – lack the knowledge or the self-confidence to appropriate their fair share. Similarly, lack of understanding of the reasons behind recommended behaviour changes leaves women unconvinced and probably plays a part in some recurring cases of poor nutrition following treatment.

Complementary education

The enormous strides made in preventing deaths have not been accompanied by commensurate improvements in nutritional status. Even mothers who habitually use health services may not necessarily make lasting changes in their daily health habits. They may not even be aware that they and their children are malnourished. Without the right type of education, they may not understand how their eating habits affect their health and nutrition status.

As important as health and other technological interventions are to their well-being, women may not reap the full benefits without complementary educational input. While the level of female schooling has often been found to be positively correlated with better nutrition, this is not always the case. Given that differences in educational content may account for some of the inconsistent findings, we need to investigate what educational approaches are most likely to lead to beneficial health and nutrition practices.

Making education relevant to health needs

Can we use education, both formal and informal, to make health and nutrition information understandable and acceptable, in a way that enhances women's self-confidence and encourages healthy practices? Answering this question is, I believe, at least as important as finding ways to increase women's resources. Better understanding of their nutrition problems may enable women to set priorities and make more effective use of the resources they have.

FORMAL EDUCATION. Formal classroom education can be a starting point for understanding the rationale behind good health and nutrition practices. The curriculum should be based on the needs of the country. For instance, schools can begin showing children proof of health hazards – preferably early in their schooling before many children (especially girls) drop out of the school system. Demonstrate to young children that there are some things in the air they cannot see. An understanding of the need to wash hands can be achieved even without microscopes: leave a piece of bread out in a tropical climate for a few days, and something will grow! Make children aware of the effect of poor diet on growth by showing them pictures of the growth of well-fed animals compared with that of animals on limited diets.

Health personnel can work with educators to produce innovative curricula that demonstrate the benefits of healthy practices. Given a good foundation, even those girls who later drop out of school can apply their knowledge when they are advised as mothers to wash their hands to avoid infection. Ironically, poor village women without education are expected to behave differently from the learned scientists of the last century who debated and demanded proof of the existence of germs.

Informal education

For maximum acceptability, information should be adapted to build on cultural practices that can be beneficial. For instance, the Akans in Ghana customarily give new lactating mothers extra foods that are believed to restore their strength and produce more milk. This concept can be used to explain that a woman needs extra food all through lactation or at least be encouraged to eat more food when the child's main diet is breastmilk. This type of message could be transmitted informally through workers in clinics and maternities or perhaps by influential persons in the community. Information on the growth of their children can be shared with communities (or countries) through appropriate channels to stimulate a demand for change. This requires attention not only to what the need is, but who can be trained and how they should be trained to provide the information to fit into the cultural context.

Even largely literate societies need to search constantly for the most effective approaches to informal health education; all the more so in illiterate populations where certain health concepts may not even exist. Too often educating women for better nutrition is reduced to a list of commands without any explanation that is meaningful to the woman's frame of reference. But when informal education is built on careful assessment of cultural beliefs and perceptions, education alone – as shown in the Indonesia Nutrition Communication and Behaviour Change – can motivate women to improve nutrition at a lower cost than is possible through other means such as food supplementation. Even among the poor, education may enable them to make better choices for better nutrition.

EXTENDING EDUCATION. In extended family situations, the first line of informal education for young mothers is the older women they live with. When only mothers are made the target of education, they require tremendous self-confidence to refuse doing something that their own mother or grandmother thinks is necessary. Young mothers find it difficult to practice what they are taught if they have opposition in the home.

When a mother is told to give more of the family fish to her children, she may risk making her husband angry! What does a well-informed pregnant mother say to a mother-in-law who insists on certain eating practices – that she is ignorant? As important as it is to target mothers to change inappropriate behaviour, we need to understand the culture well enough to bring the grandmothers, husbands, and mothers-in-law into the informal education system when they influence nutritional practices. Otherwise we may be ineffective or, at best, cause family strife.

Conclusion

We cannot afford to put all our resources into interventions that ignore education or be content with ill-adapted educational methods that do not work if we want to help make permanent changes for better nutrition. The paper by McGuire and Popkin moves us in the right direction by raising more than "pure" nutrition issues. I believe that the role of education and ways health workers can work together with other disciplines deserve similar serious consideration.

Education must enhance women's understanding of how to use the resources they actually control to make lasting behaviour changes that their children can emulate. It is time to emphasize approaches that help women understand the need for change while boosting their self-confidence to take responsibility for improving the family's health.

Women's Nutritional Poverty

Comments by Ms Nadia Youssef²

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Women's nutritional poverty is an issue which is often neglected in development programme thinking and action. The Symposium on Women and Nutrition used the position paper written by Dr McGuire and Dr Popkin entitled *The Zero Sum Game* as a focal point for the analysis of the health and nutritional well-being of women **in their own right**. Taking this position paper as a frame of reference, but extending beyond it to the development of larger policy strategy directed at improving women's nutritional status, two important issues emerge for consideration. They consist of the relationship between increased resources and women's nutritional well-being on the one hand, and the implications inherent in the definition of women in the context of "motherhood" versus "women in their own right" on the other. Translating the commitment to improve the nutritional status of women into appropriate programme action must involve a re-think of accepted strategies.

The first issue concerns the relationship between women's increased resources and their nutritional well-being. This relationship may be a problematic one. Increased productivity of women does not always lead to the increase of women's economic influence or give them greater control over income. Increased economic influence – if and when accrued by women, though leading to expenditure patterns favouring children's nutritional input, **does not in many cases** result in impoverished women taking better care of themselves in seeking to improve their own health and nutritional condition, unless other very significant transformations are taking place. Such transformations ideally involve three steps.

- Women must develop the ability to question their situation and recognize the extent to which their condition – in general – has been negatively affected by poverty-generated fatalism and culturally imposed self-denial.
- Women must develop the ability to attain a **revised positive perception** of themselves. Women's positive perception of themselves is a critical variable that may need more attention than the conventional nutrition programmers realize. Planners may not take account of the patterns that influence women's self denial and of the effects of this denial on women's health. These patterns are influenced by socio-cultural, psychological, and religious forces which are, due to "compartment thinking", generally considered to be beyond the scope of nutrition interventions.
- Women must be motivated to take action to improve their situation by demanding programme responses to their needs.

The second issue to be considered is the **mother** versus **women in her own right** nomenclature. The crusade to rectify women's nutritional poverty should not fall into the **motherhood** trap. To gain recognition, legitimacy and response, the women and development movement since 1975 has often had to compromise the **women-in-her-own-right** principle by emphasizing on the one hand the production value of women to economists in their role as contributors to GNP and, on the other hand, the maternal value, to the social service delivery community, of women as **mothers**. It should no longer be necessary to present such justifications in order to argue for the imperative action which is needed to reduce the life threatening circumstances which threaten women's well-being. Women-directed nutrition policy and programme objectives need to be guided by a **life cycle approach**. Intervening pressures over the totality of a woman's life span need to be identified. Too much of the nutrition literature draws on maternal health, maternal depletion and maternal mortality as either causes, consequences, intervening mechanisms or indicators of poor nutritional status. This is not only simplistic, but it detracts from important interventions that are not maternally related. Child-bearing, and in certain cases breast feeding, are significant contributions to impoverished health, because of associated nutritional stresses. Yet we must also take into account and carefully trace the total configuration of discriminating antecedents in a woman's life that cause nutrition-related problems. These are not necessarily grounded in maternity; they are, however, exacerbated by childbearing.

If nutrition programmes for women in all age groups are to succeed, this cumulative effect principle needs to be stressed as a central organizing principle, both conceptually and operationally.

Regarding future directions, programme strategies should aim to combine nutrition research with programme action. This means investing resources into action-oriented research on nutrition, to be undertaken on project site, and to incorporate the findings thus obtained into a dynamic formulation and delivery of a comprehensive nutritional and health programme for women of all ages.

This strategy is particularly relevant to projected nutrition and primary health projects where an investigative on-site research component can be built in at the early planning stage to assess, study and investigate, among the project population, the presence and magnitude of nutritional and health risks that we know of today as being particularly critical, and the **uncovering** of others of which we know little.

Action research undertaken within a project context among a well-defined recipient population should be effective in furthering knowledge systematically and filling in data gaps, precisely because so many intervening variables can be controlled, enabling the monitoring of progress and systematic comparability. This strategy also allows for the development of a more systematic method of data collection and the recording and sharing of information.

A second strategy involved the revamping of some social intervention programmes to be more conscious of women's nutritional needs. These need to be restructured and expanded to offer a public education component that would inform female adolescents and adult women about their reproductive and non-reproductive needs, and how, within the context of their situation, they can realistically respond to these.

Women need to be literate to be informed about differences between societies in the kind of practices and traditions followed and how these societies can discriminate and endanger the survival chances of the female infant child, adolescent and adult. Bringing the facts and numbers regarding the incidence of women's illness, death and survival in other parts of the world into a public education project can be an awakening, and often is the initial step for some women towards becoming motivated to improve their own nutritional and health situation.

In sectoral nutrition and health projects as well as in social intervention programmes, priority in programme attention and restructuring along the lines proposed needs to be given for those countries that score highest in female infant mortality rates, and lowest in female life expectancy. Such rates are clear indicators of a low social investment in girls/women. In Afghanistan, Benin, Cameroon, Malawi, Mali, Mozambique, Nepal, Nigeria and the Yemen, one woman in five will die between the ages of 15 to 45. In contrast, a corresponding statistic would be one in a hundred for western countries.

Significant sex disparities in infant and child mortality are evident in Africa, some regions of India, Pakistan and Bangladesh, and in Afghanistan and the Yemen. Health and mortality statistics provide compelling evidence of a differentiation of attitudes and practices according to whether an individual male or female. Although sometimes failing to disaggregate statistics by sex, particularly in health and nutrition surveys, statistical information still converges to reveal systematic discrimination patterns that result in increased vulnerability of females to nutritional risk, early morbidity, depletion and death. Both quantitative and

qualitative information abound to demonstrate that in several – by no means in all societies – less breastfeeding, less food, less attention, less preventive and curative health care as well as less of the other social benefits which enhance survival chances are being accorded to girls when compared to boys. Many of these discrimination patterns follow women from infancy, through adolescence, into adulthood, and old age. Women, in fact, often perpetuate practices against themselves and against their own daughters.

Trends and tendencies regarding sex equity should be monitored in countries where the *Health for All* movement is applied. Action-oriented scholars have called upon development agencies to measure and monitor gender inequality and identify more systematically countries where girls and women are a disadvantaged group because of the nutritional and health risks they confront.

WOMEN AND NUTRITION: REFLECTIONS FROM INDIA AND PAKISTAN

By Meera Chatterjee and Julian Lambert¹

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Introduction

In 1987 India and Pakistan had a total population of 913.1 million, which is considerably greater than that of all 49 countries of Africa (587.9 million). Of these, 440 million were female, 200 million being women of childbearing age. Uttar Pradesh, India's most populous state, alone had a population of 128.5 million, which is significantly greater than that of Africa's largest country, Nigeria, with a total population of 101.9 million (1987).

India and Pakistan have both made rapid gains in food production in the last two decades as a result of the green revolution, although these gains have been offset by rapid rates of population growth. In India, per capita food availability has been sustained, while in Pakistan the number of calories available per person per day increased from 2200 to 2348 between 1970 and 1986. However, these increases in overall food supplies have not been accompanied by any significant reduction in the amount of malnutrition among either women or children.

Besides high general death rates and infant and child mortality rates, both India and Pakistan have high maternal mortality rates. The number of pregnancy-related deaths every year in these two countries is estimated to be 166,000, or 450 per day. Accounting for 45% of all maternity deaths in the world, the maternal mortality rates of India and Pakistan (500 and 600 per 100,000 live births, respectively) are 250 to 300 times those of developed countries such as Canada (2 per 100,000) (UNICEF, 1989). These differences are far greater than those observed between these countries' infant and child mortality rates.

Malnutrition plays a key role in maternal mortality, just as in infant and child deaths. In 1965, a WHO Expert Committee on Nutrition in Pregnancy and Lactation wrote, "Next to young children, pregnant and lactating women are nutritionally the most vulnerable group, especially in the developing regions of the world, and yet comparatively little is known of their special nutritional needs." (WHO, 1965). Regrettably, little has changed since then and maternal malnutrition remains a major problem in India and Pakistan, where the majority of women are in a constant state of nutritional stress, beginning in childhood, then adolescence, and continuing through the childbearing period which often commences before growth has ceased, and consists of a continuous cycle of pregnancy and lactation, all too often resulting in premature death. Chronic protein-energy malnutrition, iron-deficiency anaemia, and deficiencies of iodine and vitamin A are among the common nutritional deficiencies that affect women in the two countries.

In this paper, we take the liberty of discussing the nutritional situations of women in India and Pakistan together, as the similarities appear to outweigh the differences. Occasional inferences are also drawn from Bangladesh. The paper is concerned with both the nutritional **status** of women and their nutrition-related **roles**, as these two aspects of "Women and Nutrition" are clearly inter-related. Through their diverse "nutrition-related roles" women influence the nutritional status of **individual** household members (for example, through child care) and of the **household as a unit** (eg. by earning). As women are members of the households in which they acquire, cook, serve, consume and store food, their own nutritional status is the **effect** of the exercise of these roles and of the ensuing 'household nutritional status.' While a woman's

nutritional status is part and parcel of her household's nutritional profile, it is also a **cause** of the household's nutritional status, as a woman's performance of her "nutrition-related roles" depends, for example, on her 'energy level.' Socio-economic and socio-cultural factors (such as income, literacy or traditional beliefs) simultaneously influence both women's nutritional status and their nutrition-related roles. In the Indian subcontinent, the apparent contradiction between women's primary responsibility for household nutrition (eg. food preparation, health care), and their own serious malnutrition renders a simultaneous examination of these two aspects particularly interesting.

Women's Nutritional Status

A discussion of women's nutritional status can encompass both **absolute** levels of nutrition among women, and their nutritional status **relative** to men, i.e. issues of **discrimination** between males and females in nutrition-related matters (such as feeding and health care) and consequent gender **differentials** in nutritional status. These aspects are, of course, intimately related.

Nutritional Levels

In India, the National Nutrition Monitoring Bureau (NNMB) collected data on household and individual food consumption, and individual nutritional status (judged by anthropometric and clinical indicators) during the late 1970s and early 80s in ten major states of the country on a sample basis. In a representative year (1979; there are no discernible secular trends in these data), 41% of households were "calorie inadequate" in the national aggregate, and 19% were short of **both** calories and protein (NNMB, 1980). In the different states, calorie inadequacy varied from 23% of households in Andhra Pradesh in the south, to over 65% in Uttar Pradesh in the north. The percentages of **individuals** who were "calorie inadequate" were consistently higher at the national (46%) and state levels (range: 28 to 70%), suggesting that in a proportion of households (variable across states), whereas the total food availability was adequate for all members combined, there was inappropriate distribution so that **some individuals bore a disproportionate burden of deficit**.² This is likely to be true also of those households where food (calorie) availability is inadequate in the aggregate.³ From other evidence we know that the burden falls on children, and possibly on women.

² A single exception to this is Uttar Pradesh which had 65% calorie-inadequacy at the household level (the highest among all the states), but 54% at the individual level (fourth highest of ten states surveyed). Although the deficit of *inadequate* households is not discernible from the published NNMB data, U.P. had the lowest average calorie consumption per consumer unit (1983 Kcals per CU per day, compared with the Indian recommended intake of 2400 Kcals). Thus, a tenable explanation that emerges is that, in the face of high household food deficits, greater 'equity' is achieved between individuals because survival is at issue (see later in this paper).

³ Another possible explanation for the higher percentage of calorie inadequacy among individuals than households could be that the households that are calorie inadequate account for a larger proportion of individuals, i.e. that their size is significantly larger than that of calorie-adequate households. However, there is no evidence of this from these data, nor any suggestion of it in other data known to us. The 'deviance' of U.P. from the other states' pattern would also lead one to discount a household-size explanation, as U.P. is known to have larger households than many other areas covered by this survey.

The NNMB data (pooled over 1975–78) establish the poor nutrition levels in the Indian population (NNMB, 1980). As one would expect, calorie inadequacy is consistently greater among children than among adults. In children below 13 years, at least 80% have intakes less than levels recommended for their respective ages. (Unfortunately, gender-specific data are not available under 13.) Among 13–18 year old girls, over 80% consume less than the recommended calories; among women over 18 years, 60% of those engaged in "sedentary" activity and almost 70% of those engaged in "moderate" activity have intakes below the relevant RDAs. Over 75% of pregnant and 80% of lactating women engaged in "sedentary" activity consume less than recommended, while 100% of "moderately" active women in both physiological categories fail to achieve recommended levels.

Table I. Distribution of Population (Pakistan) in Different Sub-Groups according to Percent of Calorie RDA Consumed: percent of population group in cells

Percent of RDA	Adult Males	Adult Females	Pregnant	Lactating
Less than 70%	27.3	25.6	22.0	19.9
70–79%	12.9	8.9	18.5	12.1
80–89%	12.6	13.3	10.2	14.7
90–99%	10.4	12.8	8.5	13.7
100–109%	8.1	4.4	11.9	9.5
110–119%	6.1	7.9	3.4	6.9
Above 120%	22.7	27.1	25.5	23.2

Source: Planning Commission (Pakistan), 1979

Table I shows the average daily intake of calories among adults in Pakistan. Approximately 60% of the adult population consume less than the recommended daily allowance, and around 40% consume less than 80% of the RDA.

Gender Differentials

The Indian NNMB data reveal a mixed picture of male–female differences in mean caloric (and protein) intakes. In 1982, girls in the 13–16 year age–group consumed much less than boys, and only two–thirds of their recommended calorie intakes (in all states surveyed except Karnataka) (NNMB, 1984). While 16–18 year–olds fared slightly better than boys, they were still consuming below their requirement. Earlier data (1979) showed no significant differences in the "calorie adequacy" of males and (non–pregnant/non–lactating) females over 18 years old (NNMB, 1980). While no data are given in this year for pregnant women, lactating women are more calorie inadequate than their non–pregnant/non–lactating counterparts.

An examination of **percentile values** of calorie intakes expressed as percentages of recommended levels among 13–16, 16–18, and over 18 year–olds (in pooled 1975–78 data) reveals no major differences between males and females (NNMB, 1980). Only among pregnant and lactating women were these values lower than males, as well as lower than non–pregnant and non–lactating women. On the other hand, the data from the Pakistani Planning Commission do not reveal any consistent differences in the distribution of adult males and females in different calorie consumption categories, nor between pregnant, lactating and "other" adult females (Table I).

Micro–Nutrient Deficiencies

IRON Pooled 1975–78 data on food consumption from the Indian NNMB (1980) show that girls between 13 and 18 years of age obtain lower percentages of the recommended levels of iron than do boys in the same age groups (Table II). With the onset of menarche, young girls are highly susceptible to anaemia in the absence of adequate dietary iron. The prevalence of anemia among women in India is extremely high, as shown by a study conducted by the Indian Council of Medical Research (ICMR) in four areas of the country (ICMR, 1982). It was found that over 95 percent of 6–14 year–old girls in the Calcutta area were anaemic, around 70 percent in the Hyderabad and Delhi areas, and around 20 percent in the Madras area.

Table II. Percent of Recommended Levels of Iron Consumed by Different Age–Sex Groups in Different States

	Percent of Recommended Levels of Iron	
	13–16 Years	16–18 Years

State	Male	Female	Male	Female
Andhra Pradesh	68	56	87	77
Gujarat	85	63	95	59
Karnataka	150	93	156	98
Kerala	54	45	72	43
Madhya Pradesh	80	63	93	70
Maharashtra	108	70	130	76
Tamil Nadu	96	63	99	67
Uttar Pradesh	110	53	130	69
West Bengal	103	58	119	55

Source: NNMB (1980)

Anaemia is also common in pregnancy, frequently caused by a combination of low iron intakes and poor absorption, exacerbated by malaria and hookworm infections. In some poor communities in India, 80–90% of pregnant women may be anaemic, while nationally more than 50% of women may be affected. A national survey in Pakistan in 1976 found over 54% of pregnant women to be anaemic (Planning Commission, 1987). Between 40–50% of maternal deaths may be associated with anaemia or the resultant increased dangers of hemorrhage. Agarwal *et al.*, (1988) in Varanasi treated 119 pregnant women with 60 mg iron and 500 mg folic acid daily for 100 days and improved their hemoglobin levels by 1.6 gm % (compared with a fall of 0.3 gm % in a non-treated group). They found that birth weights increased significantly between the supplemented group (mean = 2.91 kg) and the placebo-treated control group (mean = 2.59 kg).

IODINE. An estimated 200 million people in India and Pakistan are at risk of iodine deficiency disorders. Of all micro-nutrient deficiencies, a shortage of iodine in pregnancy has the most far-reaching consequences. In some seriously affected areas in the Himalayas, 80% of the population suffer from goitre and up to 10% of newborns may be cretinous.

Iodine deficiency disorders also have a significant impact on rates of spontaneous abortion, still-births, and infant and neonatal deaths. The dramatic effects on perinatal and infant mortality, and on birth weights and the development quotients of the children, of a single iodized oil injection given at the start of pregnancy were demonstrated by Thilly (1983) in Zaire (Table III). If administered early in pregnancy or preferably prior to conception, iodized oil gives guaranteed results. Given that cretinism is irreversible, and that an iodized oil injection is low cost (35 cents) and has an effective span of 5 years, the eradication of iodine deficiency disorders can be high on a list of priorities.

Table III. Effect of Injection of Iodized Oil Given to Women During Pregnancy (Zaire)

	Not Treated		Treated	
Birth Weight (grams)	2634 (SD = 552)	(98)	2837 (SD = 542)	(112)
Perinatal Mortality per 1000	188	(123)	98	(129)
Infant Mortality per 1000	255	(263)	167	(252)
Development Quotient	104 (SD = 24)	(66)	115 (SD = 16)	(72)

Number of subjects is in brackets

All differences between treated and non-treated were significant

Source: Thilly (1983)

Synergistic Effects on Nutritional Status of Gender and Poverty

The effects of gender and poverty on nutritional status may be **synergistic**. In an economic analysis of malnutrition among **young children** in Punjab, Levinson (1974) found that, while gender was the most statistically significant determinant of nutritional status, male–female differentials in nutritional status were especially great among the lower socio–economic/caste group. Nutritional status among the higher, land–owning caste was better on the whole, and the gender differential was also smaller.

In Levinson's study, gender had a highly significant effect on caloric intake among the study population as a whole, and on diarrhoeal disease rates among the economically better–off, with females having lower intakes and exhibiting higher rates of infection. Although both high and low socio–economic groups discriminated against females in breastfeeding practices, girls in the better–off households consumed as many calories and more protein, iron and "supplementary food" as boys because food resources were not scarce among these families. Among the poor, however, discrimination against female children, coupled with inadequate purchasing power meant their young girls had lower caloric intakes, consumed less supplementary food, and less solid food compared with boys. This resulted in considerably higher mortality levels among low–caste female infants (IMR = 196 per 1000 live births) compared with males (125 per 1000), documented in a contiguous study area (Kielmann *et al.*, 1983). Levinson ascribes the greater vulnerability of girls to differentials in the care and upbringing of sons and daughters: "These differences reflect an economic as well as a cultural premium placed on living sons...(while) daughters are considered unproductive and an expensive economic drain, particularly the cost of dowry when they marry." This socio–cultural attitude considerably influences household nutritional care of girls in their natal homes, and is carried to varying degrees into marital – daughter–in–law, wife and mother – situations.

A few studies (eg. Ghosh *et al.*, 1982) have documented deterioration in nutritional status (cross–sectionally) as females grow older, the combined result of socio–cultural, economic and biologic processes. Gender differences in adult nutritional status also appear to be exacerbated by poverty, as McNeill (1984) demonstrated in Tamil Nadu.

Regional Variations

In addition to the national surveys cited above, a number of smaller household dietary intake studies in different parts of the Subcontinent provide information on differentials between males and females by age, socio–economic status, region and season. A 'mapping' of these studies shows that nutritional 'equity' between males and females is lower in north India and improves towards the South. While in Rajasthan, a northern state, all children under 12 and adult women were deprived of their fair nutritional "shares" relative to adult males as well as to the applicable RDAs, the gender differential disappeared among adults in the western states of Gujarat (except for lactating women) and Maharashtra, and the southern states of Andhra Pradesh and Tamil Nadu (Harriss, 1986). However, even in the latter areas, preschool girls tended to be worse off than boys, and some gender differentials occurred seasonally. In most instances, adolescent girls appeared to be as well – or sometimes even better–off than their male counterparts. In the East (including Bangladesh), the situation was similar to that found in Rajasthan, but the nutritional deprivation of women appears to be **economically** rather than culturally mediated, as "work" plays a significant role in female undernutrition (see below). Regional variations are also seen in Pakistan, with higher rates of malnutrition among women in Baluchistan and Sind compared to Punjab and the North–West Frontier Province. In essence, the social and economic value of women underlie regional variations in their nutritional status and in male–female differences in nutrition.

