Nutrition in South-East Asia

World Health Organization
Regional Office for South-East Asia
New Delhi
2000
Nutrition Profile of the WHO South-East Asia Region

World Health Organization
Regional Office for South-East Asia
New Delhi
2000
Nutrition in the WHO South-East Asia Region
This review was prepared by Dr. Sultana Khanum, Regional Adviser for Nutrition and Food Safety, WHO Regional Office for South-East Asia. Dr. Khanum wishes to express grateful thanks to Ms. Tanuja Rastogi, doctoral student at the Harvard School of Public Health in Nutritional Epidemiology for her assistance in compilation, editing and final production of the report. We would also like to thank colleagues from countries, those who worked in the region, and WHO/NHD Headquarters-Geneva, for their valuable comments, contributions and encouragement. In particular, these include: Dr Mohan Ram, Dr Kraisid Tontisirin, Dr Jonathan Gorstein, Dr Alan Dugdale, Dr Michael Gurney, Dr Graeme Clugston, Ms Randa Saadeh, Dr Mercedes de Onis, Ms Chizuru Nishida and Dr Bruno de Benoist. A pre-print of this profile was circulated for comments and feedback during the inter-country workshop to review implementation of national plans of action for nutrition, held at WHO SEARO, New Delhi, 8-10 December 1999.

© World Health Organization 2000
Publications of the World Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. For rights of reproduction or translation, in part or in toto, of publications issued by the WHO Regional Office for South-East Asia, application should be made to the WHO Regional Office for South-East Asia, World Health House, Indraprastha Estate, New Delhi 110002, India.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The views expressed in this publication are those of the author and do not necessarily reflect the decisions or stated policy of the World Health Organization; however they focus on issues that have been recognised by the Organization and Member States as being of high priority.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>v</td>
</tr>
<tr>
<td>WHO Vision and Mandate</td>
<td>vi</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Regional Profile of South-East Asia</strong></td>
<td>5</td>
</tr>
<tr>
<td>Protein-Energy Malnutrition</td>
<td>8</td>
</tr>
<tr>
<td>Feeding Practices in Young Children</td>
<td>12</td>
</tr>
<tr>
<td>Iron Deficiency Anaemia</td>
<td>13</td>
</tr>
<tr>
<td>Iodine Deficiency Disorders</td>
<td>15</td>
</tr>
<tr>
<td>Vitamin A Deficiency</td>
<td>17</td>
</tr>
<tr>
<td>Diet-related Chronic Diseases</td>
<td>19</td>
</tr>
<tr>
<td>Nutritional Achievements in South-East Asia</td>
<td>21</td>
</tr>
<tr>
<td>Conclusions &amp; Recommendations for the Region</td>
<td>22</td>
</tr>
<tr>
<td>Challenges for 21st Century in the Region</td>
<td>27</td>
</tr>
<tr>
<td><strong>Country Profiles</strong></td>
<td>29</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>30</td>
</tr>
<tr>
<td>Bhutan</td>
<td>35</td>
</tr>
<tr>
<td>India</td>
<td>38</td>
</tr>
<tr>
<td>Indonesia</td>
<td>45</td>
</tr>
<tr>
<td>Maldives</td>
<td>49</td>
</tr>
<tr>
<td>Myanmar</td>
<td>53</td>
</tr>
<tr>
<td>Nepal</td>
<td>57</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>61</td>
</tr>
<tr>
<td>Thailand</td>
<td>65</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>69</td>
</tr>
<tr>
<td><strong>Appendices</strong></td>
<td>72</td>
</tr>
<tr>
<td>1. Abbreviations</td>
<td>72</td>
</tr>
<tr>
<td>2. Definitions</td>
<td>74</td>
</tr>
<tr>
<td>3. Regional Objectives and Ongoing Programmes</td>
<td>80</td>
</tr>
<tr>
<td>4. Regional Workshops and Consultations from 1995-1999</td>
<td>82</td>
</tr>
</tbody>
</table>
We live in a world where inequity, poverty, underdevelopment, maldistribution and inadequate access to food and health care still prevail. Though changes are taking place all round us, the benefits of social and economic progress are not evenly shared. In the South-East Asia Region (SEAR) too many people still suffer from hunger and malnutrition, while others are afflicted by diseases related to overnutrition.

Nutrition is a key factor to our future. It is a universal factor, which affects—as much as it defines—the health of all human beings. It is, therefore, critically important that WHO Member States and international health organizations recognise, identify and tackle the nutritional problems that affect different population groups.

To assist this great task, a comprehensive nutrition profile has been assembled for the WHO South East-Asia Region. I am very pleased to present this profile herewith. In this book, nutrition indicators specific to the South-East Asia Region are examined and their shift over a period of time assessed. The information presented here is derived from no less than eight inter-country meetings on nutrition conducted in the Region during the period from 1995-1999 as well as various national and international sources. It has been compiled, researched and updated over the last two years. This profile highlights the achievements, constraints, as well as the challenges and the actions required for future nutritional strategies in the countries of WHO/SEAR. Based on this, I hope that member countries may revise their programmes and, consequently, prioritise and implement their National Plans of Action for Nutrition at the beginning of the 21st Century in line with the declaration of the 1992 International Conference on Nutrition.

WHO will continue to strive for better nutrition and good health for all. In this endeavour, the South-East Asia Regional Office actively supports the countries together with our colleagues at the country and global levels. We will continue to support countries’ efforts to further strengthen national information systems through the WHO global data banks on nutrition. After all, the aim of better management and implementation of countries’ nutrition policies and programmes is very much a common purpose.

Dr Uton Muchtar Rafei
Regional Director
WHO Vision and Mandate*
Department of Nutrition for Health and Development

VISION

Our vision is of a world where people everywhere, at every age, enjoy a high level of nutritional well being, free from all forms of hunger and malnutrition.

It is founded on the intrinsic value of human life and the dignity it commands, as reflected in the international human rights instruments adopted over the last half-century. Everyone, without distinction of age, sex or race has the right to nutritionally adequate and safe food and to be free from hunger and malnutrition.

It rests on the conviction that hunger and malnutrition are unacceptable in a world that has both the knowledge and resources to end this widespread, continuing human catastrophe. It recognises that hunger and malnutrition are rooted in poverty, deprivation and underdevelopment, and are the result of inadequate access to the basic human requirements for nutritional well being, including adequate food, care, health, education and a clean environment.

WHO, with its health sector focus, has a major responsibility for promoting healthy nutrition for all the world’s people, through collaborative support to Member States, particularly in their national nutrition programmes, in partnership with other intergovernmental and non-governmental organizations, and their related sectoral approaches.
MANDATE

WHO recognises the fundamental role nutritional well being has in health and human development, and the worldwide magnitude of malnutrition-related mortality and morbidity. The following actions taken, supported and promoted by WHO, reflect the Organization’s commitment to nutrition:

- Article 2 of the Constitution of the World Health Organization (1948) specifically includes the improvement of nutrition among WHO’s declared functions.
- The Declaration of Alma Ata (1978) lists promotion of food and nutrition as one of the eight essential elements of primary health care.
- The Global Strategy for Health for All (1981) features nutrition as one of its cornerstones, and three of its 12 monitoring indicators are nutrition-related.
- The World Declaration and Plan of Action for Nutrition (1992) with its nine goals and nine action areas, was endorsed in its entirety by the World Health Assembly.
- The Forty-eighth World Health Assembly (May 1995) identified nutrition as one of WHO’s priority programme areas.
- Health for All in the Twenty-first Century (1998) includes malnutrition (stunting), and iodine and Vitamin A deficiencies, among its specific targets for the year 2000.

WHO South-East Asia Region

Member States
- Bangladesh
- Bhutan
- DPR Korea
- India
- Indonesia
- Maldives
- Myanmar
- Nepal
- Sri Lanka
- Thailand

The boundaries shown on this map do not imply official endorsement or acceptance by the WHO
The nutrition profile of a population is inextricably linked with its overall health status. It is thus imperative that national governments and international health organizations recognise and identify the nutritional problems that are afflicting different groups. Importantly, first-hand data on the demographic, dietary and health characteristics of a population should be readily available. Comprehensive databases will facilitate the modification of governmental nutrition strategies and consequently accelerate progress towards achieving the targeted goals of the International Conference on Nutrition (ICN) held in Rome in 1992 (see box) and the World Summit for Children (1990).

In this profile, nutrition indicators specific for the South-East Asia Region (SEAR) are examined and their shift over a period of time assessed. In addition to general demographic data, vital health statistics including Infant Mortality Rate (IMR), Maternal Mortality Ratio (MMR), life
The regional and country-wise overview presented in this report will provide a comprehensive nutrition profile of the Region. Moreover, it will highlight the achievements, constraints as well as the actions required for future nutritional strategies in the countries of South-East Asia. Based on this information, it is hoped that individual countries will revise their nutritional programmes, and consequently prioritise and implement their National Plans of Actions in the 21st Century (see box).

**Data Sources and Methodology**

An attempt has been made to provide the latest information on nutrition profile of all SEAR countries except Democratic Peoples’ Republic of Korea (DPRK). Data from DPRK are minimal and available information that does exist on the prevalence and trends of malnutrition are difficult to interpret. In the case of Bhutan and the Maldives, limited data available were used for the current estimates of malnutrition (Ref. 3,16 & 23).

The information presented in this profile is largely derived from the following sources: a
WHO-SEARO document (3) prepared for the Regional Committee Meeting (September 1997); the National Reports of the third evaluation of the implementation of Health For All (HFA) strategies-SEAR; and other reports of WHO, UNICEF, FAO, UNDP and World Bank (1-11). Reports on various large-scale national surveys were also utilised (12-22, 24-28, 31-33 & 36-38). There are four Appendices. Appendix 1 explains the abbreviations used in the text. The parameters used in this profile are defined in Appendix 2. Objectives and ongoing initiatives of the Regional Nutrition Programme are listed in Appendix 3. The relevant inter-country meetings and workshops during 1995-99 are summarized in Appendix 4.

In view of the wide disparities observed between national figures and the revised WHO/UNICEF estimates of maternal mortality, the official values reported by the SEAR countries are included in this presentation (3). Data given in yearly reports of UNDP during the period 1975 and 1997 (5) were used for assessing trends in the prevalence of underweight in children below five years since no uniform method was employed by different countries to assess growth status. Moreover, information on trends was not available in most of the countries. However, in the case of India and Sri Lanka, the results of national surveys carried out at two different times are also presented to project the trends in malnutrition (12, 13 & 17). Children below-2SD (standard deviations) wt/age of the NCHS median were classified as underweight (severe and moderate degree of malnutrition). Changes in the supply of dietary energy, protein and fat were computed from the World Food Surveys reported by FAO over a period of two decades (6). Shift in nutrition indicators over a period of time were assessed and an in-depth analysis was carried out to determine factors responsible for slow progress in reducing malnutrition in the region. Various measures have been suggested for amelioration of the current situation.

*Since the data relating to trends in prevalence of undernutrition are subject to many limitations, a note of caution is necessary in interpretation of the analysis as well as inter-country comparisons.*
Regional Profile

South-East Asia (SEA) is the most populated region of the world today. It is the home to over 1.4 billion people or one-fourth of the global population. Considering these population pressures as well as financial constraints in countries of the Region, a notable progress has been made in the area of health and nutrition through the development of health and nutrition programmes and policies over a period of time including National Plans of Action for Nutrition (see box).

Importantly, a significant decrease has been registered in regional mortality figures and life expectancy has increased during the last two decades (Tables 1 & 2). Moreover, the per capita supply in food and energy has risen in almost all of the countries of the region in the last 20 years (Table 3). It is also encouraging that the countries of this Region have achieved higher literacy rates for men and women alike. In Maldives, Sri Lanka and Thailand, literacy levels in both males and females have reached high levels. But other countries like Bangladesh, Bhutan, India and Nepal still need to increase their

### National Plans of Action for Nutrition

All SEAR countries except DPR Korea have developed national plans of action for nutrition with a multi-sectoral approach following the declaration in ICN. At present, implementation of these plans is receiving due attention from the highest level in the respective Governments. National nutrition and food policies have been adopted in most countries and interventions are being redesigned keeping in view past experiences and future needs.

### Table 1

**Basic indicators of the SEA Region**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>1975</th>
<th>1997</th>
<th>2025*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life expectancy at birth (yrs)</td>
<td>52</td>
<td>63</td>
<td>72</td>
</tr>
<tr>
<td>IMR (per 1000 live births)</td>
<td>124</td>
<td>68</td>
<td>32</td>
</tr>
<tr>
<td>Under 5 MR (per 1000 live births)</td>
<td>177</td>
<td>79</td>
<td>38</td>
</tr>
</tbody>
</table>

* Future projections
efforts to raise the literacy level among women. However, there has been a significant progress in narrowing the gap between the literacy rates among both the genders. Severe forms of protein-energy malnutrition (PEM), and nutritional blindness have declined substantially, but the progress with regard to the reduction in mild and moderate degrees of malnutrition is negligible in most of the countries. Household food insecurity is a major concern among vulnerable groups in all countries (12, 13 & 17). While several nutritional disorders such as beriberi and pellagra have virtually disappeared, remaining disorders of public health concern include PEM and deficiencies of micronutrients, such as iron, iodine and Vitamin A. These conditions which are afflicting a large section of the vulnerable groups pose challenges to health care. On the other hand, diet-related chronic non-communicable diseases (NCDs) are becoming severe burdens on health services and are already causing death and disability in several countries of the Region. With increasing urbanisation, changing dietary habits and changing lifestyles, this alarming situation is bound to become even more severe in the years to come.

