

## NUTRITION IN ASIA

## Innovative solutions to nutritional issues in Asia

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Asian countries are big, medium and small in size, and comprise industrialised and developing countries.<sup>1</sup> Some are in transitional states, reflected in their types of nutritional problems. Industrialised countries are more prone to overnutrition and related diseases, such as obesity, high blood pressure, coronary heart disease, cancer, etc., whereas the majority of nutritional problems in developing countries are malnutrition, such as protein energy malnutrition (PEM), and micronutrient deficiencies especially iron deficiency anaemia, and iodine and vitamin A deficiencies.<sup>1-4</sup> Furthermore, vitamin B<sub>1</sub>, B<sub>2</sub>, B<sub>6</sub>, and folic acid deficiencies cannot be discounted.<sup>1,5-10</sup> Some transitional countries are also facing increasing rates of overweight and obesity, which can lead to degenerative diseases such as diabetes mellitus, hypertension, coronary heart disease and some types of cancer.<sup>11,12</sup>

Food-borne parasitic infections, some of which are very dangerous, are also important problems affecting health, such as liver fluke infection (*Opisthorchis viverrini*), which can associate with some carcinogens, e.g. N-nitroso compounds, and cause cholangiocarcinoma (cancer of the bile canals).<sup>13,14</sup> Food-borne diseases caused by bacteria and viruses are also of public health importance, especially diarrhoea. Chemical toxins, such as aflatoxins caused by mould growth (*Aspergillus flavus*), are also prevalent in the tropics, since the temperature and humidity are suitable for mould growth in agricultural products that are inappropriately stored after harvest, especially peanuts and corn. 8,9-epoxide, the metabolite product

of aflatoxin B<sub>1</sub>, is the ultimate carcinogen, which can cause liver cancer.<sup>15</sup> The other common carcinogens are exogenous nitrosamines formed in cured meats, and/or endogenous nitrosamines, which can be formed in the stomach and small intestine.<sup>16</sup> These various factors highlight the very important issue of food safety, not only at the household level, but also at national and international levels, which can affect food exports. Food contaminant limits should meet international standards, e.g. the World Trade Organization (WTO), CODEX Alimentarius. Diarrhoea caused by unsafe foods can retard the growth of children, especially infants and preschool children, and result in wasting and stunting conditions.<sup>17</sup>

There are many other reasons for malnutrition, the majority of which are poverty, production and distribution of foods, lack of nutritional knowledge, and ignorance. Many means of nutrition intervention can be utilised, which should be appropriate and applicable to the place and size of the problem(s).<sup>1,18</sup> Successful pilot projects have been implemented nationwide; however, national implementation programmes cannot succeed without the advocacy of policymakers, politicians, academia, communities, and the general population. Many projects should start from grassroots level, signifying genuine popular participation, and the utilisation of local resources and traditional knowledge should be emphasised. In addition, modern technologies should be transferred to communities. International organisations are beneficial aids to enlarging functional outcomes.<sup>19</sup> With globalisation,

information technology is an essential tool for reaching broad segments of the population so that nutrition education can be distributed via distance learning, even reaching people in remote areas. The most important innovative solution is to promote nutrition programmes as national programmes in accord with other national programmes aimed at creating a healthy population, which implies physical, mental, social, and spiritual health.<sup>20</sup>

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