Socio–Economic Differentials

While not permitting an examination of gender differentials within each socio–economic category, the NNMB's dietary intake surveys document lower food consumption in households without land, compared with landowning households; among those who possessed land but did not grow crops in the reference year, compared with those who did grow crops; among labourers and "others" (village artisans and petty businessmen), compared with cultivators; and among Scheduled Castes and Tribes, compared with non–scheduled groups (NNMB, 1980). Thus, women in these groups are likely to be at the greatest risk of

malnutrition.

Dietary Intake vs. Energy Expenditure

There is some evidence that while women get a 'disproportionately' small share of household food, they may expend a larger proportion of 'household energy'. A few studies (Jain and Chand, 1979; Batliwala, 1982; Khan *et al.*, 1982) suggest that women work longer hours and expend more energy than men. Batliwala (1982) estimated that women had a shortfall of 100 calories a day on an average if their physical activity in paid and unpaid domestic work were considered altogether, while men had a surplus of 800 calories (in 560 households in six Karnataka villages).

Economic Crises

In times of extreme food scarcity, female access to food is more circumscribed than that of males. A survey of some flood-hit West Bengal villages in 1978 showed that females of all ages up to 72 years had higher rates of malnutrition than males (Kynch and Sen, 1983). The female/male ratio of malnourished 0–5 year olds was 1.07. If only moderate and severe malnutrition were considered, the ratio rose to 1.40; and it was 1.59 among severely malnourished children alone. These data suggest that females were both more at risk of malnutrition and more severely affected by it. They also point, as before, to the synergistic effect of impoverishment and gender bias, which has been documented in Bangladesh as well (Bairagi, 1986).

Some Demographic Influences on Gender Discrimination

Discrimination against female children appears especially acute in the case of girls born into families who already have a surviving child, particularly among low socio-economic groups (Das *et al.*, 1982), a finding that is supported by the observation of higher mortality risk among girls of high birth order (Das Gupta, 1987). The shorter period of breastfeeding of girl children in turn increases the likelihood of ovulation and subsequent conception by their mothers. Shorter birth intervals after female births compared with male births have been documented by Haldar and Bhattacharya (1969). The increased risk of malnutrition and mortality to these female children is accompanied by further nutritional depletion of their mothers.

Effects of "Development" and the "Demographic Transition"

A comparison of data from studies in the Punjab in the 1970s and '80s reveals that the social discrimination against young girls in matters of nutrition has persisted despite the agricultural growth and economic development experienced in the area. Das *et al.*, (1982) found that 24% of female children among "privileged" families were malnourished, while 74% among the "underprivileged" suffered from malnutrition. Among male children, the percentages were: 14 among the privileged and 67 among the underprivileged. Das Gupta's finding (1987) that the gender differential in food consumption among 0–4 year olds was higher among **landed** than among landless families is instructive. Furthermore, the selective discrimination practised against second or higher birth order daughters **particularly among the better-off who aspire to smaller families** suggests that the "demographic transition" that has occurred in the region may have worsened the status of the female child, as mothers continue to be under severe pressure to bear and nurture sons.

Even development at the "micro-level" may have negative repercussions. An in-depth study of two villages in West Bengal (Sen and Sengupta, 1983) demonstrated that the 'inequitable' distribution of "development benefits" exacerbated *a priori* differentials between males and females. Following land reforms in one of the study villages, the proportion of people owning land increased, and undernourishment among 0–5 year olds decreased. However, despite better overall nutritional levels, this village showed sharper gender differentials in anthropometric status, as only boys' nutrition improved, while girls' nutrition in this village remained on par with that of girls in the "underdeveloped" village. In sum, the economic benefits accrued selectively to boys. The finding of this study that a supplementary feeding programme helped to partially overcome the sex bias in nutrition is significant for policy and programmes.

Some Consequences of Female Nutritional Deprivation

Physical Underdevelopment

A major consequence of girls' nutritional deprivation in early childhood and adolescence is their failure to achieve full growth potential. A majority of girls from low income families reach adolescence about 12–15 cms shorter than their well-to-do peers in the same society (Rohde, 1987). The National Nutrition Monitoring Bureau's data on Indian women's heights and weights show that between 12 and 23 percent of 20–24 year-old women in the different states surveyed had heights below 145 cms; and between 15 and 29 percent had weights below 38 kg (NNMB, 1980). The percentages were even higher among younger girls – eg. 49 percent under-height and 67 percent under-weight among 15 year olds in Kerala – who have not yet completed their adolescent growth spurt, but who may yet marry and bear children at this early age. Girls who bear a child before the close of the adolescent growth spurt may remain physically underdeveloped and hence are at greater risk of obstetric complications, obstructed labour or maternal death, as well as of bearing low birth weight infants. During pregnancy, women's access to food is often restricted through the taboos and rituals observed in traditional Indian and Pakistani households. Besides low maternal pre-pregnancy weights and inadequate weight gains during pregnancy, low birth weights are also related to low hemoglobin levels, so that the high prevalence of anaemia adds to the negative outcomes of childbearing.

High Maternal Mortality

In developing countries overall, maternal mortality accounts for some 25% of deaths in women of childbearing age, compared with 1% in the U.S. Worldwide, WHO has estimated that 250 women die every four hours due to problems associated with childbirth. In India, deaths due to pregnancy and childbirth accounted for around 12.5% of deaths among rural females aged between 15 and 45 years in 1986 (Office of the Registrar General, 1988). While the aggregate national maternal mortality rates are estimated to be around 500 and 600 per 100,000 live births in India and Pakistan, respectively, rates over 1000 have been recorded in certain parts of these countries. These rates contrast with the range of 1 to 15 maternal deaths per 100,000 live births in developed countries. In comparison with this up to 1000-fold difference, the difference between the lowest and highest recorded national infant mortality rates in the world is around 25-fold.

High maternal mortality in India and Pakistan is a reflection of women's undernutrition, poor health status and high fertility. Poverty, low rates of female literacy, and poor access to or utilisation of health services are some of the underlying factors. Several common causes of maternal deaths are related to malnutrition, particularly to anaemia, while other serious causes, such as toxemia and septicaemia, reflect the inadequate health care available to women in the ante-natal, intranatal, and post-natal periods (see below). Some research in India found that for each maternal death there were 16.5 cases of illness related to pregnancy and childbirth, most of which would go unattended.

Low Birth Weights and High Infant Mortality

In both India and Pakistan, an estimated 25–30% of babies are under 2500 grams at birth, and low birth weight is a significant factor underlying their high infant mortality rates (eg. 105 in rural areas of India in 1986). From a retrospective study of over 10,000 perinatal deaths, Mehta (1980) found that 75% were associated with weights of less than 2500 grams.

Poverty exacerbates the problem of low birth weight for poor women have both a 'nutritional handicap' and inadequate access to food during pregnancy. For example, Ghosh *et al.*, (1982) found a 35.5 percent incidence of low birth weight among babies born to poor, short women, compared with 24 percent among those born to poor women over 145 cms in height, and 15 percent among babies of better-off, taller women. A detailed study of 5914 live births in Pelotas, Brazil found that although low birth weight infants were more common among low income mothers, low birth weight was a much more important determinant of infant mortality than income *per se* (Victoria *et al.*, 1986).

In India and Pakistan, low food intake during pregnancy is a major problem. Numerous studies have found that women consume little or no extra food during pregnancy, and may even consciously limit their intake in the fear of developing large fetuses which would make labour more difficult, given small pelvic sizes. Food taboos often deprive women of protein and iron sources, as well as reduce calorie availability. Fetal growth in India is similar to that among Caucasians until the last 5 to 6 weeks of pregnancy, when fetal weight gain significantly slows (Table IV). In addition, the average gestational age for Indian infants is 38.5 weeks.

Table IV. Mean Birthweights of Newborns

Gestation in weeks	Grams		
	Baltimore	New Delhi	Varanasi
28	1050	922	1005
29	1200	1177	1128
30	1280	1326	1255
31	1560	1499	1405
32	1750	1608	1575
33	1950	1941	1755
34	2170	2052	1955
35	2390	2250	2145
36	2610	2421	2345
37	2830	2691	2528
38	3050	2760	2690
39	3210	2843	2805
40	3280	2985	2865
41	3350	2911	2860
42	3400	2027	2830
43	3410	3000	2790

Source: Greenwald (1966)

Skewed Sex Ratio

The summary outcome of the higher mortality of females are the sex ratios found in both India and Pakistan – 904 women per 1000 men in Pakistan, and 933 in India, in 1981. In India, women have higher mortality rates than men up to the age of 35 years, the most significant differential occurring in the 0–5 year age–group. Because of the large number of deaths in this age group, they account for most of the skewedness in the sex ratio, and malnutrition is a significant underlying factor in many of these deaths.

Women's Nutritional Roles

Care of Female Children

Gender differences in nutritional status in childhood initiate women's 'nutritional handicap,' and are also evidence of the problems experienced by women (mothers) in the exercise of their "nutrition-related roles," specifically their child care and feeding responsibilities. Although child nutritional status is clearly the outcome of a host of factors, starting with the nutritional status of pregnant women, gender differentials are established during the breastfeeding and supplementation stages. Several micro-studies have observed anthropometric differences in infancy (eg. Gopalan, 1985), which persist through childhood (eg. CARE, 1974). Girl infants are breastfed less frequently, for shorter durations, and over shorter periods than are boys (Das *et al.*, 1982; Ghosh, 1985; Khan *et al.*, 1983), a situation that may be exacerbated among the poor for social and economic reasons. A study in Tamil Nadu found that while male children were breastfed for five months longer than female children on the average, male children in **landed** families were breastfed almost **ten** months more than female children in **agricultural labour** households (McNeill, 1984). Weaned earlier, young girls may not get the required quantities of supplementary food, as described by Levinson (1974). Discrimination against female children in the **quality** of food given has also been shown – in cultures as diverse as those of Tamil Nadu (Devadas and Kamalanathan, 1985) and Punjab (Das Gupta, 1987). Male children receive larger quantities of cereals, fats, milk, and sugar than females. Higher caloric and protein intakes by males of all ages have also been documented in Bangladesh (Chen *et al.*, 1981). The differential feeding of girls is accompanied by lower levels of health care (discussed below), so that they are simultaneously exposed to higher rates of malnutrition and longer periods or more severe morbidity, ultimately resulting in their significantly higher mortality.

Women's Roles as "Providers"

Women also exercise nutritional effects on the household by the **acquisition** of food through work, and by the **preparation** of food for consumption. Thus, women's employment, income and "decision-making power" vis a vis the disposal of their income, on the one hand, and their ability to cook and serve appropriate quantities of food to individual household members (based on **nutritional knowledge** and "autonomy" in 'kitchen' decision-making), on the other, are important determinants of women's nutrition-related roles. Therefore, the performance of these roles is related to women's social and economic status.

Women's Social Status

Women's inadequate dietary intakes and poor nutritional status are founded in the anthropological observation that women and girls eat "last and least," a reflection of the inferior social status they are accorded in Indian society throughout their life cycles. We shall explore their social status through two important manifestations: marriage and childbearing patterns, and educational levels.

Early Marriage and High Fertility

Marriage and childbearing affect women's nutritional status directly, as well as indirectly through associated socio-cultural norms and practices. They also affect women's education and employment, which exert considerable influence on household nutrition. Indian women have one of the lowest mean ages of marriage in the world – 18.3 years (1981) (Office of the Registrar General, 1983), with lower averages obtaining in rural areas and in some states (particularly in the north). These low ages are reflected in the proportions of girls married among younger age groups: almost 8% of 10–14 year olds, and 44% of 15–19 year olds. "Universal" marriage almost obtains by the age of 24 years among women in most states of the country. In Pakistan, the mean age at marriage was 20.4 years in 1981.

Among the correlates of age at marriage, female literacy is paramount, while other factors such as 'general' literacy, per capita income, level of urbanisation, non-agricultural employment and mass media, are also important (Srivastav, 1986). At the state-level, women's participation in agriculture has a **negative** correlation with female age at marriage because higher participation rates are indicative of more "traditional" communities. Thus, where women are married early, they are not only deprived of schooling and the benefits this may bring to nutritional awareness, but they are exposed to the 'double energy demands' of grueling agricultural work **and** of early, frequent and prolonged childbearing.

Early marriage is tantamount to early childbearing because young married women are under considerable societal and familial pressure to "prove" their fertility. This is demonstrated by prevailing age-specific marital fertility rates. In 1978, 17.5% of rural and 19.7% of urban 15–19 year old females bore a child (Office of the Registrar General, 1982). The 15–19 year age group accounted for 8% of births in rural areas; over one-third of all births occurred to women under 24 years of age and two-thirds to women under 29 years (Office of the Registrar General, 1983). Of a 30-year reproductive span, an Indian woman spends 16 years in pregnancy and lactation on an average.

Fertility and Mortality

Early, frequent and prolonged childbearing are associated with higher risks of malnourishment and mortality to both mothers and infants, as discussed above. First births and those over four are particularly problematic, the former also being related to low maternal age and age at marriage. Many first births occur under the age of 20; girls who are married young are more likely to have high order births. Infants born to women married under the age of 18 have almost twice the risk of death compared with infants of women married after age 21 (Office of the Registrar General, 1981). According to the nation-wide 1979 *Survey of Infant and Child Mortality* (Office of the Registrar General, 1981), the high rural infant mortality rate reflected the high proportion of births (20–25 percent) which had a birth order of five or more. Maternal depletion and anaemia are among the factors explaining these relationships.

Another known correlate of high infant mortality is "rapid" childbearing, or closely spaced births. In India, Das (1975) found that the mortality rate among children born between 1.5 and 2.5 years of a previous birth was almost half that of children born within a 1.5 year birth interval. With longer intervals the mortality rate decreased further. A survey by the WHO of 6000 women showed that the mortality of infants born within a year of a previous birth was twice as high as that of infants born after two years of a previous birth (the infant mortality rates in these groups were 200 and 100, respectively) (cited by Ghosh, 1987). A spacing of between 1 and 2 years resulted in an infant mortality rate of 145, while a spacing of 3–4 years reduced the rate even further to 80. A two-year spacing between births could reduce India's aggregate infant mortality rate by 10 percent and child mortality by 16 percent. It would also reduce maternal deaths by lowering maternal "nutritional depletion" and susceptibility to disease. Similar observations have been made in Pakistan, where the IMR was found to be 179 for a birth interval of less than 2 years, compared with an IMR of 92 for an interval of more than two years (World Fertility Survey).

The studies cited above also pointed to another factor important to the survival of infants – mothers' previous child loss experience. Mortality was considerably higher among infants whose mothers had lost a previous child. Child loss shortened the interval between births, and thus most likely aggravated the nutritional status of the mother. It is also related to "maternal competence," an 'intermediate variable' through which socio-cultural and socio-economic factors such as education and employment exert additional influence on women's nutritional status, morbidity and mortality (see below). The compound effects of women's low education, low employment and early marriage are a larger number of births, closely spaced, more nutritionally-depleted women, and a larger number of maternal and child deaths.

Effects of Women's Status on Female Child Survival

There are some discernible relationships between the survival of female children and mothers' characteristics. The sex ratio of children 'ostensibly born' and surviving varies by the age of their mothers, being particularly low among mothers under 15 years (Office of the Registrar General, 1983). The female child of the young mother is at particular risk of death because young women are under the greatest pressure to produce sons. The extent of this pressure is also related to women's economic status. Bardhan (1987) has shown that son preference in India correlates inversely with female earnings across the states. Where women's economic status is low, their social status is enhanced by mothering sons. As mentioned above, Das Gupta (1987) found that second or higher birth order daughters are particularly at risk of death where women's status is low. In her study, the sex differential in mortality was more influenced by birth order than by economic or education levels *per se*.

Women's Education, Fertility and Mortality

Numerous factors, including rural/urban residence, religion, caste, occupation, educational level, household per capita expenditure, and age at marriage, influence fertility, with the effects of the last three being particularly profound. Illiterate women have considerably higher fertility than do literates – more than twice as high among 15–19 year olds and 30% to 50% higher among other age groups in rural areas, with as much variation among urban groups (Office of the Registrar General, 1982). While their higher fertility is in part due to a lower mean age at marriage, other factors, such as higher desired family size, and higher child mortality rates are also important. Literacy results in fewer higher order births, with considerable differences between women having below primary level education and those with five or more years of schooling (Office of the Registrar General, 1982).

Female education is also related strongly and inversely to infant mortality. Using data from the 1979 *Survey of Infant and Child Mortality*, Jain (1984) established that female education and household economic status were important "household-level" factors explaining mortality variations. In India as a whole, illiterate mothers experienced 145 infant deaths per 1000 live births, while those with some education had an infant mortality rate of 101, and those with primary education had 71 deaths per 1000 infants born. In rural areas, infants of illiterate women had a mortality rate more than double that of infants whose mothers had a primary school education (132 and 64, respectively), while in urban areas the difference was reduced to two-thirds higher among illiterate women (81) compared with primary-schooled women (49). This suggests that other 'urban factors,' such as the availability of health services (see below) can partially offset the detrimental effects of female illiteracy on infant mortality. However, poverty may be an over-riding **negative** factor, as analysis of the infant mortality rates of different states shows that while the IMR decreases with increasing female education, the relationship does not hold in some poor states such as Assam and Andhra Pradesh. The relationship between female literacy and infant mortality has been found to hold good in Pakistan as well.

The mechanisms whereby women's education results in lower child mortality have been the subject of some speculation. As child health and survival are enhanced by better hygiene, improved nutrition and feeding practices (of the child as well as of the mother) and timely medical intervention, education may improve women's practice of any of these. Schooling may enable women to take independent decisions and act on them. Educated women may have greater roles in household decision-making, and be permitted by other household members to pursue appropriate strategies. In Bangladesh, D'Souza and Bhuiya (1982) showed that household decision-making does indeed change with the education of women, with greater shares of household resources becoming available to women and children. Clearly, the effects of women's education on their own nutritional status and on that of their children is exerted through their roles as providers of household health and nutrition care.

In fact, when it comes to child nutrition, mothers' knowledge may be more important than income. Bairagi (1980) studied the relationship between child nutrition and factors such as family income, maternal education and birth order. He found that income was not the only constraint on nutritional status, even in the lowest income group. Maternal education had a significant influence on nutritional status, as did the child's sex and birth order. A literate mother used scarce resources better for her child's welfare than did an illiterate mother with higher income. Sen and Sengupta's (1983) study of two villages in West Bengal showed that children with literate mothers fared better than those with illiterate mothers in terms of nourishment. However, these authors suggested that "literacy and prosperity" went hand in hand as the beneficial effect of mothers' education was greater in the village where there was a higher degree of "urban integration". In Das Gupta's (1987) study of Punjabi villages, women's education was associated with reduced child mortality, but she found that education **increased** the discrimination against girls of higher birth order, perhaps because with education women desire smaller families with only one daughter. In the Punjab, education may also increase rather than decrease the quantum of dowry required to marry off daughters because it does not clearly enhance the "economic value" of women.

Women's Economic Status

That women's nutritional status and health are related to their "economic status" is demonstrated both by macro- or regional-level analyses as well as micro- (household) level data (Chatterjee, 1988b). The North-South dichotomy in nutritional levels and differentials discussed above suggests that where females have high economic "value," they receive larger shares of food and health resources; where their economic value is lower, they remain at considerable disadvantage. Regional analyses of health indices other than nutritional status, such as mortality rates or sex ratios, further substantiate this relationship. Two particular

aspects of women's economic value have been related to health status – labour force participation and inheritance of property, including payment of dowry. Bardhan (1974) first hypothesized that greater demand for female labour in the rice-growing Southern region of the country supports higher female survival rates, compared with wheat cultivation in the North. Analysing sex ratios in different regions, Miller (1981) found a clear relationship between high labour force participation rates among 15–34 year old women and young girls' survival. However, in some areas where female work participation was low, such as West Bengal, Assam, Orissa and Kerala, the sex ratios were not unfavourable to females, as "culture" protected females, despite economic backwardness.

Rosenzweig and Schultz (1982) provided further evidence of a relationship between women's work and survival through a two-stage regression analysis of an all-India sample of rural households, first demonstrating a correlation between rainfall and female employment, and then a negative correlation between female employment and the male–female survival differential. Higher female employment in wetland cultivation decreased the difference in the survival rates of males and females. Female employment was more significant than present wealth or parents' educational status in explaining variations in sex-specific survival rates. Significantly, a rise in male employment exacerbated the difference between boys and girls' survival in favour of boys.

Regional differences in female survival are also related to the payment of dowry, a practice which is more prevalent in the North than in the South. Miller (1981) noted that high dowry and marriage expenses were associated with adverse sex ratios. There is also an inverse correspondence between female work participation and dowry – the lower the former, the higher the latter. Thus, in areas where female work participation is low, a daughter's value is considered to be below the cost to parents of her upbringing and marriage, including dowry payments. (The value of domestic labour is not considered as it is perceived to accrue to marital and not to natal families.) The low value attached to young girls underlies lower investment in their education in areas where female work participation and survival are low, marriage costs high, and early marriage and early childbearing the norms.

Effects of Women's Employment through Income

There is some evidence that women's employment has the potential to benefit household nutrition through increasing household income. Gulati (1978) found that daily nutritional adequacy in agricultural labourer households in Kerala was related more to women's employment than to men's employment. She estimated that on days when both the male head of household and his wife were employed, their shortfalls in terms of calories were 11 and 20 percent, respectively, while on days on which the woman was unemployed, the shortfalls increased to 26 and 50 percent. Kumar (1978) found a strong association between child nutrition and mother's income in low-income households, but no significant association with father's income. Female children were particularly dependent on their mother's wages.

Women's Decision-Making Power

Women's employment may also exert influences on household nutritional status through increased women's "status," "power," "autonomy" or "decision-making ability." There is some evidence that women's earnings are spent preferentially on goods and services which improve the health of children, implying an increase in women's decision-making power. For example, a study of women participants in Maharashtra's Employment Guarantee Scheme reported that the nutritional status of children was better when women received the cash or grain payments directly (ILO, 1979). Mencher and Sardamoni (1982) have also reported that where women exercised control over their wages, these were spent on food and other basic needs.

However, women's participation in wage work alone may not guarantee them greater decision-making power. Harriss (1986) found that men made market decisions relating to food in 60 percent of households in three Tamilian villages she studied, and made joint decisions with their wives in another 15 percent of cases, leaving women primarily responsible only in 25 percent of households. In the majority of households women had some say in the "qualitative" issues (eg. the "choice of ingredients"), but did not have much say regarding quantities, regardless of whether or not they participated in wage work.

Other Characteristics of Female Employment

Some characteristics of women's employment, such as seasonality, have important implications for household nutrition. For example, Palmer (1981) reported that pregnant/lactating women often lost weight during peak work (low food) seasons, and infants were summarily weaned at such times. As women's agricultural work tends to be seasonal because of its task-specificity, households that are dependent on women's work for their nutritional adequacy would be especially vulnerable. Seasonal variations in food availability often exaggerate differentials in food intake between men and women. When more food is available, it appears to be preferentially allocated to males, thus increasing the gap. However, in households with low average food availability, women and children are especially at risk during lean periods and may fall below the survival line, as the shortfalls in caloric intake would be exceedingly drastic. Even among slightly better-off households, discrimination against females in the allocation of food renders them more susceptible to malnutrition. The availability of off-season employment and food-for-work schemes may mitigate these detrimental effects of agricultural seasonality on nutritional status to some extent.

Employment and Child Care

Other employment-related factors such as the **location** of work-sites relative to homes, the time spent in work and in travel, the energy cost and ergonomic nature of the work, or the provision of **child care facilities** at work places may also greatly affect women's nutritional status and roles. These factors may, in fact, determine the extent and nature of the "tradeoffs" between women's productive and domestic roles. In their detailed study of an Andhra village, Bidinger *et al.*, (1986) found that employment in the household in general but also of female members specifically, was a major factor affecting the energy intakes of children under 6 years of age, and the equitable allocation of food resources. Female employment was a more significant determinant than income or landholding size. Female labour participation contributed significantly to the dietary intakes of children. The authors hypothesized that working women had more say in food distribution within the family "as male members saw them as more competent." On the other hand, they also suggested that while malnutrition in poor households was due to the lack of food, among medium and big farm families, women who hired and supervised labour had little time for child care, which precipitated some of the severe malnutrition the researchers observed among children in such households in their study. In this context, the contention by Mencher and Sardamoni (1982) that in landless and small farm families women *must* work because men cannot meet household expenses entirely is significant because of the consequent lack of choice afforded the poor family. Among the poor in particular, the additions to household nutrition made possible by women's employment may not totally offset the detrimental effects on child feeding and care of women's absence from the home.

Women's employment in the organised sector, in the context of inadequate protective legislation or lack of enforcement of existing legislation, has been considered inimical to breast-feeding because of mothers' time away from home (eg. Ghosh, 1987). Only among certain occupational groups, and for very limited numbers, are there viable arrangements which permit women to take care of the nutritional needs of their infants and young children. In India, "Mobile Creches" are available for women in the construction industry in a few metropolitan areas, and legislation calls for creches/day care centres to be provided to women in the plantation sector, in factories and mines, but these remain inadequate. The large majority of women workers in agriculture are not served by such facilities, although in areas where the Integrated Child Development Services Scheme (ICDS) has been established, a part-time alternative exists. However, the attendance of infants and toddlers at ICDS *anganwadis* is low on account of structural and social constraints. The situation of urban, self-employed women – vendors, petty traders, domestic servants, etc. – is difficult as they lack access to institutionalised child care as well as the traditional joint family system. Unfortunately, there is little or no information on the effects of different female occupations on the nutritional status of children, of the women themselves, or of other household members; nor on the effects of the support services provided for the few occupational groups mentioned or of different child care situations on overall 'home nutrition management.'