Table 2
Demographic Profile of the SEA Region

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>124.774</td>
<td>58 M, 58 F</td>
<td>79</td>
<td>104</td>
<td>390</td>
<td>240</td>
<td>0.368</td>
</tr>
<tr>
<td>Bhutan</td>
<td>2.004</td>
<td>60 M, 62 F</td>
<td>63</td>
<td>142</td>
<td>380</td>
<td>420</td>
<td>0.338</td>
</tr>
<tr>
<td>India</td>
<td>982.223</td>
<td>62 M, 63 F</td>
<td>72</td>
<td>90</td>
<td>420</td>
<td>340</td>
<td>0.446</td>
</tr>
<tr>
<td>Indonesia</td>
<td>206.338</td>
<td>63 M, 67 F</td>
<td>48</td>
<td>59</td>
<td>390</td>
<td>980</td>
<td>0.668</td>
</tr>
<tr>
<td>Maldives</td>
<td>0.271</td>
<td>66 M, 63 F</td>
<td>50</td>
<td>65</td>
<td>150</td>
<td>990</td>
<td>0.611</td>
</tr>
<tr>
<td>Myanmar</td>
<td>44.497</td>
<td>59 M, 62 F</td>
<td>79</td>
<td>90</td>
<td>190</td>
<td>220</td>
<td>0.475</td>
</tr>
<tr>
<td>Nepal</td>
<td>22.847</td>
<td>58 M, 57 F</td>
<td>83</td>
<td>108</td>
<td>539</td>
<td>200</td>
<td>0.347</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>18.445</td>
<td>71 M, 75 F</td>
<td>18</td>
<td>18</td>
<td>24</td>
<td>700</td>
<td>0.711</td>
</tr>
<tr>
<td>Thailand</td>
<td>60.300</td>
<td>66 M, 72 F</td>
<td>39</td>
<td>36</td>
<td>44</td>
<td>2740</td>
<td>0.833</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>62.6 M, 64.3 F</td>
<td>57.8</td>
<td>79.1</td>
<td>280.7</td>
<td>758.9</td>
<td>0.538</td>
</tr>
</tbody>
</table>

(References: 1, 2, 3, 5 & 8)  
(1) Infant Mortality Rate (Per 1000 live births)  
(2) Maternal Mortality Ratio (Per 100,000 live births)  
(3) Human Development Index
Table 3
Trends in Per Capita Energy, Protein and Fat Supplies in the SEA Region from 1969-70 to 1990-92

<table>
<thead>
<tr>
<th>Country</th>
<th>Per Capita Energy Supply (Kcal/Day)</th>
<th>Total Protein (g/day)</th>
<th>Total Fat (g/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>2120 1910 1990</td>
<td>45 42 43</td>
<td>15 14 17</td>
</tr>
<tr>
<td>Bhutan</td>
<td>– – –</td>
<td>– – –</td>
<td>– – –</td>
</tr>
<tr>
<td>India</td>
<td>2040 2080 2330</td>
<td>51 51 57</td>
<td>30 33 41</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2050 2450 2700</td>
<td>42 51 60</td>
<td>29 38 51</td>
</tr>
<tr>
<td>Maldives</td>
<td>– – –</td>
<td>– – –</td>
<td>– – –</td>
</tr>
<tr>
<td>Myanmar</td>
<td>2060 2320 2580</td>
<td>53 60 64</td>
<td>33 35 43</td>
</tr>
<tr>
<td>Nepal</td>
<td>1910 1870 2140</td>
<td>50 49 55</td>
<td>25 26 29</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>2270 2320 2380</td>
<td>46 46 46</td>
<td>48 46 44</td>
</tr>
<tr>
<td>Thailand</td>
<td>2190 2220 2380</td>
<td>51 49 53</td>
<td>30 32 44</td>
</tr>
<tr>
<td>Average</td>
<td>2091.4 2167.1 2357.1</td>
<td>48.3 49.7 54</td>
<td>30 32 38.4</td>
</tr>
</tbody>
</table>

(Reference: 6)
Protein-Energy Malnutrition

The WHO Global Database on protein-energy malnutrition (PEM) and child growth shows that the prevalence of PEM in children under five years in developing countries world-wide has progressively fallen from 42.6 percent in 1975 to 34.6 percent in 1995. However, in the SEA Region the fall in percentage prevalence has not been as rapid as the rise in population. Currently, over three-fourths (79 percent) of the world’s malnourished children live in this region. The figure is shocking, not only because of persisting enormous magnitude of malnutrition, but because of the contribution of malnutrition to infant and young child mortality and morbidity. It is now recognised that some 50 percent of child deaths in developing countries are related to malnutrition’s potentiating effects and 83 percent of these deaths are attributable to mild to moderate malnutrition.

*Note: x axis is not to scale.*
Despite sustained increase in the per capita dietary energy supply in all the South-East Asian countries, the position regarding undernutrition (which is less than -2SD NCHS median weight-for-age and height-for-age in children below five years) is far from satisfactory (Figure 1 and Figure 2). The prevalence of protein-energy malnutrition (PEM) in most countries, particularly in Bangladesh, India, Nepal and Bhutan is still alarming. All countries have a very large number of undernourished (underweight and stunted) pre-school children and effective remedial measures are to be taken to save them from the grave risk of morbidity and mortality.

In Thailand, Sri Lanka and Indonesia, there has been a strong commitment of significant government resources including capacity-building at the community level. The provision of integrated services in health and nutrition with active involvement of community organizations in Thailand and Indonesia has resulted
in a “bottom-up demand” which is the key factor responsible for effective monitoring and implementation of programmes in these countries (35). In Sri Lanka, social development has been given top priority by the successive governments. But due to budgetary constraints, expenditure on the social sector has been drastically reduced since the early 80s resulting in the almost complete withdrawal of food subsidy (29). The other major constraints in maintaining sustained reduction in malnutrition in Sri Lanka is the continuing ethnic violence in the north-eastern areas which has affected not only the national economy but has also severely limited access to food and health services.

In most countries of the Region, household food security and access to basic health services are the critical problems. The proportion of households with energy deficit in diet ranges from 40-56 percent (14, 21 & 22). The trends in dietary energy supply indicate that Bangladesh has not yet achieved self-sufficiency in food (6). Neglect of health care and education for the poor and rising unemployment is also leading to staggering human deprivation within the country (29).
The incidence of low birth weight (LBW) which reflects intrauterine growth retardation is high among babies born reportedly to undernourished mothers. The incidence ranges from 7-50 percent in SEAR countries (Figure 3). Surveys carried out by the National Nutrition Monitoring Bureau in India revealed that nearly 50 percent of women suffer from chronic energy deficiency [Body Mass Index (BMI) < 18.5] (17 & 22) and are at risk of delivering infants with low birth weight. It should, however, be noted that the birth weights are mostly taken from hospital records as the community-based data at the national level are not available. Hence, caution should be exercised in interpreting these data.

The system of growth monitoring is not well established in most of the countries in the Region. Health workers do not realise the significance of cut-off level on the growth charts and as a result there is absolute inaction on their part when growth faltering occurs among children. No attempts are made by health workers to counsel mothers or to give special care to such children who fall below the cut-off levels of −2 SD of the NCHS median for weight-for-age (23). Recent evaluation of the most widely quoted Integrated Child Development Services (ICDS) programme in operation in India revealed inadequate coverage (26) and about 36 percent of the functionaries at the community level were not able to monitor growth that is essential in identifying the children in need of nutritional support. The major reasons identified for poor performance of most ICDS centres were: lack of skills in recording weight in growth charts; non-availability of growth charts; non-functioning of weighing scales, and non-cooperation of parents (25).
Feeding Practices in Young Children

In rural areas of the SEAR countries, breast-feeding is very common for infants and young children. However, in urban areas there is a downward trend. In addition, in some areas, harmful traditional practices still persist before breast-feeding begins. Examples include discarding colostrum and feeding sugar water and honey. Although widely practised in most SEAR countries, the extent and duration of exclusive breast-feeding varies considerably (figure 4). While definition of exclusive breast-feeding would only allow provision of breast milk and medicine to the infant (see appendix 2 for full definition), the actual practise may not be quite as strictly adhered to as the definition implies. For example, a significant proportion of children are given complementary food in addition to breast-feeding by the age of four to six months. Some mothers continue to breast-feed up to two years in addition to providing complementary food from 9 months onwards (7). In general, the recipes for complementary feeding are mostly based on cereal gruels and legumes, which may be deficient in essential micronutrients. Except for Bhutan and Maldives, other countries have adopted the international code for marketing breast milk substitutes (34). Thailand, for instance, had adopted the international code as far back as 1981. In 1995, the country decided to revise this and rename it as the code of marketing infant and young child food.
Iron Deficiency Anaemia

Iron deficiency and anaemia have profound negative effects that include increased maternal and newborn mortality, impaired health and development of infants and children, limited learning capability, impaired immune functions and reduced working and productive capacity of those affected. Iron deficiency and anaemia are thus, impediments to individual and national development.

An alarming 600 million people in the Region are suffering from iron deficiency anaemia (IDA). Predominantly affecting adolescent girls, women of reproductive age and young children, the condition has a prevalence rate of 74 percent among pregnant women in the Region with a wide range of 13.4 percent in Thailand to 87 percent in India (Figure 5) (3). Apart from inadequate dietary intake of iron, poor bioavailability of iron from cereal-based diets and high intestinal worm infection are considered the main factors responsible for iron deficiency anaemia.

![Figure 5](image-url)  
The prevalence of IDA has not changed in any country in the Region except for Thailand. The main reasons for no reduction in its prevalence are that the condition often remains undetected unless it is severe, and that most of the countries in the Region do not have national programmes for the prevention and control of IDA. It requires functioning primary health care system. Also, demand is low and efforts to improve IEC to increase awareness is critical. Intervention programmes such as iron and folate tablet supplementation to pregnant women now implemented in some countries have failed to make the desired impact due to inadequate supply, inadequate coverage, poor compliance rate, lack of community involvement (24) and low priority in national policies (3). A consistent observation that emerged was that intestinal worm infections were common in all the countries with the prevalence being 46-90 percent in six countries of the Region. Several countries have now initiated an integrated and more comprehensive approach to control anaemia which includes provision of deworming; iron and folate supplements to pregnant women, nutrition education for consumption of food rich in iron, and health education on personal hygiene and sanitation.
Iodine Deficiency Disorders

Iodine deficiency disorders (IDD) constitute the greatest world-wide cause of preventable brain damage in the foetus and infant, and of retarded psychomotor development in young children.

Iodine Deficiency Disorders (IDDs) is another public health problem which is rampant inspite of the simple technology available for their elimination. The enormous gravity of the problem is evident from the estimation that 172 million people in the Region are victims of goitre while 599 million are at risk (46) (Figure 6). Goitre is only the ‘tip of the iceberg’ and the term ‘IDD’ comprises a spectrum of disability that includes psychomotor defects, impaired mental function and slowed cognitive development (39). TGR (total goitre rate) is the prevalence of goitre which includes the sum of individuals classified in both grades (1 and 2) of goitre divided by the total number of individuals examined. Universal iodisation of salt is being attempted and this approach has been successful in bringing down the prevalence in some countries. Yet,
consumption of iodised salt is variable within the region, ranging from 8 percent in Maldives to almost 100 percent in Bhutan and Thailand. Bhutan has made remarkable progress by reducing the prevalence of TGR from 64.5 to 14 percent within a decade. Thailand too, has reported a drop in prevalence of goitre from 19 percent in 1989 to less than 5 percent in 1997. WHO also recommends median urinary iodine excretion (UIE) as one of the indicators to track progress in IDD control programme. Nepal showed a decline in low UIE (<100 µg/L) from 52% in 1985 to 15% in 1998. This was associated with increases in iodised salt coverage (39). The major constraints experienced by countries in implementing the iodine deficiency disorder elimination programme (IDDEP) are: (1) shortage of iodised salt due to under-production and lack of demand; (2) availability of non-iodised salt in the market; (3) lack of appropriate monitoring of iodine content in iodised salt; and (4) iodised salt does not reach the consumers in remote and difficult geographical locations; (5) The other important constraint is the effective implementation of legislation, such as enforcing that all salt producers must iodise salt adequately. Apart from iodisation of common salt, iodisation of drinking water and oral iodinated oil capsule administration are being attempted in selected areas of some countries in the Region.
Vitamin A Deficiency

Vitamin A deficiency (VAD) is a serious public health problem in most developing countries and it has negative health consequences for children and women. VAD occurs when body stores are depleted enough to the extent that physiologic function is impaired even where clinical signs are not evident. The main causes of VAD are inadequate intake of Vitamin A rich foods and severe and repeated illnesses.

