

Chapter 3

Food Issues Facing New and Emerging Economies of Southeast Asia

Teuku Tahlil

Introducing Southeast Asia

Southeast Asia (SE Asia) comprises 11 countries (Moran 2014), about 24,000 islands and covers an area of approximately 4.5 million km² (Mukherjee and Sovacool 2014) or 3 % of the world's land (Kasapila and Shaarani 2011). This subregion of Asia is geographically bordering with China in the south, India in the east, and Australia in the north (Kasapila and Shaarani 2011). It is divided into mainland and island areas (Andaya 2014; Bacus 2001) and estimated that 43 % of the land is covered by forests (Mukherjee and Sovacool 2014). The mainland is an extension of the Asian continent and comprising several countries including Burma (Myanmar), Thailand, Laos, Cambodia, Vietnam, and Peninsular Malaysia (Koh et al. 2013). The Island or maritime states includes Brunei Darussalam, East Malaysia (Sabah and Sarawak), Indonesia, Philippine, Singapore and East Timor (Timor Leste) (Koh et al. 2013).

SE Asia countries differ in many respects, including in their population density, ethnicity, religion, politics, and economic development (Evers 2001). Indonesia is the largest country in the region, while Singapore is the smallest, with a total area about 0.01 % of Indonesia (Tanjung 2014). In terms of population, the highest numbers was observed in Indonesia, amounting over 238 million, while the lowest was in Brunei Darussalam, with only 0.4 million (Ministry of Health RI (MOH RI) 2012). The highest population density was reported in Singapore with 7565 people per km² and the lowest was in Laos with only 26 people per km² (MOH RI 2012). Overall, SE Asia is home for about 580 million or 8.7 % of the world's population (Kasapila and Shaarani 2011) with most of the population are living in rural areas (Dahiya 2012).

T. Tahlil (✉)

Department of Community Health Nursing, Syiah Kuala University, Darussalam,
Banda Aceh 23111, Indonesia
e-mail: ttahlil@fulbrightmail.org

Economically, SE Asia comprises both the world's richest and poorest countries. Four SE Asian countries (Cambodia, Laos, Myanmar and Vietnam) are classified as low incomes countries, three (Indonesia, the Philippines, and Thailand) as lower middle incomes, one (Malaysia) as an upper middle income, and two (Brunei and Singapore) with high incomes (Dans et al. 2011). Overall, most of SE Asian countries are classified as developing countries with the exception of Singapore, which is considered as the only developed country in the region. In terms of religion, Islam is reported as religion for the vast majority of people in Indonesia, Malaysia, and Brunei Darussalam, whereas Christianity became the majority in the Philippines and Timor Leste, and; Buddhism became the majority for people in Myanmar, Thailand, Cambodia, and Laos (Evers 2001).

SE Asia comprises both some of the world's largest importers and exporters of rice (Freedman 2013). Vietnam, Thailand, and Cambodia are regarded as world's largest rice exporters, whereas other countries, such as Philippines, Malaysia, Indonesia and Singapore were not able to produce sufficient amount of rice to meet their domestic demand (Freedman 2013). While rice is the most widely consumed food by people in the region, the lack of rice production and supply along with other nutrient deficiencies could produce significant effects on people in the region.

This section has briefly described demographic and socioeconomic differences between SE Asian countries. By identifying these differences, it is possible to predict about food and nutrient status among people across the SE Asian countries. While food and diets have the cultural, social, economic, and ethnic meaning, food security status might be also different across countries in the region. The next section will discuss further about the food and nutrient problems across the region.

Identifying Food Problems Across SE Asia

Food is an important global public health issue due to both its supply and safety issues (Mountjoy 2013). Although the proportion of people with protein-energy malnutrition and micronutrient deficiencies in developing countries have decreased recently, the proportion has not been reduced as quickly as expected and failed to meet global objectives (Food and Agricultural Organization (FAO) 2002). While people in less developed countries are struggling how to get adequate food supply, nutrient density, and to reduce foodborne-related diseases, people in more advanced countries are challenged by the high proportion of obesity, poor diet, and lack of physical activity (Mountjoy 2013).