In sum, while there are indications that women's work can bring about improvements in household nutrition, particularly if women have control over their wages, there are numerous unanswered questions on the issue of women's employment and nutrition. Does women's employment enhance nutrition and health, and if so, under what conditions? Who benefits, and how, and what is the process by which improvements are brought about? Are women's wages **preferentially** allocated to nutrition and health care, so that one could argue that women's wage employment improves family well-being more than men's wages? Are working women more knowledgeable about nutritional needs, food values, etc.? Do they make more or better decisions in favour of

nutrition? What are the disbenefits? The answers to these questions have relevance to actions such as the promotion of appropriate employment options for women, legislation of women's wages for different types of work, provision of support services for productive and domestic work, including creche and child care facilities, development of "drudgery-reducing technologies" and services such as fuel and fodder, water supply, and so on. An understanding of household decision-making processes may strengthen policy-making and action in vital social arenas such as education.

Women's Access to Health Care

Women's access to health care affects their nutritional status and roles. As the first-level health care provider within the household, a woman's knowledge of good health and nutrition practices is crucial. Although such knowledge may be gleaned elsewhere, eg. in school, from older family members or other informal networks, as formal health systems become increasingly concerned with health "promotion," they are important conduits of health knowledge. Health services offer the next level of support to the household when treatment is required, or in the arena of preventive health action. Household health and nutrition profiles subsume the health of women, which in turn determines the extent to which they can effectively carry out their multiple roles as producers, mothers, child-minders, etc., all of which affect household health. Antenatal, intranatal and postnatal care affect the viability of infants and the survival of mothers; nutritional care protects growth and development and ensures better health for work and during pregnancy and lactation; family planning services address issues of birth spacing, family size limitation, which we have seen affect women's health status and roles. Experience in both India and Pakistan has shown that health care and health education are best delivered to women by women, preferably from a similar socio-economic background.

Assessment of women's access to health care is complicated because it is not only a **determinant** of women's/household nutrition and health status but also the **outcome** of women's status in society. Thus, both health status and access may be simultaneously affected by (macro and micro) socio-economic and socio-cultural factors. **Access** implies both the physical **availability** of services and a social and economic situation for women which **permit** and **enable** them to use health services when in **need** (Chatterjee, 1983; 1984). Unfortunately, there are few investigations of women's health needs in India linked with assessments of available health services and with information on health "knowledge, attitudes and practices" at the household level. Available studies focus on differential access of males and females to health services, particularly among children, sometimes relating this to nutritional levels or morbidity rates. For example, Gopalan and Naidu (1972) showed that while females outnumbered males four to three among children suffering from kwashiorkor, more than half of hospital admissions were of boys. Similarly, Dandekar's (1975) survey of 37,000 people in rural Maharashtra revealed that although higher percentages of girls were ill than boys, lower percentages received medical treatment in the group under 15 years of age. Girls may be taken to less qualified doctors than boys (Das *et al.*, 1982), and expenditure on medicines may be higher for boys than girls, particularly among better-off families (Das Gupta, 1987). In fact, better and more timely medical care for boys may be the most important factor explaining high survival among males compared with females, as early studies showed (Singh *et al.*, 1962; Kielmann *et al.*, 1983). These and other studies imply that households discriminate against female children in terms of health care, in a vein similar to the nutritional discrimination discussed above.

There is differential use of health services among adults as well. In Dandekar's (1975) study, a greater proportion of ailing women than men received no treatment, and those women who were treated received mostly home remedies or traditional medical care, while men received institution-based care. Hospital and clinic attendance records in both India and Pakistan invariably show a preponderance of males receiving treatment. A comparison of studies of hospital admissions in different parts of India shows considerably higher ratios of male to female admissions in northern hospitals (eg. 2.1:1) compared with southern hospitals (1.3:1), although males were clearly favoured in all areas (Miller, 1981). The proportion of treatment provided to women in general is lower whether one considers out-patient attendance or indoor admissions. For example, in one study of admissions to a major hospital in Delhi, only 35 percent were female (Ghosh, 1985). Similarly, larger numbers of males are treated at Primary Health Centres in Uttar Pradesh (U.P.), Gujarat and Rajasthan (Khan *et al.*, 1983) – as much as five times as many men as women (Murthy, 1982). The observation that women seek medical help only at advanced stages of illness is corroborated by hospital-based data showing higher case-fatality among female patients (eg. Kynch and Sen, 1983).

These findings are even more significant in the light of reports that illness is reportedly higher among women than men, even though female morbidity is likely to be underestimated because women are "shy" to reveal illness, or purposely downplay them to avoid seeking medical care. The few studies that compare the health

of women and men in the same household generally report a higher prevalence of illness among women (eg. Khan *et al.*, 1982; Jesudason and Chatterjee, 1979). One study followed 110 families over a two-year period and found a significant difference in the number of illnesses suffered by adult women and men (10.8 episodes per year compared with 6.0) (Kamath *et al.*, 1969). However, failing to find a gender difference in the **incidence** of disease, some researchers in Bangladesh have suggested that higher female morbidity is largely the result of the lack of treatment of female illness (Chen *et al.*, 1981).

Only in a few percent of female illnesses is treatment sought from government health facilities such as Primary Health Centres in rural areas (Jesudason and Chatterjee, 1979; Khan *et al.*, 1982). The vast majority of women simply use traditional remedies, and a few approach private (traditional or allopathic) medical practitioners. Women's attendance at subcentres or PHCs for 'preventive' and 'promotive' health services (eg. antenatal care) is similarly low (Jesudason and Chatterjee, 1980; Khan *et al.*, 1982). While official statistics maintain that three-fourths of deliveries in rural areas are conducted within homes with the help of female relatives, friends or *dais*, micro-studies report proportions closer to 90–95 percent (eg. Jeffery *et al.*, 1984; Khan *et al.*, 1983). The persistence of low treatment rates despite the availability of free government health services in India suggests that social strictures and/or the economic costs of seeking health care (either opportunity costs or direct costs on transport, medicines, etc.) are daunting to women.

"Quality of service" issues are also important. In a household health survey in Madhya Pradesh, many of the respondents who had visited government facilities complained of lengthy waiting times, lack of adequate personnel or medical supplies, or "rude behaviour" on the part of staff (Jesudason and Chatterjee, 1979). Such complaints in turn discouraged other potential users, although consumers' poor knowledge of services available was also a serious constraint to use. Only one-third of respondents knew the location of the nearest sub-centre, and about 40% the location of the nearest Primary Health Centre; even fewer knew the working timings of these facilities. Only a quarter of the women had actually ever visited the sub-centre, and less than 20 percent the PHC. Clearly, to encourage **use**, the health system has to improve 'consumer education' as well as management of services.

There are significant regional differences in the availability of health services in India, which may partially explain variations in male–female differentials in health and nutrition. Mortality levels in different states have been related to health care variables, such as *per capita* health expenditure, trained birth attendance, numbers of hospital beds, etc. (eg. Bardhan, 1984). Trained birth attendance is lowest in the north and northwestern regions, and highest in the south, a pattern that roughly coincides with the status of women and is inversely related to mortality (Dyson and Moore, 1983). Analysis of the nation-wide *Survey of Infant and Child Mortality* data shows that trained birth attendance strongly supports infant survival (Jain, 1984). While the availability of health services was important in explaining child mortality reduction (among other factors, such as clean water supply), both female literacy and household economic status were important mediators in this process.

The relationship between availability and women's use of health facilities, and female literacy, and their combined effects on mortality have been well established (eg. Krishnan, 1975). Certain areas of India such as Kerala and Goa bear further witness to the strength of the relationships. Infant mortality in Kerala was found to be lowest where access to health facilities was easiest (Krishnan, 1976; Nair, 1980). Mothers' education is a highly significant explanatory factor (Zachariah and Patel, 1983). In sum, the state's well-developed health services and high levels of female education together explain Kerala's impressive mortality and fertility declines, the crux being that public health activities have been made effective by prevailing high literacy levels which stimulate demand, peoples' participation and government responsiveness (for a detailed discussion see Chatterjee, 1988a).

Prospects for Intervention

As has been shown, the nutritional status of women in both India and Pakistan is all-too-often unsatisfactory, a process that begins at birth and often ends in early death. Numerous 'causative factors' and correlates have been identified. The potential interventions to address the problem of female malnutrition are similarly numerous. The range of options available to planners in various sectors is laid out in Appendix A. (Although the options apply primarily to India, the matrix could easily be modified to suit other countries.) Here, discussion will be limited to a few key issues.

Focus on Nutrition for 'Women as Women'

The concept of improving women's nutrition for their own sakes, rather than just as mothers, needs to be fostered. There is little doubt that a woman whose basic nutritional and health needs are met will be in a better position to meet the needs of her family. Specific nutritional deficiencies such as those of iron and iodine must be tackled (and they **can** be, at low cost) with **all** women forming the target group. Better targeting of supplementary feeding at those **most at risk** of malnutrition, and job-creation and literacy programmes will help to address the more intractable problem of protein-energy malnutrition.

Nutrition in Adolescence

The nutritional status of women can be considerably influenced by attention during adolescence, with 'spin-off' benefits also to the children they bear later. Even children who are stunted and malnourished throughout childhood can experience catch up growth if fed adequately during their adolescent growth spurt, and achieve an adult size almost as great as children who were better nourished in their early years. For example, one African study demonstrated complete catch up during adolescence of a cohort of girls who at 10 years of age were 20 cms shorter than a normally-nourished cohort (Rohde, 1987). Thus, mid-day meal programmes for adolescent girls could have very long lasting benefits.

Improving Female Literacy, Education and Health-related Knowledge

The critical role of female literacy in improving women's overall health and nutritional status should be well recognised. The coincidence of girls' adolescence and dropping out from school signals the need for education systems to focus on keeping girls in schools. This may be done through the provision of special incentives, public education and offering alternative forms of education. It is important to provide basic vocational skills, enhancing girls' employability, and delaying marriage until they are physically prepared for child-bearing.

While these are longer-term goals, in the short term efforts to specifically improve women's knowledge of health, nutrition and hygiene must be increased. The communication of basic nutrition information, based on a proper understanding of existing knowledge, attitudes and practices, and involving health workers, primary school teachers, women extension officers, and other frontline workers, reinforced by appropriate use of the mass media, can help empower women to successfully address malnutrition.

Increasing Numbers of Female Health Workers

The provision of basic services to women in rural areas of India and Pakistan is a huge undertaking, given the numbers of women involved. Furthermore, in addition to size, the delivery system must be appropriate in 'quality' in order to address women's nutritional and health problems. Experience has shown that to provide effective services to women, the frontline workers must in turn be women. Under these circumstances, shortages of female health workers are a serious constraint to improving women's nutrition and health status. While this is widely recognised, many countries are still a long way from meeting their 'womanpower' requirements in health systems (or, for that matter, in education or other key sectors). International aid agencies can play a key role in this area. For example, in Pakistan during the early drafting stages of the Eighth Five Year Plan, the Government announced plans to recruit and train one community-level worker for each of the country's 50,000 villages. The Plan further stated that all these CHWs would be men educated to high school level. Following considerable pressure from a number of donors and UNICEF, the Government revised its plans stating that at least 50% of the workers would be females for whom they would relax the educational qualifications.

Another key female health worker is the trained birth attendant. In the subcontinent traditional birth attendants 'cover' 50% or more of all deliveries, and in some places they may visit mothers in the post-partum period for varying periods of time. They can be useful resources not only to conduct safe deliveries but also in antenatal and postnatal care of women.

Detection and Care of Mothers “At Risk”

In the arena of Maternal and Child Health services, simple indicators of maternal malnutrition and predictors of risk of low birth weight can be usefully employed. These can be derived from Table V, which lists factors associated with low birth weight from a number of case–controlled studies reviewed by Walsh (1987). Among the most significant are severe anaemia, poor obstetric history, current obstetrical problems, and TB which increase the chances of a woman having a low birth weight baby four–fold or more. All these problems can be diagnosed and managed at the primary health centre level, where skilled attention and limited resources should be focussed on the most needy.

Food supplements during pregnancy, particularly if given during the last trimester, have been shown to have a positive impact on birth weights. For example, food supplements given to pregnant women through the Indian ICDS programme resulted in a mean increase in birth weights of 150 grams (Bhatnagar and Tandon, 1981). A review of a number of studies by Sai (1986) concluded that the mean increase in birth weight resulting from a daily supplement of 500 kcals was 300 grams. Research in the Gambia by Prentice (1983) showed that supplementation is particularly effective when given during times of food shortage, such as that caused by seasonal fluctuations in food supply.

Table V. Predictors of Low Birth Weight Risk

Problem	Odds Ratio	Percent of Women Affected
Anaemia 7–9 grams	1.5 – 2	20 – 70
Anaemia <7 grams	3 – 5.3	6
Current obstetrical problems (toxaemia, haemorrhage, twins)	5 – 6	15
Bad obstetric history	8	1 – 2
Maternal weight <35 kgs	3.2 – 3.8	10 +
Syphilis	2.7	0.5 – 5
Diabetes mellitus	3	0.2
Hypertension (diastolic >90)	2	5 – 10
Urinary tract infection	2	10
Heart disease	2.7	5
Active tuberculosis	4	5
Parity >5	2.1	5 – 8
Previous stillbirth	2.6	1 – 6
Rural	1 – 1.6	30 – 70
Income <200 rupees	1.4 – 2.7	4 – 40
No education/illiterate	1.4	40 – 45
Manual/farm labour	1.3 – 3	2 – 10 +
Age >30 years	1 – 1.6	10 – 20
Height <140 cms	1 – 3	1 – 10
Gestational age <37 weeks	2 – 4	10 – 20

Source: Walsh (1987)

Increasing Female Employment and Income

Increasing numbers of female health workers would also increase female employment, albeit on a very small scale. While we shall not discuss the issue of female employment at any length here, this strategy could clearly do more to improve women's nutrition and health status than many others. Ensuring 'fair' wages for work done so that women can purchase adequate food for themselves and their families, improving working conditions so that these are not nutritionally-draining or hazardous to health, and providing access to services such as day care, health care, and those to lighten domestic work, are all important ingredients of female employment strategies.

Both India and Pakistan share the rare distinction in the developing world of having elected women leaders. It is hoped that this elevation of women to the highest elected positions in these countries will be translated steadily into improvements in the position of women within the household.

Appendix A: Women and Nutrition – Matrix for Policy Planning

Cause of Malnutrition	Possible Interventions by Sector					
	Primary Health Care	Agriculture & Rural Dev. Sector	Labour Sector	Social Welfare Sector	Legal Systems	Education Sector
Social mores: girl children not welcome at birth	TBA's delivering girl children given special recognition			Special recognition to women with surviving girl child of 1 – 2 years	Severe legal systems to punish female infanticide foeticide; law against amniocentesis	Curriculum change to promote status of girls and children
Women giving birth to girl children not cared for adequately				Special care of mothers, particularly girl children. Special feeding		
Low enrolment of girls in schools – illiterate, low level of skills			Organized Sector – priority to worker families for training of girls	Feeding programmes for girls?		Special vocational training for girls. Special incentives for girl students. Classes for girls at appropriate time
Inadequate food in adolescence			Employment opportunities for adolescent girls	Food preparation for programmes		School feeding programmes focussing on girls
Early marriage – teenage pregnancy	Better family planning practices. Concept of family welfare pushed vigorously		Education in organized sector re. importance of girls' education, development		Better enforcement of minimum age of marriage. Incentive to parents to postpone	

					marriage		
Frequent pregnancy – large families, unhygienic birth practices	Good antenatal care through well trained TBAs. Provision of sterile kits to TBAs. TT Iron Folifer, I–oil. Child survival, particularly immunization, vitamins CDD/ARI. Incentives for small families		Maternity leave and benefits in organized sector. Supplementation with nutrients				Prom family proper spaci
Lack of adequate child care services			Creche facilities in organized sector	Extended ICDS. Creche facilities in ICDS			Comm utiliza service
Low value added jobs in organized sector			Training of women for better jobs. Certain minimum proportion of jobs for women		Legislation for equal wages for women	Increased proportion of women teachers	
Low wages, irregular employment, low knowledge due to being in unorganized sector	All women community health guides	Agricultural extension by women for women. Credit for women. Women's co–ops in dairy, land development		Maternity leave and benefits to women in unorganized sector			
Crowded unhygienic living conditions in urban areas			Creche facilities in cities. Working girls hostels				
Inadequate fuel/fodder/water facilities			Social forestry. Village wood lots and more efficient stoves. Fodder programmes attached to women's co–ops.				

Source: Developed by Mrs Geeta Athreya, Health and Nutrition Section, UNICEF, New Delhi.

Summary

⁴ This summary was prepared for the ACC/SCN by Rosemary Kevany.

India and Pakistan account for 45% of all maternal deaths in the world. This paper examines the nutritional status of women from childhood through adolescence, pregnancy and lactation in biological terms, with reference to protein energy malnutrition, iron-deficiency anaemia and deficiencies in iodine and vitamin A (looking at causes) and more specifically, in socio-economic and socio-cultural terms (looking at effects) to women's household nutritional roles. Correlates identified in this paper are gender, employment and health care services.

Gender and Nutrition

Although Indian National Nutrition Monitoring Bureau (NNMB, 1980) data find no major differences in percentile values of calorie intake for males and females, in the context of gender differentials, pregnant and lactating women suffer a disproportionate burden of food deficit due to inappropriate distribution of food within households. In addition to suffering a calorie shortfall, women also work longer hours and expend more energy than men. Gender is a statistically significant determinant of nutritional status, and male-female differentials are especially evident in the lower socio-economic/caste groups, which indicates that the effect of gender and poverty on women's nutritional status may be synergistic. A mapping of differentials of nutritional equity between males and females according to age, socio-economic status, region and season, indicates that nutritional deprivation of women appears to be economically, rather than culturally, mediated and that the variable social and economic value of a woman is a crucial factor in her access to food. Where females have high economic value, they receive larger shares of food and health resources; where their value is low, they are disadvantaged. In times of extreme poverty and food scarcity, female consumption of food is substantially less than males.

Other demographic influences on gender discrimination include a shorter period of breastfeeding for female children which may lead to shorter birth intervals between females, with consequent risk of malnutrition and mortality. Social discrimination against young females persists as mothers continue to be under pressure to bear sons and to nurture them more carefully than daughters. Son preference correlates inversely with low economic status and second female children are particularly at risk of death. A consequence of the sex bias is that the nutrition and health deprivation of females in childhood and early adolescence exposes them, via pregnancy, to the subsequent cycle of low birth weight infants and high infant and maternal mortality rates. Low food intake during pregnancy is correlated with low birth weight infants; food taboos deprive women of protein and iron sources and in many cases women make a conscious decision to limit intake for fear of a large fetus resulting in obstructed labour and obstetric complications.

Gender differentials are established and perpetuated by women themselves at the breastfeeding and supplementation stages; female children are weaned earlier than males, and are given less supplementary food and health care, resulting in significantly higher mortality rates for female children from 1-5 years. Inadequate dietary intakes for female infants and children are precursors of the inferior social status they enjoy throughout their life cycle. Early marriage means early childbearing which adversely affects not only women's nutritional status but also her education and employment opportunities. Correlates of age at marriage include literacy, per capita income, urbanization and non-agricultural work; agricultural work has a negative correlation with age at marriage in the sense that early marriage and agricultural work carry a double indemnity of high energy expenditure and frequent childbearing. Rapid childbearing is a known correlate of high infant mortality and child loss itself shortens the intervals between pregnancies, which in turn depletes the nutritional status of the mother. The compound effects of inferior education and employment added to early marriage, are increased by closely spaced births and elevated maternal and infant mortality.

Female education is inversely related to infant mortality. Health services can partially offset the detrimental effects of illiteracy, except where poverty is a predominant negative factor. Conversely, education improves the role of women in household decision-making and control of resources, and permits them to choose healthier feeding and hygiene practices.

Employment and Nutrition

Such economic factors as participation in the labour force, inheritance of land and dowry payment have particular relevance to women's health status and survival. Women's employment increases household income, with consequent benefit to household nutrition. Employment may increase women's status and power, and may bolster her preference to spend her earnings on the health and nutrition of her children, but does not always guarantee her decision-making ability when contested by the husband. Agricultural work is affected by season, and women often lose weight during peak work (low food) seasons. Seasonal variations in food availability exacerbate food differentials between males and females. Off-season employment and food-for-work schemes could remedy this problem. Although female labour participation contributes to the dietary intake of children, the gain may be offset by diminished breastfeeding and child care due to the absence of the mother; trade-offs between the domestic and productive role are inevitable. Facilities such as mobile creches and day care centres are scarce in poor communities.

There is a dearth of information available on the interaction of female occupation and child nutrition; this needs to be addressed as it is relevant to women's employment options, wage scales and support services. In addition, domestic constraints and drudgeries need to be measured and appropriate technologies directed to minimize the effort of fuel and water collection.

Health Status and Nutrition

Women's knowledge of nutrition and access to health care services has a crucial bearing on their own health and that of their children; infant mortality is lowest where access is easiest. Access means both physical availability of services, (convenient times, suitable personnel and medicines, trained birth attendants) and a cultural environment which allows women to use health services for themselves, in distinction to, or together with, their children. In both India and Pakistan a preponderance of males receive hospital treatment, while women tend to rely on traditional remedies. This tallies with social devaluation of women and women's deliberate self-neglect associated with her lesser status. Health services must be consumer-friendly in order to encourage women to use them. In this regard, health education is best delivered *to women by women* from a similar socio-economic background. "Womanpower" requirements need to be met by training female health workers. (Pakistan has recently substituted 50% females for males in a proposed community health workers (CHW) scheme covering 50,000 villages due to pressure from UNICEF and other donors.)

Interventions and Options

The concept of "women as women", responsible for their own health and welfare, needs to be advertised within nutrition programmes with particular emphasis on improving female literacy; high levels of female education are related to mortality and fertility declines. Particular attention must be paid to adolescent girls in view of the catch-up potential during their growth spurt. Strategies should be designed to circumvent culture and norms and to allow adolescent girls to remain in school longer, to train for a job and to delay marriage. "At risk" mothers should be diagnosed at primary health care clinics, and screened for anaemia, obstetrical problems and TB, as well as offered food supplements during the final trimester of pregnancy (taking into account "eating down" resistance).

Women's nutritional status will not change substantially unless gender, employment and health care correlates are altered. The biological solutions are fairly straightforward, and appear to be a matter of organization and finance by government and donor bodies to provide clinics, personnel, supplies and information. There is no question however that the socio-cultural aspects of women's position in society militate against their health and welfare and that changes must be made in the very fabric and organization of society to reinstate/establish women in a position of equity.

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WOMEN AND NUTRITION: GRAMEEN BANK EXPERIENCE

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Bangladesh is a country of 55,598 square miles and has a population of more than 105 million of which women constitute 48.5% with per capita income of about 150 dollars per annum. The literacy rate is 23.8%. This reveals that there is widespread poverty, illiteracy and malnutrition. Widespread poverty and lack of consciousness are major causes of malnutrition in the country. According to one estimate less than 5% of the total population consume an adequate quality of food (World Bank, Bangladesh Food and Nutrition Sector Review, January 1985). The Nutrition Survey of rural Bangladesh indicates that about 76% of all rural households were calorie deficient and about 48% were protein deficient in 1982. In general the situation appears to be worse for the lower income groups and within household for mother and children. The effect on the lives of women in Bangladesh due to lack of adequate nutrition is visible in many forms such as anaemia, low learning and working capacity, low resistance to disease and stress, and lack of proper mental and physical developments. An underlying factor of high maternal mortality rate (6 per thousand live births) is the inferior status of women and related social problems.

In a country where poverty is so acute it is difficult to implement the concept of nutrition and balance food. Although women are responsible for family survival and childcare nutrition, because of their subordinate status in the society they cannot perform an effective role. The women do not have direct access to resources and services. For this reason the Grameen Bank (GB) has emphasized credit for income-generating programmes. It was founded by Professor Muhammad Yunus in the small village of Jobra in Chittagong in 1976 and later was established as a Bank in October 1983.

Since then the Bank has grown into considerable size in terms of both horizontal and vertical expansion of its coverage and activities. As at December 1988, the GB has been operating through 501 branches in 10,552 villages of 9 zones serving 490,363 landless² women and men members through the credit programme (Annex I). Women members constitute 86% of the total members. The amount of loans disbursed is US\$83 million to women, US\$30 million to landless men and the repayment rate by the women members has been almost 100 percent.

² Anybody who does not own more than 0.5 acres of cultivable land and the value of all the family assets together do not exceed the value of one acre of medium quality land.

Objectives

The primary objective of Grameen Bank is to raise income and the standard of living of the most disadvantaged sections of the rural community through providing access to credit for poor landless people who have previously been debarred from formal institutions due to lack of collateral and who have therefore been dependent on the informal credit sector at exorbitant rates of interest. Apart from offering loans without collateral, GB is also trying to create effective consumer demands for loans among the landless and develop viable cooperative loanee groups at the village level through social mobilization.