The available evidence indicates that severe forms of Vitamin A deficiency (VAD) e.g., clinical xerophthalmia have declined in the Region. However, in most countries of the Region, VAD is still a public health problem (Figure 7) (3). [A public health problem is indicated when the prevalence of night blindness > 1.0 percent, Bitôt’s spots > 0.5 percent, xerophthalmia-related corneal xerosis > 0.01 percent or corneal scars > 0.05 percent]. Also criteria for sub-clinical VAD is used to indicate a public health problem. Apart from leading to
easily preventable blindness, VAD greatly increases the risk of mortality and morbidity from related grave infections (such as measles, diarrhoea, pneumonia). Increasing evidence now show that improving Vitamin A status in preschool children living in VAD endemic area can increase their chances of survival by as much as 30%. As many as 125 million children in the Region are currently at risk. Clinical signs of xerophthalmia due to VAD are seen in nearly 1.3 million children (8). Though the countries in the Region have launched short-term programmes for the prevention of this condition (15 & 20), such as supplementation with Vitamin A capsules, a sustainable solution would be to encourage fortification of food with vitamin A, dietary diversification and ensure higher dietary intake of Vitamin A rich foods and management and prevention of infections.
Diet-Related Chronic Diseases

In the past, it was believed that problems of chronic non-communicable diseases were minor in developing countries; however, as a result of broad socio-economic changes including rapid urbanisation, industrialisation and the evolution of health services in both developed and developing countries, there has been considerable transition in health and nutrition in recent decades.

The profile of populations in the Region are changing with economic advancement and adoption of new urban-based lifestyles and diets. For instance, low levels of physical activity and exercise has been observed in urban areas. The intake of processed foods and saturated fats need to be assessed, as they can be detrimental to health, and likely to be increasingly consumed. Added to this are the habits of tobacco and alcohol consumption. The cumulative effect of these negative lifestyles is the higher occurrence of obesity and other degenerative disorders including coronary heart disease, diabetes mellitus and hypertension. At present,
the prevalence of diabetes mellitus in countries of the Region ranges between 2.1–4.1 percent in adult population (Figure 8) (43). However, each of the SEAR countries is facing the threat of a huge increase in the number of diabetics by the year 2025. In major urban agglomerates, the prevalence was shown to be much higher: 6–12 percent. As well, recent reports indicated that in Thailand 9-19 percent of children aged 19 years or less were obese and 20-30 percent of adults had a BMI value of more than 25—indicative of overweight. Surveys conducted in India recently showed that 6.6 percent of adult women are overweight and that the incidence of obesity has increased during the last decade (17 & 22).
Nutritional Achievements in South-East Asia

Major Nutritional Achievements in the South-East Asia Region*

- Infant mortality reduced.
- Life expectancy increased.
- Literacy rate increased in both men and women.
- Severe forms of protein-energy malnutrition have declined.
- Increased trends in per capita dietary energy and protein supplies.
- Nutritional blindness and Vitamin A deficiency have declined substantially.
- Iodine deficiency disorders have shown a declining trend in children in most countries.
- Coverage of iodised salt has increased at the household levels.
- Legislation of salt iodisation is in place in almost all countries.
- Most countries have adopted and are following the International Code of Marketing Breast Milk substitutes.
- All countries have developed National Plans of Action for Nutrition which are in different stages of implementation as appropriate to each country’s priority.

*See also Appendices 3 & 4
Conclusions and Recommendations

Recommendations
1. Growth monitoring & Promotion;
2. Nutrition Surveillance;
3. Promotion, protection and support of breast-feeding and caution against early introduction of complimentary foods;
4. Food security and Safety net;
5. Revised strategy for anaemia prevention and control;
6. Control of parasitic and other infections;
7. Monitoring of iodine content in salt;
8. Assessment of subclinical Vitamin A deficiency;
9. Encouragement of community participation;
10. Strengthening of the Information, Education and Communication (IEC) component;
11. Development of human resources for health (HRH);
12. Nutrition for the elderly;
13. Undertaking of expenditure surveys;
14. Need for sustainable health & nutrition programmes;

Broad conclusions and general recommendations based on past experiences and emerging trends are presented below keeping in view the targeted ICN goals:

1. Growth monitoring and promotion (GMP)

High prevalence of undernutrition in the Region underscores the need for intensifying GMP so that growth faltering can be detected at an early stage and remedial measures initiated. Due to the lack of motivation and proper training of health functionaries, GMP is not being carried out with due care. It is often observed that monitoring ends with just the weights of the children being recorded. Therefore, it is necessary to provide appropriate orientation to health workers on the importance of this exercise, with the ultimate objective of ensuring that anthropometric measurements are linked with follow-up action to address the causes.

2. Nutrition surveillance

Currently, very little attention is given to country-specific nutrition monitoring and surveillance system and operational research
suited to the country’s needs. It is imperative that each country should develop a strong mechanism of nutrition monitoring and surveillance system which should be action-oriented. Such system would provide useful data enabling the assessment of the existing situation and trends in nutrition as well as finding solutions to the problems.

3. **Promotion, protection and support of breast-feeding and caution against early introduction of complimentary foods**

Early introduction of complimentary foods to infants is fraught with grave risks and should be discouraged and exclusive breast-feeding encouraged up to 4-6 months of age. Sometimes needless supplements are given as early as 4-6 weeks. In view of high rate of infections, it is desirable not to introduce complimentary foods before four months. Certainly, it should not be delayed beyond six months. Complementary food/supplements should be energy and micronutrient dense and free from contaminants. In addition to appropriate complementary feeding, care should be taken to treat and control infectious diseases.

4. **Food security and safety net**

Household food insecurity is commonly observed in different countries. Strengthening of the public distribution system (PDS) for foodgrains, income generation programmes, creating job opportunity and enhancing the purchasing power of households should be given priority.

5. **Revised strategy for anaemia prevention and control**

Prevalence of anaemia remained practically unchanged in the Region for several years. This suggests that there is a need for a fresh look at the current approaches being adopted for the prevention and control of this problem. The present practice of extending a blanket coverage to all pregnant women and children may not be appropriate. In view of the seriousness and urgency of the problem a suitable strategy would be to screen the population and identify the groups which are below the cut-off level of Hb so that they can be targeted and given
special care and attention under the programme. For example, children from 6-18 months are most vulnerable. The target population also has to be appropriately counseled about the benefits for iron supplementation. Since worm infection is high in the Region, deworming should be linked with the IDA prophylaxis programme. Further, instead of building stores of iron only after women become pregnant, it would be desirable that action for improvement is initiated right at the adolescent girls stage, thereby ensuring adequate body stores of iron even before they marry and become pregnant. In the existing situation in the Region, the focus has to be on adolescent girls who constitute the key segment of the population. Inadequate attention is currently given to raise the awareness of this group regarding the available health and nutrition services and the need for their utilisation. This has to be addressed and suitable means of communication selected for reaching out to adolescent girls.

6. Control of parasitic infections

Considering that anaemia is widespread and that most of the countries are endemic to parasitic infections such as hookworm and malaria, cost-effective programmes of deworming and malaria control need to be taken up at the community level. These programmes should be linked with not only the anaemia control programme but also with all the development programmes in each country.

7. Monitoring of iodine content in salt

In controlling IDDs, it is necessary that the iodine content in iodised salt is monitored to ensure that the prescribed level of iodine is maintained from the point of manufacturing down to the consumer level. Another feasible suggestion that may be considered is that iodised salt be made available in small packets at the factory level which can as such be used at the household level. This would avoid losses of iodine at the intermediate stages of handling and thus the quality of salt can be ensured. In view of the emergence of new endemic areas, it is essential to investigate the presence of goitrogens and bioavailability of iodine in diets of these areas.
8. Assessment of the subclinical Vitamin A deficiency
A significant reduction in ocular manifestation due to VAD has been reported in the Region, but there is paucity of information on the extent of subclinical VAD in the community. This has a large public health dimension as VAD is closely related to the under-five child morbidity and mortality. The need is, therefore, to measure Vitamin A stores in a sub-sample of population in each country of the Region in order to assess the subclinical Vitamin A status.

9. Encouragement of community participation
A recipe for success of intervention programmes of health/nutrition services rendered is active community participation at different stages and the optimal utilisation of such services. Attention has to be given on this aspect and ways and means of achieving active involvement of the community should be encouraged keeping the prevailing socio-cultural environment in view.

10. Strengthening of the Information, Education and Communication (IEC) component
Evaluation studies have revealed that most of the nutrition intervention programmes have a weak or ill-conceived IEC component. High priority should be given to qualitative research so that message content and concept are consistent with the needs of the situation. Communication strategies should be developed aiming at behavioural change with a built-in system of feedback to assess the changes in knowledge, attitude and practices.

11. Development of human resources for health (HRH)
A serious attention has been given to the present imbalances in HRH. The critical shortages, especially in the categories of allied health workers, such as nurses and midwives, experienced in most of the countries must be corrected. Nutrition training programme for health professionals should be relevant, need-based and linked to career development.
12. Nutrition for the elderly
As a result of the increase in life expectancy and better health care, the proportion of the elderly is rising significantly. Adequate information on their nutritional status as well as their dietary and social needs is required. It is also important to identify the dietary factors that are associated with decreased risk of both morbidity and mortality and which promote overall health and longevity.

13. Undertaking of expenditure surveys
It is now well recognised that data from expenditure surveys on food and non-food items provide information on food/nutrient intakes that could be more reliable than other indirect measures. Countries should be encouraged to take recourse to these surveys in their assessment exercises in addition to per capita dietary energy and other nutrient requirement and daily intakes.

14. Need for sustainability
In order to sustain the improvement of health and nutrition, a broad-based action will be required on all aspects of human deprivation and under-development. The issues encompassing human deprivation which need to be addressed are: inadequate income; low literacy rate; inaccessibility to health care; lack of access to safe drinking water and sanitation; and inadequacy of dietary intake. It is necessary to identify strategies whereby the improvement of nutritional status is adapted as both a specific goal of development and as an indicator of socio-economic progress.

15. Prevention of diet-related non-communicable diseases
The 1992 ICN called for the development of strategies based on the prevailing diet-related health problems to promote appropriate diets and healthy lifestyles, taking into consideration both the traditional and contemporary dietary patterns in its widest variation. The human requirements of essential nutrients should be considered which are adequate to meet the nutritional needs of practically all healthy persons. Moreover, sound epidemiologic research that aims to identify dietary risk factors for cardiovascular diseases as well as certain cancers should be encouraged.
Challenges for the 21\textsuperscript{st} Century

Continuing challenges in the South-East Asia Region

- Low birth weight continues to be a problem in most countries and increasingly so amongst infants born to undernourished and adolescent mothers.
- Undernutrition continues as a major problem with unacceptably high levels of moderate to severe stunting.
- Iron deficiency anaemia is a major problem in the region particularly in women of childbearing age and children less than five years.
- Iodine deficiency disorders are still a public health problem in most countries.
- Vitamin A deficiency, while generally lessening, is still a major public health problem.
- Other nutritional deficiencies of emerging global public health importance include, for example, zinc deficiency associated with growth retardation and impaired immune function, folate deficiency which causes widespread megaloblastic anaemia of pregnancy and is associated with neural tube defects in high risk groups; and calcium deficiency associated with osteoporosis.
- The non-communicable diseases are now becoming major causes of death in some countries of the region. This reflects demographic changes as well as changes in diet and lifestyles, especially in newly industrialised countries.
- A future concern is the epidemiologic transition where countries must develop multi-faceted nutrition programmes which address both undernutrition and infectious diseases as well as diet-related chronic diseases like diabetes, obesity, cardiovascular diseases and certain diet-related cancers.
nutrition in south-east asia
Country Profiles

The second part of this report provides individual country profiles of all WHO South-East Asian Member States except DPR Korea. Basic demographic, health and nutrition figures are presented, as well as an overview of the major nutritional concerns within the country. When possible, the most recent national data available from the country are presented. The parameters used in the tables pertaining to individual country profiles are defined in Appendix 2.
With a population of 125 million, Bangladesh is one of the most densely populated (800 persons per square kilometres) countries in the world. During the period 1960-1994, the crude birth rate dropped from 47 to 36, as the death rate fell from 22 in 1960 to 13 in 1997 (age and sex standardised death rate per 100,000). The Infant Mortality Rate (IMR) has also declined from 151 in 1960 to 79 in 1998. The life expectancy has only marginally increased from 56.1 in 1991 to 58 in 1998. The life expectancy has only marginally increased from 56.1 in 1991 to 58 in 1998. Maternal mortality ratio continues to be high with 390 per 100,000 live births. The adult literacy rates are low in the country (combined = 38.1 percent, M = 50.5 percent, F = 35.9 percent). The human development index of Bangladesh is 0.368 and the per capita GNP is US$ 240. More than half of the country’s population live in poverty and the progress of poverty alleviation programmes in the country is the slowest in Asia (5).

Nutritional Situation

Protein-Energy Malnutrition (PEM)
Currently, 56 percent of pre-school children are underweight, 51 percent stunted and
14.7 percent are wasted by international standards. Per capita dietary energy supply in Bangladesh shows a declining trend. Although Bangladesh has made substantial progress in reducing the prevalence rate of stunting from 68 percent in 1985-86 to 51 percent in 1995-96 and underweight from 71 percent in 1985-86 to 56 percent in 1995-96, moderate and severe malnutrition remains a major public health problem.