Globally, over 800 million (12.5 %) of the world's population are undernourished with 852 million of these are living in developing countries (FAO 2012). Among children, 178 million of the world's children under five are classified as stunted and 55 million are wasting (FAO 2012). Worldwide, 50 % of deaths are linked with malnutrition every year (World Health Organization (WHO) 2003) with about 300,000 deaths occurring among the resource-poor people in developing countries (Muller and Krawinkel 2005). It was estimated that approximately

19 million children below 5 years of age were in severe acute malnutrition (SAM) worldwide in 2011, with most of them were found in Africa and Southeast Asia (The Lancet 2013).

Regionally, many people in different population groups in Southeast Asia are considered at risk for malnutrition and other nutrition problems (Schaafsma et al. 2013). Findings of the Global Food Security Index 2014 (Economist Intelligence Unit (EIU) 2014) show that food security index for SE Asian countries were ranked between 5th (Singapore) and 96th (Cambodia) of 109 countries from six regions included in the survey. The EIU also suggests that food security index had improved in Singapore (+2.7), Malaysia (+2.0), Thailand (+0.5), and Philippines (+0.3); reduced in Myanmar (-4.1) and Vietnam (-0.2); but remained stable in Indonesia and Cambodia. The EIU index ranks the surveyed countries according to their ability in three factors: accessibility, affordability, and quality and safety (EIU 2014).

The levels of malnutrition among children in SE Asia are a cause for serious concern. A report (MOH RI 2012) suggests that many children were suffering from acute or chronic nutrition problems, such as underweight, wasting, stunting in SE Asia. The proportion of these problems varied between countries across the sub-region. The highest underweight proportion among under five years of age was found in Timor Leste (45), trailed by Laos (31), and Cambodia (28) (MOH RI 2012). Wasting incidence rates among under five years of age was highest in Timor Leste (19), followed by Indonesia (14), then Cambodia (11), Vietnam (10), Philippine, and Laos (7, each) (MOH RI 2012). Also, Timor Leste, Laos, and Cambodia had the highest under five stunting prevalence, a chronic nutrition problem, with Timor Leste accounting for 58 cases, trailed by Laos with 48 and Cambodia with 40 (MOH RI 2012).

Micronutrient insufficiency also appears to have disproportionately deteriorated many people in the region. Akhtar et al. (2013) suggest that most children with vitamin A deficiency are living in Southeast Asia. The proportion of vitamin A deficiency and anemia among preschool children in Southeast Asia were estimated to be around 45.5 and 65.5 %, respectively (Poh et al. 2013). In terms of vitamin D deficiency, the highest was found in Indonesia and Malaysia (41–87 %) and the lowest was in Thailand and Vietnam (5.7–7 %) (Yang et al. 2013). Also, Southeast Asia has the largest proportion of anemia in the world with an estimation of 315 million people (Wallace et al. 2014). Micronutrient malnutrition could increase morbidity and mortality rates, such as increasing poor pregnancy outcomes among pregnant women, impaired physical and mental development in children, and reducing work productivity in adults (Black et al. 2008). Vitamin A deficiencies increase individual risk for various physiological problems including blindness (xerophthalmia) among children (Akhtar et al. 2013).

Further, many studies have also identified obesity and overweight as major health problems for the people in SE Asian countries. In Malaysia, the prevalence of overweight and obesity, along with hyperlipidemia, hypertension, and diabetes among Malaysian adults has increased substantially over the last 10 years (Shariff et al. 2014). In Thailand, the prevalence of overweight and obesity were 8.5 % for children aged 1–5, 8.7, and 11.9 % for 12–14 years (Phaitrakoon et al. 2014). The

prevalence of severe obesity among school-aged children (between 6 and 12 years old) in Malaysia (4.6 %) and Thailand (3.4 %) was higher than in Vietnam (1.1 %) and Indonesia (0.5 %) (Sandjaja et al. 2013).

