

Health Economics of Nutrition Intervention in Asia: Cost of Malnutrition

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Summary Asia has recorded the fastest economic growth in the world. However, some countries are still struggling with economic stagnation and poverty. Even in the emerging countries, there are economic disparities between urban and rural areas within a country. Reflecting the situations, nutritional issues in Asia came to be the antithetical situation of excess and insufficiency. The rate of overweight and obesity keeps increasing, especially in emerging countries. Meanwhile, underweight is still a critical problem in the region. Although the importance of nutrition is well recognized for social and economic development, it is difficult to identify the immediate outcome of nutrition interventions. Evidence-based decision-making is an important element of quality health care and efficiency and effectiveness are always key words. Along with enhanced attention to accountability and transparency of budget use in health services, attention to the economic evaluation of nutrition interventions has increased in recent years. In this symposium, we will review the current situation of nutritional issues and economic evaluation of nutrition interventions in Asia through experience of an international organization, the basis and trends for health care economics, and also efforts have been made in an Asian country. Discussion will be made about efficient and effective ways to evaluate projects/programmes for nutrition improvement.

Key Words health economics, malnutrition, evaluation of interventions, developing countries

Asia has become one of the world's fastest growing economic regions. The Organisation for Economic Co-operation and Development (OECD) has projected 6.9% as the annual growth rate of the emerging Asian economies such as China and India for the next half decade. On the other hand, some countries in the region are still struggling to overcome economic stagnation and poverty. Even in the emerging countries, rural areas are left behind in the economic growth of their countries. The economic disparity produces health disparities and nutritional issues in Asia came to be the antithetical situation of excess and insufficiency. The double burden of malnutrition, which refers to the co-existence of under- and over-nutrition occurring simultaneously within a population, and even of micronutrient deficiency and overweight/obesity within individuals, has also become a critical public health issue in the region. The World Health Organization (WHO) has warned that overweight and obesity came to be leading risks for global deaths. In Asia, however, there are five times more population-adjusted DALYs lost to underweight than to obesity and

overweight (1).

Although it is well recognized that good nutrition is the foundation for human health and well-being, physical and cognitive development and economic productivity, improving nutritional status is not immediately evident to clinicians, much less to the lay public. This feature had made it difficult to motivate research allocation for nutrition programs compared to programs that are directed to overtly fatal diseases. In recent years, the number of economic evaluation studies of nutrition interventions has increased and it seems public attention has also increased to the importance of nutrition for social and economic impacts. Malnutrition in all forms imposes very high social and economic costs on countries at all income levels. The cost to the global economy from lower productivity and direct health care costs if malnutrition persists at its current level for another year could amount to as much as US\$3.5 trillion. Investing just US\$1 in nutrition can result in a US\$30 return in increased health, schooling and economic productivity. Nutrition interventions could result in 46 percent higher wages with an estimated increase in gross domestic product (GDP) of at least 2-3 percent

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In this symposium, the current situation of nutritional issues and recent studies of nutrition interventions in Asia will be reviewed with their economically evaluated outcomes and impacts, and the ways forward to carry out efficiency and effectiveness to evaluate projects/programmes for nutrition improvement will be discussed.

Overviews of the Global Situation of Nutritional Issues and Economic Evaluation of Nutrition Interventions

"Access to nutritionally adequate safe food is a right of each individual." This is stated in the World Declaration on Nutrition, adopted by the first International Conference on Nutrition in 1992. The Rome Declaration on World Food Security in 1996 reaffirmed the right to be free from hunger. In recent years, recognition of the critical linkage between human rights and development has been expanded. Human resources are essential for social and economic development. For successful and sustainable development, the population should be in good health and have good nutritional status to participate in the process. As economic development progresses, epidemiologic transition has emerged. The world today faces antithetical dietary issues: under- and over- nutrition. In 2013, WHO announced that at least 2.8 million people die each year as a result of being overweight or obese. On the other hand, malnutrition still contributes to more than one third of all child deaths today.