Anaemia

Data from national nutrition surveys indicate that anaemia is a major public health concern within Bangladesh. The Nutrition surveys carried out in rural Bangladesh in 1981-82 indicated that about 74 percent of pregnant and lactating women were anaemic. Among the under five children, 73 percent suffered from iron deficiency anaemia (IDA) (3) and the country document on nutrition (1992) revealed that about 20 percent of maternal deaths were attributable to anaemia and post-partum hemorrhage (11). A small-scale study undertaken during 1990-95 reported that IDA prevalence remained unchanged when compared to 1981-82 estimates. Inadequate intake and impaired absorption of iron, heavy parasitic

Nutritional profile of Bangladesh

- Per capita energy supply: 2060 kcal/day (1994-96)
- Energy from cereals: >80% (1994-96)
- Per capita total protein supply: 43 g/day (1990-92)
- Per capita fat supply: 17 g/d (1990-92)
- Children < 5 years underweight: 56% (1995-96)
- Children < 5 years stunted: 51% (1995-96)
- Children < 5 years wasting: 14.7% (1995-96)
- BMI < 18 in women: Rural: 47% Urban: 25%
- LBW babies (<2500g): 50% (1993-95)
- Prevalence of TGR in School Children: 50% (1997)
- Prevalence of anaemia in pregnant women: 74% (1981-82)
- Prevalence of night blindness due to vitamin A deficiency in pre-school children: 0.78% (1996)
- Exclusive breast-feeding in infants 0-3 months: 54% (1990-96)
- Breast-fed with complementary food in infants 6-9 months: 30% (1990-96)
infestation and recurrent infections are identified as the common causes. The country has no national programme of prevention of nutritional anaemia and the problem has received low priority. Distribution of iron and folic acid supplements among pregnant women is sporadic and even that is channelised only through limited number of MCH-FP out reach government run centres.

**Iodine Deficiency Disorders (IDD)**

A national IDD prevalence survey carried out in 1993 revealed that total goitre prevalence rate was about 50 percent in children aged 5-11 years while prevalence of cretinism was 0.6 percent in the same age group (9). In the past 50 years, urinary iodine excretion has been taken as the gold standard employed for the assessment of iodine status and of IDD. Almost 90 percent of all iodine is excreted in the urine, and as such it provides an accurate indication of the current iodine intake. According to WHO recommended cut-off points, a median UIC (urinary iodine concentration) of below 100 µg/l has been recommended to denote that sub-clinical iodine deficiency exists in the population. A median value of 51-99 µg/l reflects mild deficiency and median UIC value of less than 20 µg/l is considered severe. Data from 1993 indicate that the prevalence of low urinary iodine excretion (< 100 µg/l) among school children (ages 5-11) was 70.7 percent and among adults was 67.4 percent (28). Heavy rains, repeated flooding, continued trend of deforestation further aggravate the IDD problem. As a long term measure, the universal iodisation of common salt is being implemented in the country and a legislation has been passed making iodisation of all salt (produced and imported) mandatory. However, there is no effective monitoring of this programme.

**Vitamin A Deficiency (VAD)**

National blindness survey in 1996 reported that prevalence of night blindness due to Vitamin A deficiency in pre-school children was 0.78 percent. Recent research (1999) from rural Bangladesh indicates that the prevalence of night blindness among rural pre-school children is 0.62 percent and among rural
pregnant women is 2.7 percent (44). National VAD control programme in Bangladesh is currently operated twice a year in pre-school children (6 months-59 months) since 1995. More than 80 percent of children have received capsules during the special Vitamin A week campaign and distribution is linked with National Immunisation Day (NID) with Intensified Pulse Polio Immunisation (IPPI). In addition, other public health measures including dietary diversification are strongly advocated.

**Feeding Status of Infants and Young Children**

About 54 percent of children in rural Bangladesh are reported to be exclusively breast-fed till three months and 30 percent children are breast-fed along with complementary foods (7). In about 87 percent children, breast-feeding is continued for about two years along with other foods. Several prevailing superstitions interfere with appropriate breast-feeding. The use of breast milk substitutes is increasing in urban areas.

Diarrhoeal diseases and respiratory infections constitute the major killers and are also sources of morbidity and malnutrition among children in Bangladesh. Control of diarrhoeal diseases by advocating exclusive breast-feeding up to 4-6 months, consumption of safe food, promoting ORS coverage among children needs a major thrust.

**Constraints & Actions for the Future**

Bangladesh has not yet achieved self-sufficiency in food with 50 percent households experiencing food insecurity. Dietary energy supply accounts for only 80 percent of Recommended Daily Intake (RDI). The problem of malnutrition is further aggravated by inadequate supply of safe water, lack of proper sanitation, particularly in rural areas and urban slums accounting for high prevalence of diarrhoeal diseases. These issues deserve highest priority. Nutrition surveillance has not received due attention in national health and nutrition programmes. Health workers are not able to realise the significance of cut-off level on growth
charts resulting in inaction on their part when growth faltering occurs among children (23). Most of the well-planned health centres at district and lower levels run short of essential physical and logistic facilities and suffer from inadequate trained manpower. Issues regarding implementation of micronutrient malnutrition as well as diarrhoeal diseases control programmes are only partially addressed. Higher allocation of resources need to be made to improve the outreach of health care delivery.

In view of wide prevalence of malnutrition and poor outcome of the intervention programmes, the government of Bangladesh has adopted programmes to realise the national plan of action for nutrition in different ways. Primarily they are World Bank funded projects: viz Bangladesh Integrated Nutrition Project (BINP). Two other programmes are under way: (1) nutritional activities are included in Health and Population Sector Programme (HPSP) and, (2) National Nutrition Programme (NNP) which is a nation-wide extension of BINP. However, operational merits and demerits of these programmes need to be carefully reviewed.
Bhutan

Country Profile

- Population: 2.0 Million (1998)
- Life Expectancy: 60 years males, 62 years females (1998)
- Crude Birth Rate: 40 per 1000 population (1994)
- Death Rate (Age/sex standardised): 14 per 1000 population (1997)
- IMR: 63 (per 1000 live births) (1998)
- < 5 MR: 142 (1997)
- Maternal Mortality Ratio: 380 (per 100,000 live births) (1994)
- Adult Literacy: 42.2 (1995)
- Total Fertility Rate: 5.5 (1998)
- Measles: 9 reported cases (1996)
- TB: 1271 reported cases (1996)
- Human Development Index: 0.338 (1994)

Population of this land-locked country is 2.0 million. The limited data available show that crude birth rate has declined from 42 in 1960 to 40 in 1994 and death rate from 26 in 1960 to 15.9 in 1997. The IMR has also declined from 203 in 1960 to 63 in 1998. The total fertility rate is 5.5, which is the highest in the region. According to the country report, the maternal mortality ratio is 380(3). The country’s human development index is 0.338.

Nutritional Status

Protein-Energy Malnutrition (PEM)

Recent surveys carried out showed that about 40 percent of children under five are underweight using weight-for-age criterion and 54 percent stunted as per height-for-age. Although the incidence of PEM based on hospital growth monitoring records, showed a downward trend, the overall percent of underweight children has not changed (23). Data on nutrition trends are not available in the country. Since growth monitoring is linked with immunisation schedules, weight is recorded only when children are brought for immunisation and thus only until the last dose of vaccine (measles) has been received.
Anaemia
Limited scale surveys indicate that the prevalence of anaemia among pregnant women is 68 percent and 58 percent in children less than five years, but no national control programme exists for prevention and control of anaemia. At antenatal clinics, iron and folate tablets are distributed to pregnant women. However, the compliance rate is not monitored.

Iodine Deficiency Disorders (IDD)
With the introduction of universal iodisation of salt, the prevalence of IDD in school children was brought down from 64.5 percent in 1983 to 14 percent in 1996 and cretinism dropped from 10 percent to 0.4 percent during this period. Bhutan has made a remarkable progress in reducing IDD. The IDD control in Bhutan is a well coordinated multi-sectoral programme which includes (i) salt iodisation and distribution; (ii) iodised oil injection (discontinued in 1995); (iii) monitoring of iodine in salt; (iv) evaluation of the programme and (v) community level education.

Vitamin A Deficiency (VAD)
Data regarding the extent of Vitamin A deficiency is scanty, but a programme of Vitamin A distribution is being implemented.
for children between six months and five years and women within one month of delivery. The prevalence of Vitamin A Deficiency in pre-school children has been reported to be 0.7 percent (1995).

Feeding Status of Infants and Young Children
Breast-feeding is universally practiced. Ninty eight percent of mothers breast-feed their infants for at least 12 months. Exclusive breast-feeding is generally encouraged for children up to 4-6 months, while young children are fed cooked rice as complementary food. However, this is introduced late, resulting in slower growth of children after six months of age.

Constraints & Actions for the Future
One of the major constraints faced in Bhutan is that its population is sparsely scattered over remote areas, making it extremely difficult to ensure adequate access to health and nutrition services. Further, the terrain in the country is unfavourable for food production. It is a matter of great concern that only 15 percent of deliveries are attended by trained personnel (3) and in some remote areas attendance at birth by trained personnel is as low as four percent, which highlights the need for intensification of both antenatal and postnatal care. Although the country is aiming at sustainable development, it is at present dependent on external assistance for its developmental programme. Limited financial resources and shortage of trained and skilled human resources in all sectors including health and nutrition is yet another major hurdle faced in the country. The country needs to establish an efficient system of growth monitoring and nutrition surveillance. Nutritional enhancement of the population in Bhutan calls for sustained attention towards improvement of sanitation, provision of safe drinking water coupled with promotion of nutrition awareness and female literacy.
India

With an estimated population of about 982 million, India is the most populous country in the region. In the recent past, the country has made considerable progress on social and economic fronts, as indicated by improvements in indicators such as life expectancy, IMR and MMR, under five mortality and literacy rate (1). However, improvement in nutritional status of women and children has lagged behind. The population of India doubled between 1960 and 1992, but the impressive food grain production nearly kept pace with population growth, and therefore, per capita food availability did not decline. While it is estimated that per capita cereal availability within India is adequate, national level surveys still show that 40 percent of the population in India consume less than 80 percent of energy required (17). Low purchasing power, limited access to food, and individual household food insecurity are the major constraints.

Nutritional Status

Protein-Energy Malnutrition (PEM)

According to repeated surveys carried out by National Nutrition Monitoring Bureau...
(NNMB) in 10 states, prevalence of severe forms of PEM in pre-school children declined from 15.0 percent in 1975-79 to 8.7 percent during 1988-90. Assessment of the nutritional status, adopting the Gomez classification based on weight-for-age, showed that prevalence of underweight among children below five years decreased from 62.5 percent in 1975-79 to 52.5 percent in 1988-90. The recent surveys of NNMB revealed that the prevalence of underweight remained at 50 percent (22). Consistently, a high prevalence of severe and moderate malnourished children was observed among 1-3 years, than in the 3-5 age group. About 63 percent of pre-school children suffer from stunting, indicative of long duration chronic malnutrition, and about 17 percent suffer from wasting which is a reflection of acute or current malnutrition (22). Surveys conducted by Integrated Child Development Services (ICDS), one of the extensive child development programmes in the country, also indicated high prevalence of undernutrition in areas where ICDS is not in operation (I7). The other major source of data on nutritional status of children in the country is the National Family Health Surveys (NFHS). NFHS has obtained anthropometric data on children under four years. Children who fall below -2SD weight-

### Nutritional profile of India

- **Per capita energy supply:** 2390 kcal/day (1994-96)
- **Energy from cereals:** >60% (1994-96)
- **Per capita total protein supply:** 57 g/day (1990-92)
- **Per capita fat supply:** 41 g/d (1990-92)
- **Children < 5 years underweight:** 50% (1995-96)
- **Children < 5 years stunted:** 63% (1992-93)
- **Children < 5 years wasted:** 17% (1992-93)
- **BMI < 18 in women:** 47% (1996)
- **LBW babies (<2500g):** 30% (1993)
- **Prevalence of TGR in school children:** 2.3–65% (1997)
- **Prevalence of anaemia in pregnant women:** 87.5% (1991)
- **Prevalence of anaemia in children <5 years:** 56% (1991)
- **Prevalence of vitamin A deficiency disorders:** 0.7%
- **Exclusive breast-feeding in infants 0-3 months:** 51% (1990-96)
- **Breast-fed with complementary food in infants 6-9 months:** 31% (1990-96)
for-age NCHS median are considered to be undernourished. Surveys conducted by NFHS in 1992-93 showed that the prevalence of underweight, stunting and wasting were 53.4 percent, 52 percent and 17.5 percent, respectively (18).

Growth monitoring is an important activity of ICDS. However, the recent national evaluation showed that in ICDS programme, the main focus is on supplementary feeding rather than its impact. The study identified various factors which are impeding growth monitoring activity such as non-availability of growth charts, lack of skills in Anganwadi workers in recording the growth measurements, weighing scales not in working condition and non-cooperation of parents (25).