Operational Procedures of Grameen Bank

To obtain a loan, a group must be formed with five like-minded people having similar socio-economic status. After formation of an informal group, members go through intensive training of GB's rules and members' obligations. Before extending formal recognition to a group, GB review the eligibility criteria very carefully.

Each group elects its own chairman and secretary and 5–6 groups federate into a centre. Each centre elects a centre chief. Each centre organizes weekly meetings and the centre chief conducts centre meetings. She is responsible for observance of GB's rules and procedures and recommending loan proposals to the bank workers.

Savings

Individual Savings

Each loanee deposits one Taka every week as compulsory savings along with the weekly installments.

Group Fund

Each loanee is required to pay a group tax of 5 percent of the loan received and this is deposited in a separate account as Group Fund. The Group Fund is operated by the Chairman and Secretary. This fund can be used by the members as agreed upon by the group.

Emergency Fund

Each loanee pays an amount equivalent to 25 percent of the interest paid on the principal amount. This is being built up as an Emergency Fund to be used as a potential insurance against default, death, disability and other accidents.

Social Development Programme of Grameen Bank

Grameen Bank is not only a credit programme for the landless. It has a social development component incorporated within the credit programme. A substantial part of the social development programme is supported by UNICEF. Cooperation between UNICEF and GB began in July 1980 with the integration of the women's social development component within the framework of the GB programme, and since then the project has gone to scale and developed an integrated approach to basic services. UNICEF assistance will continue until 1993.

Objectives

- To enhance socio-economic status of women promotion of self-employment opportunities among the rural landless women to enable them to take care of their developmental needs,

child survival and development-related issues.

- To sensitize and expose the rural landless women to the possibilities of credit services for income earning activities and accustom them to the discipline of loan repayment using group norms.
- To provide landless women group leaders with functional education to enable them to improve their social status, with particular emphasis on women's health and nutrition (Curriculum attached, Annex II).

Operation

Thus, under the social development programme a comprehensive training programme has been formulated for the women group leaders of GB and related GB officials. Group leaders are responsible for disseminating this information to the members. To date, 37,486 women group leaders have been trained under the project. During 1988–1993 project period, 60,000 additional women group leaders will be trained to work for 750,000 landless women and GB members and 1.5 million children.

Through the training workshops GB plays a vital role in involving women in nutrition care, maternal health and child care (detailed breakdown of curriculum attached, Annex III). As a result, a great demand for basic services has been generated and linkages have been established with related service agencies. In one national workshop held in 1984, sixteen decisions were adopted (Annex IV) which are followed by all Grameen Bank members.

As an impact of the programme, nutritional status of GB women members and children has improved. Not only has food intake increased, but also food of higher quality has been added to the normal diet. The members have adopted the habit of low cost nutritious food such as vegetables, small fish, pulses, beans, eggs, etc. in the family diet.

As a result, GB children show better nutritional status in terms of anthropometric measures. While more than 50% of Grameen Bank children (up to 9 years) have normal nutritional status (in terms of height and weight), the figure for the non-GB children is about 30%.³

³ Source: Atiur Rahman (1986). *Impact of Grameen Bank on the nutritional status of the rural poor. BIDS, Dhaka.*

In addition, as a part of child care, GB members are aware of the fundamental rights of their children i.e. food, housing and education. GB borrowers have now established 5,000 "Centre Schools" with a student enrolment of 131,506 (73% girls). Financing of these Centre Schools is done entirely by GB members from the creating of a Special Savings Fund.

As an attempt to maintain nutritional balance, GB members secure food in the following ways:

- JOINT VENTURE – Through joint ventures i.e. some of the groups take a loan together and save food for the family for a minimum period of 3 months. Rice is the main item.

Moreover, all GB members practice "musti Chal" which is a direct food storing from their daily rice quota.

- SEEDS AND SAPLINGS – To enhance nutritional status GB distributed 2.15 million packets (17,000 kg) of vegetable seeds and 954,055 saplings to the borrowers. The product of vegetable seeds and different saplings is also stored for consecutive uses. The major purpose of this programme is promotion of family food gardening so that (a) the women and family can consume some of the vegetables they grow to improve nutritional status, and (b) sell surplus products to earn income.

- FISH – During the specific season, especially in winter, some varieties of fish are dried for future consumption. Dried fish has a lot of concentrated protein.

Mahbub Hossain (presently Chairman, Bangladesh Institute of Development Studies), as a result of his studies, found enhanced economic status and increased vegetable production by the GB women members. The following are some of his observations:

• “Two-thirds of the loanee households were involved in kitchen gardening even before joining the Bank and their proportion was found to be about three-fourths at the time of survey. The intensity of kitchen gardening has increased more than the induction of additional households in this activity. The average income earned from kitchen gardens has increased by about 84 percent in nominal terms and about 47 percent in real terms. Nearly one half of the loanee households considered that their economic conditions improved because of their additional involvement in vegetables and fruit growing.”⁴ Since there is a strong correlation between income and nutritional status, it is observed that the GB women members spend more money on food items and they consume a substantial portion of the vegetables they grow.

• “Women particularly benefited, showing a noticeable increase in status in the family and community, as well as improvements in their homes and the nutritional status of their children.”⁵

⁴ Mahbub Hossain (1986). *Credit for Alleviation of Rural Poverty*. Bangladesh Institute of Development Studies (BIDS), Dhaka.

⁵ Mahbub Hossain (1986). *The Impact of GB Women’s Involvement in Production Activities*. BIDS, Dhaka.

Atiur Rahman, in a study, mentioned that: “With the economic upliftment there has been improvement in the status and position of rural women. In order to sustain this newly found strength of the women, GB organizes special programmes to improve their knowledge about different aspects of every day life. Special workshops for women are being organized by GB in order to update their knowledge and actions on aspects like dowry, sanitation, family planning, clean drinking water, nutritional status, primary health care, children’s education, etc. These workshops have been make significant contributions towards raising awareness about different issues, in altering attitudes and behaviour of poor rural women.”⁶

⁶ Atiur Rahman (1986). *Consciousness Raising Efforts of Grameen Bank*. BIDS, Dhaka.

Recently GB has added a new dimension to the project in respect of maternal health care with particular attention to the nutritional care of women and children.

Although we have started the process, there is still a long way to go. We are looking for new ideas that will have a direct impact on the nutrition and health of women GB members. I hope some useful suggestions will eventuate from this symposium that can be incorporated in our new programme.

Table I. Grameen Bank: Consolidated Cumulative Statement as at December 1988¹

SL. NO.	PARTICULARS	CHITTAGONG	TANGAIL	RANGPUR	DHAKA	PATUAKHALI	BOGRA	SYLHET	R
1.	Amount Disbursed ^(b)								
	Landless (Male):	1435.73	3153.06	2363.32	1830.36	778.57	30.14	0.00	
	Landless (Female):	4766.51	4197.25	4890.20	6615.24	4918.50	484.87	132.33	
	Total Disbursement: ^(c)	6201.24 (196.03)	7350.31 (200.57)	7253.52 (207.22)	8445.60 (385.02)	5697.07 (162.70)	515.01 (73.41)	132.33 (29.48)	
2.	Amount Repaid								
	Landless (Male):	1271.46	2758.10	1997.79	1600.50	683.76	10.94	0.00	

	Landless (Female):	3822.97	3319.82	3651.29	4978.57	3989.78	238.30	40.01	0.01
	Total Repaid:	5094.43 (156.69)	6077.92 (178.35)	5649.08 (205.94)	6579.07 (263.44)	4673.54 (151.91)	249.24 (29.63)	40.01 (9.16)	0.03 (0.03)
3.	Amount unrepaid after one year (in %)	1.88	0.33	2.97	1.16	2.07	0.00	0.00	0.00
4.	Amount overdue (in %): ^(d)	1.24	2.35	1.85	1.27	0.77	0.00	0.00	0.00
5.	Group Fund Savings ^(e)								
	Landless (Male):	116.63	280.71	208.86	147.68	62.16	2.10	0.00	0.00
	Landless (Female):	362.69	376.67	462.45	525.01	379.53	40.00	8.87	0.02
	Total Group Fund Savings:	479.32	657.38	671.31	672.69	441.69	42.10	8.87	0.02

(a) Grameen Bank Started out as "Grameen Bank Project" in the Village Jobra of Chittagong in Aug., 1976 & in Tangail in November 1979. Grameen Bank operational as an independent bank on October 2, 1983.

(b) This Figure does not include TK. 3375.82 Lakh & TK. 965.62 Lakh (Total TK. 4341.44 Lakh) Disbursed so far housing loans and loans for activities involving higher technology.

(c) Figures in parenthesis indicate amount for the current month.

(d) Overdue means amount remaining unrepaid after two years.

SL. NO.	PARTICULARS	CHITTAGONG	TANGAIL	RANGPUR	DHAKA	PATUAKHALI	BOGRA	SYLHET	RAJSHA
6.	Emergency Fund Savings ^(f)								
	Landless (Male):	28.31	79.94	41.27	33.32	12.63	0.04	0.00	0.00
	Landless (Female):	66.18	68.80	64.36	80.70	65.41	1.99	0.04	0.00
	Total Emergency fund Savings:	94.49	148.74	105.63	114.02	78.04	2.03	0.04	0.00
7.	Loan from Group Fund								
	Landless (Male):	64.81	166.85	157.19	121.96	36.13	0.07	0.00	0.00

	Landless (Female):	125.87	143.76	164.66	211.06	122.67	3.84	0.00
	Total Loan from Group Fund:	190.68	310.61	321.85	333.02	158.80	3.91	0.00
8.	Number of Members							
	Landless (Male):	11,120	18,080	20,180	12,835	5,860	1,318	–
	Landless (Female):	60,859	53,835	1,05,317	1,06,260	63,242	22,325	8,722
	Total Number of Members:	71,979	71,915	1,25,497	1,19,095	69,102	23,643	8,722
9.	Number of Centre							
	Landless (Male):	445	728	738	539	231	64	–
	Landless (Female):	2,602	2,201	4,057	4,046	2,478	978	515
	Total Number of Centre:	3,047	2,929	4,795	4,585	2,709	1,042	515
10.	Number of Village Covered:	1,315	1,619	2,415	2,643	1,219	835	471
11.	Number of Branch in Operation:	72	66	108	102	74	38	32

(e) A Group member can borrow from the group fund with the consent of remaining group members. Loan from this fund can be used for both consumption and investment purposes.

(f) It is sort of Insurance fund. This fund when operational, will cover the members from accident death and disaster.

(Dr. Muhammad Yunus)
Managing Director

Table II. Training Curriculum for Functional Education

- Introduction to each other
- Objectives of the Workshop
- Working Procedures of GB
- Rules of Group Formation
- Procedures for Group Fund, Formation, Utilization and Management
- What is Emergency Fund and how to use it
- Difference between Emergency Fund and Group Fund
- How to prepare Loan Proposal
- Use of Loan, its Supervision and Procedures for Supervision
- How to complete Attestation Form
- Aims and objectives of Centre Formation

- Duties and Responsibilities of GL and CC
- Collective Enterprise
- Cleanliness
- Poultry and Dairy
- Vegetable Cultivation
- Child Development and Education
- Mother and Child Care
- Major Child Diseases and their Prevention
- Care of Expectant Mothers' Nutrition and Diet
- Preservation of Food
- Family Spacing
- Prevention of Diarrhoeal Disease/ORT
- Tubewell water, boiled water and use of alum and iodized salt
- Cooking Process
- Annulment of Dowry System
- Role of the Centre in case of Problems and Litigation
- Implementation of Sixteen Decisions (Attached)
- Reading from "Uddog"
- Area Visitation
- Group Discussion
- Question/Answer Session
- Display of Chart, Poster and Nutrition Card
- Decisions of the Workshop and its Announcement
- House Building Loan
- Pre-school Programme
- Purchase of Share
- Short Cultural Function

Table III. Training Workshop Curriculum

A. Functional Education

Breakdown of nutrition-related activities:

1. Nutrition and health care of women including maternal care, importance of safe delivery and family spacing.
2. Primary health care and personal hygiene including immunization and use of ORS.
3. Nutritional care of children including use of colostrum and supplementary feeding/weaning practices.
4. Use of safe water and health education including improved environmental sanitation.
5. Household level food production and consumption.
6. Family food gardening/nutrition education including maternal health care.
7. Motivate women group leaders in nutritional blindness prevention through nutrition education.

B. Food and Care for Pregnant Women

1. Additional food for pregnant women.
2. To drink more water.
3. To eat adequate vegetables and fruit.
4. To eat fish regularly.
5. To eat protected and hygienic foodstuffs.
6. Consulting local doctors whenever needed.
7. Adequate physical movement in the form of walking.
8. To keep oneself joyful.

C. General Care for Children

1. Normal and ideal food.
2. Breastfeeding.
3. Prepared food weaning food...
4. Weaning food.
5. Classification of food items.
6. Frequency of food.
7. Prevention against six major killer diseases – (immunization) against DPT, Polio, Measles, Whooping Cough.
8. Cutting children's hair and nails regularly.
9. Measuring nutritional status of the child (e.g., food intake, height/weight).

10. Bath and meals at proper times.

Table IV. Sixteen Decisions adopted at Women Group Leaders' National Workshop, March 1984

1. We should maintain discipline, unity, courage and hard work in all walks of our lives.
2. We shall bring prosperity to our families.
3. We shall not live in dilapidated houses. We shall repair our houses and work towards constructing new houses at the earliest.
4. We shall grow vegetables all the year round. We shall eat plenty of vegetables and sell the surplus.
5. During the plantation seasons, we shall plant as many seedlings as possible.
6. We shall plan to keep our families small. We shall minimize our expenditure. We shall look after our health.
7. We shall educate our children and ensure that they can earn to pay for their education.
8. We shall always keep our children and the environment clean.
9. We shall build and use a pit-latrines in every home.
10. We shall drink tubewell water. If it is not available, we shall boil water or use alum.
11. We shall not take any dowry in our son's wedding, neither shall we give any dowry in our daughter's wedding. We shall keep the Centre free from the curse of dowry. We shall not practice child marriage.
12. We shall not inflict any injustice to anyone, neither shall we allow anyone to do so.
13. For higher income we shall collectively undertake bigger enterprises.
14. We shall always be ready to help each other. If anyone is in difficulty, we shall all help him.
15. If we come to know of any breach of discipline in any Centre, we shall all go there and help restore discipline.
16. We shall introduce physical exercise in all our Centres. We shall take part in all social activities

collectively.

NUTRITION SECURITY SYSTEM AT HOUSEHOLD LEVEL – POLICY IMPLICATIONS

By Satinder Bajaj¹

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Introduction

The household nutrition security is the assurance that the family will be adequately provisioned to receive food and health care that is commensurate with the requirements of its individual members. When the problem is focussed on the vulnerable section of the population who are below the poverty line (38.7% in India), the women can be observed to play a central role in child care and food processing even when their economic roles require extensive time and physical energy. Any new effort at women's development must divert their time and energy from other activities. The policy implications of nutrition security to families have at their core the empowerment of women to enable them to break the vicious cycle of what has been termed *the zero sum game*. The limiting resources of time, energy and income within the frame of cultural and economic conflicts have rendered women's development programmes ineffective in a number of countries, including India (1).

The background, intervention programmes and the nutritional status of the Indian women are examined with a view to suggest a policy strategy that can enable women to participate in the national development programmes intended to secure the family's health and nutrition.

Background

The reports on amniocentesis and female infanticide in India depict the low value given to the life of a female. Sex specific death rates are higher for female children in both rural and urban areas of India (Table I).

Table I. Sex and Age Specific Death Rates in India (0–4 years), 1971–1983

Year	Deaths per 1000 population per year			
	Rural		Urban	
	Female	Male	Female	Male
1971	59.3	53.2	33.3	31.1
1976	55.9	54.2	30.1	29.0
1978	57.9	48.9	27.2	25.6
1980	48.1	44.2	23.0	21.4
1983	43.1	40.6	21.7	21.1

Source: Office of the Registrar General of India

The female infants, toddlers and preschoolers tend to be more malnourished than the males (Table II).

The sexwise morbidity patterns likewise show that more females suffer from deficiency as well as infectious diseases (Figure 1).

Education

A wide gap exists between male/female literacy (Figure 2).

This may be seen in conjunction with enrollment at primary and middle school level (Figure 3), indicating that literacy differences would continue during the life span of these girls.

The relevance of the syllabus and the requirement for the girls to stay at home to take care of the siblings and share household chores are considered to be some of the reasons for low school admission and higher drop out amongst girls. An educational policy that aims at a socially relevant syllabus and teaching that provides self-confidence and psychological uplift to girls are desirable as are well-targeted programmes (2).

Table II. Malnutrition in Children in Punjab

		Male %	Female %
Severe malnutrition	Infants	2.4	18.4
	Toddlers	8.0	14.7
	Pre-schoolers	4.3	6.7
Moderate malnutrition	Infants	15.3	30.4
	Toddlers	21.0	35.3
	Pre-schoolers	21.6	38.2
Mild malnutrition	Infants	25.6	30.5
	Toddlers	34.4	35.7
	Pre-schoolers	39.5	37.2
Normal	Infants	56.7	20.8
	Toddlers	36.6	14.3
	Pre-schoolers	34.7	27.9

Source: Shanti Ghosh: "Discrimination begins at Birth". Conference on the Girl Child, UNICEF, 1985.

Economic Contribution and Support

Most (94%) of the women work force in India operates within a highly exploited sector characterized by long working hours, lack of skills, low productivity and lack of job security (National Commission of Self-Employed Women). There is very little organization in the form of trade unions to enable women to bargain for better conditions. An important reason for women acquiring low-skill jobs is lack of training which could improve their employment status. The major systems which employ rural women in India and enjoy government support (Table III) show that most of the effort is focussed on male workers. The women are viewed as indirect beneficiaries through male members of their families. Construction sites are another place where women are highly exploited through loan bondage, credit tying and succumb to deprivation through frequent mobilization into alien, unhealthy surroundings which disturb the physical and social security of the family. Domestic work (the data for which is not available in the National Data System) frequently employs young girls under the age of ten to act as mother's help. A figure of 1.68 million female domestic workers as against 0.62 million males has been reported (3). While young unmarried girl children acting as domestic help might find themselves better fed than they might be at home, the married domestic help has often to neglect her own family.

In order to improve the employability of women, a purposeful human resource policy aimed at improving training facilities for women is urgently called for. There is also a need to have clear definition in the labour policy to enable women to receive direct benefits and secure their families.

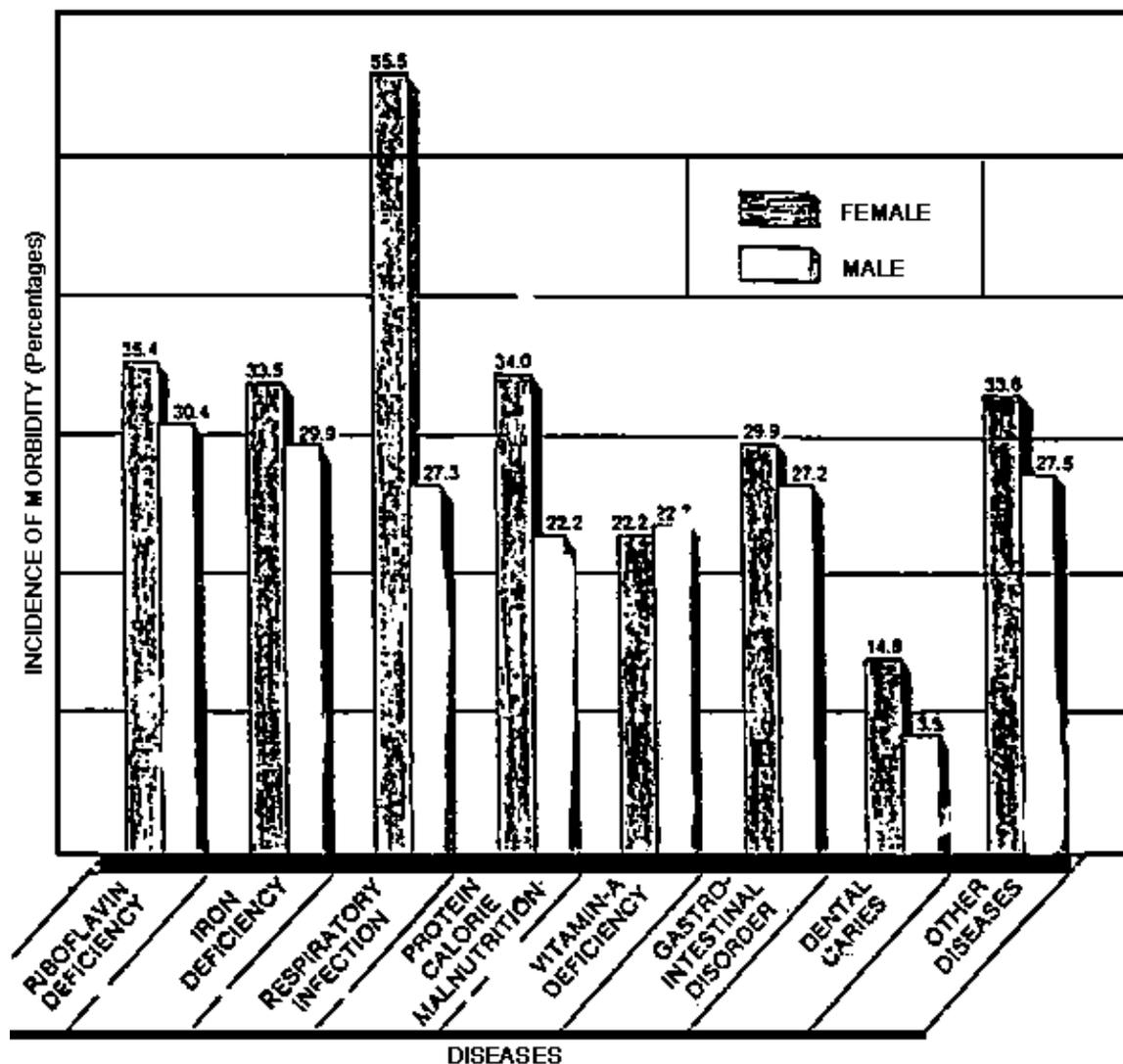


Figure 1. Sexwise Morbidity Patterns among Children – 1985

Source: *The Girl Child in India – Data Sheet on Health*. National Medical Centre and UNICEF (1985).

The government schemes (45 schemes in 17 ministries and departments) for women do not represent a holistic approach. The schemes range from relief-oriented (short stay homes) to supportive (working women's hostels), to mixed (such as TRYSEM). Most of these are not as effective as visualized because they do not reach the maximum number of most deprived women in the unorganized sector.

Since time is a major constraint in the participation of women in programmes, cognisance has to be taken of all work performed by women including domestic work. There is a clear need for evolving a strategy that improves women's working conditions and generates free time.

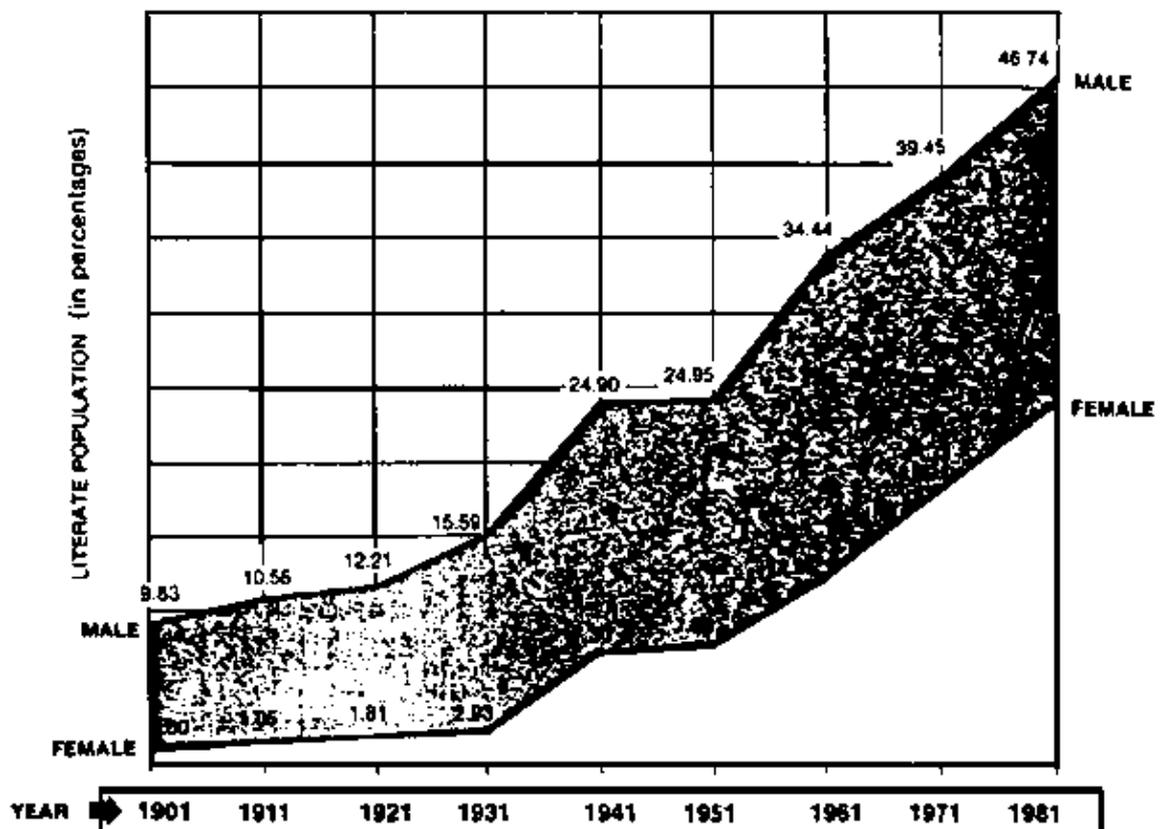


Figure 2. Literacy Rates

Source: Census of India, 1981

Interventions for Growth and Development

Two periods of growth make children vulnerable. Infancy characterized by total dependence, is more important for formation of self-concepts and later self-worth. A total educational programme for the family and the community is required to strengthen this period. Unless the whole family participates in a practical exercise of giving the child (both boys and girls) a sense of worth, any intervention will remain at a superficial level. A girl has to fight against her family and community if they do not share her sense of self-worth.

