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CASE 2

The Double Burden of Malnutrition: Challenges and Opportunities in Thailand

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As a senior-level researcher with the Association of Southeast Asian Nations (ASEAN) Institute for Health Development, Sanji Suresh had the chance to observe many hospitals and schools in geographically distinct areas in Thailand. He noticed many of the children who came to these institutions were very small for their age, whereas others were overweight. After reviewing the literature, he learned that this paradox—known as the “double burden of malnutrition”—is quite common in developing regions of the world. Returning to his office after a long flight from a remote area in Thailand, Sanji found a massive document on his desk containing child development data from the Thailand Multiple Indicator Cluster Survey (MICS) (UNICEF, 2016). Sanji's eyes widened as he saw the high prevalence of children under five years of age who were stunted, wasted, or overweight, which confirmed his observations. He wondered what percentage of these children were experiencing concurrent stunting and being overweight, an indicator that Thailand was facing this double burden. Because he had read some research papers about this phenomenon, his mind raced with all the potential problems he knew he might have to help address.

THE DOUBLE BURDEN OF MALNUTRITION

The double burden of malnutrition is defined as the coexistence of undernutrition with overweight and obesity (or overnutrition) (World Health Organization [WHO], 2019). The double burden can occur within individuals, households, populations, and over the entire life course (WHO, 2019). The double burden of malnutrition can occur at the individual level when a person is overweight or obese yet lacks specific vitamins or minerals such as iron or folate in their diet. This burden can also occur when someone who is overweight or obese as an adult experienced stunting during childhood. An example at the household level is an overweight mother with underweight children (WHO, 2019). The coexistence of both undernutrition and overweight in the same community or region is an example of the double burden of malnutrition at the population level.

In 2014, approximately 42 million children worldwide under the age of five were classified as overweight or obese and 156 million children were stunted, which means they are too short for their age (WHO, 2019). Being stunted is indicative of the failure to reach a linear growth potential as a result of inadequate nutrition (WHO, 2019). In the same year, approximately 50 million children worldwide were affected by wasting, which means they are too thin for their height (WHO, 2019). Wasting can be indicative of severe weight loss that can be linked to acute

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starvation or chronically unfavourable conditions (WHO, 2019). Worldwide, half the deaths of children under the age of five are due to poor nutrition (WHO, 2017a). Many low- and middle-income countries also are seeing a rise in overweight and obesity rates among children (WHO, 2017a). Being underweight in early childhood may predispose children to be overweight and have noncommunicable diseases later in life (WHO, 2017a). The double burden of malnutrition affects all nations regardless of whether they are rich or poor, but it is a particular concern in countries that have high rates of stunting (Shrimpton & Rokx, 2012).

The double burden of malnutrition is caused by three interrelated, dynamic processes known as the nutrition transition, the demographic transition (Exhibit 1), and the epidemiological transition (Shrimpton & Rokx, 2012).

THE NUTRITION TRANSITION

Global changes have occurred related to diet and physical activity patterns over the past two decades (Popkin, 2004). Modernized societies are consuming a higher proportion of calories from fats, saturated fats, and sugars, and fewer calories from complex carbohydrates and fibres (Drewnowski & Popkin, 1997). In addition, there are lower levels of energy expenditure by people in relation to their activity levels (Popkin, 2004). This underlies the concept of the nutrition transition. As the shift to a more “Western” diet occurs, there are notable changes in nutritional consequences such as changes in average stature, body composition, and morbidity (Popkin, 2004).

In 2015, Professor Barry Popkin, who developed the concept of the nutrition transition, wrote that “the nutrition transition places human diet, activity, and body composition in a broad historical perspective, with emphasis on understanding the pace, magnitude, determinants, correlates, and results of dietary change across centuries and millennia”. The four main underlying drivers of the nutrition transition are advances in technology, urbanization, expansion of global trade, and shifts in income per capita and general economic welfare relative to the cost of food (Popkin, 2015).