The food consumption surveys conducted by NNMB indicated little change in the average consumption of dietary energy among rural households between 1975-79 and 1988-90 period. The dietary intakes of pre-school children showed an increase of 75 kcal in 1-3 age group and 140 kcal in children of 4-6 age group.

Data on nutritional status of adults as determined by Body Mass Index (BMI) indicated that about 50 percent of adults suffered from different grades of chronic-energy deficiency (CED) with BMI < 18.5. The values for BMI were similar in males and females except that overweight/obesity (BMI > 25) was more in females (6.6 percent) than in males (3.5 percent). The prevalence of obesity ranged from 3.1 percent among low income agricultural labourers to 8.5 percent in others of high income group (17 & 22). Nearly 30 percent of all infants born in India are of low birth weight (<2500 g) reflecting intrauterine growth retardation, possibly because of maternal malnutrition.

**Anaemia**

Anaemia is the most widespread and much neglected problem. Prevalence of anemia was reported to be 87.5 percent in pregnant women and 56 percent in children under five years (3). An evaluation by the Indian Council of Medical
Research found that the current strategy of combating anaemia of pregnancy through distribution of iron and folate tablets during the last trimester of pregnancy had made only a limited impact (24). The child survival and safe motherhood (CSSM) programme, starting in 1992, is progressing at a slow pace. ICDS programme also has similar limitations due to lack of effective and supportive supervision and induction and in-service training.

**Iodine Deficiency Disorders (IDD)**

Although the overall goitre prevalence rate is reported as 19 percent (3), the surveys carried out in 1993 indicated a wide range of 2.3 to 65 percent (9). Evaluation in 1995 in Himachal Pradesh revealed a decline of total goitre rate (TGR) to 5.7 percent from 41.2 percent in 1954. It is estimated that nearly 200 million people are at risk of developing IDD and about 64 million suffer from goitre. Hitherto, goitre was known to be endemic only in hilly areas. Emergence of new endemic areas in the plains is recently reported, but the reasons for such emergence are not clear. National IDD control programme in operation in the country involves making iodised salt available to the population, monitoring and quality control of iodised salt and providing health education. Government of India has recently decided to universalise iodised salt distribution throughout the country. All States apart from Kerala have banned the sale of non-iodised salt. At first iodised salt production was confined to the public sector, but this failed to meet the demand and now private production is vigorously encouraged. Over 800 iodisation plants have been installed and India now produces over 4 million tons of iodized salt annually which is more than 80% of its national requirements. Seventy percent of households have access to iodized salt.

**Vitamin A Deficiency (VAD)**

Taking Bitot spots as an index of Vitamin A deficiency (VAD), the prevalence has shown a reduction from 1.8 percent in 1975-79 to 0.7 percent in 1988-89. Keratomalacia, due to severe VAD, is reportedly not seen often and is observed only in extreme poverty pockets (17). The prevalence of subclinical Vitamin A
deficiency is not known. However, in 1996 the Government of India’s Micronutrient Task Force estimated that 88 million pre-schoolers are at risk for VAD. Recent survey data from the state of Uttar Pradesh indicates 12 percent of children have severe deficiency (serum retinol level < 0.35 µmol/L) and 58 percent with moderate deficiency (<0.7 µmol/L). Also, a 1990 study of National Institute of Nutrition showed that 50 percent of mothers and 20 percent of infants had low serum retinol at the time of delivery. India’s Vitamin A control programmes cover children from nine months to three years with high dose (appropriate for age) supplement through primary health centres and sub-centres. The policy of providing Vitamin A with measles vaccine at nine months needs to be reviewed as several studies have documented low measles immunisation coverage. The current coverage in children (ages 12 to 48 months) under the Vitamin A massive dose programme could be improved substantially by linking Vitamin A supplementation programme with Intensified Pulse Polio Immunisation on national immunisation days (20).

Feeding Status of Infants and Young Children
In India, exclusive breast-feeding of very young children is common. On an average, 51 percent of infants under four months are given only breast milk. The percentage of babies exclusively breast-fed drops off to nearly 10 percent in children of eight months or older. Complementary food, in addition to breast milk, is introduced in 16 percent of children of less than one month of age. At the age of 11 months, percentage of children receiving complementary food increases to more than 80 percent. Provision with complimentary solid food rises from 17 percent at six months to 79 percent by the age of 15 months (18). Such provision, however is often inadequate and unsafe.

Constraints & Actions for the Future
There has been a striking decline in severe forms of malnutrition and under-five mortality during the last few decades in the country, and also some improvement in growth profile of pre-school children and a shift in the distribution of BMI
among adults. However, the rate of reduction in the overall percentage of malnourished children has been rather slow. The major factors which have hampered the improvement in nutritional status are rapid population increase, poverty and widespread lack of awareness.

Several target oriented, nutrition related interventions like CSSM, ICDS and mid-day meal programmes currently being implemented need to be periodically reviewed and strengthened. An ongoing World Bank study revealed that 15-25 percent of the poor in rural areas covered by ICDS do not have access to services provided through that programme (26). It is suggested that ICDS should now focus on intensifying its efforts on the poor sections of the community, rather than attempting to further expand its coverage to new blocks in the country. A limited data on household food security in some backward areas of the country showed that the proportion of households meeting energy requirement was only 44 percent (21). Among the major factors identified for high food insecurity were low income, high illiteracy, low agricultural production, illness of an earning member of the household and lack of land ownership for cultivation.

There is thus, a clear need to look into the ways of improving Public Distribution System to ensure that the benefits are targeted to the poor and needy. Another major corrective measure which the country has to emphasise is the population control for improving food availability and continued economic growth.

The National Nutrition Policy adopted by the country recently has included several indirect measures to achieve the nutrition goals such as food security, improving purchasing power, strengthening of the public distribution system, improvement in literacy and community participation. With effective implementation of the programmes providing package of services, it should not be difficult for the country to achieve the desired results in the near future.

Considering the range of different nutrition related problems met with and the variation of nutrition status of different population groups, India may be said to
represent the region in general. Currently the major nutrition related programmes in the country are being separately implemented by three ministries, viz. Health and Family Welfare, Women and Child Development and Education with rather limited coordination between them. In view of the magnitude of malnutrition in this vast country there is a need for continuous implementation and monitoring of the progress towards achieving the ICN goals.
Indonesia

Country Profile

- **Life Expectancy**: 63 years males, 67 years females (1998)
- **Crude Birth Rate**: 23 per 1000 population (1997)
- **Death Rate (Age/sex standardised)**: 9 per 1000 population (1997)
- **IMR**: 48 (per 1000 live births) (1998)
- **< 5 MR**: 59 (1997)
- **Maternal Mortality Ratio**: 390 (per 100,000 live births) (1994)
- **Adult Literacy**: 83.8% (1995)
- **Total Fertility Rate**: 2.6 (1998)
- **Measles**: 15,339 reported cases (1996)
- **TB**: 24,647 reported cases (1996)
- **Human Development Index**: 0.668 (1994)
- **Per Capita GNP**: US$ 980 (1995)

Indonesia is an archipelago state consisting of more than 1700 tropical islands. The five main islands are inhabited by most of the country’s population which stands at a total of 206 million. Vital statistics reveal life expectancy at birth as 63 years (males) and 67 years (females), with a crude birth rate of 24, IMR, 48 and MMR, 390. The economy of Indonesia is largely based on oil and mineral resources. Per capita food production index is 145 (from 100 in 1980) and the GNP per capita has increased to US$ 980.

Nutritional Status

**Protein-Energy Malnutrition (PEM)**

The major nutritional problems in Indonesia are PEM and micronutrient malnutrition. According to recent surveys, the children under-five whose weight-for-age is below –2SD using WHO-NCHS median value has decreased to 36 percent in 1995 from 54.7 percent in 1986. However, there was a slight increase in the prevalence of severe malnutrition during this period. The analysis showed that girls have better nutritional status than boys up to age of five years. The proportion of malnutrition was higher in rural areas (>40 percent) as compared to
Nutritional profile of Indonesia

- **Per capita energy supply**: 2880 kcal/day (1994-96)
- **Energy from cereals**: >60% (1994-96)
- **Per capita total protein supply**: 60 g/day (1990-92)
- **Per capita fat supply**: 51 g/d (1990-92)
- **Children < 5 years underweight**: 36.1% (1995)
- **Children < 5 years stunted**: 38% (1996)
- **BMI < 18 in women**: 35.5% (1996)
- **LBW babies (<2500g)**: 11% (1995)
- **Prevalence of TGR in school children**: 27.2% (1997)
- **Total goitre rate in pregnant women**: 16.0% (1992)
- **Prevalence of anaemia in pregnant women**: 51% (1995)
- **Prevalence of anaemia in children < 5 years**: 40.5% (1995)
- **Prevalence of xerophthalmia due to vitamin A deficiency**: 0.3% (1995)
- **Exclusive breast-feeding in infants 0-3 months**: 47% (1990-96)
- **Breast-fed with complementary food in infants 6-9 months**: 85% (1990-96)

Urban areas (>30 percent). On the other hand, proportion of overweight children was higher in urban areas (30). The growth monitoring system is quite satisfactory in the country, except that the weighing scales used, need to be standardised and checked for their quality. Also, health functionaries should be motivated to take prompt corrective action in case of growth faltering.

**Anaemia**

Iron deficiency is the most common cause of nutritional anaemia among pregnant women and pre-school children. Prevalence of anaemia dropped from 70 percent in 1986 to 51 percent in 1995 among pregnant women while in pre-school children, it came down to 40.5 percent in 1995 from 55.5 percent in 1992(3). Low consumption of haeme iron and exposure to parasitic infections are the major causes of anaemia. IDA control programme consists of provision of iron and folate tablets to pregnant women, other women in reproductive age group and pre-school children. Fortification of instant noodles with iron and Vitamin A is being implemented nation-wide. As part of a long term strategy, deworming of school children and nutrition education through family improvement programmes (UPGK) are undertaken.
**Iodine Deficiency Disorders (IDD)**

The national prevalence of TGR decreased from 37.2 percent in 1980-82 to 27.2 percent in 1992. Total goitre rate in school children was 9.8 percent (1992-97). A presidential decree banning non-iodised salt was issued in 1995. It was estimated that 60 percent of households were consuming adequate amount of iodised salt in the country in 1996. One of the operational strategies planned in the country is to integrate IDD and iodised salt issues into the education system and establish an efficient monitoring and reporting system at the provincial and district levels (9).

**Vitamin A Deficiency (VAD)**

National xerophthalmia surveys (1992) showed a downward trend in the prevalence of xerophthalmia in children to 0.3 percent in 1995 from 1.2 percent in 1986. However, in three provinces, South East Sulawesi, South Sulawesi and Malaku, the prevalence was more than 0.5 percent (3). Besides fortification of certain foods with Vitamin A, capsules of Vitamin A are selectively distributed in areas where the problem is still prevalent. Nutrition education activities have been intensified to promote increased consumption of Vitamin A through natural sources such as vegetables and fruits and big effort is underway in promotion of consumption of eggs (Central Java) and other animal sources of vitamin A.

**Feeding Status of Infants and Young Children**

Nearly 50 percent of children are reported to be exclusively breast-fed up to three months of age, while 85 percent are breast-fed with complementary foods from 6-9 months. Sixty-three percent of children continued to be breast-fed for about two years (7). A major programme addressed to nutrition problems is the family nutrition improvement programme, UPKG (an integrated family health package). Posyandu, (health posts run by volunteers with support of the health services) initiated in Indonesia in 1984, is very effective in reducing the health and nutrition problems in the targeted programme areas. In view of its wide acceptance, the programme has been now expanded to cover all provinces in the country. Posyandu
programme serves as a success model of community participation and inter-sectoral collaboration, where women’s organizations, NGOs and other sectors work together. The activities undertaken in this programme include weighing under five children, growth monitoring, supplementary feeding, family planning services, antenatal care, immunisation, management of diarrhoea and health education.

It is encouraging that a separate directorate for community participation has been established in the country. While the total budget of the health ministry has been reduced, the allocations for the community participation programmes have been increased.

**Constraints & Actions for the Future**

Because of the geographical problems and socio-cultural factors, the coverage of iron supplementation programme is only about 50 percent. Iron and folate tablets are distributed to all pregnant women but demand remains low. Vitamin A capsule is usually distributed to the target groups across, but only 70% coverage is reached. Several constraints are faced in implementation of fortification programmes mainly due to technology and management problems. The integrated services under Posyandu programme should be made complementary and supporting to the UPGK activities and they should not operate in isolation. In rural areas it is the practice to record birth weight of infants only after 2-3 days of delivery. The health workers need to be properly trained and motivated on the importance of weighing the infant immediately after the birth. The other underlying causes of malnutrition are poverty, population growth, income disparity, and environmental conditions.

Technical support is needed in establishing IDD surveillance, quality control and monitoring process for iodised salt programme. The success achieved in reduction of various nutritional problems should be sustained. The recent economic and political crisis in the country may affect the nutritional status of population adversely. Close monitoring of the situation is required for timely and effective nutritional intervention programmes.
Maldives

The Republic of Maldives is an atoll-based island nation, with a total population of 271,000 (1998). It is a widely dispersed archipelago, spread over 200 inhabited islands, out of an approximate total of 1190 small coral islands. Demographic indicators show that life expectancy has risen sharply while Infant Mortality Rate (IMR) declined. However, Maternal Mortality Ratio (MMR) and fertility rates have remained high. In the past, an impression prevailed in the country that Maldives was “under-populated” but the population has doubled between 1971 and 1991(16). The per capita GNP is US$ 990, which is one of the highest in the region. Although the country has made a significant economic progress, high population growth is threatening the quality of life, especially of women and children. The average annual rate of population growth was 3% for the period 1978-1998(2).