Physical growth monitoring during infancy provides a powerful tool to control malnutrition. It can prove to be a very important platform for providing community education for growth and development of children (4).

The second crucial period for growth is adolescence. During this time the girl gets ready for her adult role to carry the burden of early marriage, dowry and teenage pregnancy. An estimate of 10–15% (approximately 25 million) of annual births in India are attributed to teenage mothers. The malnourished state of the teenage girl compounded (5) with her own growth spurt and pregnancy to which is added the pressure of shift to the in-law's house, dowry problems and the possible birth of a girl child, are some problems requiring intervention. Clear policy and targeted programmes for adolescent girls that aim at nutritional improvement (6, 7) and confidence-building are required to empower this woman to secure the nutrition and health of her family.

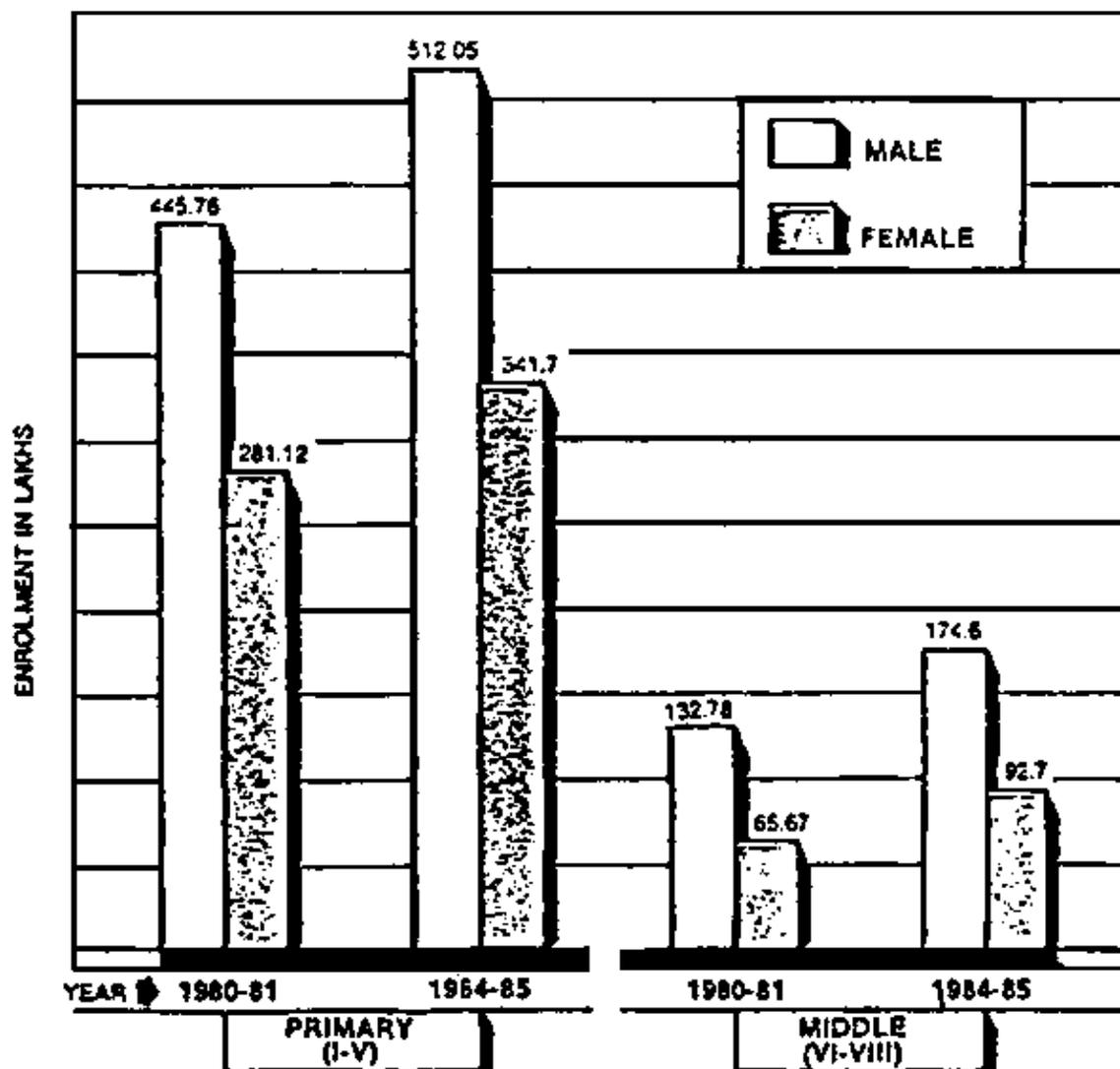


Figure 3. Enrollment Rates at Primary and Middle Levels of Education

Source: Dept. of Education, Govt. of India, 1983, 1984, 1985.

Nutrition Intervention Programmes

An important and direct intervention for pregnant and nursing women in India is the Integrated Child Development Services (ICDS) scheme which provides supplementary food, tetanus immunization, iron and folic acid supplements as well as health and nutrition education. The nutritional basis for food supplements are dietary surveys revealing energy deficiency in the diets of low income pregnant and nursing women. Studies (8) on actual measurements of energy intake and expenditure of pregnant and nursing women showed a deficit in the energy balance of lower and middle income groups during the third trimester of pregnancy (Figure 4). The deciding factor in determining energy balance is the energy expenditure. Since the lower income groups expend most of their energy in earning their livelihood they have no relief from expending the extra energy. Clearly rest and extra energy intake are indicated for these women.

Maternal weight gain relates positively to the birth weight of infants. Women engaged in hard physical labour during pregnancy do not gain adequate weight and deliver low birth weight babies (9). Maternal mortality accounts for the largest proportion of deaths among women in their reproductive life period. Maternal mortality in India is 400 – 500 per 100,000 live births (this figure in rural India is as high as 1000 – 1200 in some areas). Anaemia, haemorrhage, toxemia, sepsis and abortion are the reported causes (3).

Table III. Number Employed in the Large employment Systems (Lakhs)

	Women	Men

Agriculture	19	756
Dairying	750	50
Fisheries	10	18
Small Animal Husbandry	150	20
Khadi & Village Crafts	17	20
Handicrafts	5	22
Sericulture	8	12
Handlooms	30	45

Source: Shanti Ghosh (1985). *Discrimination begins at Birth*. Presented in the Conference on the Girl Child, UNICEF, 1985.

More than a third of the live births are of the fourth order or more. It is obvious that respite from pregnancy, rest and care are important needs of the women. The ICDS programme addresses itself to these problems, yet the awareness of the programme and its full utilization leave scope for improvement (10, 11).

Apart from the ICDS, a number of programmes endeavour to support the nutrition of the family. These include the National Anaemia Prophylaxis Programme (12); National Goitre Control Programme (13, 14); National Programme for Prevention of Nutritional Blindness due to Vitamin A Deficiency (15); Mid-day Meal Programme (16,17); Special Nutrition Programme (18); Applied Nutrition Programme (19); and Chief Minister's Noon Meal Programme (20). These direct nutrition interventions differ in their immediate direct impact and their indirect outcomes. Some are more sharply focussed than others. While the poor households have been reported to benefit most from these nutrition interventions, better area and population focus is required.

Supportive Interventions

Antipoverty and employment programmes offer support to vulnerable households. In India, interventions designed during the last two decades aim at meeting regular trend level shortfalls in food arising from income gaps, shortages in poor crop years and off seasons when physical access reinforces income shortage to render the hard core poor to maximum vulnerability. These interventions which include public distribution systems (PDS) and public employment programmes do not always contribute to raising the nutritional status of at-risk families. The contribution of PDS to raising the per capita calorie intake was estimated to be 46–138 Kcal for the highest and lowest income groups as revealed by elimination of the rationing system (21).

An evaluation of the Employment Guarantee Scheme (22) shows an appreciable impact on the employment situation of female workers and consequently on child nutrition. Other employment schemes such as the National Rural Employment Scheme (NREP) and Rural Landless Employment Guarantee Scheme have not shown improvements in nutrition of poor households.

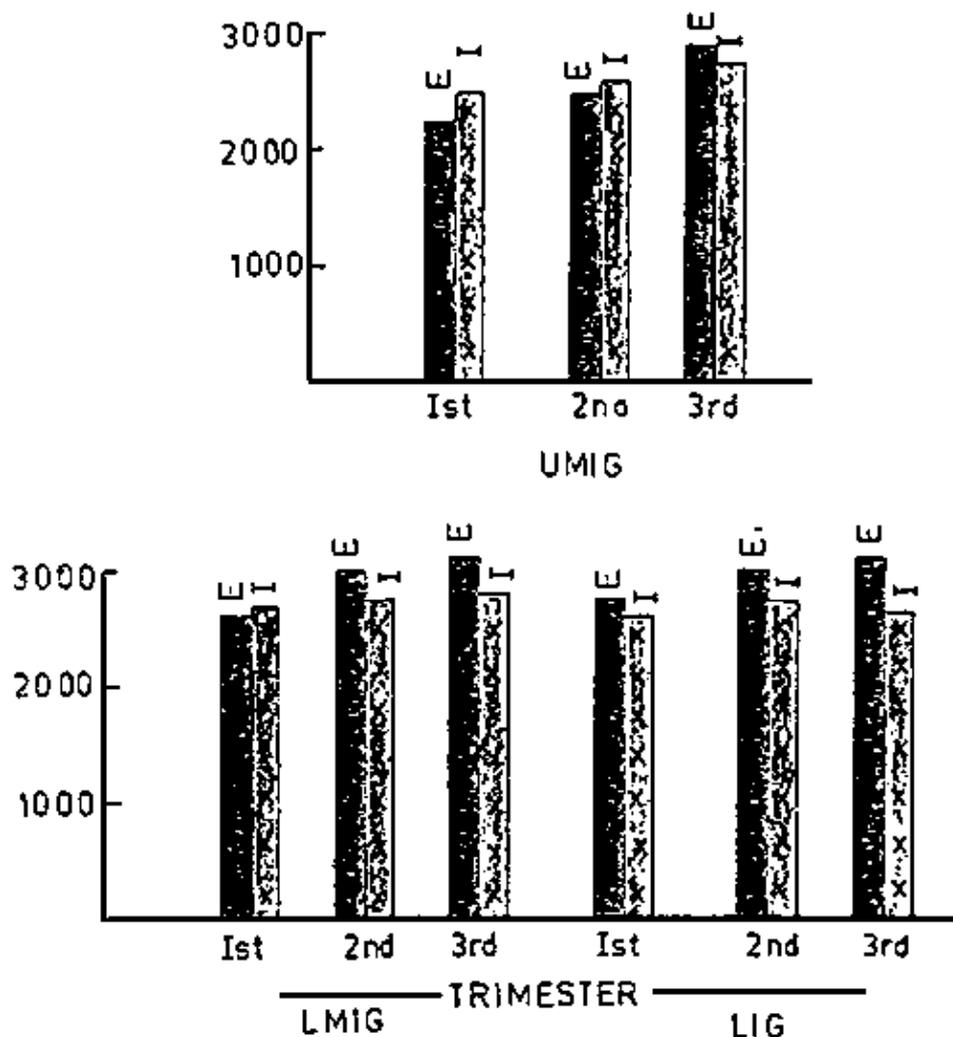


Figure 4. Energy expenditure (E) and Energy Intake (I) in Pregnant Women by Income Group (UMIG = upper middle; LMIG = lower middle; LIG = lower)

Source: see reference 8

Nutritional Status

Studies on the energy balance of 300 female subjects (23) which included manual workers (MW), educated working women (WW) such as teachers and researchers, as well as housewives (HW) showed that manual workers had shorter heights and lower weights (Table IV), and obtained most of their nutrient requirements from cereals. The working women and upper class housewives consumed more fats, milk and milk products as well as vegetables. The manual workers expended most of their energy and time in earning their livelihood, and spent least time in household activities (including child care). The educated working women spent more time in household activities in comparison to housewives whose main job was housekeeping (Figure 5). An important step in assuring nutrition security is time freeing and improving wage earning. As a policy it is possible to attach such interventions to child spacing and family planning as incentives and educational strategies.

Table IV. Distribution (%) of Subjects According to Various Factors

Sr. No.	Factor	MW	WW	HW
1	Type of family:			
	Nuclear	81	77	61
		19	23	39

		Joint		
2	Size of family:			
	3-5	67	86	55
	6-8	31	12	18
	9-11	2	1	7
	12-14	-	1	13
	15-17	-	-	7
3	Age (Yrs):			
	20-25	37	15	14
	26-30	25	30	31
	31-35	20	35	36
	36-40	18	20	19
4	Height (Cms):			
	Below 140	2	0	0
	140-145	11	0	0
	146-150	13	0	1
	150-155	28	22	25
	156-160	37	39	54
	161-165	9	31	16
	Above 165	-	8	4
5	Weight (Kg):			
	Below 35	13	0	0
	36-40	15	3	0
		32	3	4

41-45			
46-50	28	12	7
51-55	12	20	20
56-60	-	24	25
61-65	-	30	26
66-70	-	4	9
Above 70	-	4	9

Key: MW = Manual Working Women
 WW = Education Working Women
 HW = Housewives

Source: Gupta, S. (1985)

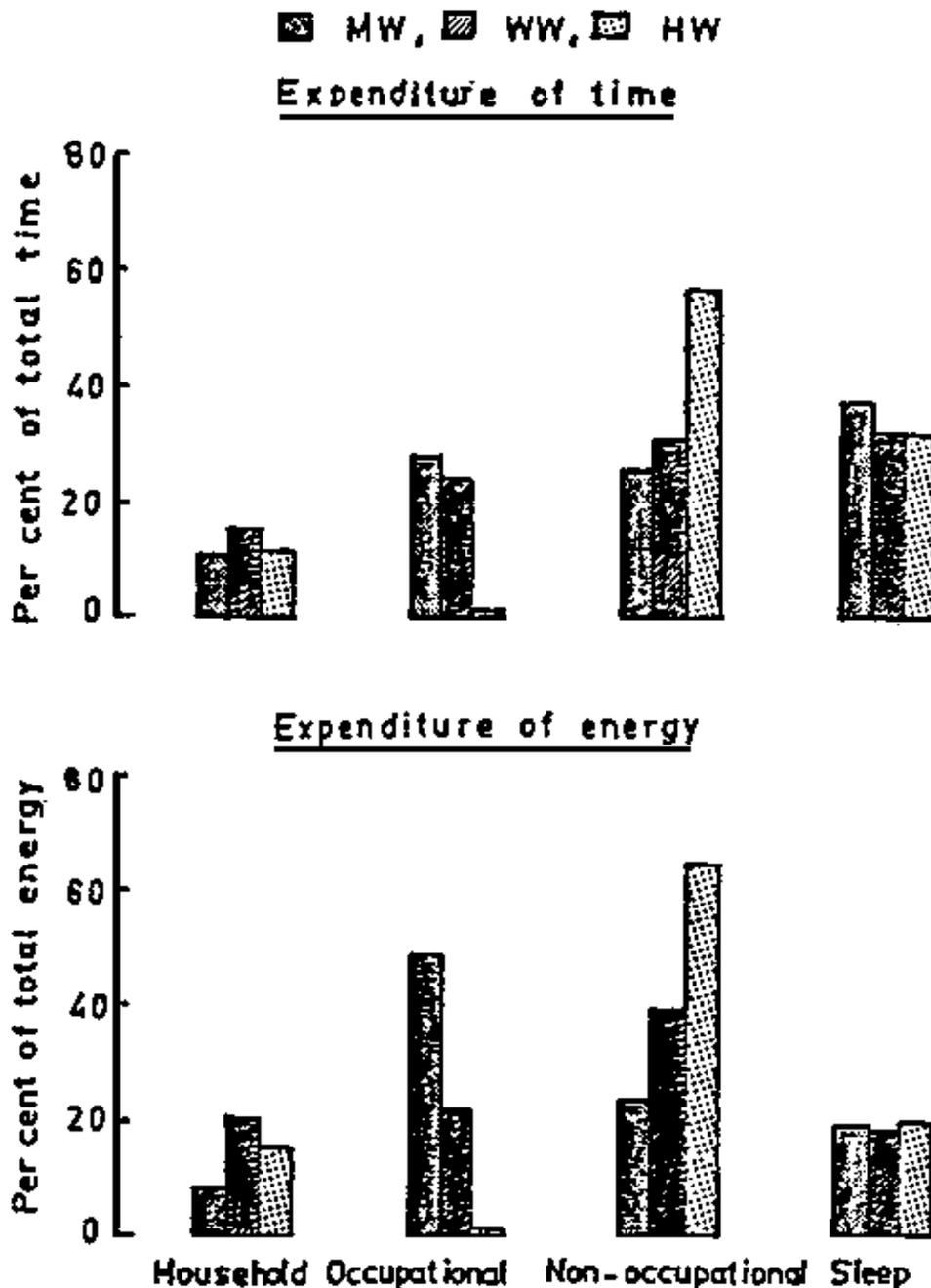


Figure 5. Expenditure of Time and Energy during Different Routine Activities

MW = manual work; WW = educated; HW = housewife

Policy Implications

In devising a functional nutrition policy, the subject of targeting comes up with great frequency (24). To recognize target households, evidence and information are needed to determine the conditions under which the families require intervention and the extent to which the malnutrition in such households is due to insecure food availability, disease or social discrimination. An important step for the government is to set up a policy research unit for developing continuous information flow to establish such a system.

A woman-centred policy for improving the nutritional status of the vulnerable families is evident in most health and nutrition schemes in India. Evaluation of these schemes show that desired impact can be produced only if modifications are made, particularly at the operational level. Yet if the delivery systems are examined, many conceptual ambiguities are evident. One ambiguity is that women and children are the target groups for intervention. Missing within the framework of the schemes at the policy planning level is the *built-in component* to enable women to actually participate. The community participation component of most schemes

appears to be appended as an afterthought. In the ICDS Scheme, for instance, referral service is one component for health; yet missing at the operational level is the infrastructure for referral to operate (25).

Education

Policy literature focusses on production, purchasing power and poverty aspects (26, 27). It is rare to come across fresh research on education which could transform behaviour. If women have to be empowered to secure their family's nutrition, the community needs to undergo revolutionary action for change, in which the educators are involved in a two-way flow of knowledge towards problem solving (28, 29).

The education system in general, and nutrition education in particular, assumes that the target audience is ignorant and the resources are not adequately utilized. Such one way transfer of knowledge even when sophisticated social advertizing methods are used does not create the desired change in behaviour. Education which encompasses all aspects of training and brings about attitudinal changes is most essential if women are to play a key role in the household nutrition security. Although educational materials are expensive to produce, very little research goes into the methodology of communication. We must find and train people who are able to popularize technical information and knit it together with the indigenous knowledge and present it to the target audience so that it results in a two-way flow.

In order to illustrate the importance of a people-centred method of communication, Rana (personal communication) during her consultancy for DANIDA Drinking Water Project in Orissa, India, drew attention to pictorial language. It is commonly believed that pictures are universally comprehended, therefore, funding agencies spend vast sums of money on them while communicating with illiterate audiences. In her experiment, Rana asked four women of varied educational background (from Class 3 to BA) to draw their version of six messages on water and sanitation. It is interesting to note² that the women drew from their knowledge of reality, they drew serial time perspective in the same frame (as is done in folk art in many countries), their pictures had their own stylization code (such as flowers represented cleanliness and squiggles represent dirt). They did not draw the vanishing point perspective but drew from the broadest aspect (again as is done in folk art in many countries). The emotional ambience and community relationships were an important and integral part of their drawing. If existing pictorial (posters and charts) are reviewed against this information, the inadequacy of communication materials becomes evident.

² Unfortunately the posters could not be reproduced here – details may be obtained from Dr Bajaj at the address in footnote 1.

Access to indigenous knowledge and people-centred educational strategy would appear to be time consuming and cumbersome, yet that need not be the case. It is possible to draw generalizations across cultures and time from a wide range of information. Proper classification and adaptation can form the basis for dialoguing. A fresh look is also required at the training to make it more participatory and meaningful within the context of the peoples' lives.

Conclusions and Prospects

The woman, despite her low socio-economic status, is the central figure for participating in development programmes meant to elevate the nutritional status of families. Empowerment of women through a two-way flow education and direct focus of economic programmes can enable the woman to participate actively in establishing and maintaining the nutrition security at household level. Without economic power and self-confidence, the household nutrition security through the aegis of women remains at a superficial level.

The government has to expend money, technical expertise and time to plan economic programmes intended to benefit women directly. A continuous flow of information on the community's needs and indigenous knowledge are required to establish a system which would feed into the participatory training and exchange of knowledge.

Acknowledgements

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WOMEN AND NUTRITION: TANZANIA FOOD AND NUTRITION CENTRE'S EFFORTS IN IMPROVING THE NUTRITION OF WOMEN IN TANZANIA

By Pauline Kisanga¹

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Introduction

Research during the UN Decade for Women showed the situation of women in many parts of the world to be deteriorating. Changes in the agricultural systems and patterns of development adversely affect women. The nutrition situation of women cannot be divorced from the socio-economic situations in which they live and especially from the traditional norms and customs that dictate women's behaviour in relevant societies. In Tanzania, women are the major agricultural producers, responsible for about 70% of food crop production and supplying about 80% of their working time. The major part of this food feeds the family due to the women's traditional responsibility for food subsistence. She therefore cultivates, weeds, harvests, processes and stores, and also takes part in tending to the cash crops.

Despite their major input to agricultural production, women face a host of problems which interfere with their efforts. In many areas women do not get easy access to suitable agricultural land. For example, in a cash crop intensive area like Kilimanjaro, women are normally forced to look for food plots many miles away from home. Technology in the food crop area is normally of a low level, with women still using the traditional hand hoe for both cultivation and weeding. The labour burden on women is a major constraint to productivity. Another drawback is that women are excluded from the decision-making process. They have no control over the way resources are allocated for different functions of the family or society, e.g., use of cash income, sale of produce, etc.

The extension workers' services also often concentrate on cash crops while women's crops and small livestock are left to more or less tend for themselves. Another constraint is that of obtaining credit without which she cannot purchase fertilizer, hire a tractor or even an ox-plough. The present structure and policy of cooperative societies, the major credit organs in the rural areas, do not appreciate the women's credit constraints, focussing more on cash crops.

Then comes the biological reproduction process – pregnancy, child bearing and nursing; and the social reproduction process – caring for children, husband, the sick, the old, entertaining guests and performing all the household chores which include washing, collecting water and firewood and preparing food. All this is always termed *service* and is not accounted for as labour even though it is so crucial for the economic health of the nation.

In our present society traditional customs are now dying out – the good customs are not being passed down the generations. Knowledge of contraception and family planning is often limited to those married women whose husbands allow them to practice family planning. The good habits about care of a pregnant woman and the extended family support that was there to reduce her workload are now non-existent. The rural woman has no say over the number of children she and her husband are going to have, nor sometimes the choice of a husband, nor the socialization of boys in the duds of a father.

Lack of an adequate health care system, especially in the rural areas, leads to high maternal death rates. Inadequate maternity care is still the major cause of female deaths in Tanzania. It has been established that half the child deaths in Tanzania occur during the first year of life, especially in the first four weeks. These statistics point to poor maternal nutrition and health care as well as the workload for pregnant women being major reasons for infant mortality.

In summary, the key problem of women in the rural areas centre on *workload, unequal ownership, access and allocation of resources and the secondary status of women in the decision-making process*. The repercussions of these aspects are felt in all areas of life, not excluding nutrition.

If the health, nutrition and socio-economic status of women is to be improved, together with that of their children, action is necessary in all areas of development, including health and nutrition. Table I gives certain indicators of the public health and socio-economic situation in Tanzania (1987).

Nutritional Status of Women in Tanzania

In Tanzania malnutrition among mothers, especially in rural areas, is a common phenomenon. The commonest types are underweight, anaemia due to malaria and nutritional deficiencies; and iodine deficiency disorders. Most of these deficiency disorders are aggravated by infection and energy drain due to heavy workload.

Apart from the fact that women have the right to be healthy and enjoy all the benefits that life offers, the health and nutrition of a woman is very important because of her role in social and reproductive processes. The outcome of pregnancy is better in women brought up in good nutritional health; who have consumed nutritious food from birth to maturity, received adequate medical care, sufficient rest, and who continue to have these advantages during pregnancy, than in those from poorer socio-economic backgrounds.