The concept of the nutrition transition is closely linked to two other processes: the demographic transition and the epidemiological transition. The demographic transition occurs as societies gradually move from high birth and death rates to low birth and death rates (Bongaarts, 2009). The epidemiological transition refers to the process of moving from a period of pestilence and famine through one of receding pandemics to a modern phase marked by degenerative and noncommunicable chronic conditions (Omram, 2001).

THE THAILAND MULTIPLE INDICATOR CLUSTER SURVEY

The Thailand Multiple Indicator Cluster Survey (MICS) was conducted in 2015–2016 by the National Statistics Office, working closely with the United Nations International Children's Emergency Fund (UNICEF). The purpose of this survey was to support the collection of international data to compare a wide range of indicators pertaining to children and women. These indicators facilitate the creation of policies and programs and allow the monitoring of countries' progression towards the Millennium Development Goals (UNICEF, 2016).

According to the 2015–2016 data, approximately 10% of children in Thailand are moderately or severely stunted, and 5.4% of children under the age of five are moderately or severely wasted. Similar to stunting, 10% of children under the age of five in Thailand are overweight.

The data showed that boys, children who were living in the southern region of Thailand, and children living in households in the poorest wealth index quintile were most likely to be stunted

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and wasted. It also showed that children who lived in rural areas of Thailand experienced a higher prevalence of stunting and wasting. Children under the age of five who had mothers with no education had a higher prevalence of being stunted or wasted compared with children whose mothers had some education (primary, secondary, or higher). In terms of age-related patterns, children from birth to five months of age were more likely to experience wasting than other age groups. The children who were 24 to 35 months of age were more likely to be stunted than any other age group. Families who had a non-Thai household head (person who makes decisions and earns money) also had children who had the highest prevalence of stunting.

ASSOCIATION OF SOUTHEAST ASIAN NATIONS INSTITUTE OF HEALTH DEVELOPMENT

In 1982, the ASEAN Institute for Health Development (AIHD), which is located in Thailand, was created through a joint effort between Mahidol University, the Ministry of Public Health, and the Royal Thai Government (AIHD, 2019). The AIHD supports the global strategy of health for all through an approach used by the WHO (AIHD, 2019). As the training centre for primary health care development, the AIHD has three main missions—to provide education and training, to provide technical services, and to provide research and development that focuses on community-based health and management (AIHD, 2019).

As a senior-level researcher for the past three years, Sanji had focused his work on policy development and health promotion initiatives around Thailand. After reading through Thailand's MICS report, he thought about all the health challenges and future implications these alarming rates of stunting and overweight would have on Thailand. Beyond that, he thought about the possible implications of dealing with the potential double burden of malnutrition among Thai children under the age of five. However, the report did not specify the prevalence of the double burden of malnutrition among this age group. Sanji had to obtain the raw data from the national survey to make the necessary calculations and provide some insight into the at-risk populations in Thailand.

Because the AIHD had made several strong partnerships with the many governmental and public health organizations in Thailand and across the ASEAN countries, obtaining the data was the least of his worries. After reviewing the raw MICS data, which included data from 12,313 children, he organized the dataset. He recategorized the data related to stunting and overweight so that the children were organized into two categories: child stunted/child not stunted and child overweight/child not overweight. Sanji made the distinction between the child being stunted or overweight according to the WHO Child Growth Standards median. This allowed him to accomplish two things. First, he was able to calculate the prevalence of children under the age of five who were concurrently stunted and overweight, which indicated the double burden of malnutrition. Second, he was able to look at the population of currently stunted and overweight children and relate this to different sociodemographic factors that were included in the original survey.

Based on his calculations, Sanji was able to determine that the prevalence of the double burden of malnutrition for children under the age of five in Thailand was approximately 2%. Although this percentage seemed low, there was still a great cause for concern. He determined that the double burden was also significantly positively associated in boys, in children with mothers having a secondary education, in households having one child under the age of five, in urban settings, in households where the household head was non-Thai, and in children ages 24-35 and 36-47 months.

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The prevalence of underweight preschool children in Thailand declined from 20% in the 1990s to below 10% in 2006 (Chavasit et al., 2013). Although Thailand has been able to limit the incidence of undernutrition, there has been an increase in overnutrition, which includes increasing rates of overweight and obesity (Chavasit et al., 2013). Taken with the recent data reported from the 2015–2016 Thailand MICS that one in 10 children under the age of five was stunted or overweight, Sanji knew he had to think of strategies to more effectively combat this problem. But first he had to understand what kind of initiatives were already present in Thailand to address undernutrition and overnutrition.