Nutritional Status

Protein-Energy Malnutrition (PEM)
No large-scale surveys were undertaken until the 90s to assess the nutritional status of population. In 1994, Ministry of Health and Family Welfare conducted a national survey
in collaboration with WHO and UNICEF and covered a total of only five percent households in the country. Results of these studies revealed that 16 percent of under-five children suffered from moderate to severe wasting, 30 percent had moderate to severe stunting and approximately 38 percent were underweight (16). The limited data available from previous studies show that severe malnutrition has not decreased since 1985. This is due mainly to poor feeding practices. Extensive data on nutrition trends are not available in the country. Although growth monitoring is carried out regularly in children up to three years with coverage of over 95 percent, it does not seem to have significant impact on children who faltered in growth. It was observed that when growth faltering occurred, no attempts are made by the health workers to take special care or counsel the mothers’ (23).

### Anaemia

Anaemia is a major public health problem in the country. Approximately 82 percent of children, 68 percent pregnant women and 62 percent non-pregnant women suffer from anaemia. Parasitic infestation is widely prevalent. Thalassaemia is another major problem in the Maldives, with

---

**Nutritional profile of Maldives**

- **Per capita energy supply:** 2470 kcal/day (1994-96)
- **Energy from cereals:** >40% (1994-96)
- **Children < 5 years underweight:** 38% (1994)
- **Children < 5 years stunted:** 30% (1994)
- **Children < 5 years wasted:** 16.7% (1994)
- **BMI < 18 in women:** 19.8-22.1% (1995)
- **LBW babies (<2500g):** 20% (1995)
- **Prevalence of TGR in school children:** 23.6% (1997)
- **Prevalence of anaemia in pregnant women:** 68% (1991)
- **Prevalence of anaemia in children:** 82% (1991)
- **Exclusive breast-feeding in infants 0-3 months:** 8%
approximately 18 percent of the population reported to be carriers of the disease (11). Information on dietary intake of iron and its bioavailability is not available. Ninety-five percent of deliveries are conducted by trained personnel and incidence of low birth weight is 20 percent.

**Iodine Deficiency Disorders (IDD)**

According to a study undertaken by the Department of Public Health and UNICEF in 1995, total goitre rate in school children is 23 percent (30). Currently intervention strategies are being evolved prescribing the required amount of iodine through iodised salt for human consumption.

**Vitamin A Status**

Data on Vitamin A status is not available. However, related indirect indicators such as nutritional status: breast-feeding patterns, anthropometric measurements, prevalence of low birth weight; market and household food availability; parasitic and other infections suggest that subclinical Vitamin A Deficiency (VAD) is likely. For this reason, a national survey for Vitamin A status was recommended by the WHO Regional Office in 1996.

**Feeding Status of Infants and Young Children**

In Maldives, overall about eight percent of infants are exclusively breast-fed at birth at least up to three months and in rural areas it is often continued for one year (23). Breast milk substitutes are introduced in urban areas as early as one month. The traditional weaning foods are millet gruel and legumes. It is unfortunate that fish, which is available in the country in abundance, is not commonly used in child feeding. Maldives has not adopted the international code of marketing of breast milk substitutes (34).

**Constraints & Actions for the Future**

Service delivery and communication are often affected by geographical constraints. Food security and free flow of food in the remote islands with no agricultural
production become vulnerable in bad weather conditions. Food security is dependent on imported food, and distribution channels are controlled by private sectors. Fruit and vegetables do not generally figure in the common Maldivian diets. As per the food production index, shortfall in the country’s food production is to the extent of 10 percent and the daily energy supply as per the present requirement falls short by 13 percent.

There is a need for building a good database on food consumption and nutritional status of the population. It was observed that the recording of children’s weights is done on regular basis, but the health workers do not take any action in cases of growth faltering. This activity, therefore, has to be constantly supervised and the health workers properly guided. The concerned health functionaries at all levels need to be properly trained in nutrition. Training institutes should be strengthened and established to develop an efficient cadre of personnel to handle the country’s nutrition programmes effectively at all levels.
Myanmar

Country Profile

- **Population:** 44.497 Million (1998)
- **Life Expectancy:** 59 years males, 62 years females (1998)
- **Crude Birth Rate:** 32 per 1000 population (1995)
- **Death Rate (Age/sex standardised):** 10 per 1000 population (1997)
- **IMR:** 79 (per 1000 live births) (1998)
- **< 5 MR:** 90 (1997)
- **Maternal Mortality Ratio:** 190 (per 100,000 live births) (1994)
- **Adult Literacy:** 83.1 (1995)
- **Total Fertility Rate:** 2.4 (1998)
- **Measles:** 1684 reported cases (1996)
- **TB:** 22,201 reported cases (1996)
- **Human Development Index:** 0.475 (1994)
- **Per Capita GNP:** US$ 220

There has been no change in the crude birth and death rates and IMR in the country over the last decade. The national estimates place the maternal mortality at 190/100,000 live births. The per capita GNP in the country is US$ 220. Population growth rate in the country has declined from 1.9 percent in 1986 to 1.8 percent in 1995. Unlike other countries in the region, Myanmar does not face the problem of population explosion.

**Nutritional Status**

**Protein-Energy Malnutrition (PEM)**

According to the country report (3), the prevalence of underweight in children has decreased to 31.2 percent in 1994 from 42.1 percent in 1982. The data reported by UNDP (5) indicated that percent of underweight children has increased during the last two decades in Myanmar. However, the per capita dietary energy supply has increased from 2060 in 1967-71 to 2710 (1994-96) (6). Recent surveys showed that only 40 percent of the households consumed calories at or above the recommended daily intake.
and 55 percent consumed adequate protein. At household level, pregnant and lactating mothers, infants, pre-school children and adolescents are found to be the most vulnerable groups consuming inadequate protein and calories (14).

**Anaemia**

The prevalence of anaemia is reported among 58 percent pregnant women, 36 percent non-pregnant women and 30 percent of under-five children. Major causes of anaemia in Myanmar are low intake of animal products, low bioavailability of iron from the usual diets and malaria. Other causes are worm infestations and thalassaemia in young children. The prevalence of roundworm infestation is as high as 90 percent in some areas. A national programme for control of anaemia is being implemented which consists of iron and folic acid supplementation to pregnant women together with nutrition education for increasing the intake of iron. Other measures such as selective deworming of under-five children have been adopted.

**Iodine Deficiency Disorders (IDD)**

Total goitre rate is reported to be 25 percent in school children and endemic in the whole of Myanmar except in southern states.
Though the need for universal iodisation of salt is recognised, the programme is yet to be started. Both iodised and non-iodised salts are available in the market (9). On the basis of the results of a country wide survey of iodised salt consumption carried out by National Nutrition Centre in 1994, the maximum consumption of iodised salt in most of the states was found to be 10-20 percent (36).

**Vitamin A Deficiency (VAD)**

In 1994, the National Nutrition Survey found that percent of children with Bitot spots has declined to 0.38 percent from 0.6 percent in 1991 (3). The National VAD control programme includes distribution of high potency Vitamin A capsules to infants and children from age nine months to five years (100,000 IU to infants nine months to one year of age, and 200,000 IU to children ages 1-5 years). As well 200,000 IU to women within one month postpartum is provided. This is in addition to other public health measures.

**Feeding Status of Infants and Young Children**

In Myanmar about 30 percent of children are exclusively breast-fed till about three months, 40 percent are breast-fed along with complementary foods and 56 percent are breast-fed till about two years (7). Complementary food given to poor children were often largely based on rice gruel in inadequate quantities. These poor weaning practices could be largely responsible for the high prevalence of undernutrition among children in the country.

**Constraints & Actions for the Future**

The health information system and nutrition monitoring are weak in the country. The national programme for goitre control, with the use of iodised salt, deserves and has recently received, highest priority. Extensive studies need to be undertaken to assess the household food security situation in the country and welfare measures to be promoted, enabling vulnerable sections of the population to acquire food
at affordable cost. Emphasis should be placed on strengthening development of human resources in nutrition as well as the training institutes in the country.

Myanmar has recently modified many of its strategies according to needs. Under the NPAN, household food security has been defined as a primary issue in six major areas of the country. In the revised strategy, growth monitoring programme has been intensified with education component which stresses the field workers to emphasize individual counselling on using growth charts (32). For effective and meaningful operation, it has been decided to focus services on the groups most at risk, especially children under three years of age, and to integrate growth monitoring into public health programmes.
Nepal

Nepal is a land-locked country with a population of nearly 23 million. Several measures have been initiated to improve health status of the people and raise access to basic health care. Still, the health indicators suggest that there is a great need for improvement. IMR of 83 and MMR of 539/100,000 live births are the highest in the region (2,40). Female literacy level of 14 percent is one among the lowest in the world. Life expectancy remains low at 58 years (males) and 57 years (females). The population continues to have a high growth rate of 2.1 percent mainly because of high fertility and declining mortality. Nepal is among the least developed countries of the world with very low income and poor human development indicators.

Nutritional Status

Protein-Energy Malnutrition (PEM)
National family health survey (NFHS) (1996) in a nationally representative sample of children (6-36 months) showed that overall, 54.8 percent were stunted, 12.7 percent showed wasting and 54.2 percent were underweight. Recent unpublished findings
Nutritional profile of Nepal

- Per capita energy supply: 2270 kcal/day (1994-96)
- Per capita energy supply: 2270 kcal/day (1994-96)
- Energy from cereals: >75% (1994-96)
- Per capita total protein supply: 55g/day (1990-92)
- Per capita fat supply: 29g/d (1990-92)
- Children underweight (6-36 month): 48.8% (1998)
- Children stunted (6-36 month): 50.5% (1998)
- Children wasted (6-36 % month): 8.5% (1998)
- LBW babies (<2500g): 33% (1996)
- Prevalence of TGR in School children: 40% (1997-98)
- Prevalence of anaemia in pregnant women: 74.6% (1998) [63% (1995)]
- Prevalence of anaemia in pre-school children: 78% (1998)
- Prevalence of Bitot spots due to vitamin A deficiency in pre-school children: 0.33% (1998)
- Exclusive breast-feeding in infants 0-3 months: 36% (1990-96)

(1998) indicate that in the same age group 50.5 percent were stunted, 8.5 percent showed wasting and 48.8 percent were underweight (39). The first National Survey on Nutrition carried out in 1975 showed similar findings, approximately 48.1 percent were reported as stunted, 2.8 percent as wasted, and 50 percent of pre-school children were underweight. This suggests that there has been no improvement in the prevalence of malnutrition in the country during the last two decades, although per capita energy consumption showed an upward trend. Though growth monitoring activities received serious attention in 1994 at the national level, the coverage achieved was only 25 percent for monthly growth monitoring. This is much higher than expected, considering the efforts required for mothers’ to bring children to health posts from distant places for weighing every month (33). National scale data on birth weight of infants is lacking due to the fact that most births are delivered outside the formal health care system.

**Iodine Deficiency Disorders (IDD)**

It is believed that prevalence rate of goitre in Nepal is one of the highest in the world. The prevalence of goitre in a recent national survey in school-aged children (6-11) was found to
be 40.0 percent (39). However, only one in four were verified as goitre when examined by ultrasound. As discussed earlier in this report, urinary iodine excretion has been taken as the gold standard employed for the assessment of iodine status and of IDD (see Bangladesh IDD section). The prevalence of low urinary iodine level decreased from 52 percent in 1985 to 14 percent in 1998 (39).

Intensified intervention efforts during the last few years focused initially on distribution of iodine capsules in inaccessible areas and more recently on universal salt iodisation. Draft legislation for a ban on the sale of un-iodised salt is finalised. It is estimated that currently over 50 percent of households are consuming adequately iodised salt, while over 85 percent are consuming salt with some iodine (39).

**Anaemia**

Recent information available on the prevalence of anaemia indicates that: 74.6 percent of pregnant women, 67.7 percent of all women, and 78 percent of young children below five years are anaemic (39). Poor dietary intake of iron, low bioavailability and parasitic infestations are major causes of this.

**Vitamin A Deficiency (VAD)**

Recent data (1998) indicates that nightblindness and Bitot spots in pre-school children have decreased considerably (39). However, nightblindness was found to be high among school-age children (1.2 percent) and among adult women (4.7 percent) and even higher among pregnant women (6.1) (39) Subclinical VAD remains high, indicating that vitamin A capsule distribution has only affected clinical manifestations. Further interventions to improve Vitamin A intake for the entire population are planned (39).

**Feeding Status of Infants and Young Children**

In Nepal, breast-feeding is universal in rural areas but is less in urban areas. Traditional home-based complimentary food consists of mainly rice flour called
“Litto”. Commercial complimentary foods are also used in urban situations. Short period of exclusive breast-feeding needs to be improved.