In summary, this section has shown that some people in SE Asian countries were suffering with a range of both under- and over-nutrition problems (dual burden of malnutrition). This suggests that low social economic status is an important social determinant for food or micronutrients problem. Understandably, socio economic status is closely related to ethnicity, education, occupation, diet, lifestyle choices, and other factors including healthcare access.

The next sections will examine any existing policies and practices to combat the dual burden of malnutrition and increase food security at regional, national and community levels across the region.

Tracing Regional Approaches for Food Insecurity Alleviation

SE Asian countries are united under an organization, namely the Association of Southeast Asian Nations (ASEAN). This association was established in 1967 in Bangkok by Indonesia, Malaysia, Philippines, Singapore, and Thailand (ASEAN Secretariat 2014b). ASEAN is a geopolitical and economic organization (MOH RI 2012), aiming at accelerating the economic growth, social progress, and cultural development in the region; promoting regional peace and stability; promoting active collaboration and mutual assistance; providing assistance to each other; collaborating more effectively; promoting Southeast Asian studies; and maintaining close and beneficial cooperation with other international and regional organizations (ASEAN Secretariat 2014b). The full member states of ASEAN include Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam (ASEAN Secretariat 2014b). It has also been reported that Timor Leste has applied for ASEAN's membership (Lunn and Thompson 2011).

Concerns over possible negative effects of food insecurity on socioeconomic aspects of people in the region, ASEAN has included food security as one of regional importance and permanent priority. ASEAN has made significant progress in preventing and alleviating food insecurity across the region. ASEAN countries have endorsed the ASEAN Integrated Food Security (AIFS) along with strategic plan of action on food security in the ASEAN region (SPA-FS). This strategic plan aimed at ensuring long-term regional of food security and improving the livelihood of farmers in the region (ASEAN Secretariat 2014a).

The AIFS framework has several objectives as follows: increasing food production; reducing postharvest losses; promoting conducive markets and trade for agriculture commodities and inputs; ensuring food stability; promoting the availability and accessibility to agriculture inputs; and operationalizing regional food emergency relief arrangements (Association of Southeast Asian Nations 2011). To achieve these objectives, ASEAN has outlined four components and established six

corresponding strategic trusts to the four components of the AIFS framework. These include: (1) Food security and emergency/shortage relief through strengthening regional food security arrangements; (2) Sustainable food trade development through promoting conducive market and trade for food; (3) Integrated food security information system by improving regional food security information system for effective forecast, plan and monitoring supplies and the use of basic food commodities; (4) Agricultural innovation through promoting sustainable food production, encouraging food-and agro-based industry investment, and identifying and addressing emerging issues concerning food security problems (ASEAN 2011).

Overall, various projects with a range of activities have been implemented. These include information exchange, crop production, postharvest and handling, training and extension, research and development, the enhancement of food safety, quality and standard, and trade certification and promotion in food, agriculture, and forestry (Freedman 2013). The report (Freedman 2013) also suggests that ASEAN has made several meeting and worked collaboratively with non-Southeast Asian countries and other existing regional and international agencies, such as with China, Japan, and Korea (ASEAN Plus Three), and APT and Australia, New Zealand, India, USA and Russia (the East Asia Summit). The ASEAN plus three cooperation strategy focuses on six strategic areas as follows: strengthening food security, biomass energy development, sustainable forest management, mitigation and adaptation of climate change, animal health and disease control, and cross-cutting issues (Freedman 2013). The ASEAN Plus Three Emergency Rice Reserve (APTERR) focuses on food security in emergency situation by providing rice and nutrition assistance program to disaster victims in the region during times of crisis (ASEAN Emergency Rice Reserve 2015), such as distributing rice to Philippines following the super typhoon Haiyan (ASEAN Emergency Rice Reserve 2014).

