

Original Article

Promoting household food and nutrition security in Myanmar

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Myanmar has a policy of promoting food and nutrition security and, at the national level, food production is more than that required to meet the country's needs. Nevertheless, food and nutrition surveillance has revealed that malnutrition still exists in the country, despite economic growth and national food self-sufficiency. The National Plan of Action for Food and Nutrition, formulated in 1994 and adopted in 1995, accorded priority to household food and nutrition security. Accordingly, in 1996, in partnership with the World Health Organization (WHO), the National Nutrition Centre embarked on a study of household food and nutrition security in Myanmar. A preliminary situation analysis revealed that transitional changes in the economic, demographic and social sectors have driven dramatic changes in people's lifestyles, behaviour and practices and that these changes affect food and nutrition security. The present paper explores household and intrahousehold determinants of nutrition problems in Myanmar.

Key words: care of the vulnerable, food security, malnutrition, Myanmar, National Plan of Action for Food and Nutrition.

Introduction

Nutrition is a highly complex science involving many interrelated factors and disciplines. Causes of malnutrition include an inadequate dietary intake in relation to needs and exposure to disease. However, the underlying causes of malnutrition are linked directly to poverty and include household food insecurity, the unavailability of care for vulnerable household members and a lack of access to health services, combined with an unhealthy environment. Therefore, in the present study, the conceptual framework shown in Fig. 1 was used to examine the current nutritional situation and its determining factors in Myanmar.

Structural factors

The Myanmar Government has a clear policy of improving the health, fitness and education of the entire nation and of striving for better conditions of food, clothing and shelter for its people. There is also a policy of self-reliance and self-sufficiency in terms of basic food within the country. With an average annual gross domestic product (GDP) growth rate of 8.2% (from 1992/93 to 1995/96) and a literacy rate of 86% for males and 73.5% for females,¹ it is clear that the structural situation in Myanmar at the macro level is conducive to nutritional well-being.

Underlying causes of malnutrition at the household level

There has been remarkable progress in Myanmar in food production at the national level. In 1992, the food supply per capita per day was 10 870 kJ, which was adequate for nutrition in general. Protein availability was 64 g per capita, which is greater than the required amount, although most of this protein was from vegetable sources. In 1994/95, the availability of rice at the national level was 113% of the required amount. In 1997, the average household consumption of calories and

protein was 92.5 and 115% of the recommended daily allowance (RDA), respectively. Only 37% of households consumed calories at and above the RDA, while 31% of households were consuming less than 80% of the RDA. With regard to protein, 56% of households consumed enough, while 20% of households consumed less than 80% of the RDA.² The adequacy of nutritional intake is shown in Fig. 2.

Immediate causes of malnutrition at the individual level

At the individual level, pregnant and lactating mothers, infants, preschool children and adolescents were found to be the groups most vulnerable to malnutrition, consuming much fewer calories and less protein than required (Table 1).

Health and nutrition situation

In 1997, reflecting the background conditions in Myanmar described above, 28% of children under 3 years of age were still suffering from protein–energy malnutrition, although the trend was declining, down from 42.1% in 1982. The trend in protein–energy malnutrition in children from 1988 to 1997 is shown in Fig. 3. The average height of children 5 years of age has increased, but was still under the reference level (Figs 4,5). The maternal mortality rate (MMR) had decreased from 1.0/1000 in 1993 to < 1/1000 in 1996 and child mortality had also decreased (the mortality rate of children aged 1–4 years decreased from 8.6/1000 in 1993 to 4.6/1000 in 1996). However, the infant mortality rate (IMR)

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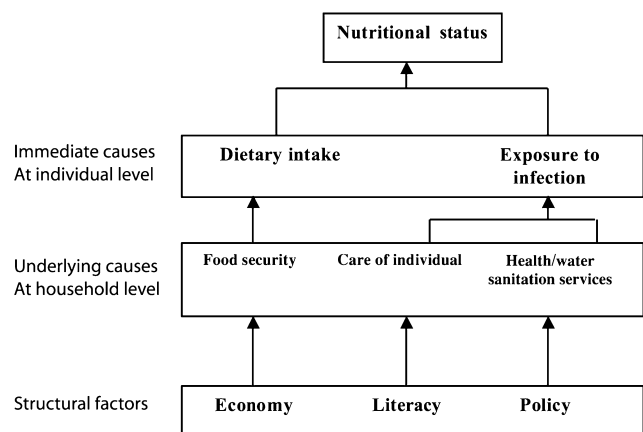


Figure 1. Conceptual framework for investigating the nutritional status of households in Myanmar.