PAST AND CURRENT INITIATIVES TARGETING UNDERNUTRITION AND OVERNUTRITION

In 1998, Thailand implemented a voluntary nutrition labelling policy (Chavasit et al., 2013), which mandated that milk and food-related products making nutrient claims have nutrition labelling. The goal of this initiative was to address undernutrition and overnutrition concerns (Chavasit et al., 2013). However, despite being similar to the United States Food and Drug Administration’s nutrient fact table (Judprasong et al., 2013), the labelling in Thailand was too complicated for the general population to understand because it focused on making products seem appealing rather than on providing useful information (Chavasit et al., 2013).

In another attempt to tackle the issues of overweight and obesity, Thailand initially tried to improve its nutrition education. This led to the development of a national dietary food guideline that emphasized maintaining proper weight and eating food across a diverse range of food groups (Food and Agricultural Organization of the United Nations, 2010). Thailand also created a nutrition flag that provided information to the population about the proportion of the different food groups that should be eaten each day (Ministry of Public Health, 2001).

In 2005, Thailand’s Ministry of Public Health also launched a campaign called “Half Fruits and Vegetables and Half of Others”. This campaign aimed to encourage people to consume fruits or vegetables for half their diet and foods from other food groups for the other half. Despite being widely adopted and easy to understand, the Ministry of Public Health lacked funding for this campaign, so it ended in 2006 (Chavasit et al., 2013).

The Thailand Food and Drug Administration also decided to implement a guideline called the Guideline Daily Amounts, which was a nutrition profile for all food products (Rimpeekool et al., 2015). This profile included recommendations for saturated fats, sugars, and sodium. There was much debate about the implementation of this guideline because some people thought this would lead to more confusion, whereas others thought that consumers had the right to know what they were eating (Chavasit et al., 2013).

There have also been campaigns targeted at incorporating regular exercise and physical activity. This concept has been adopted by many public and private organizations, with these organizations establishing public areas for exercise in an effort to achieve this goal (Chavasit et al., 2013). Similarly, the “Thai People Have Flat Belly” campaign also sought to promote healthy behaviours in terms of food consumption and physical activity (Chavasit et al., 2013). This campaign had a lot of traction, in particular as a result of the involvement and influence of several high-ranking politicians (Chavasit et al., 2013).

In 2004, a collaboration of dentists, pediatricians, and several public health workers created the Sweet Enough Network. This group started initiatives that advocated for banning added sugar in infant formulas and sugar-sweetened beverages in school (Thai Health Promotion Foundation,

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n.d.). Through the efforts of the Sweet Enough Network, a national law banning added sugars in infant formulas was eventually adopted.

There was also a regulation put in place to combat the commercialization of food for children through limiting television advertisements targeted at children during certain times of the day (Chavasit et al., 2013). In addition, toys were not allowed to be sold with unhealthy foods targeted at children. Unfortunately, despite these regulations, there have been reports that they have been widely violated (Kulsomboon, 2013).

There is also a wide range of other nutrition initiatives that are in the planning or pilot stage in Thailand. These include standard indicators for nutrition and noncommunicable diseases, food guidelines for different age groups, nutrition education for different age groups, programs to increase fruit and vegetable consumption, initiatives to decrease sugar, sodium, and fats in diets, school-based food and nutrition programs, community-based food and nutrition programs, annual national surveys for nutrition status and noncommunicable diseases, and food and nutrition management during crisis (i.e. massive floods) (Chavasit et al., 2013).