It is always important to provide health care in a manner that is as effective and efficient as possible. Anthropometric and biomedical health indicators play important roles to monitor and evaluate outcomes of nutrition interventions. Meanwhile, attention to the economic evaluation of the impacts of nutrition interventions has been enhanced. In 2013, FAO announced that the cost of malnutrition to the global economy in lost productivity and health care costs are "unacceptably high" and could account for as much as 5 percent of the global gross domestic product... \$3.5 trillion, or \$500 per person.

This presentation provides overviews of global situation of nutritional issues including "nutrition transition" and "double burden of malnutrition" and previous and on-going studies of economic evaluation of nutrition interventions.

Under-Nutrition in Asia

Despite impressive economic development and successful poverty reduction efforts in many parts of Asia, there are more under-nourished children in Asia than in any other continent. Stunting, in particular, is a problem of larger proportions which cannot be reversed later. Under-nutrition can be considered one of the root causes of the cycle of poverty, and can even negatively impact the GDP of a nation.

The World Food Programme (WFP), which has historically dealt with the food insecurity of poor households,

and particularly in situations of man-made or natural disasters, has increasingly recognized the importance of nutrition in its food assistance.

The presentation will talk about some of its nutrition-focused studies and food-based assistance modalities, especially in Asia, and will touch upon the following aspects:

- Affordability of a nutritious diet for a poor family
- Supplementation and fortification, including rice fortification
- Importance of a nutrition-related Government Safety Net
- Nutrition intervention during natural disasters

Introduction to Healthcare Economics

Many decision-making processes regarding policies and systems involve evaluations from an economic perspective. In the healthcare setting, this field is an established academic discipline known as healthcare economics.

Economic evaluation methods can be broadly classified into 3 categories: cost-benefit analyses (CBA), cost-effectiveness analyses (CEA), and cost-utility analyses (CUA). These methods are similar in that they evaluate the costs and results of an evaluation target, but differ in their approach to evaluating the results component. In CBA, the results are measured in monetary terms, and it is therefore possible to conduct comparisons between different fields. For example, decisions can be made to use funds within a specific budget for nutrition education or for highway construction. However, there is need for monetary calculation methods that are acceptable to all stakeholders, which can influence the evaluations and reduce their reliability. In contrast, CEA measure results in natural units (e.g., number of survivors or prolongation of life). These evaluations enable more objective assessments, but only allow comparisons with similar measurement units. In addition, the prolongation of life does not take into account the quality of life during the extended period. CUA include qualitative aspects in the evaluation of results through the use of quality-adjusted life years (QALYs). There are 3 major methods for calculating QALYs: the visual analog scale, the standard gamble method, and the time trade-off method. Analysts can compare new policies with existing policies using these methods, which can guide decisions in policy implementation.

In the field of nutrition science, the WHO has implemented a policy database (Global database on the Implementation of Nutrition Action, or GINA), and there will likely be a need for economic evaluations in various countries' policies. These will require cooperative efforts with healthcare economists to assess and propose feasible policies.

Efforts to Improve Nutritional Situation in Indonesia

Consideration of the relationship between nutrition and health-economic outcomes is important. New research on Indonesia related to nutrition has shown that \$1 spent on nutrition could be worth \$160 in the

long term.

Indonesia has maintained its high economic growth rates in recent years. Despite the economic growth, malnutrition issues, especially stunting, remain major concerns, which, unless they are resolved, will affect future generations. Stunted children are more likely to become ill and they have a higher risk of premature death. Their school performance is lower than that of their properly nourished counterparts, including completing fewer grades thereby lowering their income-earning potential later on. With Indonesia's economic growth surging, the government has begun to recognize the investment that is represented by ensuring every child in the country reaches his or her full potential. To determine the cost-benefit ratio, the economists compared how much it would cost to improve nutrition against the benefits healthy children could provide to a country's economy in the future.

The causes of malnutrition are directly related to inadequate dietary intake as well as disease, but indirectly to many factors, among others household food security, maternal and child care, health services and the environment. For the improvement of such services and programs, health economic studies will play more important roles by providing tangible information for policy making.

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