Table I. Indicators of Public Health and Socio-Economic Situation in Tanzania (1987)

Area of Tanzania (km ²)	945,000
Total Population in 1987 (million)	22.5
Population Density (persons/Km ²)	25.3
Population Growth Rate (%)	3.5
Rural Population (%)	85
Urban Population (%)	15
Infant Mortality Rate (IMR) (1988)	107/1000
Adult Literacy Rate (%)	85
Life Expectancy at Birth (years)	55
Income per capita per annum (US \$)	300

Population within 5 km walking distance from Health Facility (%)	73
Antenatal Care Coverage (%)	95? (50)
Growth Monitoring Coverage (%)	76
Full Immunization Coverage (1987) (%)	54
Estimated number of Households with any type of Latrine (%)	67
Estimated Population served with Tap Water (%)	38

Children born to healthy mothers normally have higher birth weights. Stunting can result from impaired growth *in utero* when the foetus is deprived of essential substances. Mothers with higher parity are often more affected as too close and too many pregnancies deplete the mother's nutritional status and this results in low birth weight for babies. Low birth weight babies experience higher morbidity and mortality rates especially in the first year of life and hence higher chance of dying leading to a vicious cycle of another pregnancy – malnutrition in mother – malnutrition in baby – death. A poorly fed mother often fails to breastfeed successfully and hence a higher chance for a child becoming malnourished due to implied early introduction to other supplements.

Underweight

Nutritional status surveys on adult populations in Tanzania are few and these show women to be grossly underweight in most rural communities. Table II shows the results of some of these studies.

The low BMI's are due to too much energy expenditure and high nutritional depletion due to constant infections as well as low dietary intakes.

Table II. Nutritional status of women from selected studies

Place, Time	Number	% BMI <20
Iringa, 1985	420	29.8
Arusha, 1987, lean season	47	36.2
Arusha, 1988, lean season	57	33.3
Kilimanjaro, 1988, lean season	57	49.0

Anaemia

The laboratory definition of anaemia is usually based on a haemoglobin value of below 11 g/dl reference range for age and sex, although in certain circumstances the lower cut-off point of 10 g/dl is used.

The causes of anaemia are many. For example, malaria infection shortens the life span of the red blood cells by its direct haemolytic attack. In the presence of underlying iron deficiency the iron produced from the destroyed blood cell is not sufficiently reutilized and this will lead to increased iron deficiency. On the other hand, hookworm infestation can cause negative iron balance especially in Tanzania where the total iron absorbed is low due to low iron bioavailability.

In Tanzania's (1987) hospital-based study in Dar es-Salaam, Kilimanjaro, Mwanza and Mbeya, maternal death rates were reported by Justensen (1987) as 378 as against 270/100,000 as stated by UNICEF (1985). 12% of deaths in Justensen's study were due to anaemia, most of which is iron deficiency anaemia.

Table III gives prevalence of anaemia in some community nutrition surveys carried out by TFNC from 1972.

In 1971, 1974 and 1977, anaemia was reported as the third commonest fatal complication of pregnancy, out-ranked only by difficult labour and haemorrhage. This is the same to date according to Justensen (1987) and Kavishe (1981). According to these figures, therefore, anaemia is of great public health significance in

women in Tanzania.

Iodine Deficiency Disorders (IDD)

In Tanzania endemic goitre ranks third in the list of nutritional disorders. The others, in order of their importance, are protein energy malnutrition and anaemia.

Goitre is found everywhere in Mainland Tanzania with low prevalence along the coast of 0–10% and 80–90% in high prevalence areas (mostly in mountainous areas). Surveys conducted during the early 60s (e.g. Gottlieb M, 1973) give prevalence rates of between 9%–67%. The most recent studies of 1980–81 show similar trends with an average prevalence of 47% (Kavishe, 1983). The high rates of endemic goitre also suggest high risk of cretinism. Although more information is still required on the distribution of cretinism and its relationship to endemic goitre and other nutrition, medical or genetic factors, it has been shown that cretinism occurs with increased frequency in mothers with goitre. In Tanzania, IDD prevalence in women of child bearing age is three times higher than that in men.

Table III. Anaemia by Area and Population Group

Date	Area	Population	Sample Size	Mean Hb (g/dl)
1972	Dar-es-Salaam	Pregnant women	1317	9.3
1973	Kilosa	Adult Women	1702	11.2
1973	Bagamoyo	All ages	1467	10.4
1974	Tabora	Adults	328	12.8
1979	Rufiji	Under 5's	288	7.9
1979/80	Iringa	Under 5's	1143	11.2
1984 (April–May)	Iringa	Under 5's	979	11.8

Source: TFNC Reports – Maletnlema et al 1974; Kavishe 1981

The Tanzania national programme on IDD control which is supported by SIDA, the Netherlands, UNICEF and WHO, has taken a big step towards reducing the IDD problem in Tanzania. Through this programme, short-term measures such as distribution of iodine capsules and long-term measures like salt iodation are being taken.

A Summary of Tanzania Food and Nutrition Centre's Work and its Contribution towards Alleviating Nutrition Problems of Women in Tanzania

The major focus of Tanzania Food and Nutrition Centre between 1973 at the time of its inception and 1983 was on clinical research aimed at defining causal relationships between malnutrition and health factors as they appeared in Tanzania; and creation of awareness in the general public on matters relating to nutrition. Emphasis was more on infant and young child nutrition than on women or other adult groups.

From 1984, more practical action oriented research began to emerge and the Women's Decade brought the issues of women into the open. That helped because the government began taking really positive actions towards improving the situation of women, and TFNC also started placing more emphasis on improving the situation of women.

The Ilula Study

Among the most important studies by Tanzania Food and Nutrition Centre in the area of Women and Nutrition is the Iringa (Iringa) study. This study, which was funded by SAREC, was a collaborative effort between TFNC and the Institute of Nutrition and Department of Paediatrics, University of Uppsala, Sweden. The study was aimed at identifying risk factors that contribute to the high maternal and infant morbidity and mortality, leading to developing strategies for the control of these problems through early detection. The choice of Iringa was well suited because positive results from the study could immediately be injected into JNSP programme areas.

The study covered two villages with a total population of 5,657 (1978 census). The villages are about 45 km from Iringa municipality. The sample was selected through enrollment of all mothers immediately recognized as pregnant. Altogether 300 mothers were covered. The study was designed into 3 parts. The first part, the obstetric study covering 703 cases, identified factors influencing maternal health and the health delivery system. The questionnaire used was based on WHO'S questionnaire by a task force on Hypertension Disorders in Pregnancy. Within 48 hours after delivery, every woman within the area was interviewed and measured. Secondary information was derived from antenatal cards and other hospital records.

The second part was a maternal and child health study whose components included a rapid nutrition baseline survey on factors influencing maternal, neonatal, perinatal and infant morbidity and mortality and how they relate to socio-economic and cultural factors. Basic information on income, household work patterns, prevalence of major diseases etc., was also included. Other relevant biological tests were also done. The three hundred mothers were then followed up at weeks 12–16, 22–24 and 32–36 of pregnancy and measures taken by a midwife for fundal height, weight. Samples of urine for albumin, and blood for Hb were analyzed. Mothers were also interviewed on 24 hour dietary recall and work patterns. Dietary records were filled in and the length of gestation, birth weight, height and head circumference of baby and cord blood serum were collected at birth. Quarterly home visits were continued by a midwife after birth.

In the third part, 50 out of 300 mothers were followed up for more indepth observation on women's workload and dietary intake by recording all food purchases for three days for each quarter. The results of the study were very useful indeed for designing future interventions. The following are some of the results (Kavishe *et al*, 1985).

- i) 29.5% had a BMI of <20 showing underweight
- ii) 30% of mothers actually lost weight during pregnancy
- iii) 50% of pregnant mothers only increased weight from second trimester.
- iv) Dietary intakes, especially of energy source, were very low averaging 1,695 kcal or 60% RDA
- v) Energy intakes were highly correlated with weight increases
- vi) There were negative correlations between energy intake and expenditure. It shows that those who work hard to survive are the ones who do not have enough food to eat. These are those who lost weight.
- vii) Excessive workload negatively affected weight increases.

Women's Workload

Heavy workload has a direct effect of causing loss of energy leading to body weakness under conditions of poor food supply but also has an indirect effect on children causing malnutrition due to inadequate time for child care and feeding by nursing mothers. A TFNC study carried out in Arusha periurban area, Kisanga *et al* (1984), shows that nutritional status of children under five years old improved with increased time for child care.

Efforts by TFNC in the area of reducing women's workload were prompted by the results of the Ilula study, in 1986. As a first step, a national overview of the women's work situation was made. This was done through a

number of methods.

1. Designed questionnaires were sent to women's organization leaders in the 20 regions and 53 districts of Mainland Tanzania.
2. Visits were made to institutions researching on or producing implements that reduced women's workload.
3. The data was analyzed to give indications of time spent on different activities, types of traditional tools used and of appliances produced by the different institutions.

A 61% response rate was achieved by this method and total time expenditure on different activities was estimated to be between 10–13 hours a day, with an average of about 10 hours per day spent on the following major activities: collecting firewood and water, milling, attending health services and agriculture.

It was noted that distance, heaviness of the load and the time spent on queuing contribute to the workload. The use of poor traditional tools as shown in the appendix IA are very laborious and energy consuming, Rutahakana and Kisanga (1987). Visits to institutions revealed that a lot of effort is being made to produce appropriate implements to reduce the workload of women. However, there was little in the area of simple agricultural technology for clearing land, cultivating, planting, weeding, harvesting, etc. Improved tools are a prerequisite if the women's workload is to be reduced. Another observation was that institutions producing workload-reducing tools do not carry out much promotional training, but rather sell their items through customer demand. Thus there was a great need both to increase production and encourage purposeful promotion of these appliances.

The study concluded by saying that women spend long hours on simple non-productive activities because of lack of appropriate tools, distance and inadequate facilities. Educational, research and production institutions and private individuals are making efforts in designing some of these technologies but meet with little support from the government. Rutahakana and Kisanga (1987). Lack of coordination of these efforts at the national level was also a major setback.

This study was followed up by a national seminar for extension workers, Home Economics teachers, institutions and private individuals researching and producing appliances. From the recommendation of the workshop, TFNC efforts continue both in research to further define the problem and to identify solutions as well as carry out area-specific promotion of appropriate appliances. Such area-specific actions are always preceded by a rapid rural appraisal (RRA) to identify area-specific problems, available resources, inherent customs etc. and assist the local communities to design and implement projects suitable to them. Such efforts have begun in (Kitefu) Arusha, (Ongoma) Kilimanjaro and (Kikwawilla) Morogoro. In Kitefu and Ongoma a quick 24-hour recall method of mothers' activities and participant observation were used, while in Kikwawilla a more sophisticated method is being used as is discussed below.

The Kikwawila study on women's workload

This study has been phased into two parts; phase one: the slack time and phase two: the **agricultural labour intensive** period. It has the objective of establishing accuracy by use of a stop watch and close observation over the recall method usually used for time budget in relation to different women's activities. It also aims at correlating time allocation to different activities, to mothers' and children's nutritional states. A comparison between time spent on productive, reproductive and social activities will also be made.

The study covers 50 households (HH) selected from among 100 households in which previous nutritional and agricultural studies had been carried out. The sample was selected to include 25 households with malnourished children, and 25 with normal children. All children were matched for certain basic characteristics such as the number of parents, family size, composition of the household, number of children under five, etc.

The study methods include interviews covering basic characteristics like reproductive history, morbidity, mortality, family size, education level of mother, meal patterns and a 24-hour recall of mothers' activities including distance to crucial services like health care, water collection sources or firewood sources. The second method is participant observation plus use of stop watches and filling of record sheets to cover the period of time from mother's waking up until retiring to bed.

In the second phase, similar techniques will be used including improvements on observed errors and elimination of double recording in situations where the mother carried out two activities simultaneously such as cooking and feeding the baby as has been shown by the first stage.

The study will utilize the results of previous studies in the village (agricultural, food production, and consumption studies) to facilitate adequate description of selected parameters, e.g. food production/consumption in relation to mother's workload and/or nutritional status of mother and/or child, etc. From the first phase of the study some methodological shortcomings have been observed, but some useful preliminary observations were made, for example:

1. There were some observed significant differences between time recorded by stop watch and 24 hour recall.
2. During the slack period women spent more time socializing and doing social activities like beer brewing, drinking and mat making.
3. Children 11 years old and over and not attending school, had significant input in the day's activities.
4. Men also contributed by chopping firewood and with household work when the wife was ill and there was no relative around.

On actual work done, observations made were fairly similar to previous studies by 24-hour recall, Rutahakana and Kisanga (1987) for example:

1. Health care was the most time-consuming single item due mostly to time spent queuing rather than distance to health service which was often 2–3 hours.
2. Washing was often limited to 2–3 times/week due to soap limitation.
3. Water demanded over 3 trips a day, but most often children participated.
4. A 3-hour walk was on average demanded to a firewood source and it has been observed that supplies dwindled yearly.
5. Young children were observed to be with their mothers up to two years after which they were left at home with grandmothers or older siblings.

Most of the earlier studies on women's workload and time consumption studies in Tanzania have been 24-hour recall studies. The present one, carried out in October/November 1988 through the cooperation of TFNC and the Swiss Tropical Field Laboratory, is based on a number of enumerators measuring the time of women's activities by the help of a stop watch. This we hope will give more accurate data which will form the basis for useful interventions.

Among the observations made and lessons learned by TFNC were the following:

1. Women have serious nutritional problems which must be attended to immediately.
2. Different government ministries and research and production institutions are involved in the question of women's workload, but no impact is felt in the rural areas.
3. Workload, lack of time-management skills and tangible alternative ways of raising income, were identified as problems.
4. There is need for more accurate research on the nutrition situation of women in rural areas.
5. Rural women are not sufficiently aware of their limitations and poor socio-economic and nutritional status.

Recommendations

1. Rural women should be more reflected in nutrition and health studies in order to find solutions to their problems.
2. Activities designed to improve the situation of women should be better coordinated at both national and grassroots levels.
3. Education and training emphasizing the nutritional needs and conditions of women should be targeted to families rather than women alone.
4. Women should be given skills on how to manage time within the existing circumstances.
5. Government must take more realistic actions to change the socio-economic situation of women.

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WOMEN, FOOD AND NUTRITION – ISSUES IN NEED OF A GLOBAL FOCUS

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Introduction

If we all wanted to join forces in promoting the health and well-being of those who deserve it the most and receive it the least, we should concentrate on young women. It is simply because when women become healthier, better nourished and rise above poverty, and when their status in society improves, the world will be a better place, our children will have a better future and development and peace will have a better chance.

Therefore, the central message of this report is a call for global focus on health and nutrition issues of young women and an outline of some selected strategies geared to this purpose.

Primary focus in this report will be on young women of child bearing age (i.e., 15–44 years). They have a major role in production and reproduction. Young women in the third world spend almost three-fourths of their prime time of life in an almost continuous state of pregnancy and lactation. They also work long hours in family food production, child care and household management and often work longer hours than men. Women in continents like Africa are the primary producers of staple foods. They form a major part of the labour force in Asia. They spend relatively more of their income on child nutrition and family welfare needs. They are the primary driving force in delivery of primary health care and birth attendance to hundreds of thousands of villages around the world. They form the majority of teachers and nurses. They also have the responsibility of bearing and caring for the next generation. They teach the children in the world and heal the pains of the sick and elderly. It is unfortunate that the world does not pay enough attention to their health, as well as their economic and social well-being. They have an undue share of poverty, illiteracy, disease and poor diet. They also are given an uneven and unfair share of the fruits of advances made in social, economic and political development in the third world.

The promising side of the picture is that women in the industrialized world have made substantial progress in their efforts for a better position in society, and the UN Decade for Women has made a difference in putting women and women's issues on the national development agenda in many countries, and the world is now better informed and aware of the women's problems and needs.

It is now time that the health and nutritional issues of women are given serious and sustained attention. The World Health Organization is committed to the health and nutritional well-being of women, particularly in the developing countries and has a keen interest in joining force with all women's advocates and women's organizations in advancing their cause, particularly their health and nutritional needs.

We hope this report will be helpful in reaching as many national and international groups and organizations interested and involved in women's health and development and further encourage and stimulate them in taking an active role in supporting women's food and nutrition issues.

This report does not intend to address the technical and programmatic issues in detail. These are matters which need to remain country specific. It is designed to offer our reasons and rationale as well as an outline of strategy options for approaching formulation of the relevant policies and programmes.

Poor Women and Their Health Status

Current estimates show that there are approximately one billion absolute poor in the world and half of them are women. Nutritionally speaking, the young women in child bearing age (15–44) are of particular concern, and there are 300 million of them who live under conditions of severe poverty. Half of these young women live in Asia, one third in Africa and the rest in Latin America and the Middle East. It is also important to note that two thirds of these women live in rural and one-third in urban settings. They usually suffer from a rather poor health status which is characterized by shorter life expectancy, high incidence of maternal mortality and low weight gain during pregnancy, low birth weight, poor physical stature, highly prevalent nutritional anaemia, delayed menarche and low productivity.

Table I. Health Status of Women in Various Regions

Region	Life Expectancy at birth (years)	Maternal Mortality Rates	Incidence of Low Birth Weight	Haemoglobin below normal women 15–49
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				Pregnant	Non pregnant	All women
Asia	67(1) 52(2)	420	20	65	57	58
Africa	51	640	15	63	40	44
Latin America	66	270	11	30	15	17
Developed Countries	79	30	7			

(1) East Asia and Pacific (2) South Asia

Sources:

Life Expectancy: World Tables, The World Book, Washington, DC. 1984.

Maternal Mortality Rates: WHO, Geneva, 1987.

Incidence of Low Birth Weight: WHO, Geneva, 1980.

Haemoglobin below Normal: WHO, Geneva, 1979.

Women in the third world live shorter lives than those in the industrialized world by at least 10 years. The average female life expectancy at birth is 50 years in Africa, 60 in Asia and 64 in Latin America. On the average, women live longer than men in almost all parts of the world, although the difference varies considerably in different regions (Table I).

Child bearing in the third world involves a high risk of death. Maternal mortality accounts for almost 25% of deaths among women of child bearing age in developing countries compared with 1% in the USA. According to the World Health Organization, up to sixty women die every hour worldwide due to problems associated with child birth. In the developing world as a whole, the life time risk of dying is 1 in 40 as compared to 1 in 4000 in the developed world. On the average, maternal mortality rates in the developed world are 30 per 100,000 live births, while the rates are 640 in Africa, 420 in Asia and 270 in Latin America (Table I).

Unfortunately, data on women's physical stature is rather limited. Studies have shown that the majority of rural and poor urban girls reach the age of adolescence some 12–15 centimetres shorter than their well-to-do peers in the same society. Fortunately, given proper food intake during adolescence growth spurt, young girls can catch up and reach weight and height comparable to previously well nourished boys and girls. Taller women have better capacity to bear children. A particularly important factor is the size of their pelvis which strongly influences the natural capacity for having infants of normal size. Several studies have shown that women often weigh below the 55 kilograms norm used by the World Health Organization. For instance, data from several studies in Asian and African countries including the Philippines, East Java, New Guinea, India, Bangladesh, and Burkina Faso reported the average weight of non-pregnant-non-lactating young women to be in the range of 40–50 kilograms. Similar surveys in Brazil and Mexico reported the average weight of women to be 50–57 kilograms. In sample surveys in countries like Iran and Jordan, women's weights were reported in the range of 55–60 kilograms. Although these figures do not represent a national profile, they clearly show that women in Asia and the Pacific are underweight. Although the situation in Latin America is satisfactory, it should be pointed out, however, that these figures only represent the population surveyed, and they are not often clearly defined in terms of their socio-economic position and the larger class of the population they may represent.

Weight gain during pregnancy is a good indicator of pregnancy outcome. On the average, pregnant women in the industrialized world gain 10–12 kilograms, while several studies in the third world have shown that weight gain during pregnancy is only in the range of 2–7 kilograms. There is plenty of evidence that low levels of weight gain during pregnancy are closely related to the incidence of low birth weight. Weight gain during pregnancy reflects the state of maternal nutrition. It is a source of stored energy that helps in meeting the costs of lactation. Repeated pregnancies without weight gain lead to physiological depletion.

The World Health Organization estimates that 21 million infants with low weight at birth (LWB) are born in the world each year, a vast majority of such births occur in the poorest parts in the third world. In the developing countries, incidence of low birth weight is around 17% compared to 7% in the industrialized world. The figures vary between the regions. For instance, the rates are 20% in Asia, 15% in Africa and 11% in Latin America.

Low birth weight is closely associated with maternal malnutrition. Maternal malnutrition, especially in the last trimester of pregnancy, reduces the baby's ability to put on weight, a phenomenon which subsequently limits their chances for survival or growth.

Several studies have shown that low birth weight infants are five times more likely to die of infectious diseases, three times from diarrhoea and seven times from respiratory infections. High incidence of low birth weight is a direct indicator of social and economic underdevelopment. It also reflects a poor status in maternal nutrition and limits the prospects of the newborn to experience a healthy growth and development.

Nutritional anaemia widely affects menstruating and pregnant women in the third world, a problem which fortunately has been fairly well studied. The World Health Organization estimates that nearly 500 million young women suffer from some degree of nutritional anaemia. It is alarming to know that almost one out of every two young women in the third world is likely to be anaemic. Iron deficiency has been identified as a common and important cause of nutritional anaemia in both pregnant and non-pregnant women in low income populations which severely affects women's health and productivity. Anaemia is frequently caused by a combination of factors, particularly low iron intake and absorption, and is often aggravated by malaria and hookworm. Intake of folic acid and riboflavin are important, plus the intake of protein and Vitamin C which enhance iron uptake.

As Table I shows, two-thirds of pregnant women in Africa and Asia and one-third of them in Latin America are suffering from anaemia. It is also important to note that the difference between pregnant and non-pregnant women is significant. It actually speaks to the magnitude of nutritional stress during pregnancy.

Evidence shows that well nourished young girls are likely to reach menarche two years earlier than the poorly nourished ones. Substantial variations have been reported in age at menarche between young girls in the developed and the developing world. In the western societies, the average age of menarche is 13 years, while in the third world, it has been reported to be 15. Also, several studies have reported differences up to two years among young girls of high and low nutritional status. Historically, evidence has shown a decline in age of menarche of up to three years in Europe within the last century, which also correlates with gains in height and weight. In countries like Bangladesh, delays in age of menarche have been reported in connection with war and famine. Clearly, nutritional status seems to be associated with age at menarche but explanations are not clear.

Finally, low labour productivity is often associated with undernutrition and low income. Women with poor nutritional and health status are not enduring to long hours of physical activity. They are more likely to be absent from work due to repeated illness. It has been shown that iron supplementation improves women's average work hours and reduces absenteeism. Also, there is evidence that productivity (work intensity per unit of time) increases as nutritional status improves.

The facts and figures presented so far speak to the tremendous health hazards under which the young women live in the developing countries. This is a quick glance at a major global health problem. They are symptomatic manifestations of women's unhealthy life being full of physical, social and physiological stress. It presents a complex and widespread problem often termed as maternal malnutrition. Maternal malnutrition makes pregnant women prone to fatigue, and reduces their ability to work and care for their children. Furthermore, it seriously affects their quality of life and makes them vulnerable to disease. Maternal malnutrition also poses a serious threat to the infant's health. Partly because the infant is physically affected by it and partly because the mother is less fit to care for the infant. In the next section, there will be a brief discussion of the immediate and underlying causes of poor health and nutrition among women.

A Look at the Immediate Causes

Women's health and nutritional well-being in the low income families are seriously affected by too many pregnancies, prolonged lactation, long hours of work, poor diet, repeated exposure to disease and extremely limited access to adequate health care. These are often referred to as the immediate causal factors in the genesis of maternal malnutrition in the world.

The combination of work and reproduction exert substantial stress on women for many years in their lives. Repeated pregnancies and prolonged lactation often result in a physiological depletion and stress, while long hours of work put them under continuous physical stress. As a matter of fact, lives of women are constantly under what we may call double jeopardy. On the one hand, they have to meet the challenge of biological

functions in child bearing and lactation, plus child care, home production and farming. While on the other hand, they live with poor diets which fail to provide them with their nutrient needs, plus rather heavy exposure to illness and lack of access to adequate health care services.

Women and Reproduction

If you take a careful look at the life of young women in their twenties and thirties in the third world, on the whole they are pregnant for five years, lactating for ten years and physiologically resting for three to five years. Naturally, these figures vary between different regions of the world.

The cumulative fertility rates are 6.5 in Africa, 5.6 in Asia and 4.9 in Latin America and only 1.7 in the industrialized countries (Table II). Therefore, young women in Africa are on the average pregnant for well over five years, while women in the developed countries spend, on the average, only 16 months in pregnancy. The difference is tremendous in terms of the physiological burden, additional food needs and the amount of time being free for other purposes in the prime of life.

Table II. Fertility in Various Regions (Mean Number of Children born by Age of Women)

Region	Women's age					Average Fertility*
	20-24	25-29	30-34	35-39	40-44	
Africa	1.4	3.0	4.6	5.7	6.3	6.5
Latin America	1.1	2.5	4.0	5.2	6.0	4.9
Asia	1.2	2.7	4.3	5.5	6.3	5.7
Industrialized Countries	-	-	-	-	-	1.7

* Five years prior to the World Fertility Survey

Source: United Nations (1987). Fertility Behaviour in the context of Development, Population Studies No. 100. United Nations, New York.