LIFE COURSE APPROACH AND “DOUBLE-DUTY ACTIONS”

Given the rising rates of overnutrition and noncommunicable diseases in conjunction with the current prevalence of undernutrition in Thailand, traditional approaches may not effectively address these health burdens. Knowing this, Sanji looks into some of the more nuanced frameworks for addressing this double burden of malnutrition. After completing his research, he decides that it is essential to address the determinants of health for noncommunicable diseases across the entire life course. This entails appropriate interventions targeted at every stage of life to reduce the overall risk of developing noncommunicable diseases (Baird et al., 2017). Taking a life course approach allows for the early identification of risks to allow for the development of nutrition and lifestyle interventions that can prevent disease (Baird et al., 2017). This approach considers preventive measures before conception and during fetal development, early childhood, adolescence, adulthood and beyond (Baird et al., 2017). Although early preventative measures require a long-term investment, in the long run, they have the potential to lead to disease reduction.

Many studies have shown that maternal undernutrition during pregnancy is associated with low birthweight and childhood stunting (Oken & Gillman, 2003). As such, maternal undernutrition and associated factors such as economic strains and food insecurity must be taken into account by using the life course approach to help obtain a holistic picture of the health of children (Baird et al., 2017). In addition to this, establishing healthy behaviours and physical activity patterns during early childhood is essential to promote health and protect against noncommunicable disease over the child's life course (Ezzati & Riboli, 2013). To this end, it is known that parents have a strong influence on the eating habits and exercise patterns of their children through mirroring of behaviours (Barlow & Blair, 2012). Therefore, interventions that can allow parents to modify current maladaptive patterns of behaviours may go a long way for developing healthier child behaviours.

Sanji also understands that any such solution to this huge problem needs to be aligned with the double-duty actions (Exhibit 2) that were outlined by the WHO in a recent policy brief (WHO, 2017b). This policy brief calls for programming and policies that reduce the burden of undernutrition and overnutrition by following three levels of actions. The recommended actions ensure that current interventions, policies, and programs targeted at one form of malnutrition do not have the unintended consequence of increasing another (WHO, 2017b). For example, interventions aimed at addressing undernutrition should not increase the burden of overnutrition.

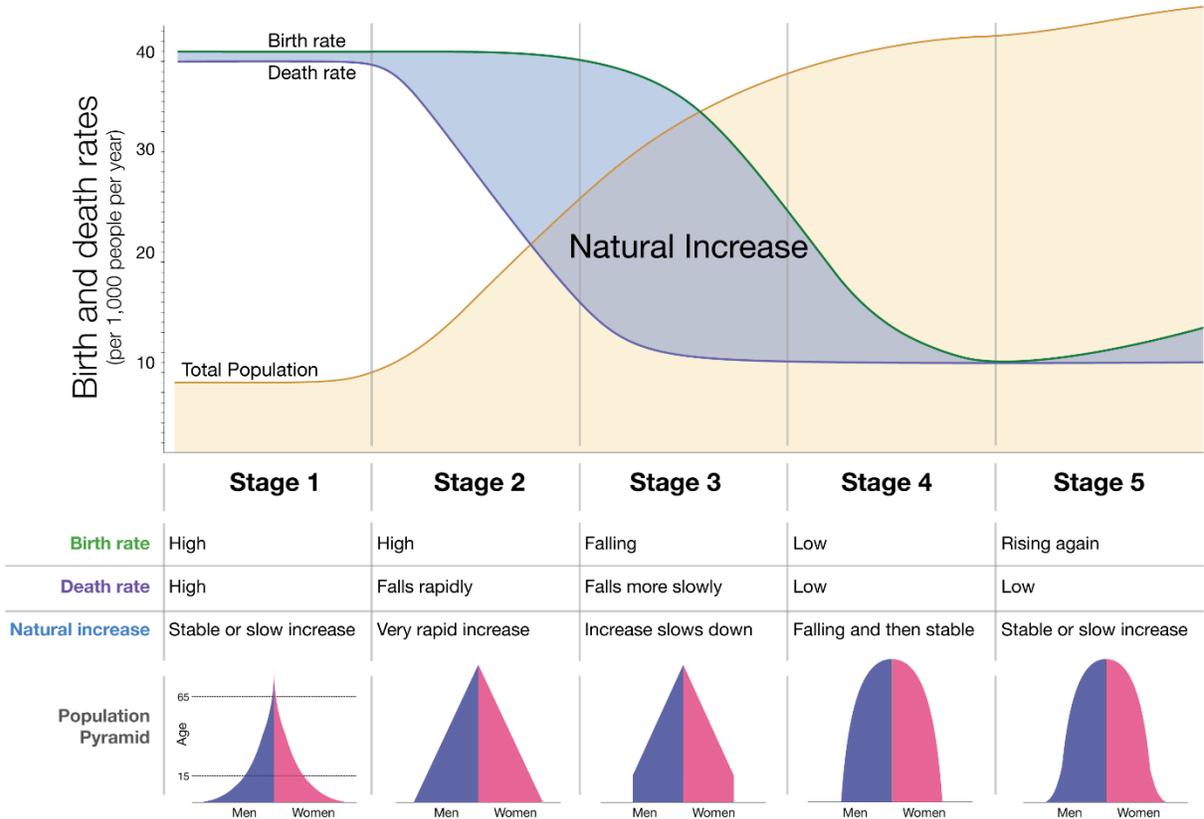
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Sanji knows it is of great importance to incorporate double-duty actions into any intervention to ensure there is a simultaneous reduction of undernutrition and overnutrition. He also knows that double-duty actions do not require a new idea or intervention. Rather, interventions and actions that are already known to have the potential to reduce both forms of malnutrition can be used. Common platforms that should be examined for delivering these double-duty actions include national dietary guidelines, health systems, urban food policies and systems, national-level policies pertaining both to undernutrition and overnutrition, humanitarian aid and emergency nutrition programs, and social policies (WHO, 2017b).