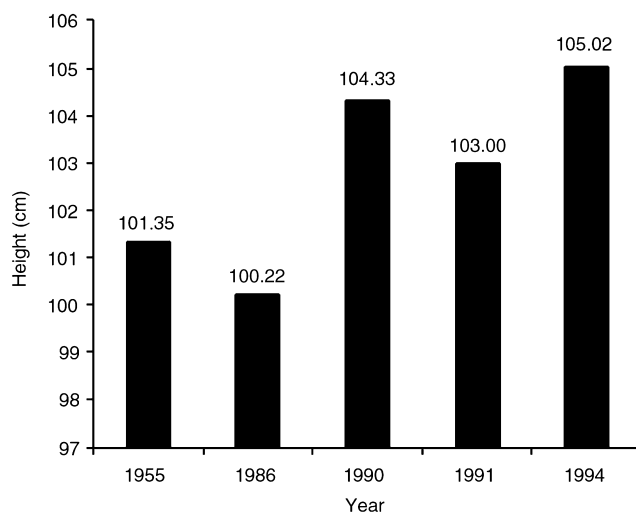


Figure 4. Mean height of boys aged 5 years in Myanmar from 1955 to 1994. Data from the National Food and Nutrition Survey, National Nutrition Centre, 1997.⁸

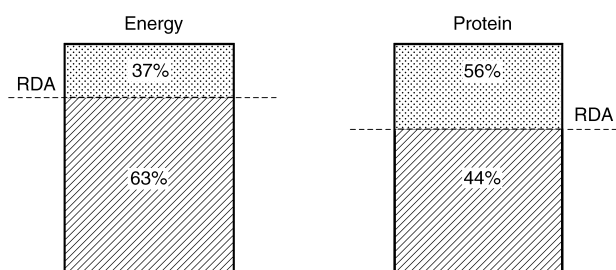


Figure 2. Number of households consuming adequate nutrition in Myanmar in 1997. RDA, recommended daily allowance. Data obtained from the National Nutrition Centre, Department of Health.²

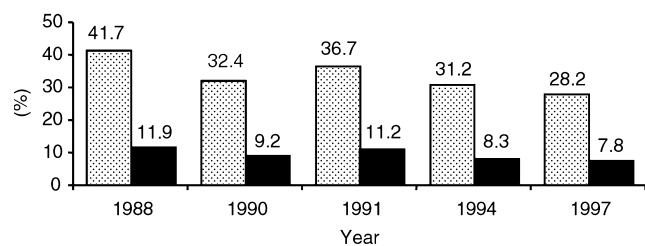


Figure 3. Trends in protein-energy malnutrition among children under 3 years of age in Myanmar for the period 1988-97. (▨), <-2 SD weight for age (WFA), National Centre for Health Statistics (NCHS); (■), <-3 SD WFA, NCHS.

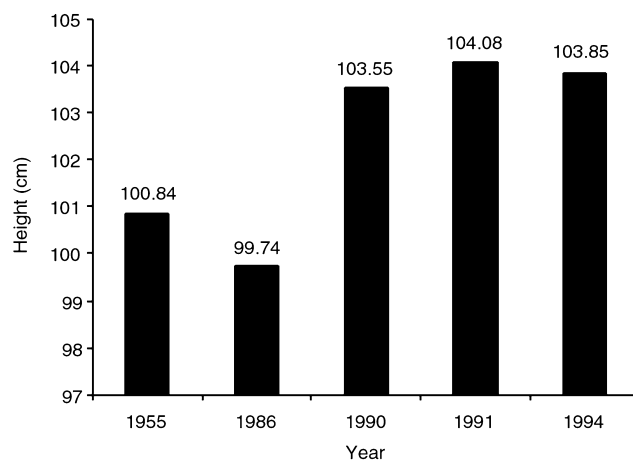


Figure 5. Mean height of girls aged 5 years in Myanmar from 1955 to 1994. Data from the National Food and Nutrition Survey, National Nutrition Centre, 1997.⁸

Table 1. Calorie and protein consumption in Myanmar

Population group	Year	Consumption (%RDA)	
		Calorie	Protein
Pregnant mothers	1993	90.2	94.8
Lactating mothers	1984-85	84	100
Infants (aged 6 months to 1 year)	1985-86	73	63
Pre-school children (1-3 years of age)	1986-87	57	73
Adolescents	1993-94	80	85.8

Data obtained from National Nutrition Centre, Department of Health.³ RDA, recommended daily allowance.

has remained constant at 47/1000 in urban areas. The rate of children born with a low birth weight was 23%, while 58% of pregnant women suffered from iron-deficiency anaemia.³

Household food and nutrition security: Effects of the changing environment

Because analysis of the health and nutrition status in Myanmar pointed towards problems at the household and intra-household levels, the National Plan of Action for Food and Nutrition, adopted in 1995, accorded priority to household food and nutrition security. In 1997, at the start of this multicountry study, experts from various sectors (including economists, agriculturists, anthropologists, psychologists, statisticians, planners, public health experts and nutritionists) undertook further analysis of the situation that was developing as a result of the rapidly changing environment, particularly the newly adopted free market, the outcome of economic reform.