**Constraints & Actions for the Future**

The growth monitoring system is not well established in the country. After the withdrawal of UNICEF support, this activity seems to have been much neglected. Severe limitations of communication and equipment at the central level, as well as an overall shortage of trained manpower and supervision routine has meant that monitoring is not performed at the PHC level. As a result of this, the activities such as growth monitoring and supplementary feeding programmes are seriously affected (33). The programme of distribution of iron among target women is weak with very poor compliance rate. Non-availability of iron tablets and consequent inability to meet the demands from various districts is cited as one of the reasons. Only six percent of births are attended by trained personnel. About four-fifth of total population in the country has no access to sanitation and nearly half is deprived of potable water (29). High female illiteracy, with only a small proportion of children enrolled in schools, is a matter of great concern. Community involvement is lacking in almost all the programmes and outreach of services is poor. The critical constraints have been in the areas of sustainable policy initiatives, mechanisms and inadequate resources.
Sri Lanka is an island nation with a population of 18.5 million. The human development indicators in Sri Lanka are among the highest, almost equalling levels achieved by the developed regions. The achievements in the area of social welfare are considered to be remarkable for a developing country. Several social welfare measures implemented over the last few decades have yielded rich dividends. The national literacy rate has reached 90 percent and the differences in male and female literacy rates has been narrowed down to six percent. The IMR in the country is 18 and life expectancy is 71 years (males) and 75 years (females) (Table 1).

**Nutritional Status**

**Protein-Energy Malnutrition (PEM)**

Despite considerable social development in the country, prevalence of malnutrition continues to be high. Nearly 16 percent of children under five years suffer from moderate and severe stunting and 30.7 percent are underweight (12 &13). A clear pattern of geographical differential of childhood undernutrition was observed. The eastern sector in south-central hills of the

---

### Country Profile

- **Population:** 18.46 Million (1998)
- **Life Expectancy:** 71 years males, 75 years females (1998)
- **Crude Birth Rate:** 20 per 1000 population (1995)
- **Death Rate (Age/sex standardised):** 6 per 1000 population (1997)
- **IMR:** 18 (per 1000 live births) (1998)
- **< 5 MR:** 18 (1997)
- **Maternal Mortality Ratio:** 24 (per 100,000 live births) (1995)
- **Adult Literacy:** 90.2 (1995)
- **Total Fertility Rate:** 2.1 (1998)
- **Measles:** 158 reported cases (1996)
- **TB:** 5,439 reported cases (1996)
- **Human Development Index:** 0.711 (1994)
- **Per Capita GNP:** US$ 700 (1995)
Nutritional profile of Sri Lanka

- **Per capita energy supply:** 2262 kcal/day (1994-96) (38)
- **Per capita energy supply:** 2262 kcal/day (1994-96) (38)
- **Energy from cereals:** 57% (1994-96)
- **Per capita total protein supply:** 49 g/day (1994-96)
- **Per capita fat supply:** 44g/d (1990-92)
- **Children < 5 years underweight:** 30.7% (1993)
- **Children < 5 years stunted:** 16.1% (1996)
- **LBW babies (<2500g):** 18% (1995)
- **Prevalence of TGR in school children:** 14.4% (1997)
- **Prevalence of anaemia in pregnant women:** 58% (1994)
- **Prevalence of anaemia in children <5:** 45% (1994)
- **Prevalence of Bitot spots due to vitamin A deficiency:** 0.6% (1995)
- **Exclusive breast-feeding in infants 0-3 months:** 24% (1990-96)
- **Breast-fed with complementary food in infants 6-9 months:** 60% (1990-96)

country was worst affected, while Colombo and south-western costal lowlands showed relatively better standards. Undernutrition as indicated by wt/age has improved during the decades together with per capita energy consumption and probably reflects the impact of numerous nutrition intervention programmes. On the other hand, in rural areas, stunting has remained almost static, whereas wasting or short duration malnutrition as indicated by weight-for-height has increased. The data on trends indicate that prevalence of stunting remained high for a long period and showed a decrease only in 1993. Overall, the nutritional level for both height-for-age and weight-for-age has improved between 1987 and 1993. But wasting (weight-for-height) showed a slight deterioration. Wasting or acute malnutrition is due to sudden inadequacy of food usually accompanied with infection. The increase in wasting may therefore be due to the increase in the cost of living and consequent lower purchasing power. The prevalence of low birth weight is 18 percent indicating maternal malnutrition.

**Iodine Deficiency Disorders (IDD)**

Iodine deficiency exists in all segments of the population. About 70 percent of the population are at risk of developing IDD.
The prevalence of TGR in 1997 was reported to be 14.4 percent. Sri Lanka has adopted the strategy of universal salt iodisation for elimination of IDD. The main constraint in implementing this programme is grossly inadequate production of iodised salt (only 15 percent of its requirement).

**Anaemia**

In spite of numerous intervention programmes launched through MCH clinics, the prevalence of anaemia has been reported as 58 percent in pregnant women, and 45 percent in children below five years (3). Nutritional deficiency, worm infection and malaria are considered to be the major causes of anaemia. Anaemia control programme of distribution of iron and folic acid tablets is implemented through MCH services. Routine deworming and health education for improving personal hygiene are promoted.

**Vitamin A Deficiency (VAD)**

Studies done in 1975 showed that in some pockets of Sri Lanka, the prevalence of Vitamin A deficiency was (1.10) high. The results of recent survey undertaken by Medical Research Institute in 1995 shows a prevalence of Vitamin A Deficiency as 0.6 percent (Bitot spot). VAD, although reduced, is still a public health problem in Sri Lanka.

**Feeding Status of Infants and Young Children**

Breast-feeding is nearly universal in Sri Lanka. At the overall level, 98 percent of children were ever breast-fed and the mean duration of breast feeding is 3-4 months (12). Exclusive breast-feeding till three months is 24 percent. At the age of 4-5 months, majority of infants receive complementary food in addition to breast milk. These consist of other milk, fruit juice, solid or mashed food. A national level committee has been constituted for monitoring breast-feeding in the country.
Constraints & Actions for the Future

Although the programmes of food supplementation have been in operation for about three decades, there is no significant reduction in the prevalence of malnutrition among children below 36 months. Cost-effectiveness and sustainability of supplementary “Tripusha” foods used in feeding programmes need to be evaluated. There is a scope of building in more effective and intensive antenatal and postnatal services, since incidences of anaemia in pregnancy and low birth weight are still high. A major hurdle in enforcement of legislation for salt iodisation is the inadequate capacity of small provinces to manufacture iodised salt. Until this problem is overcome, iodised salt may have to be imported.

There is an uneven geographical distribution of health resources and facilities. Services do not reach socially and economically marginalised segments of people. Community involvement needs to be encouraged in planning, management of nutrition services at local level. For strengthening food safety programmes, adequate training of laboratory technicians and food inspectors is required. WHO and other UN agencies could possibly extend the necessary support in this regard.

A major constraint in achieving the nutritional goals in the country is the armed conflict in northern and eastern areas. The continuous state of violence has not only strained the national economy, but also severely limited access to health and nutrition services for women and children. Due to budgetary constraints, welfare expenditure as percentage of total expenditure has been reduced considerably (29).
Thailand

The current estimated population of Thailand is 60.3 million. Following brisk national development during the 1990s, income growth was rapid with a shift of economic structure from agriculture to industrialisation. The GNP per capita has gone up from US$ 1,065 in 1988 to US$ 2,740 in 1995. Health and nutritional status of the Thai population has also improved. The life expectancy at birth has gone up to 66 years (males) and 72 years (females), and population growth has declined. The IMR has decreased from 32 in 1992 to 29 in 1998 and proportion of newborns with low birth weight has been brought down to 7.2 percent (3).

Nutritional Status

Protein-Energy Malnutrition (PEM)
During the 15 year period between 1975 and 1990, Thailand dramatically reduced severe and moderate degrees of undernutrition from 36 percent to 13 percent (5). According to the national reports, the current prevalence of severe and moderate undernutrition among pre-school children is < 1.0 percent (3). Thailand uses its own growth monitoring standard instead of NCHS/WHO reference standard. However, the random survey on

Country Profile

- **Population**: 60.3 Million (1998)
- **Life Expectancy**: 66 years males, 72 years females (1998)
- **Crude Birth Rate**: 19 per 1000 population (1995)
- **Death Rate (Age/sex standardised)**: 7 per 1000 population (1997)
- **IMR**: 29 (per 1000 live births) (1998)
- **< 5 MR**: 36 (1997)
- **Maternal Mortality Ratio**: 44 (per 100,000 live births)
- **Adult Literacy**: 93.8 (1995)
- **Total Fertility Rate**: 1.7 (1998)
- **Measles**: 5,677 reported cases (1996)
- **TB**: 39,871 reported cases (1996)
- **Human Development Index**: 0.833 (1994)
- **Per Capita GNP**: US$ 2740 (1995)
nutrition status carried out in 1993 by MOPH on a sample size of 11,773 pre-school children showed high prevalence of PEM especially in north-east, north and southern parts of the country (27). With a cut-off point <-2SD NCHS median, the prevalence was shown to be 18 percent underweight, 16 percent stunted and 5.9 percent wasted. Nutrition surveillance for children aged 0-5 has been established all over the country, but the coverage needs to be improved. Thailand reduced malnutrition significantly over the years and improved per capita food availability, mainly through broad ranging, integrated health and nutrition approaches with the involvement of local organizations.

**Anaemia**

Despite high rate of antenatal care, prevalence of anaemia is 13.4 percent in pregnant women (1994), 18 percent in non-pregnant women and in children under five years it is 25.2 percent. Populations in 14 southern provinces of Thailand show a high prevalence of worms. Deficient intake of iron and Thalassaemia are the other major causes of anaemia in the country. Under the anaemia control programme, both pregnant women and young children are provided with iron supplements. Deworming and health
education for personal hygiene are the control measures used for combating worm infestation.

Iodine Deficiency Disorders (IDD)
The prevalence of TGR among primary school children has come down from 9.3 percent in 1989 to 4.3 percent in 1996 (9). The strategy for IDD control and prevention includes distribution of iodised salt, iodisation of drinking water, fish sauce, noodles and distribution of iodised oil capsules. Legislation regarding iodised salt was enacted in 1994. Quality control of iodised salt and of drinking water is maintained and monitored.

Vitamin A Deficiency (VAD)
Vitamin A deficiency surveillance carried out among children aged 0-60 months during 1993-96 in five southern provinces reported no new cases of Vitamin A deficiency with ophthalmic manifestations. Sub-clinical Vitamin A deficiency as a health problem in school children is believed to exist in the north and north-eastern parts of the country.

Feeding Status of Infants and Young Children
Exclusive breast-feeding is generally encouraged but practised in only 4% of infants less than 3 months. In 1994, it was recommended that duration of breast-feeding should be extended to six months from three months as practised earlier. Recipes for complementary feeding are based on rice, legumes, sesame and groundnut. Thailand adopted its own Code of Marketing of Infant and Young Children Food in 1984. This Code has been revised in 1995.

Constraints & Actions for the Future
Carefully compiled data on changing trends regarding nutritional status are not available in Thailand. As the prevalence of PEM is assessed using the country’s own standard and as mild, moderate, and severe degrees of PEM are pooled together, inter-country comparisons become difficult. Survey data on under five
children are not classified by sex and further under-reporting of data on growth monitoring is noted (3). As the data derived from 1993 surveys (27) show that high prevalence of PEM persisted, contrary to the figures provided in the country report (3). Detailed investigations are necessary using comparable survey procedures. A sound and effective tool should be developed to assess the impact of several nutrition intervention programmes in operation. Nutrition monitoring and surveillance activity should extend its coverage to include all target populations in rural, urban areas and hill tracts.