Once again, Sanji, realizes the complexity of being able to address such a big problem in Thailand, which has such a diverse population with such different needs. Before his meeting to debrief his staff on his findings, Sanji has to think about some critical questions. What kinds of integrative strategies that incorporate double-duty actions can be used to reduce the rates of undernutrition and overnutrition in Thailand? Should there be a greater focus on pregnancy and early childhood interventions to prevent future noncommunicable diseases? How should the diverse sociodemographic backgrounds of the Thai population be accounted for to ensure its needs are met? How can the life course approach be applied to some of the strategies to tackle the double burden of malnutrition?

EXHIBIT 1
Demographic Transition (in 5 stages)

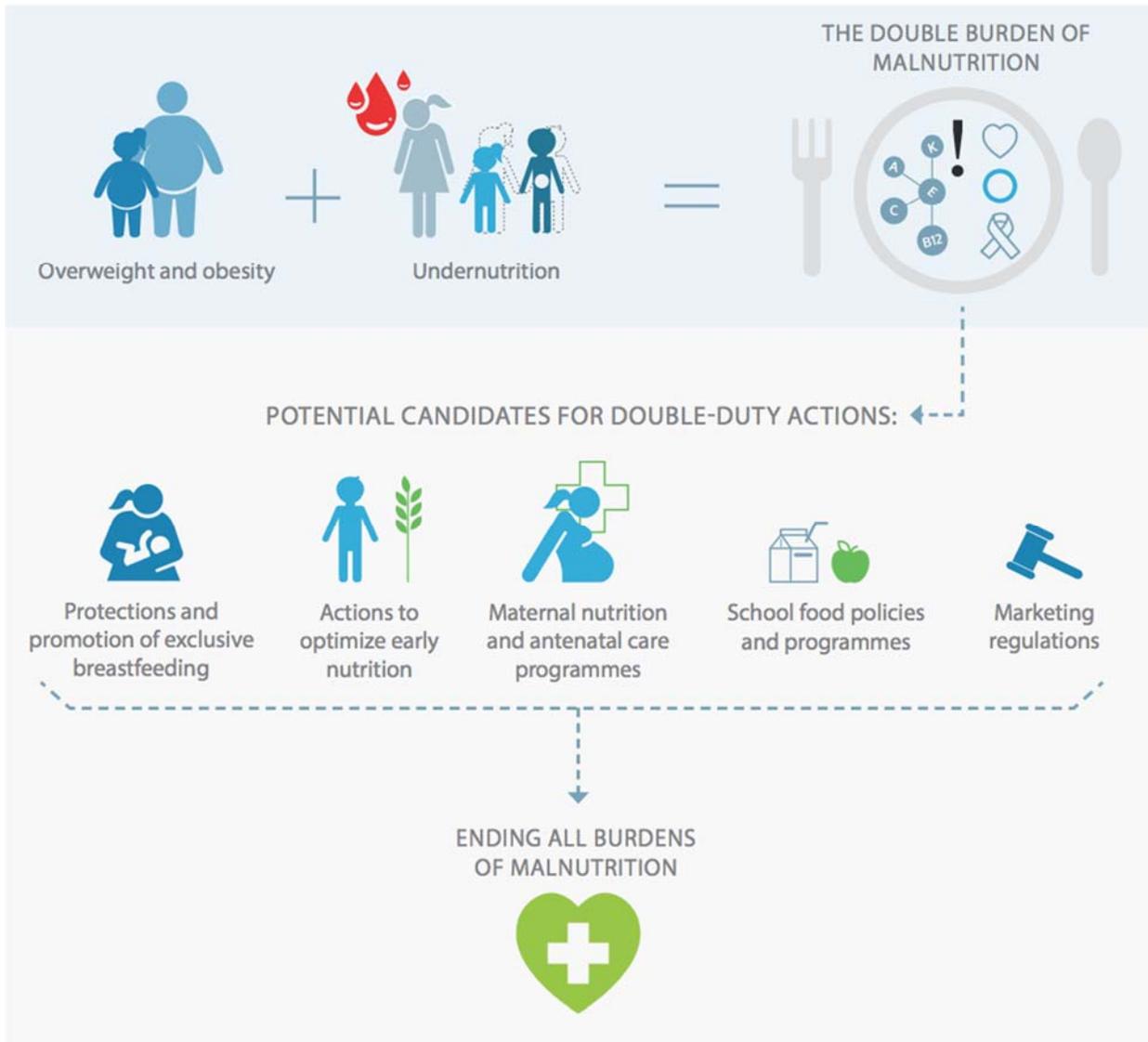
The demographic transition in 5 stages



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Source: Roser, Ritchie, & Ortiz-Ospina, 2020.

EXHIBIT 2
Double-Duty Actions



Source: World Health Organization, 2017b.

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INSTRUCTOR GUIDANCE

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BACKGROUND

Sanji Suresh, a senior-level researcher at the Association of Southeast Asian Nations (ASEAN) Institute of Health Development, received a document containing national child development survey data from Thailand. The data indicates that children under the age of five have high rates of being overweight and stunted. After seeing this literature, Sanji realizes that there is the potential for a double burden of malnutrition in Thailand. Sanji is tasked with identifying current initiatives and possible solutions to help address this dual burden. The country's diverse sociodemographic data adds to the complications Sanji must