Demographic changes. The total population of Myanmar is 47 million, with an annual population growth rate of 1.84%. Since the beginning of the economic reforms in March 1989, the economy has grown at an average annual rate of 8.2%. According to the Central Statistical Organization, labour force participation has increased from 55.6% in 1985/86 to 58.87% in 1995/96. The number of people living in urban areas has also increased, from 2 579 000 in 1986 to 11 210 000 in 1996.¹

Changes in food prices, employment and wages. Despite the liberalization of agricultural production, food prices in Myanmar have increased. In 1995/96, the consumer price index (CPI) for food and beverages increased to 8.5-fold that of the CPI in 1986/87. Wages have also increased according to the government, but only up to the level of a minimum daily wage of 20 kyat. Others have reported⁴ that although government employees pay subsidized prices for basic food, non-government workers usually earn between three- and 10-fold more than government employees. Expenditure on food has increased more than 10-fold from 1986 to 1996 (Table 2). This may have contributed to the increased demand for women to undertake paid work outside the home. In fact, household work as a percentage of total employment decreased from 27.6% in 1973 to 17.93% in 1990. The number of women working outside the home has increased to 3.21 million (30% of women) today.¹

Changes in food adequacy at the household level. The Department of Applied Economics, Institute of Economics (Yangon) of Myanmar, has calculated the minimum cost of the RDA for an average family of five residing in different administrative regions of the country on the basis of the recommendations of the National Nutrition Centre and the food

prices reported by the Central Statistical Organization.⁵ This cost was taken as the food adequacy line and households in which expenditure on food was below this level were defined as 'inadequate' with regard to adequate nutrition. Surprisingly, there has been a declining trend in the proportion of 'inadequate households', despite rising food prices. Households below the food adequacy line accounted for 90% of all households in 1986, 61% of all households in 1989 and 45% of all households in 1994.⁴ This decline could be the result of wage increases and more women undertaking paid work to contribute to household earnings.

Effects on the household environment. A rapid assessment study, performed in a peri-urban town near Yangon, by the Psychology Department, Yangon University, found that typical Myanmar families live in a strongly cohesive community, 50% being extended families and most having only one breadwinner, namely the head of the household. The poor housing environment and low levels of education point towards high health and nutrition risks. Negligible MMR and a low IMR during 1999, coupled with a high level of nutritional and health knowledge in these households, seem to prove the effectiveness of the maternal and child health services provided by the government health centre, community groups and non-government organizations, particularly the Maternal and Child Welfare Association.⁶

Changes in health and nutrition services. A series of people's health plans and national health plans has made positive changes to health services in Myanmar. Various health facilities, from rural health centres to specialist hospitals, have increased in number over the years, with the result that the proportion of people having access to health services has increased from 55% in 1980 to 65.6% in 1995. Immunization services covered 77–94% of children in 1995, which was an increase from 14 and 35% in rural and urban areas, respectively, in 1980 to 44.18 and 49.3%, respectively, in 1994/95. The proportion of the population with access to sanitation increased from 15 and 34% in rural and urban areas, respectively, in 1980 to 44 and 70.5%, respectively, in 1994/95. Nutrition promotion activities have moved from conventional education to behavioural modification approaches and have also established a strong multisectoral mechanism.⁷

Rationale and aim of the present study

The reasons for the continuing existence of malnutrition are to be found at the household and individual levels. While the National Nutrition Centre has reported finding more undernourished children in urban than rural areas, Myanmar's urban population is increasing. When the urban population increases, the food security of this population becomes increasingly risky because of increasing food prices and

Table 2. Household expenditure per month, Myanmar

	Yangon		Mandalay	
	1986 Kyat (%)	1989 Kyat (%)	1994 Kyat (%)	1996 Kyat (%)
Total household expenditure	996.8 (100)	2026.4 (100)	5900.9 (100)	10 726.15 (100)
Household expenditure on food	647.29 (64.93)	1375.9 (67.9)	3959.2 (67.09)	6938.43 (64.69)
Average size of household	5.78 (5.18)		5.64 (5.17)	