Exploring National Strategies to Improve Food Security

SE Asian countries have implemented several strategies at various levels to improve their individual country's food security at short and long terms, including through strengthening national food policies, subsidies, partnership, diversification, and research and development. For instance, to increase their domestic food supply, some SE countries such as Indonesia and Malaysia have strengthened their domestic agricultural and trade policies, helped local farmers by providing subsidies for agricultural-related needs and activities including for power, fertilizers, pesticides, paddy cultivation, seeds, irrigation, and other infrastructures; and imported rice from their neighbors' countries to keep the rice at low price (Freedman 2013). Both Indonesia and Malaysia along with other SE Asian countries, except Timor Leste, have joined the World Trade Organization (WTO) and few (i.e., Cambodia, Laos, Vietnam, and Timor Leste) had not previously signed the General Agreement on Tariffs and Trade (GATT) (WTO 2015). The WTO (2015) has established rule of the games for its members to follow in a wide range

of international commerce activities, including in agricultural trade restriction, export, and food price and other domestic subsidies. In terms of agricultural trade, the WTO allows developed and developing countries to cut all agricultural product tariffs by 36 and 24 %, respectively (WTO 2015).

Additionally, a previous report suggests that other countries (i.e., Philippines) have also bolstered their rice production by initiating the production of rice with greater vitamin content (Freedman 2013) which is potentially vital in the prevention of micronutrient deficiency (De Steur et al. 2014). Research and development have also been regarded as an important strategy for boosting rice production. Singapore, for instance, included research and extension capacity for agriculture, aquaculture, and adaptation to climate change as part of their domestic strategy on food security in addition to urban farming strategies and the investigation of new farming technology (Freedman 2013). It has been reported that agricultural research and development could increase agricultural production and reduce poverty rates (Fan et al. 2008).

It has been described earlier that there is a large regional inequality between countries in SE Asia in terms of their economy and ability in ensuring food security among their people. Given these discrepancies, enhancing bilateral cooperation between countries have also been implemented and used as one of strategies for food security improvement. This cooperation is not only between food importer and exporter countries but also among exporter countries. For example, the cooperation between Vietnam and Thailand in controlling food (rice) price and supply; and between Cambodia and Myanmar in rice production and export (Freedman 2013).

Taken together, regional approaches for food security have provided broad picture of efforts in improving food security in SE Asia. Individual countries differ in their handling of the food security issues. The next section will briefly describe some important strategies or interventions in insuring food and nutrients strategies in SE Asia.

Describing Specific-Food or -Nutrient Interventions and Strategies for Improving Food Security

Several strategies have been identified to be useful to increase food security across SE Asia region. These include school meal program, breastfeeding, micronutrient fortification, supplementation, and dietary diversification. The following are short description of the programs or strategies.

School Meal Programs

School meal program plays a significant role in the improvement of food and nutrient status among school age population. This program has been developed at various levels, for different purposes and with different scenarios in SE Asian

countries. In Vietnam, school meal programs targeted kindergarten and elementary schools students with the aims to provide appropriate meals and education and information (communication tool) for students (Le 2012). Program implementation was organized by Department of Education, comprised about 30 % of the recommended dietary allowances (RDA) with 90 % of meals were prepared in school's kitchen and 10 % by food companies (Le 2012). In Thailand, Pinkaew et al. (2013) tested their lunch meal program among primary school students (kindergarten to grade 6) with triple-fortified rice grains comprising Zn, Fe, and VA at lunch time. Findings of this randomized trial suggest that school meal program could improve serum Zn of school students (Pinkaew et al. 2013).

Breastfeeding

Breastfeeding is a vital for achieving good infant nutrition (Gupta and Dadhich 2008) and tackling the burden of food and nutrients insufficiencies. Breastfeeding reduces infection rates, allergy, and atopic conditions in infancy, improves intelligence and cognitive development, and decreases individual risk for obesity, diabetes, cholesterol, and cardiovascular diseases later in adult life (Robinson and Fall 2012). A previous report also suggests that breastfeeding provides some benefits in reducing maternal obesity rates, by increasing weight loss among postpartum women who have gained excess weight during pregnancy (Dewey 2004).

