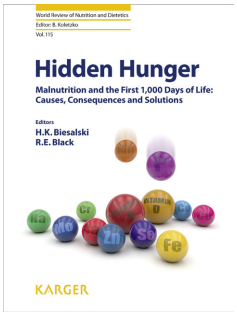

Hidden hunger. Malnutrition and the first 1,000 days of life: Causes, consequences and solutions

A book review by Permani Weerasekara

Editor: H. K. Biesalki and R. E. Black
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Nutrition plays a significant role in fetal and newborn brain development. Lack of micronutrients affects the everyday life of billions of people. Malnutrition is caused by energy, vitamin and mineral deficiencies, and is also called hidden hunger. Hidden hunger is a growing problem that affects both the developing and the developed world. Malnutrition during the first 1,000 days of life is an essentially irreversible burden for a child since this period of human life is a very critical for growth and development. Micronutrient deficiencies during this period cause many problems for human life.

The first editor of the book, H. K. Biesalski, is a German physician and professor of biological chemistry and nutritional medicine and director of the Food Science Center at the University of Hohenheim. Biesalski investigated the importance of vitamin A for the development and function of the inner ear and lungs. He focuses on question regarding and the treatment of micronutrient deficiencies and food security. The second editor, R. E. Black, M.D., is the Edgar Berman professor and chairman of the Department of International Health and International Programs at the Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland. He is trained in medicine, infectious diseases, epidemiology, and nutritional problems. Dr. Black's current research includes field trials of vaccines, trace elements and other nutritional interventions, as well as studies on the efficacy of health programs.

This book describes the causes and consequences of hidden hunger during the 1,000 days of life, as well as the nutrition transition and nutrition deficiencies in low income countries and interventions to improve nutrition security. The various chapters are written by leading experts in the field. The first article of the book presents the topic of the 1000-day window and cognitive development. This article describes brain development and poverty, the relationship between micronutrients and brain development, and causes and consequences of micronutrient deficiencies during the first 1,000 days of life. Nutrition plays a significant role in fetal and newborn brain development. Improving nutrition during the first 2 years of life by using a micronutrient-enriched protein supplement showed a positive impact on cognition in adulthood, even after accounting for the effect of education.

The second chapter of this book presents evidence of malnutrition in high income countries by describing five case studies. The first case study about hidden and neglected food poverty occurs in the global north: the case of Germany. Although still a powerful economy, Germany faces rising income inequality and food insecurity. An example is given that presents current quantitative data on food insecurity in Germany, which are compared to qualitative results on nutritional coping strategies. The second topic is critical dietary habits in early childhood. In day to day living, people eat foods rather than nutrients. Therefore, it is critical to understand the food habits of at risk population groups to identify underlying causes for deficiencies in critical nutrients. This article shows food-based dietary guidelines (FBDG), followed by stepwise approaches. FBDG could provide various opportunities to identify critical nutrients and critical food habits in early childhood and beyond. The German example shows that even well-designed FBDG for infant and young child nutrition that rely on common nonfortified foods can result in children developing nutrient deficiencies

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of vitamin D, iodine and iron. Present day food habits that deviate from FBDG, such as vegetarian children in Europe, are insufficient nutritionally. Furthermore, unhealthy eating is more prevalent among women and people with low socioeconomic status. Policies that affect the price of food have been proposed to improve diet quality. The third case study compares the impact of food price policies on the nutritional quality of the food baskets chosen by low and medium income women. The fourth research shows evidence of the relationship between child mortality and socioeconomic factors in relatively wealthy nations. Finally, the last case study of this chapter discusses food insecurity in the USA and Canada.

The third chapter specifically discusses nutrient deficiencies in low income country and the nutrient transition, which is a change in food consumption and energy usage that occurs simultaneously as economic, demographics and epidemiology status is altered. The reasons for poor nutrition are multifaceted, as are the interventions against it. One of the case study shows child malnutrition and infant and young child feeding practices in Cambodia. Nutritional transition has consequences for several areas, including environmental health, culture, society and economics. This chapter uses the example of Tanzania and Kenya to explain the outcomes of the nutrition transition, the triple burden of malnutrition, and dietary guidelines and their association with conditions of being overweight and obese. Moreover, the chapter highlights that breast feeding has an important role in the prevention of different forms of childhood malnutrition, such as wasting, stunting, underweight and micronutrition deficiencies. This chapter reviews the benefits of breastfeeding for child health, growth and development and its significant role in the prevention of malnutrition.

The fourth chapter discusses the consequences of hidden hunger. One case study shows vitamin A is essential for brain development and the depressed learning ability and memory resulting from its absence. Evidence is also provided regarding how iodine deficiency during pregnancy can cause maternal and fetal hypothyroidism. Moreover, zinc deficiency can cause increased rates of infection and stunting. Methods for supplementation of iodine and zinc are clearly discussed in this chapter. In addition, evidence is presented that micronutrient interventions have a very positive effect on public health. Most micronutrient policies have been established according to World Health Organization recommendations. This chapter discuss fundamental questions underlying micronutrient intervention policies, such as which micronutrients should be delivered, when, how, and to whom.

The last chapter discusses intervention to improve nutrition security. It talks about the second international conference on nutrition organized by the Food and Agriculture Organization and Word Health Organization, where international food and nutrition policy was discussed. The conference was a high level intergovernmental meeting that focused global attention on addressing all aspects of malnutrition. The conference discussion clearly recognized the problem of hidden hunger and the slow progress in addressing it. One article also discusses genetically modified (GM) organisms, future global nutrition supply and the impact of GM crops. Undoubtedly, biofortification offers a real opportunity to enhance the availability of micronutrients. These strategies are working, but they are limited by uneven social and political acceptance. Furthermore, this chapter discusses a systematic partnership to reduce vitamin A deficiency in Tanzania. The Strategic Alliance for the Fortification of Oil and Other Staple Foods (SAFO) has been effective in combining the respective strengths of public and private sector actors to tackle the development challenge of vitamin A deficiency. In addition, this chapter discusses GM crops and certified organic agriculture for improving nutrition security in Africa and south Asia. This article analyzes the potential impact pathways from agricultural production to nutrition. It also demonstrates public and private partnerships for resolving nutrition problems and gives examples of both successful and less successful private and public partnerships and describe some broad lessons. In addition, the book opens new perspectives for future research, thus setting a new agenda for further scientific studies on hidden hunger and malnutrition that may help to detect, prevent, and treat these avoidable conditions and improve the health and prosperity of future generations.

Information about the author:

Permani Weerasekara is a member of the Department of Organic Food Quality and Food Culture, Faculty of Organic Agricultural Sciences, University of Kassel, Germany and Rajarata University of Sri Lanka, Mihinthale, Sri Lanka.