Data was obtained from the Central Statistical Organization, Myanmar.⁵

because these people mostly depend on the market for their food. The decrease in the proportion of people working at home and the increased labour force participation of women are indications of the demand for women to work outside the home; 'traditionally', women were seen as caring mothers who stayed at home. More women in the workplace could lead to more dependency on street food, the quality and safety of which is still poor. Thus, the knowledge and practice (behaviour) of these urban households in terms of health and nutrition becomes pivotal under these conditions. An analysis of food adequacy in Yangon in 1994 showed that 45% of households fell below the food adequacy line, while only 55% of households spent enough on food to meet their nutritional requirements. Yet, a nutrition survey in the same year found that 72% of households in Yangon were not consuming enough calories. Nutritional surveillance undertaken by the National Nutrition Centre showed that the lowest cost of a nutritionally balanced menu for a family of five was 108.5 kyat per day in 1995, while a menu based on recommended food intake was calculated to cost 147.7 kyat. These findings point to the need to explore policy and programme requirements for the promotion of nutritional security in urban and rural households.

The aim of the present study was to improve the nutritional status of vulnerable family members by providing information that would assist in the formulation of policy and programmes to improve household food and nutrition security. The objective of the study was to explore household and intrahousehold determinants of food and nutrition security and their relationship.

Methods

There were seven phases undertaken as part of the present study.

1. A scientific literature review was carried out in the initial phase to provide background to the study.
2. A consultative meeting was held in June 1997 that brought together policy advocates, planners, administrators, researchers, non-government organizations and community groups involved in nutrition-related activities.
3. The development of the study design and sampling strategy took place in November 1997.
4. Research tools were developed in November 1997. This involved using participatory rapid appraisal methods in order to identify and understand the range of activities to be covered by the study, as well as constraints and other factors, with a view to developing appropriate language and proxy indicators for use in questionnaires and survey protocols.
5. Quantitative data were collected through a two-round survey that was undertaken during the post- and preharvest periods (April 1998 and November 1998, respectively). Qualitative data were collected in June 1998 by means of indepth interviews.
6. Data entry, processing and analysis took place from May 1998 to June 1999.
7. Reporting and dissemination of information comprised the final phase of the study.

The study team was headed up by one principle investigator and comprised one co-investigator, two research assistants with technical and administrative responsibilities, four

supervisors, who were responsible for close monitoring at the operational level and for quality control, and 20 enumerators.

One urban area (Dowbon) and one rural area (Pale) in Myanmar were selected for the study. These two areas have more or less similar characteristics to other urban and rural areas of the country, respectively, and were, therefore, considered to be representative areas. Sampling for the quantitative study comprised the random selection of 300 households in each of these two areas. Households in both areas were divided into two groups: (i) those with malnourished children; and (ii) those with well-nourished children. To support the findings of the quantitative analysis, a qualitative study was conducted on five families each from each of the two groups in both the urban and rural area by indepth interview. Thus, a total of 10 interviews were undertaken in the urban area and 10 were undertaken in the rural area.

Quantitative research

In the two rounds of cross-sectional surveys, namely post-harvest (April 1998) and preharvest (November 1998), anthropometric measurements were taken from all children under 5 years of age and their mothers (Table 3) by means of an interview by pretested questionnaires. In addition, after the first round of the survey, households were divided into four groups: (i) urban households with well-nourished children under 5 years of age; (ii) urban households with malnourished children under 5 years of age; (iii) rural households with well-nourished children under 5 years of age; and (iv) rural households with malnourished children under 5 years of age. Furthermore, a dietary intake survey of the whole family, the mother and the child aged under 5 years of age was undertaken on a subsample of 10 families from each group.

Qualitative research

After the first round of the survey, five families each from each group (i.e. households with malnourished children and households with well-nourished children) were selected for indepth interview (a total of families 10 each from the urban and rural areas) to explore the following family dynamics: basic characteristics, attitudes towards marriage, care during pregnancy, traditions during delivery, traditions during puerperium, breast-feeding and supplementary feeding practices, child-care practices, food and income sharing practices and birth spacing.

Results

Preliminary descriptive analysis demonstrated more acute malnutrition in the urban area than in the rural area for both the pre- and post-harvest periods. Furthermore, nutritional problems were more acute in both the urban and rural areas during the preharvest period than during the post-harvest period. Urban children consumed fewer calories than rural children during both the pre- and post-harvest times, while children in both rural and urban areas consumed fewer calories during the preharvest period than during the post-harvest period, although all the differences were not statistically significant.