The proportion of breastfeeding has slightly improved recently across SE Asian countries. For example, In Indonesia, exclusive breastfeeding for 6 months tends to increase over the years, from about 56.2 % in 2008 jumped to 61.5 % in 2010 (MOH RI 2012). Also, Indonesia has made significant efforts in improving exclusive breastfeeding practice through regulation, advocacy, training and counselling, establishing strategy for achieving successful breastfeeding, socialization and campaign, education, strengthening healthcare capacity and its personals ability, and mother, family, and community empowerment (MOH RI 2012). Another, in Timor Leste, the proportion of exclusive breastfeed infants have also increased by 18.23 %, from about 30.8 % in 2003 to approximately 49.0 % during the period of 2009–2010 Demographic and Health Survey (Khanal et al. 2014). Overall, a previous report suggests that the proportion of exclusive breastfeeding in SE Asia region (43 %) was higher when compared to Eastern Mediterranean (34 %), The American (31 %), Africa (30 %), and Europe (18 %) (World Cancer Research Fund International (WCRFI) n.d).

Micronutrient Fortification

The International Life Sciences Institute (ILSI) Southeast Asia Region considered micronutrient fortification as an appropriate public health strategy for nutrition

security improvement in Southeast Asia (Gayer and Smith 2015). Several empirical evidences have demonstrated some positive benefits of food fortification in the reduction of micronutrients across the region. Laillou et al. (2012) reported the impact of the fortified vegetable oils with vitamin A and rice with iron, zinc, and folic acid which show positive impact of the fortified vegetable oil on the Vitamin A intake by 27.1 % of the recommended nutrient impact (RNI); the fortified rice on iron, the increase intake of iron, zinc, and folate by 41.4, 15.5, and 34.1 %, respectively. Theary et al. (2013) reported initial impact of fish sauce, soy sauce, and vegetable oil fortification program among Cambodians' knowledge, attitudes, and practices and found that the program improved study participants' perception toward the fortified food. Based on their findings, the researchers (Theary et al. 2013) recommended for communication campaign and the establishment of adequate regulatory food fortification monitoring system in Cambodia.

Supplementation and Diversification

Supplementation and dietary diversity have also shown to be effective in increasing nutrient status among SE Asian people. For example, findings of previous study (Purwestri et al. 2012) suggest that providing locally ready-to-eat foods comprising fortified cereal/nut/legume-based biscuits with ± 500 kcal and 8–10 % protein per 100 g produced promising impact in the reduction of mild case of wasting children in Indonesia. Another, Shahar et al. (2013) assessed the effectiveness of exercise intervention and protein supplementation either alone or in combination for 12 weeks, on body composition, functional fitness, and oxidative stress among 65 elderly Malays with sarcopenia aged between 60 and 74 years (men = 47, women = 18), using a quasi-experimental study design. Findings of this community-based intervention study suggests that the protein supplementation increased upper body strength and reduced body weight among sarcopenic elderly in Malaysia. Report also suggests that supplementation could be used effectively to improve iron and zinc status among infants (Wasantwisut et al. 2006) and reduce the prevalence of anaemia and iron deficiency among women (Casey et al. 2009).

While each food produces different nutrients, the availability of dietary diversity is required to meet nutrient needs (de Pee and Bloem 2009). Dietary diversity is essential for food security (Dixon et al. 2007) and in particularly important for non-breastfed children (Arimond and Ruel 2004). Arimond and Ruel (2004) found a substantial association between dietary diversity and height-for-age Z-scores (HAZ) amongst non-breastfed children in Cambodia. It has also been acknowledged that consuming food with higher dietary diversity positively correlated with children's body weight and height in Malaysia (Ey Chua et al. 2012).

Conclusions

This chapter shows that SE Asia countries are being affected by various food and nutrient problems, which include both nutrition deficiencies, especially among children, and the rise in the proportion of overweight, obesity along with its related diseases. The double burden of malnutrition unequally affects many people in SE Asia and is acknowledged as an important regional issue for people in the region. While countries in the region differ in many respects, the extent of the public health threat posed by the nutrition problems is varied between countries. This could suggest that any intervention approaches at regional level should consider individual country socioeconomic background abilities. Also, governments and healthcare providers across the region should provide more attention on this issue. While the current approaches or strategies seem to be effective, matching the intervention with the individual country's background would provide additional benefit in increasing the program effectiveness.

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