account for to ensure the health of the children of Thailand. Being underweight in early childhood can predispose children to be overweight and have noncommunicable diseases such as diabetes and heart disease later in life. Sanji understands that the establishment of healthful behaviours and physical activity patterns during early childhood are key to health promotion and act as protective factors against noncommunicable disease over the child's life. Realizing the complexity of addressing such an immense problem, will Sanji be able to come up with suggestions to tackle it?

OBJECTIVES

1. Understand the concept of the double burden of malnutrition and nutrition transition.
2. Understand measurements and standards related to calculating the double burden of malnutrition such as those measuring stunting, wasting, and being overweight.
3. Evaluate some of the sociodemographic factors associated with overnutrition and undernutrition and develop strategies to address them.
4. Identify current and future initiatives in Thailand to address overnutrition and undernutrition with key consideration of "double-duty actions".
5. Explore the life course approach to help navigate a complex public health issue.

DISCUSSION QUESTIONS

1. What kinds of integrative strategies that incorporate double-duty actions can be used in Thailand to reduce the rates of undernutrition and overnutrition?
2. How can we account for the diverse sociodemographic backgrounds of the population in Thailand to ensure its needs are met?
3. How can the life course approach be applied to some of the strategies to tackle the double burden of malnutrition?

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KEYWORDS

double burden of malnutrition; double-duty actions; life course approach; overnutrition; overweight; stunting; Thailand; undernutrition; wasting; child development