All other variables were analysed descriptively and were tested in several possible models. The most plausible independent variables were processed by multivariate analysis

in order to find the determinants of the nutritional status of children and their mothers. Tests of significance were also applied. The analysis identified important factors that merit consideration in policy and programme formulation. It also raised additional questions, some of which could be answered by further analysis of existing data, while others demanded

further qualitative exploration. The findings are summarized below.

Malnutrition among urban children is currently an undeniable problem. This raised the question of whether there was more household work, more time spent on child care or more exclusive breast-feeding in the rural area than in the urban area. Rural mothers had a lower body mass index (BMI) despite the consumption of more calories than their urban counterparts. Rural mothers also had better-nourished children. This was partly explained by the interaction of independent variables. For example, illiteracy is more prevalent among the heads of households in urban areas (6%) than in rural areas (4.5%); the ratio of food expenditure to total income is higher for urban families (15%) than rural families (6%); the proportion of information on health and nutrition obtained from sources other than trained personnel is higher in urban areas (80%) than in rural areas (57%); and precarious housing was more prevalent among urban families (69%) than rural families (4%). All these factors showed a significant negative effect on child nutrition.

The preharvest period had a negative effect on child nutrition in the rural area, but less so in the urban area. This could be explained by the fact that a major source of food in the rural area is year-long storage (30% of rural households grew their own food, 4% obtained food as wages and 53% bought rice). In the urban area, food is available year-round in the market (98% of urban households bought rice and none grew their own food).

In urban households, the status of working mothers was associated with a lower prevalence of acute malnutrition among children. The proportion of mothers who worked was lower in the urban area (21%) than in the rural area (34%). It may be tempting to argue in favour of creating more employment for urban mothers, with a view to lessening acute malnutrition among children. The following findings, however, tend to contradict that argument. Where the child's major caregiver is someone other than the mother, this tends to have a negative effect on the urban child's nutritional status and time spent on child care by the mother tends to have a positive effect on the rural child's nutritional status.

These findings raise interesting questions regarding current programmes of income generation (by women) and women's empowerment, such as whether mothers who already have a heavy burden of household tasks should be encouraged to engage in income-generating activities and to what extent empowerment should go. The Myanmar study team will explore these questions in the second round of the qualitative survey, including household dynamics, time allocation, support to mothers and food sharing practices in families. The nutrient adequacy of commercial supplementary food will also be examined and quantitative data will be further analysed to reveal coping strategies or safety nets for household food and nutrition security, especially with regard to the protection of vulnerable groups.

The first round of the qualitative survey, designed after the preliminary rapid assessment of the community and before quantitative data analysis, could not answer all these questions, but revealed some related information. For example, where housing conditions and the educational level of the mother were the same, negative factors may include arduous labour

Table 3. Information collected following quantitative research by means of cross-sectional surveys in Dowbon (urban) and Pale (rural), Myanmar

Urban/rural
Area
Post-harvest/preharvest
Season
Nutrition
Nutritional status of child
Nutritional status of mother
Food consumption
Calorie intake of mother
Protein intake of mother
Calorie intake of child
Protein intake of child
Calorie and protein consumption of whole family
Frequency of consumption of protein/vegetables
Child and care
Sex
Nutritional status
Age
Care given
Time allocated
Food priority
Mother and care
Age
Nutritional status
Educational level
Working status
Social status
Allocation of time
Food availability
Expenditure on food
Income
Source of food
Utilization of food
Type and time of food shortage and reason for shortage
Coping strategy/safety net
Property
Extended family
Distant income
Money saving practices
Debt
Social, NGO, membership, type
Household dynamics/socioeconomic factors
Religion
Family size
Dependency by age
Dependency by work
Marital status of mother
Marital status of father
Educational level of father
Educational level of mother
Educational level of head of household
Father's employment
Information from trained person or not

and irregularity of employment of both parents, food avoidance during the traditionally prolonged puerperium and lack of food availability. Positive factors may include the proper use of good-quality commercial supplementary food by working mothers and supplementary feeding as early as 15 days, together with continued breast-feeding (which was found to be a common practice in families with well-nourished children and working mothers).

Discussion

Some interesting points have already been revealed by this study, as described above. Women's empowerment, whether limited to household decision making or extended to participation in other activities, such as income generation, will be a big question in advocating policy. The matter of whether or not to encourage the use of high-quality commercial supplementary food will be another controversial point. Social marketing will be used to promote the recommended approach. Once completed, the study will provide important information for policy advocacy and programme changes, particularly for Myanmar, and generally for the formulation of global policies and programmes.

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