The problem of overnutrition is also emerging due to rapid industrialisation of the country and changes in food consumption behaviour. A recent study reported that 9-19 percent of children aged 6-19 years are obese (3). Twenty to forty percent of adults in the age range of 20-59 years had BMI values more than 25 (15). Among the underprivileged population in urban and rural areas, unsatisfactory sanitary conditions and consumption of contaminated food call for greater attention towards food quality and safety norms in the country.
3. National Reports on the Third Evaluation of Implementation of HFA Strategies, 
   SEA Region-WHO/SEA/RC50/Add.1, 1997
11. Situation Analysis of Iron Deficiency Anaemia in South East Asian countries; 
    a Regional Overview(SEA/NUT/134 and 135), 1995.
15. Thailand Country Report-The International Workshop on Nutritional 
    Problems and Strategies in Asia Region, Ministry of Public Health, 
    Thailand, 1996.
17. Nutrition Trends in India, National Institute of Nutrition, Hyderabad, 
    India, 1993.
33. Annual Report, Department of Health services, HMG, Nepal—1995/96
35. El Naggar, M.N; Regional Health Forum, WHO SEARO vol. 1, P. 1, 1996
46. Progress towards the Elimination of Iodine Deficiency Disorders. WHO/NHD/99.4.
Appendix 1

Abbreviations

ANF — Asian Nutrition Forum
BINP — Bangladesh Integrated Nutrition Project
BMI — Body Mass Index
CSSM — Child Survival and Safe Motherhood
FAO — Food and Agriculture Organization
HFA — Health For All
HDI — Human Development Index
ICDS — Integrated Child Development Services
ICMR — Indian Council of Medical Research
IDD — Iodine Deficiency Disorders
ICCIDD — International Council for the Control of Iodine Deficiency Disorders
IEC — Information, education, communication
INMU — Institute of Nutrition, Mahidol University (Bangkok, Thailand)
IMR — Infant Mortality Rate
MI — Micronutrient Initiative
MMR — Maternal Mortality Ratio
NFHS — National Family Health Survey
NFI — Nutrition Foundation of India
Appendix 1

NIN — National Institute of Nutrition (Hyderabad, India)
NNC — National Nutrition Centre
NNMB — National Nutrition Monitoring Bureau
NNP — National Nutrition Programme, Bangladesh
NPAN — National Plan of Action for Nutrition
NRDC — Nutrition Research & Development Centre
ORS — Oral Rehydration Solution
PEM — Protein-Energy Malnutrition
PDS — Public Distribution System
RDI — Recommended Daily Intake
SD — Standard Deviation
SEARO — South-East Asia Regional Office, World Health Organization
µg — Microgram
UIC — Urinary Iodine Concentration
UIE — Urinary Iodine Excretion
UNDP — United Nations Development Programme
UNICEF — United Nations Children’s Fund
UPGK — abbreviation in the Indonesian language, Bahasa, for “Family Improvement Programme”
VAD — Vitamin A Deficiency
WB — World Bank
WHO — World Health Organization
**Appendix 2**

**Definitions**

Anthropometric measures, indices and classification:

BMI, Body Mass Index—(Weight/height\(^2\)) A measure of body mass relative to height, calculated as weight (kilograms) divided by the square of height (metres).

Height-for-Age (ht/age)—An index which reflects achieved linear growth and its deficits indicate long-term, cumulative inadequacies of health or nutrition. Low height-for-age is height < -2 SD of the sex-specific reference data relative to age. It is referred to as ‘stunting’ when it is due to pathological causes and is a result of sub-optimal health and/or nutritional conditions.

Weight-for-Height (wt/ht)—An index which reflects body weight relative to height. Its advantage is that it does not require knowledge of age which may be difficult to assess in less developed areas. Low weight-for-height is weight < -2 SD of the sex-specific reference data relative to height. It is referred to as “wasting” when it is due to a recent and severe pathological process such as acute starvation and/or severe disease and results in significant weight loss.

Weight-for-Age (wt/age)—An index which reflects body mass relative to chronological age. Low weight-for-age is weight < -2 SD of the sex-specific reference data relative to age. It is a measure for being underweight.

Classification of public health significance based on the prevalence of low height-for-age and low weight-for-age among children under five years of age (see following table).

<table>
<thead>
<tr>
<th>Classification</th>
<th>Low height-for-age (stunting)</th>
<th>Low weight-for-age (wasting)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>&lt;20</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Medium</td>
<td>20-29</td>
<td>10-19</td>
</tr>
<tr>
<td>High</td>
<td>30-39</td>
<td>20-29</td>
</tr>
<tr>
<td>Very High</td>
<td>&gt; 40</td>
<td>&gt; 30</td>
</tr>
</tbody>
</table>
Complementary feeding—Provision of both breast milk and solid (or semi-solid) food to a child.

Complementary food—Any food, whether manufactured or locally prepared, suitable as a complement to breast milk or to infant formula, when either becomes insufficient to satisfy the nutritional requirements of the infant. Such food is also commonly called “weaning foods” or “breast milk substitute”.

Crude birth (death) rate—The annual number of live births (deaths) per 1000 mid-year population.

Daily calorie supply per capita—The calorie equivalent of the net food supplies in a country divided by the population, per day.

Exclusive breast-feeding—The feeding of an infant only with breast milk from his/her mother or a wet nurse, or expressed breast milk, and no other liquids or solids except vitamins, mineral supplements, or medicines in a drop or syrup form.

GNP, Gross National Product—The sum of gross value added by all resident producers, plus any taxes (less subsidies) that are not included in the valuation of output, plus net receipts of primary income (employee compensation and property income) from non-resident sources, divided by the mid-year population and converted to US dollars using the World Bank’s Atlas method. This involves using a three-year average of exchange rates to smooth the effects of transitory exchange rate fluctuations.

HDI, Human Development Index—Composite index of achievements in basic human capabilities in three fundamental dimensions—a long and healthy life, knowledge, and a decent standard of living—(life expectancy, educational attainment and income). The HDI value for a country indicates how far the country has progressed and how far it has to go to attain certain defined goals—an average life span of 85 years, access to education for all, and a decent standard
of living for all. The HDI values are on a scale of 0-1. Countries are categorised as high (0.800-1), medium (0.500-0.800), or low (below 0.500) human development.

IDA, Iron Deficiency Anaemia—Inadequate amount of red blood cells caused by lack of iron. It is defined by low haemoglobin or haematocrit. The following cut-offs for haemoglobin and haematocrit are used to define anaemia in people living at sea level:

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Haemoglobin (g/dL)</th>
<th>Haematocrit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children 6 months to 5 years</td>
<td>11.0</td>
<td>33</td>
</tr>
<tr>
<td>Children 5-11 years</td>
<td>11.5</td>
<td>34</td>
</tr>
<tr>
<td>Children 12-13 years</td>
<td>12.0</td>
<td>36</td>
</tr>
<tr>
<td>Children 12-13 years</td>
<td>12.0</td>
<td>36</td>
</tr>
<tr>
<td>Non-pregnant women</td>
<td>11.0</td>
<td>33</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>13.0</td>
<td>39</td>
</tr>
<tr>
<td>Men</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Classification of the severity of anaemia in relation to public health significance: pregnant women:

<table>
<thead>
<tr>
<th>Category of Public Health Significance</th>
<th>Mild-Moderate Anaemia (Hb 7-10.9 g/dL)</th>
<th>Severe Anaemia (Hb &lt; 7 g/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>&gt;40%</td>
<td>&gt;10%</td>
</tr>
<tr>
<td>Medium</td>
<td>10-39.9%</td>
<td>1.0-9.9%</td>
</tr>
<tr>
<td>Low</td>
<td>1.0-9.9%</td>
<td>0.1-0.9%</td>
</tr>
</tbody>
</table>

IDD, Iodine Deficiency Disorders—Sum of all disorders resulting from decreased intake of the element iodine, which is essential in minute amounts for normal growth, development and well being. It includes a spectrum of crippling conditions affecting the health of individuals from early foetal stages of life through adulthood. It is categorised into three levels based on the prevalence of total goitre rate (TGR) (see following table).
Criteria to define IDD as a Public Health Problem

<table>
<thead>
<tr>
<th></th>
<th>TGR Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild IDD</td>
<td>5.0-19.9</td>
</tr>
<tr>
<td>Moderate IDD</td>
<td>20.0-29.9</td>
</tr>
<tr>
<td>Severe IDD</td>
<td>≥ 30.0</td>
</tr>
</tbody>
</table>

IMR, Infant Mortality Rate—The number of infants who die before reaching one year of age per 1000 live births in a given year (UN, *Demographic Yearbook 1988*).

LBW, Low Birth Weight—Birth weight less than 2500 grams (up to and including 2499 grams).

MMR, Maternal Mortality Ratio—The number of maternal deaths per 100,000 live births, may also be expressed per 1000 or 10,000 live births (WHO, *International Statistical Classification of Diseases and Related Health Problems—Tenth Revision*).

NCHS, National Centre for Health Statistics (USA) Standards—Reference standards obtained from an internationally recommended reference population in the USA which are used to assess nutrition status.

Prevalence—The number of cases of disease (or people with a particular characteristic), in a given population at a designated time; sometimes used to mean “prevalence rate”. When used without qualification, the term usually refers to the situation at a specified point in time (point prevalence). Prevalence rate (ratio) is the total number of all individuals who have an attribute or disease at a particular time (or during a particular period) divided by the population at risk of having the attribute or disease at this point in time or midway through the period.
Stunted—Term applied to individuals whose height-for-age is low as a result of the past process of stunting.

Stunting—The process of failure to reach linear growth potential as a result of inadequate nutrition and/or poor health. The percentage of children 6-59 months of age with height-for-age < -2 Z (standard deviation) scores, chronic malnutrition.

TGR, Total Goitre Rate—Prevalence of goitre, the sum of individuals classified in both grades (1 and 2) of goitre divided by the total number of individuals examined.

TFR, Total Fertility Rate—The number of children that would be born per woman, if she were to live to the end of her childbearing years and bear children in accordance with the prevailing age-specific fertility rates.

Under-five mortality (< 5 MR)—The annual number of deaths of children under five years of age per 1000 live births.

Underweight—The percentage of children 6-59 months with weight-for-age < -2 Z (standard deviation) scores.

Urinary Iodine Excretion (UIE) or Urinary Iodine Concentration (UIC)—Considered the gold standard employed for the assessment of iodine status and of IDD. Almost 90 percent of all iodine is excreted in the urine, and so it provides an accurate indication of the current iodine intake. According to WHO recommended cut-off points, a median UIC (urinary iodine concentration) of below 100 µg/l has been recommended to denote that sub-clinical iodine deficiency exists in the population. A median value of 51-99 µg/l reflects mild deficiency and median UIC value of less than 20 µg/l is considered severe.
VAD, Vitamin A Deficiency—Vitamin A is an essential nutrient required in small amounts for normal functioning of the visual system, growth and development, maintenance of epithelial cellular integrity, immune function, and reproduction. VAD occurs when body stores are depleted to the extent that physiological functions are impaired even though clinical eye signs may not be evident. When Vitamin A depletion is sufficient to affect the visual system it leads to nightblindness, xerophthalmia (dry eye), Bitot spots, and eventually keratomalacia (partial or total blindness).

Wasting—The percentage of children 6-59 months with weight-for-height < -2 Z (standard deviation) scores, acute malnutrition.

Z-score (Standard deviation score)—A measurement of how far a child’s nutritional status deviates from the internationally recommended reference population (WHO/NCHS). Malnutrition is defined as less than –2 standard deviations from the mean (< -2 Z scores) for stunting, wasting, and underweight.
Appendix 3

Regional Objectives & Ongoing Programmes

Objectives

To collaborate with Member countries of WHO SEAR in:

- Improving nutritional status of vulnerable populations.
- Reducing all forms of malnutrition.
- Strengthening their technical (including research) and management systems in nutrition in the context of primary health care.
- Strengthening their national capabilities in developing and implementing actions against PEM, and the sustainable elimination of micronutrient deficiencies:
  - (a) IDD,
  - (b) Vitamin A Deficiency,
  - (c) Prevention and control of Anaemia.
- Promoting technical and operational aspects of national food and nutrition strategies.
- Food Safety: (1) Assist Member Countries to develop national policies and programmes in food safety and improve national capacity for monitoring, assessing and controlling food quality. (2) Provide training in food-borne disease surveillance and control as well as on analytical methods for assessing food contamination and consumer education on food safety issues and public information dissemination. (Please note food safety is discussed separately).
**Ongoing Programmes**

Currently, the following country activities are being undertaken in WHO SEAR:

- Protection, promotion and support of breast-feeding
- Appropriate and safe complementary feeding
- Targeted growth monitoring
- Prevention and control of micronutrient deficiencies (vitamin A, iron and iodine)
- Nutrition support to sick children
- Programme to support maternal nutrition
- Programme to support adolescent nutrition
- Public awareness and actions for safe foods
- Capacity building on Nutrition Action Research for better health:
  This is achieved in close collaboration with 4 WHO collaborating centres in SEAR countries and through the South-East Asia Nutrition Research-cum-Action network.
- Implementation of multi-centric studies contributing to normative work in human growth and nutrition at national (1) and international (2) levels:
  1- Household food and individual nutrition security (Myanmar)
  2- A growth curve for the 21st Century: The WHO Multi-centre Growth Reference Study (India).
Appendix 4

Regional Workshops and Consultations from 1995-1999

- Conference on Partnership to end hidden Hunger: collaboration of stakeholder (SEARO/UNICEF/ICCIDD/MI, etc) in sustaining the elimination of Iodine Deficiency Disorders (IDD) held in Dhaka, Bangladesh (1995)

- Inter-country workshop on Iron Deficiency Anaemia at Institute of Nutrition, Mahidol University (INMU), Thailand (1995)


- Fourth meeting of South-East Asia Nutrition Research-cum-Action Network at Jakarta, Indonesia, SEARO/NRDC (1996)

- Training Workshop on Community-Based Research Methodology, SEARO/INMU, Thailand (1997)

- Regional Consultation on Nutritional Status of Adolescent Girls and Women of Reproductive Age at SEARO, New Delhi (1997)

- Symposium on Diet-related chronic diseases, India International Centre, ANF/SEARO/NFI (1997)

Appendix 4

- Regional Consultation on the Development of a Strategic Plan for Food Safety in South-East Asia Region, WHO SEARO, New Delhi (1998)

- Training Workshop on Maternal and Adolescent Nutrition at INMU, Thailand, in collaboration with WHO SEARO (1999)

- Fifth meeting of the South-East Asia Nutrition Research-cum-Action Network at INMU, Thailand (1999)