Mean duration of breastfeeding in Asia and Africa is around 19 months for each child. Therefore, young women, cumulatively, are lactating for ten years. It is also important to note that over two-thirds of women in Asia and Africa breastfeed their children beyond 12 months (Table III). The picture is somewhat different in Latin America, where mean duration of breastfeeding is 10.4 months and only 37% of women breastfeed beyond 12 months. Undoubtedly, the costs of reproduction are quite high for women as well as for the family and society. In addition to the risks of death discussed earlier, pregnancy and lactation have substantial food costs. For instance, the average increase in need for calories due to pregnancy and lactation is estimated around 15% for pregnancy and 20% for lactation which becomes an additional burden on the limited family budget. Whenever those food needs are not met, then the women suffer from chronic undernutrition, and their bodies become depleted from its sources of nutrients and essential materials for healthy living.

As a result, women lapse into a state of low productivity, poor resistance to disease plus the fact that pregnancy and lactation also inhibit them physically from participating in economic activities. Therefore, the total sum of costs of additional food needs, health care and opportunity costs are very high. It is on these grounds that **child spacing** is highly recommended as an appropriate method of easing the burdens of reproduction, while protection and promotion of breastfeeding is strongly recommended.

Table III. Breastfeeding Pattern by Region

Region	Mean Duration (Months)	% Ever Breastfed	% Breastfed at 12 Months Age
Africa	18.7	98.4	79

Latin America	10.4	92.4	37
Asia	19.0	94.5	63

Source: As for Table II

Women and Work

Data on time use among women and men has improved in the past ten years. There is now plenty of evidence that women in the third world spend long hours at work. Almost without exception, the rural women have the dual role of home care and economic activities. They divide their time between domestic work including child care and household care and farming. Several studies in this area are summarized in Table IV.

Table IV. Time Use of Men and Women for Various Activities (in Hours)

COUNTRY	WAGE EARNING		DOMESTIC WORK/SUBSISTENCE FARMING		TOTAL		RATIO
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
<u>BANGLADESH</u> (Cain 1979)	7.04	1.61	1.29	6.68	8.33	8.29	.99
<u>NEPAL</u> (Acharya 1982)	5.81	4.62	1.7	6.19	7.51	10.81	1.44
<u>PHILIPPINES</u> (King et al 1983)	6.85	2.57	1.3	7.42	8.15	9.99	1.22
<u>BOTSWANA</u> (Mueller 1984)	3.7	1.8	1.43	4.38	5.13	6.18	1.20
<u>TANZANIA</u> (Kamuzora 1980)	5.85	4.96	1.79	4.56	7.64	9.52	1.25
<u>CENTRAL AFRICA</u> (Bangai 1960)	2.28	3.57	0.17	3.37	5.5	8	1.45
<u>IVORY COAST</u> (Berio 1984)	3.35	3.17	0.40	3.45	4.15	7.2	1.7

They all show that women on the average have longer working hours. In most studies women work between 8 to 10 hours per day while men work 6 to 8 hours. Furthermore, it is clear that when women find the opportunity to work within the market employment, they work almost the same hours as men do. In addition, women spend much longer hours in domestic or household care and subsistence farming. In almost all studies women spend around 4–6 hours in domestic work and farming, while men spend less than two hours in this area.

Women in rural areas are primarily active and engaged in subsistence agricultural production, and their role in wage earning and cash crop production is secondary. Therefore, their economic role and productive contribution to the development process are not properly quantified and are often under reported. However, there is plenty of data to show that women play a major role in family farm production in all regions of the third world. They are actually the prime producers in subsistence agricultural production while men specialize in cash crops. As a matter of fact, with increasing male migration, women are becoming the dominant force in family food production in many poor rural areas. There is also a clear sex division of labour. As Table V shows, women have a much larger share in feeding the family, carrying and storage of crops, carrying water and fuel, weeding, harvesting and caring for animals while men are primarily responsible for clearing the fields, turning the soil, planting, harvesting, marketing and hunting. In addition to a major role in subsistence farming, women have an important role in household management and family expenditure as well as petty trade, while men have the control in decisions over cash crop production as well as market transactions.

Other studies have shown that men have the control of decisions on marketing the surplus grains, while women have better control over marketing of vegetables and milk as well as cooking, child care and pay for clothing. The extent of women's influence in household decisions depends on their social class, participation in market production, and access to land, as well as time use pattern. What is clear is that women make significant contributions to the household income.

Table V. Relative Time Use by Men and Women in Farming in Africa

NATURE OF WORK	MEN (%)	WOMEN (%)
Cleaning forest, staking out fields	95	5
Turning Soil	70	30
Planting	50	50
Weeding, hoeing	30	70
Harvesting	40	60
Crop transportation (from field to home)	20	80
Storing crops	20	80
Food processing	10	90
Marketing food surplus	40	60
Carrying water and fuel	10	90
Animal husbandry	50	50
Hunting	90	10
Feeding and caring for the family	5	95

Source UN/ECA 1975

Table VI. Composition of Labour Force by Gender and Sector of Activity* (1980)

ECONOMIC REGIONS	FEMALE				MALE			
	AGR	IND	SER	TOT	AGR	IND	SER	TOT
INDUSTRIALIZED MARKET ECON.	9.43 (7.7)	31.8 (25.8)	81.8 (66.5)	1.23 (100)	18 (8.5)	100 (45.9)	99 (45.6)	217 (100)
INDUST. CENTR. PLANNED ECON.	20.6 (21.5)	31.7 (33.1)	43.5 (45.4)	96 100	21 (19.4)	54 (50.3)	33 (30.3)	108 (100)
DEV. COUNTRIES	267 (66.3)	65 (16.3)	70 (17.4)	403 (100)	467 (55.7)	181 (21.6)	190 (22.7)	839100
TOTAL	297 (48)	129 21	195 (31)	622 (100)	527 43.8	336 29	322 28	1165 (100)

* figures in millions

Source ILO/UNRTIAW, Geneva 1985

Several studies have shown that women contribute anywhere between 20–60% to the household income, while time allocation studies have shown the nature and extent of female work activities in comparison with their menfolk at the household and family farm levels. The estimates of the International Labour Organization (ILO) speak of the magnitude of the economic contribution by women at the global level (Tables VI & VII).

Table VII. Regional Distribution of Female Labour Force and its Increase Over Time

REGION	FEMALE LABOR FORCE 1985		% INCREASE DURING 1975–1985
	NO. (MILLIONS)	%	
WORLD	676	100	8.4
ASIA	382	56.5	9
AFRICA	61	9.06	11.2
LATIN AMERICA	33	4.86	19.5
NORTH AMERICA	46	6.8	8
EUROPE	151	21	

Source: ILO/UNRTIAW, Geneva 1985

It is interesting to note that by 1980 there were over 600 million women in the work force in the world which formed around 40% of the total labour force. It is also notable that a proportion of the female work force in various sections in the developing countries is quite similar to the male, although their absolute numbers differ. In the developing countries, 66% of women are active in agriculture, while in the industrialized countries 66% of them work in the service industry (Table VI).

Finally, as Table VII shows, more than half of the female work force is in Asia, and their size is larger than Europe and North America combined. Although the absolute size of the female force in Latin America is relatively small, their rate of increase over the last ten years has been the fastest in the world.

Women and Poor Diet

While women face the demands of reproduction and physical work, they are severely disadvantaged in having a poor diet and access to limited health care services. As indicated earlier, the food needs of young women are considerably increased because of being almost constantly in the reproductive process as well as keeping with long hours of work. For instance, the average daily caloric needs of moderately active non-pregnant-non-lactating women is about 2200. Additional needs for pregnancy and lactation are around 350 to 500 or 15–20%. Furthermore, access to health services pertaining to maternal care is an important factor in maintaining the health and well-being of women.

Although the data on food intake among women is rather limited, several studies have shown that calorie intake among young women in Africa was only 50–70% of their recommended allowance. Similar data on food intake among poor women in India, Philippines, and Gambia have shown that women's calorie intake was no more than 60–65% of their needs. Interestingly enough, food intake among women in Mexico and Korea have been reported as being within the adequate range. Clearly, there is need for better data in this area. However, plenty of corroborating evidence from sources such as household budget surveys and food and nutrition surveys point to the fact that a chronically low level of food intake exists among low income households, and women and young children are often at a relatively higher risk of food deprivation. As a matter of fact, several of the indicators of poor health among women, particularly low weight gain during pregnancy and widespread nutritional deficiencies, are partly explained by poor diet and chronic undernutrition.

Table VIII. Health Care Services in Various Regions

Region	Access to Health Services*	% Child Birth Attended by Trained Health Worker
Asia	87	49
Africa	58	39
Latin America	88	64

Industrialized Countries	99.7	98
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* Within one hour travel

Source: WHO, Geneva 1981.

Access to Health Services

While almost everyone in the industrialized world has access to health services, the situation is quite different in the third world. In Africa only 58% of the population has access to health services. Figures for Asia and Latin America are around 87–88%. The situation is much more serious when it comes to the professional care during child birth. For instance, in Africa only one–third of child births are attended by the trained health workers. In Asia only one–half, in Latin America two–thirds of deliveries are attended by professionally trained health workers. In the developed countries the figure is 98% (Table VIII).

Underlying Causes

There is plenty of evidence that the lower status of women in society is among the basic underlying causes of maternal malnutrition and women's poor health.

Lower status of women is well reflected in the fact that many societies prefer boys to girls, offer better education and job opportunities to men, pay women less for the same work, and often see them in less prestigious jobs with very little access to decision–making. In the poor rural areas of developing societies, women have a higher share of illiteracy, overwork, undernutrition as well as loss of traditional support systems and the burden of heading the household due to accelerating male migration.

Women's status defines their position in society. It is both their standing as well as the perception in society as to where they actually belong. Women's status is often characterized through a set of social, political and economic indicators:

1. The group of political indicators consist of: (a) legal entitlements; (b) participation in the political process; and (c) authority through holding offices either via election or by appointment.
2. Indicators of economic position include: (a) participation in labour force; (b) job security; (c) wage rates; and (d) education and specialization.
3. Indications of social position are: (a) marital relations; (b) maternity benefits; and (c) divorce, child custody and child care.

Historically, poorer women have had to work and have received few societal benefits. Interestingly enough, what is known about women is based on records and thoughts of men. It was only in the 18th century that women began to organize themselves around the issues of their own concerns. Their situation at that time has been described as fragile, domestic and dependent.

In the United States, change of women's status began in the 1920s and have continued ever since. Initially, women gained the right to vote, common access to primary education, and gradually improved their social and economic position. Over the past two or three decades, women in the industrialized world have gained substantial social, political and economic rights. For instance, rights to equal job opportunity, equal pay, property and credit, as well as expanded educational opportunities, increasing political participation and organization, have been tremendous improvements. Family roles are changing too. For instance, substantial change in age at marriage (22 years in the USA), having the first child as late as 30 years of age, and sharing of men in child care and housework are to be noted.

In summary, women have gained status almost equal to men which, in the opinion of some experts, is not fully secure.

In the third world, attention to women's issues has been a much slower process. The UN Commission on the Status of Women was established in 1948. However, the first worldwide effort to enhance the status of women began with the UN Conference on Women in Mexico in 1975 and followed through with the UN Decade for Women 1975–1985.

Experts such as Margaret Leahy see a connection between the global concern over food and population issues in the sixties and a new level of attention to the women's issues. Actually, two major international conferences on food and population in the early 70s made it clear that women have a central role in food production and fertility control, and there was an almost sudden awareness as to how little the world knew about women. It also became clear that success in policies and programmes geared to better nutrition, family planning and population control were heavily dependent on enhancing the position of women.

Since then, progress made in enhancing women's position has been reviewed in two major international conferences in Copenhagen (1980) and Nairobi (1985).

Important progress in the last ten years includes the following. **First**, the state of knowledge and information on the conditions of women in the world have improved dramatically. **Second**, the role and contribution of women to national development, family life and societal welfare is now much better documented and understood. In other words, the links between women's status and national development are clearer now. Therefore, women and women's advocates can be much more effective in defining women's issues and placing them on the national and international agenda. **Third**, substantial experience has emerged in numerous countries in dealing with women's issues from a variety of perspectives. Already, good beginnings have been made in many countries, and through persistence and hard work, much more could be achieved.

It has been argued that in the long run, industrialization and sustained national economic growth are the critical preconditions for enhancing the position of women. However, it is no secret that many developing countries have experienced serious difficulties in their efforts for industrialization and economic advancement. Furthermore, there are several serious barriers to women's participation in economic and political spheres.

Illiteracy and poor education lie at the heart of women's lower status. Today 27.7% of men and women are illiterate in the world. Table IX shows the alarming contrasts between the industrialized and developing world as well as those between women and men. Level of illiteracy in the developed world is only 1.7 for men and 2.6 for women. In the developing countries, illiteracy is 16 times higher for men and 20 times higher for women. In the least developed countries in the world, more than half the men and three-quarters of the women are illiterate. In the developing countries, there are almost two illiterate women for each illiterate man. Looking at the regions of the world, the highest illiteracy is found in African and the least in Latin America with Asia being somewhere in between.

Table IX. Illiteracy Rates (%) by Gender, Aged 15 Years, and Over

Region	Both Sexes	Male	Female
Africa	54.0	43.3	64.5
Asia	36.3	25.6	47.4
Latin America	17.3	15.3	19.2
Least Developed Countries	67.6	56.9	78.4
Developing Countries	38.2	27.9	48.9
Developed Countries	2.1	1.7	2.6
World	27.7	26.5	34.9

Source: Division of Statistics on Education, UNESCO, Paris, 1987.

In many traditional societies, education is considered as preparation to leave home while women's traditional place is at home. This logic cuts across several social strata. It explains why more boys are sent to school in several classes, societies and regions of the world. A look at primary school enrollment shows that the female disadvantaged position is likely to remain for the next generation in Africa and Asia.

The primary school enrollment in the developed world is 92/92 for men and women, and in the developing countries it is around 79/66. In Latin America there is no gap between boys and girls and the ratio is 88/88, while in Africa and Asia respective rates are 72/60 and 81/65. Some experts argue that education gaps between men and women widened since boys gained access to the western-modeled education and girls did not. This is particularly true in the Islamic nations. Women's education in all probability is a critical precursor to closing the gender gap, facilitating their political participation and moving them from the periphery to the mainstream of development. Educated women are much more effective in their own welfare as well as that of their family. At the very basic level, illiterate women often find it hard to absorb modern methods of sanitation, management and prevention of disease, nutrition, fertility regulation and pregnancy care. Women with no education are more apt to embrace the traditional status quo and less open to change for better health and family practices.

Furthermore, the prevalent social attitudes towards the role of men and women and sometimes the religious teachings play a strong role in conditioning women's economic and political position. In societies where the appropriate social role for women is perceived to be *a wife and mother*, then it becomes extremely difficult for them to expand their economic role and social mobility. Under such circumstances, women are primarily responsible for the reproductive process while being denied the right to control it.

The discussion thus far indicates that future positive change in status of women is primarily a matter of education, empowerment through organization and political participation, change of attitudes in society and economic control.

Unfortunately, there is no clear and conclusive analysis as to whether any of these variables function as precursor to the other. However, industrialization, economic growth, combined with education and empowerment of women, could result in better social and economic positions for them.

Sociologists like Blumberg, have argued that relative male/female economic control is the most important of major independent variables that affect overall gender stratification. She has defined *relative economic power* as degree of control of key economic resources, i.e., income and property, particularly allocation of surpluses. Therefore, she is in favour of increasing the women's control of the household economy on the premise that women's control of the household economy helps in enhancing their position in society and will contribute to family welfare, and on broader scales will make a major contribution to national development, particularly in the areas of food production, child nutrition and family health. The essence of the argument is that *the family internal economy* should be taken into account in development planning. This happens to be in contrast with the economists' approach where the *household economy* is taken as the unit.

Blumberg's argument is based on the evidence that women have a higher propensity to spend their income on child nutrition and immediate family welfare. Furthermore, it has been shown that women assume control over their fertility, and their sense of self-esteem improves drastically as their income increases and their relative control over that income improves.

Furthermore, looking at the food production situation at the macro level, particularly in the regions such as Africa, it is argued that as long as women are the main producers of staple foods, their incentives in food production need to improve, and income control is the most effective incentive which is often ignored within food and agricultural policies and programmes. In fact, several analyses have shown that while women's income has increased, their relative control over it has decreased. Some argue that development strategies of this nature have resulted in further marginalization of women. In a parallel review, negative nutritional effects of the agricultural policies and programmes were reported in several studies during the last decade.

The discussion on the immediate and underlying issues clearly serves two purposes. First, as a basis for articulating the women's issues in short and long terms as well as advocacy in favour of priority attention to their needs. Second, as a basis for identification of alternative strategies in addressing those issues, which will be the subject of discussion in the next section.

What Are the Options and Alternatives?

Given the nature of women's issues and its diversity, there are five major groups of strategies through which women's state of nutrition and health as well as their social and economic position could be improved. These strategies are being advanced as a response to the major women's issues discussed earlier in this report. They are expected to remove barriers to advancement of women and enhance their health and well-being.

These are as follows:

1. Reduce the burdens of reproduction.
2. Reduce the burdens of child care.
3. Improve their access to maternal health and nutrition care
4. Enhance their position in food production and farming.
5. Elevate and improve their position in society.

These strategies cover a wide spectrum of options all the way from the household level to the community life and further to the long-term issues in society. They include both short-term and long-term approaches. They are grouped in a fashion that easily relates to the specialties and interests of various sectors. For instance, women and farming relate to the agriculture sector while health and reproduction are within the territory of the health sector. Child care relates to social welfare, and other issues relate to the economic and political sides of development.

Finally, proposed strategies are being quite selective and specific.

Perhaps many of the developing countries are already interested and involved in several of these areas. However, they all need to establish or strengthen a national machinery responsible for addressing the women's priority issues and also provide the related political and institutional support in order to make them effective. As a matter of fact, this is one of the important recommendations of the International Conference on Women in Nairobi in 1985, at the end of the UN Decade for Women.

There is a general consensus around the world on the need for national and international political commitment to advancement of women, and there is a fairly good agreement on the process and the mechanisms involved. However, there is substantial difference on the women's agenda and priority issues depending on which region in the world we are talking about and the platform from which it is being advanced. It is quite understandable that women's issues as seen in different countries should vary considerably. However, the core of the agenda and points of emphasis also differ within the international community.

For the purposes of this study, a careful look has been given to the issues and priority solutions advocated by the international nutrition and health community as compared to that of the international development assistance institutions and the women's groups outside the UN system.

The sets of strategies proposed here do not represent a simple collation of the views of one or more of these groups. It is a set of logical responses to the critical issues affecting women as discussed earlier and should be reviewed as strategies for removal of the primary barriers to women's health and better status in society.

Here is a brief outline of options for action on each issue, and it is our suggestion that a detailed discussion is not necessary. The reader can easily refer to a variety of sources for more information.

Reducing Burdens of Reproduction

There are two strategies widely seen as effective and appropriate for this purpose. These are (a) increased age at marriage and (b) child spacing. In societies where the girls marry too young, they and their families could be encouraged to have them marry at a later age. This can be accomplished through legislation and education. Furthermore, proper child spacing will help a young family to have children when they are socially, economically and emotionally prepared.

Reducing Burdens of Child Care

Child care options in the third world are either good in meeting the needs of children or for the interests of women and rarely are suitable for both. Child care, through the help of older siblings and grandparents, helps women save their time, but are not usually adequate in meeting the child's needs for early stimulation, food and care. On the other hand, child care centres are more effective in caring for children, but are not often affordable and accessible in the rural areas. The mobile creche system has been tried for working women in the field and has proven to be effective and useful. Also, rural and urban child care centres heavily subsidized by the government and the community have been tried with success. Preparation of special foods for children

during weaning age will help save mothers' time for child feeding.

Improving Access to Maternal Health and Nutrition Care

This group of strategies ought to serve as an effective response to health hazards of child bearing and common diseases of young women as well as providing short-term answers to the dietary issues. Needless to say, long-term answers to problems of poor diet will have to be found in family food production and rural development as well as income and employment policies. Now, what are the critical aspects of *health care access* issues that need selective attention? Actually, there are three aspects which need pointed attention. These are (a) focus, (b) outreach and (c) quality. The term *selective* here is meant to spell out those aspects of health care access that directly relate to maternal health issues while improvement of access to health care services is a general health care policy. *Focus* on maternal health care is a specific women's issue. Actually, *maternal health care* services are by far the least developed part of the overall Maternal and Child Health (MCH) services in many countries. In fact, some experts on *family health* are concerned that in practice "M" abbreviating *maternal* is missing in "MCH" and needs to be put back. Therefore, *focus* on access to maternal care services which covers prenatal care, birth attendance and post natal care is a critical dimension of health care access issues. In this context, particular mention should be made of pregnancy monitoring, education on nutrition during pregnancy, provision of food and nutrient supplements, health education, child birth attendance, protection of breastfeeding and prevention and control of common diseases of young women. Another barrier to be removed is a highly uneven distribution of services which often prevail in developing countries. Therefore, special focus on extension and outreach of services into the rural and remote areas is a decisive possibility for reducing social inequalities in favour of women. Finally, improvements in service quality are badly needed. In this context, training of health workers, improved health care management and supervision and provision of supplies can make a major difference.

As a part of general strategy on maternal health and nutrition, special attention to promotion of functional literacy especially on health, nutrition, water and sanitation, and treatment of common diseases is strongly recommended.

Enhancing Position of Women in Food Production and Farming

Strategies in this category need to focus on the invisible and unremunerated contributions that women make to national economies, particularly through subsistence family farming. The *visibility* problem is recommended to be remedied through development of a data base on women's issues in national statistics. In many countries such a breakdown in data is already in the works, and within the international community the economic contribution of women, particularly in food production, has become much more visible.

A combination of training, credit, and agricultural extension would help improve women's agricultural productivity.

At present, agricultural extension and credit are both less available to women than men while women play a larger role in food production. An effective answer to this problem may involve more female agricultural extension workers and modification of techniques, and focus on women's needs.

Women's access to credit may improve through women's cooperatives or saving groups. Finally, research and development in practical methods and means of enhancing women's position in farming is urgently needed. Applied research can be extremely helpful in finding effective packages of credit and extension and training for women under various circumstances.

Elevate and Improve Position of Women in Society

Status of women in society will improve and rise through (1) education; (2) increase in and control of income; (3) empowering women through organization and political participation; (4) change of social attitudes in favour of women's equality; and (5) legislature for social rights.

As indicated earlier, illiteracy is at the heart of women's poor health and lower status. It is also a major factor

behind negative social attitudes on the role of women. Therefore, in the long run education and education policies make a major difference as far as position of women is concerned. In the immediate future, it is essential that national women's literacy programmes be given high priority, and the primary school enrollment for girls, particularly in the rural areas, increases as fast as possible and women participate in developing education policies in the developing countries.

Now let us look at the income issues. There have been plenty of studies on the income earning and income control by women as a precondition for their advancement. Blumberg's excellent theoretical work in this area was cited earlier. Undoubtedly, healthy and educated women will be in a much better position to compete for the jobs and in being economically productive. For all practical purposes, the following four sets of options have been proposed for increasing women's income:

- Reduction of time required for household production.
- Increasing efficiency, output and returns of the economic activities in which women currently engage.
- Transformation of subsistence activities into income-generating activities.
- Creating new employment opportunities for women.

On the political fronts, women's participation in the political process is critical in putting the women's issues on the national agenda and improving their position in society. This process will be accelerated and energized through organizing and empowering women. As a matter of fact, women's organizations at the grassroots level are seen as a key to improving their position in income earning, agricultural productivity, development of community-based primary health care and advancement in education. In the urban settings, women can advance their social and economic equality through organization and participation in the political process. In doing so, a continuously increasing number of women will move into a position of decision-making within the executive and legislative branches of government.

Finally, in many developing countries, the attitudes toward women and their role need substantial change. There are many societies where women are considered to be biologically incapable of being equal to men. Historical, cultural and religious teachings have established the role of women as being *wives and mothers* and the husbands as *providers and protectors*. It has taken almost a century to change these norms and attitudes in the industrialized world, and many development experts and historians are of the opinion that industrialization and economic growth are the preconditions for such change of roles and perceptions. However, in the age of electronics and modern communication, the attitudes in third world societies towards women and their roles may change well before these societies are fully transformed economically and industrially. The process of change can be energized and accelerated through a carefully designed public awareness and education campaign. After all, educated and informed men can facilitate a positive change and minimize its pain.

In the final analysis, as women succeed in improving their position, the society will change its attitudes.

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THE FEMINIZATION OF POVERTY

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I want to share some of the broad policy concerns which derive from problems that poor women are facing today. This comes from the centre's (ICRW) work on poor women with the Inter-American Development Bank, and with the Population Council in New York City on female-headed households in the Third World. As you well know unlike poor men, poor women have two roles. They are both income earners, and mothers and homemakers. This can often lead to what Judy McGuire and Barry Popkin very well said to you last year: Zero Sum Games. Women's increased economic activities can detract them from spending time on home production and nurturing; this can either bolster family welfare, or can lead into a vicious circle of poverty and malnutrition for women and their children. McGuire and Popkin pointed out how to change the zero-sum game – how do we make it into a positive-sum game for women and children?

What has happened in the last decade with different adjustment policies and structural reforms in Latin America? Joanne Leslie (1988) reviewed the literature on the relationship between women's work and child welfare. A critical question concerns effects of women's increased participation in economic activity on child welfare and child nutritional status. If women are joining the labour force in increasing numbers, does this have a positive or a negative effect on child welfare? Before Leslie's review was published, there was a growing concern that while women's increased work force participation had a positive income effect – in terms of the household having more money to purchase food stuffs – on the other hand, there were negative effects in terms of lost time for child care resulting in less breastfeeding and decreasing child nutritional status. This review of empirical evidence from countries around the world found that there was little evidence to show the negative effect of women's employment on both breastfeeding duration and infant feeding patterns. What she did show is that there can be a positive effect of child nutrition status, *if* you provide women with decent employment. There are two critical issues – decent employment and/or alternative child caretakers in the home to substitute for mothers time when she is out working. Leslie concludes that in order to ensure child welfare you have to provide poor women with quality employment. This is a critical concern for policy. Why? Structural adjustment and policy reforms, (at least in Latin America and this can probably be generalized) have done two things: they have increased the participation of poor women in the work force – there has been a feminization of low paid work – and they have contributed to the feminization of poverty.

The demand for low paid female labour in Latin America has been triggered by three different forces. *First*, usually along with structural adjustment packages there has been an emphasis on export-oriented growth. This is both through the industrial and agricultural sectors, through export processing in agri business and through the multinational corporations absorbing female labour. This process has increased dramatically the numbers of low income women who are working both in export manufacturing – in Panama, Costa Rica, the Dominican Republic for example – in low wage jobs, and in agri business in Ecuador, Costa Rica, Chile, particularly with companies that export flowers and fruits. *Second*, there has been an “added worker” effect along with the economic and debt crisis. Poor women in the region have joined the labour force in increasing numbers in order to compensate for declining family income. Interesting information from a number of countries shows that in peak economic recession years there is an increased participation of low income women in the labour force along with a retreat in the participation of high income women. The *third* factor that has increased the demand for low income women workers has been the growth of the informal sector. In Latin America this has attracted a substantial number of low income women workers.

The critical question is if there is an increased participation of poor women in the work force, how do we minimize the probability of zero-sum games? That is, how do we ensure that these women are provided with quality employment so that they can make their home production and nurturing roles compatible with their market roles? The question is critical because we are functioning today in very deregulated labour markets, that attract women workers precisely because it is flexible labour for low wages. In fact, when minimum wage legislation is imposed one of the things that happens is that you substitute men workers for women workers. So the question is how do governments, donors and international agencies ensure quality employment for women in the context of very competitive labour markets with a high degree of participation of the private

sector. The establishment of minimum wage legislation and of laws that protect women workers has been seen in fact to move women away from the work force. One of the things that governments, and donors can really do concerns subsidies, particularly for quality child care close to the places of women's employment. This is something that particularly in the Latin American context the state and donor agencies can assume a major responsibility for. Another is investments in human resources to expand the economic opportunities of low income women.

A second trend that is very prevalent in Latin America these days is the feminization of poverty through the rise in poor women-headed households. This is not happening only in Latin America it is also happening in Africa. Perhaps linked to the debt crisis of the '80s or perhaps independent of it, in Latin America the evidence clearly suggests an increase in women heading their own households. Moreover, this increase in women-headed households is tied to household poverty and thus increasing numbers of children living in poverty. We have just reviewed 22 studies that have been conducted in the region on the poverty of female headship and the status of children in these households. All but one of the studies confirmed this trend: There is an increasing number of children living in poverty in female headed households (Buvinic 1990).

The question is what to do about this trend? Women household heads are typically facing the zero sum game or the double burden. They have no option but to work in the market place because they don't have anybody to generate income and they have usually nobody to take care of children. Therefore, a factor here is also the provision of quality child care facilities. There are other strategies that could be implemented, perhaps in the short term particularly during periods of economic crisis, but they are very controversial. One such strategy is simply income transfers, targeting female headed households. There is, though the concern that income transfers to women headed households may have a perverse incentive effect resulting in a rise in female headed households, rather than a diminution of these forms of family structures. The evidence often cited is from the programme in the United States that provides aid for women and dependent children. Recently Nancy Folbre (1990) reviewed the consequences in the United States of these programmes on the formation of households headed by women and concluded that no reliable evidence to show that income transfers to poor women headed households leads to a rise in female headship. In fact Folbre says that an increase in women headed households was the catalyst of these programmes of aid, rather than the reverse. Targeting can be effective, particularly in periods of economic crisis for these very vulnerable populations of female headed households and their children. Solid documentation and operations research are needed, attached to experimental programmes that target female heads and their children – particularly in periods of economic vulnerability – both with employment and child care and health services. This is one of the challenges that state and donor agencies face.

Another challenge is housing policies. One of the problems that female headed households have in the Latin American region is they have no access to housing. They can usually not purchase housing, and they end up renting, paying very high rents. While the housing policies in the region try to discourage renters in favour of housing ownership. But women-headed households have no access to these. An alternative intervention is the setting up of vouchers, particularly for female-headed households, that can be used to rent housing.

In conclusion, I would like to emphasize the important role of intermediaries in trying to help poor women. In the context of these deregulated labour markets with intense competition, intermediaries can bridge the gap between poor women and resources in the market economy. There are a large number of women's groups that, with funding and technical assistance, can play this intermediary role and bring poor women into contact with programmes provided by the state and donor agencies. For instance, intermediary organizations can help women subcontract with big industries, and can help women have access to credit, allowing more equitable subcontracting arrangements. The role of women's organizations and women groups in the provision of credit for poor women in the informal sector also has been well documented. Lastly, and importantly, is the role of women's groups in providing child care and health services. There are a number of groups that can fulfill this function, that can help in the private provision of child care and services for poor women if they have the subsidies of the state, or if they have funds and technical assistance from donor agencies.

A final issue which I would like to highlight is the need to encourage research – by national women's groups and by women in the countries – on issues of concern to women. Donors can play a more affirmative role in encouraging national researchers to study issues of women's work, poverty and child welfare. This is ultimately what is going to lead to the real changes of awareness at the national level of the importance of women's roles in development. Research that is not carried out by national researchers has far less chance of changing national awareness.

There is a significant role that donors can play in encouraging researchers, in funding women's intermediary groups for the provision of child care services, and in helping women bridge the gap between their poverty

and resources in the formal sector.

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WOMEN, HOUSEHOLD FOOD SECURITY AND COPING STRATEGIES

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Introduction

The concept of household food security (HFS) refers to the ability of a household to assure all its members sustained access to sufficient quantity and quality of food to live active health lives. Such access is likely to be most threatened in times of economic deterioration. The reasons for linking women and household food security are by now well known, but it is worth quickly looking at some regional dimensions to the links before moving on to discuss the relevance of current debates on structural adjustment policies. There appears to be a general consensus that the persisting food crisis in Sub-Saharan Africa (SSA) is the consequence of a long-run neglect of women's food farming roles in a subcontinent where women perform 70% of labour in food production. Badly informed agricultural policies have undermined women's ability to fulfil their food obligations to their families and have also undermined the achievement of national food security objectives. In some of the poorest areas of South Asia, on the other hand, cultural restrictions on women's ability to participate fully in food production activities have left them particularly vulnerable in times of economic crisis. I am referring here to the findings of marked sex differentials in access to food and other life preserving resources, of overall excess female mortality and to the extreme poverty of female-headed households.

Maximizing household income is not always sufficient to maximize the food security of all its members for the same reasons that national food availability does not necessarily translate into household food security. In both regions there is evidence that women appear to take a much greater role in assuring the food requirements of their dependents in situations of economic deterioration. So that situations where women produce and/or control the resources by which their own nutritional needs and those of their families are met are likely to be associated with enhanced food security of all members.

These issues have been given a new urgency in current debates about the social costs of adjustment, led by UNICEF's work on adjustment with a human face. Many components of adjustment policy have adverse implications for the poor and vulnerable. The removal of food subsidies; devaluation and the effect on domestic prices; cutbacks in health, education and other forms of public sector services; the effects of such cutbacks on those without resources to cushion them through an indeterminate transition period until the benefits of adjustment may become more widespread.

Women are among those identified by UNICEF as potentially vulnerable groups in this process. A recent report by the Commonwealth Secretariat *Engendering Adjustment in the Nineties* builds on the UNICEF contribution by putting together an analytical framework for considering the specific bases of women's vulnerability. It points out that women throughout the world play multiple roles, as mothers, as homemakers attending to their family's basic needs, as producers and contributors to the family income and as community organizers. The mainly adverse implications of adjustment programmes for each of these activities add up to a sizeable demand on women's energies and resourcefulness. On the one hand, they have to cope with increasing demands on their time as a consequence of reduced health, education and other social services

and on the other they are required to put in increasing amounts of time to compensate for increased food prices or reduced real incomes.

A great deal of the evidence provided in the Commonwealth Secretariat report relies on secondary data and there is as yet not sufficient evidence to clarify which groups of women and under what circumstance are likely to benefit/suffer in the course of economic adjustment. However recent analysis of the welfare effects of commercialized agriculture suggest that increasing reliance on market forces and private enterprise – the ultimate goal of adjustment policies – have to be planned and timed very carefully if potential benefits are to be realized and vulnerable groups to be protected. I would like to use this presentation to offer, not a detailed set of prescriptions to deal with women, food security and economic deterioration, but a broad checklist of issues which would need to be considered if interventions to assist women in coping with deteriorating economic circumstances are to be successful.

Gender divisions in the food chain

I believe that the “four roles of women” framework adopted in the Commonwealth Secretariat report, while performing a useful function in drawing attention to the specific time constraints faced by women, may be too general for those concerned particularly with women and household food security. The food chain (Holmboe–Ottesen et al, 1989) is probably a more useful organizing concept because of its closer focus on food and nutrition. The food chain refers to sequence of events by which food enters households (purchase or production) and is transformed first into a consumable form and then into nutritional intake. Obviously support mechanisms or service delivery systems could be designed for each stage of the chain. If the aim of an intervention is to enhance women’s control over household food resources, then gender divisions in food chain activities should inform the design of interventions.

Let me outline at least two distinctions that should be borne in mind in the design of projects. The first is between “sex–sequential” and “sex–segregated” forms of food production (Whitehead, 1985). Do labour techniques require work inputs from each sex at different stages in the production cycle of a single product (sex–sequential) or are women and men responsible for the production cycles of different products (sex–segregated). In general it has been hypothesized that in the former where women’s labour is put into specific tasks in a crop cycle which includes or may have been initiated by male kin, it is more difficult for her to increase her share of the rewards as a result of extra effort because there is no clear cut basis for sharing rewards.

Examples of sex–sequential crop production is rice in Bangladesh where men engage in all the field based stages of production, women are responsible for the post harvest processing and men once again step in at the marketing stage. Examples of sex–segregated forms of production come from the Gambia. In some areas, men and women produced different crops on their separate fields i.e. men were primarily responsible for sorghum and millet (coos) while women were the traditional rice growers. In other areas, both men and women might grow the same crops (e.g. ground nuts) but on separate fields and with separate rights of disposal over the crops.

A second important distinction to bear in mind is the different categories through which women (and men) become involved in production i.e. dependent family labour, independent farmers, casual waged labour, permanent hired labour or exchange labour. Different forms of involvement are as critical to understanding the intra–household distributional implications of development interventions or technological innovations as is the gender of the person affected. These points are best illustrated through some well–known empirical examples.

Food Production

The series of irrigated rice projects in the Gambia (Dey, 1981) between mid–sixties to mid–seventies provide probably the most widely cited examples of project failure in a context of sex–segregated production at both crop and field levels. Misconceptions about the gender division of labour led to the transfer of newly–irrigated rice lands (and related productive inputs) from women to men and the retreat by women rice farmers to more distance and inferior plots. Not only were the men unable to mobilize female labour in the peak labour seasons (because women were involved in rice cultivation in their own fields) but they were also unable to tap women’s knowledge and skills in a crop which had traditionally been their responsibility. The projects failed to reduce reliance on imported rice. However, the assumptions made by the project’s planners concerning the gender division of labour in rice production and the ability of men to command the labour of their wives would have been less misplaced in the South Asian context where men do initiate and control most stages of rice production.

Food Processing

Despite considerable cross-cultural variations in the gender division of labour, there does appear to be a general predominance of women in the household based processing stage of crop production as well as in the transformation of raw food into edible form. The mechanization of the processing of grains has been identified as an important factor leading to the widespread displacement of female agricultural labour in South and Southeast Asia. This carries important policy dilemmas. In the Bangladesh case, a careful cost benefit analysis of rice mills showed that in straight economic terms they made a great deal of sense (Greeley, 1987). However, many of the women displaced by the mills desperately needed the wages provided by manual husking of paddy and had few alternative choices of employment. On a social cost benefit calculation, the study concluded that the mills should not have been imported.

The mechanization of food processing looks very different in the Gambian context where both government and development agencies have been keen to introduce labour saving technologies in processing coos. In rural areas, women spend four to six hours daily in processing coos grains for one meal by hand pounding (6 kgs). This has to be cooked and eaten within two to three days. Women forced to do this manually consider hand pounding coos the worst aspect of their work. Rice has become a preferred cereal partly because of the ease of husking paddy, the availability of cleaned imported rice and its storeability. Yet coos have higher nutritional value than rice. Introduction of medium size coos decorticators and grinding mills would do in a minute tasks that took almost an hour. In this situation mechanization of food processing would have far more positive implications.

One reason for the different implications lies in the distinction referred to earlier between categories of labour involved in the food chain. In countries where female seclusion restricts women's earning opportunities to very specific points in crop production, development interventions which reduce labour requirements at those points are likely to reduce opportunities of women from landless households for whom this may have been a primary form of employment. It has very different effects for women in small landowning households in Bangladesh for whom it reduces the burden of a very labourious activity and releases women's time for other forms of work within the household or for leisure. In the Gambian case, where landless wage labour is not the widespread phenomenon it is in South Asia, the mechanization of food processing would be welcomed by most women since it would release them from an extremely time-consuming and burdensome aspect of their food chain activities and would allow them to switch back to a more nutritious form of food grains.

Other Aspects of the Food Chain

The above examples have mainly been based on the staple food crops of different countries, but there are other aspects of food chain activities where the same distinctions might apply. There appears to be a fairly widespread gender differences in involvement in livestock rearing, for instance. Larger stock, such as cattle, have to be grazed over larger distances and often require male labour at least for some stages of livestock care. Smaller stock and poultry can be cared for with female labour alone. This often leads to greater male rights over cattle and female rights over smaller stock. In Bangladesh and India, "share-rearing" of goats and poultry is a common means by which poor women transform their only resource – labour power – into a productive asset. Other common examples of primarily female activities are cultivation of homestead plots and "backyard" gardening. If household food security is an objective of project intervention, then clearly targeting these spheres of activity will help to enhance women's control over household food resources.

Control Over Income: Cash Crops and Food Security

Obviously the sensitivity with which projects designed for different food chain activities will influence the extent to which the intervention has a positive, negative or neutral effect on women's contribution to household food security. This issue has been given a new lease of life by recent debates over the virtues of cash crops versus food crops in assuring food security objectives.

The increased commercialization of agriculture has been one of the effects of adjustment packages in many Third World countries. This has been strongly resisted by a number of voluntary agencies under the Food First banner. Basically the argument is about whether increased ability to earn foreign exchange through export of crops allows countries greater food security by permitting them to purchase food from a variety of international sources or whether it increases food insecurity by subjecting them to the vagaries of international markets.

However, the debate may have become unnecessarily polarized and a recent workshop was held at the Institute of Development Studies to clarify where the real differences may lie and to refine future interventions.

Workshop contributions revealed there was no stark dichotomy between cash crops and food crops, because meeting domestic consumption needs may entail buying and selling of food crops so that food security needs are met through cash crops. Equally many cash crops also serve as food crops; in the Gambia men adopted groundnuts at the expense of their traditional food crops (millet and sorghum) but used some of that revenue to purchase rice to make up the shortfall in food provisions. Women often grow small amounts of groundnuts to supplement basic staple foods with peanut sauce.

Secondly, food crops do not always compete with cash crops. They are sometimes complementary, through rotation or intercropping practices. In Northern Ghana there was a positive correlation between the two at the household level: families either produced enough to eat and cash crops for the market or not enough to eat and no cash crops. If there was competition, it was often at village level in the unequal distribution of resources rather than at household level in the choice between cash crops and food crops.

I would like to refer here to some features of crops identified by Longhurst as particularly conducive to household food security based on a survey of various studies looking at the nutritional impact of cash crops, as well as on a great deal of well-founded by anecdotal evidence. Some of these features relate to the crop itself. Cash crops which are also food crops are most "virtuous" in nutritional terms; non-food export crops (cotton, cocoa, coffee and eucalyptus) least so other virtuous features of cash crops are complementarity rather than competition with subsistence crops and when they do not monopolize subsidized inputs, marketing, research and extension services.

Another set of features relate to the impact of the crop on intra-household distribution. Here virtuous crops are those for which women exercise or at least share control over income from the crops. In terms of our earlier food chain distinctions, crops which are either initiated and produced by women or at least marketed by them would fall into this category. Women's control over incomes may also be expanded if male crops have at least some local uses or are processed locally (rather than abroad) that additional employment is leaked to landless and off-farm industries. Another important feature is the lumpiness or otherwise of payments for cash crops. State marketing boards who give "lumpy" one-off payments rather than spreading payments over the year may encourage growers to oversell and make it difficult to ensure stretching of the budget over the year.

It may not be feasible to consider growing only "virtuous" cash crops in the context of serious balance-of-payments crises, but these findings suggest that such crops will be an important component in interventions designed to increase household food security, alleviate poverty or enhance women's income earning capacity.

Expanding the food chain: linking energy intake and energy expenditure

The idea of the food chain helps to highlight gender differences in the ways in which households acquire and consume food. However, it is presented sometimes as a uni-directional sequence activities starting with production/purchase of food items, going through post-harvest processing and preparation, the distribution stages and ending in consumption and nutrition. I would like to suggest it might be useful to expand the concept of the food chain into that of a food cycle to draw attention to the fact that it is part of the cycle of activities by which households reproduce their labour resources on a daily and generational basis. In addition to looking at all the ways in which households acquire food and transform them into nutrients, this expanded food cycle would also include the main ways in which nutrients are used up. It would help to draw attention to the fact that individual labour inputs into the food cycle simultaneously add to household food reserves as well as depleting energy reserves of that individual. Individual nutritional shortfalls occur because household members (as well as adjustment programmes) have not always respected this link between the use of human energy in the production of human energy.

In this expanded food cycle, one could insert that major source of demand on household energy reserves: the bearing and breastfeeding of children. Given that pregnant and lactating women have appeared as a nutritionally vulnerable group in a diverse range of food production systems, it appears important to understand what lies behind this widespread form of nutritional failure. In some situations the problem may arise out of discrimination in the distribution of food and energy (as may be the case in South Asia) while in others it may be the product of unchanging labour patterns and energy expenditure, as may be the case in the Gambia where women continue long hours of work despite of the demands of pregnancy and breastfeeding. In both countries, maternal nutritional deprivation is associated with low birth weight of infants and high infant mortality rates.

If, in times of economic adjustment, women are expected to make good the increasing gap between incomes and prices as well as compensate for cuts in state provision of health and other services, the intensified demands on their labour and energy are likely to show up in wellbeing indicators: maternal anaemia, infant mortality, reduced birthweights, more stillborns and miscarriages, etc.

The value of a food cycle approach is that it highlights the fact that in addition to any increased contributions that women might make to household food security they generally have a constant overhead of domestic labour, including their reproductive work, to perform. It should provide a framework for breaking down the compartmentalized ways in which development planners often think and help to point out the interlinkages and inter-connectedness of different aspects of women's lives. The expanded food cycle, sensitivity to gender dimensions in its different stages and an alertness to their inter-connectedness will help to alert different sectors to areas in which they may wish to coordinate their activities.

One final cautionary note in interpreting data on the food cycle. Gender divisions are cultural phenomena and therefore subject to change. There is sometimes a tendency, especially when agencies are working in contexts that are unfamiliar to them to see cultural practices as written in tablets of stone. Yet the literature on changing agricultural practices in SSA – the extent to which the food crisis partly reflects the switch by men to cash cropping and their reluctance to fulfill fully their food obligations to the family – reminds us that gender divisions can be renegotiated to favour one sex over the other. It is important that planned interventions do not always result in renegotiations that favour the same sex.

Learning from coping strategies

A third set of issues is raised by research on household coping strategies to deal with economic deterioration. Such research can be useful in two ways. The first is to develop microlevel indicators relating both to the onset of food insecurity (early warning systems) and to manifestations of food insecurity. The second is to develop interventions to assist the vulnerable households to meet their immediate food needs and to devise longer term sustainable livelihoods. Here too a sensitivity to gender differentials will help to pick up differential forms of vulnerability as well as to design appropriate programmes of intervention.

While coping strategies appear to vary in terms of timing, sequence and precise content, certain common guiding principles have been observed. Jean Dreze (1988) points out that households will protect their longer term productive base over their shorter term consumption needs; according to Jane Corbett (1988), the first response to crisis is to preserve assets, the second stage is asset depletion while the final stage is destitution. How do these strategies look in practice. Drawing on my own research in Bangladesh, a first response appears to be increased austerity: cutting down on number of meals a day, postponing expenditures on health, gathering wild foods and roots rather than purchasing the usual dietary items. Then previously non-earning members (women, children and the old) are drawn into employment. At some stage in the process, households begin to sell off their assets, starting off with consumer inventories but inevitably productive assets as well. When crises persist, the family unit starts to break down. Able-bodied men are usually the first to go, migrating temporarily to areas with food or employment or else simply abandoning the unit. In extreme destitution, mothers may abandon their children or leave them in orphanages.

Based on these responses, a variety of indicators of food insecurity can be devised. One indicator appropriate in the South Asian context is frequency of meals; food insecurity is the absence of more than one meal a day. Other indicators could be based on the presence of women in non-traditional areas of activity, the fall in the price of assets which are sold by the poor in times of crisis, falling returns to wage labour as more poor people compete in the market. A study of coping strategies can also help to inform interventions. What are the search costs entailed in gathering wild foods and who bears them. The evidence varies. In South Asia, it appears to be primarily women. In Ethiopia, Rahmato (1987) suggests it is also women, while Susannah Davies' work in Mali notes that gathering wild foods requires travelling long distances and it is primarily done by men. Suggestions here are to apply agricultural research to develop famine and fallback foods; this is already being done to reduce the toxicity of kessari dal. Improvement of communications to wild food areas is suggested by Davies may both reduce time entailed in collection and increase access by women.

Migration data, particularly who migrates, is another important piece of information in designing assistance for vulnerable households. In both Africa and Asia, greater male mobility introduces particular gender dimensions in the experience of vulnerability. It is generally men that migrate, leaving behind women and children. In studies from both regions, the presence of women in migration streams, whether into towns or into other rural areas, for employment generally signals extreme distress. Finally of course the breakdown of the family unit is also an extreme response to crisis. The growth of poor female-headed households has been "feminization" of poverty. It is important to target such households in poverty alleviation programmes but it may also be

important to devise livelihood strategies which build on the existing skills and capabilities of women before the abandonment of women and children takes place. This may have the effect of making family structures more viable and women less dependent on male provision.

Entitlements and enfranchisement

Agencies working in the area of food security are generally familiar with the contribution made by Amartya Sen (1982) through his work on food entitlements. The idea of entitlements helped to draw attention to the importance of distribution rights in determining access to food and helped to overcome the previous narrow focus on food availability. However, there is another deeper level of inequity. Entitlements are not determined in perpetuity, they are often changed through negotiation, bargaining, conflict, over-ruling, force, redistribution. Women and children's entitlements often not only allows them lesser claims on food but they have less power to change the distribution of entitlements or enforce their share of the existing distribution.

Here Appadurai's (1984) idea of enfranchisement may be a useful supplementary concept. Enfranchisement refers to the ability to participate in decisions about entitlements; the ability to enforce rights to food and livelihoods. While the poor may need interventions to make good shortfalls in their food entitlements, these are often short-term measures. What I would like to offer in my final comments is the kinds of interventions that will lead to the long-term enfranchisement of one category of the poor, poor women.

Such interventions are best designed by analyzing the basis of women's disenfranchisement. One idea which comes from grassroots development NGOs and is also mentioned in the Commonwealth Secretariat report is the idea of the group approach. This entails building group activities among women as a way of breaking down their isolation and powerlessness. There are other advantages to the group approach in that assets acquired through collective activities appear to be less easily alienated and group security can compensate for lack of material collateral.

A second long-term intervention is education, particularly for young girls. The payoffs from educating young girls, even if it is only up to primary school, are considerable in terms of fertility reduction, reduced infant mortality, increased labour force participation. The ability to read and write is also an important component in communicating and exchanging ideas, in analyzing and acting upon one's own problems. There may be considerable value to investing in some form of food-for-education programmes to encourage young girls to attend school.

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