World Medical & Health Policy
www.psocommons.org/wmhp/

Volume 4, Issue 1 • 2012 • Article 4

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Pawloski, Lisa R.; Thurman, Shaneka; Curtin, Kevin M.; and Ruchiwit, Manyat (2012) "The Spread of Obesity in Developing and Transitional Countries: A Focus on the Mekong Region, Southeast Asia," *World Medical & Health Policy*: Vol. 4: Iss. 1, Article 4.

DOI: 10.1515/1948-4682.1198

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Abstract

Introduction: Obesity policies in transitional countries are limited as most have needed to focus resources on reducing hunger, poverty, and infectious diseases. The Mekong Region is one such area that is still facing issues of undernutrition and infectious disease, yet has a growing population at risk of obesity related diseases. Such a dual burden creates a dilemma regarding which issue to address first, given limited resources. This review addresses this problem from a policy perspective.

Materials and Methodology: Comparative analyses of literature reviews, existing policy, and previous research were synthesized among countries within the Mekong Region.

Results: Traditional diets, quickly emerging fast food markets, and urbanization add levels of complexity to managing and creating obesity policy. Existing policies have not been successful and there are few measurable outcomes.

Conclusion and Policy Implications: Obesity-related policies have been initiated in the Mekong Region, but with few resources and conflicting priorities, several countries are at risk of being left behind. Suggested policies in the region include utilizing mass media education campaigns, modeling other successful public health programs, and promoting culturally and regionally appropriate interventions.

KEYWORDS: obesity, Mekong Region, nutrition transition, obesity policy

Author Notes: This work was supported by the National Research University Project of Thailand Office of Higher Education Commission. Conflicts of interest: None declared. Corresponding author: Lisa R. Pawloski. Email: lpawlosk@gmu.edu.

Introduction

Obesity is increasingly becoming an epidemic in many industrialized nations, particularly in the United States, where recent reports show that one out of every three adults is obese (Flegal et al. 2010). However, the United States is not alone with this emerging public health crisis. In Europe, rates of obesity among the adult population are as high as 25% in the United Kingdom and Germany, and 10% in Italy and France (WHO 2010). The concern for the rising rates of obesity in many nations is as much an economic one as it is a public health issue. In the United States, for example, the Centers for Disease Control (CDC) report that in 2008, obesity-related illnesses accounted for $147 billion (U.S.).

Co-morbidities of obesity include chronic conditions often requiring lifelong medical attention. These chronic conditions often lead to reduced productivity and quality of life (CDC n.d.; Guh et al. 2009). Guh et al. (2009) conducted a meta-analysis of the incidence of co-morbidities related to obesity and found primary associations with obesity and type II diabetes, particularly in females. Further associations were found with most cancers, all cardiovascular diseases, asthma, osteoarthritis, gallbladder disease, and chronic back pain. Such co-morbidities create huge costs over long periods of time, draining the medical systems even in the wealthiest nations (Abegunde et al. 2007).

In the United States and in the developed world more generally, determinants of obesity are often blamed on time watching television, increased portion sizes, and the proliferation of cheap fast food restaurants (Popkin and Gordon-Larsen 2004). In the United States, most recent reports suggest that the highest rates of obesity are found among many immigrant populations, those of low socioeconomic status, and ethnic minorities. Obesity appears to be a growing problem among immigrant children in general in the United States, and especially among second-generation Hispanic immigrant children (Bates et al. 2008). Research on immigrant populations has shown that obesity increases with acculturation and is most prevalent in low socioeconomic communities (Amaro and de La Torre 2002). Much of the recent literature among these populations suggests that obesity is multifaceted in nature and may also be influenced by the lack of access and availability of healthy foods, particularly fruits and vegetables. Many studies have shown a relationship between high fruit and vegetable consumption and low rates of obesity (Tohill et al. 2004). Further, studies examining the built environment have shown obesity to occur more often in neighborhoods with fewer grocery stores and greater access to fast food restaurants (Franco et al. 2008).

As rates of obesity have risen among the poor and among immigrant populations in the United States, global health researchers have identified a newer

trend of overweight which is emerging in both low- and middle-income countries. More importantly, this trend has been noted where significant economic shifts have occurred. The idea of this change has been coined "the nutrition transition" by epidemiologists. The nutrition transition can be defined as "population shifts in dietary patterns considered to increase the risks of obesity and related chronic diseases" (Caballero and Popkin 2002). The nutrition transition is thought to be driven by demographic changes, urbanization, transportation shifts (including increased driving) (Wen et al. 2006; Grize et al. 2010), and changes in food production and marketing (Caballero and Popkin 2002). Such shifts lead to reduced activity as technology becomes more efficient and there is greater access to high-calorie and low-nutrient-dense foods. Similarly, in low socioeconomic areas of the United States, where high rates of obesity are found, high-calorie, low-nutrient-dense processed foods are more prevalent and cheaper than fresh fruits and vegetables, suggesting similar factors influencing obesity in developed and transitional countries alike (Franco et al. 2008).

The global threat of obesity and the nutrition transition, first described by Omran (1971), has become a reality in the past 10 years. The World Health Organization (WHO) now estimates that approximately 1.5 billion adults (20 and older) as well as 43 million children under the age of 5 are overweight or obese (WHO 2011a; 2011b). The nutrition transition was noted initially in South and Central America. More than 10 years ago, the Pan American Health Organization (PAHO) published a book titled "Obesity and Poverty" (Pena and Bacalloa 2000). This book presented initial evidence concerning the rise of obesity throughout the PAHO region. The rise in obesity primarily occurred in women of low socioeconomic status and men of high socioeconomic status. Such findings were first identified in Venezuela and in Brazil where wealthy women tried to remain thin primarily for social benefit; while greater weight signified greater wealth among men. Poorer women, on the other hand, had little access to healthy nutrient-dense foods while working indoors, and so they often consumed primarily calorie-dense foods that lacked sufficient nutrients (Aguirre 2000). The influence of socioeconomic status and gender is not limited to the example from the PAHO region, as within the United States, obesity is also found to be significantly higher in areas of low socioeconomic status.

There is evidence, however, that these trends will not be seen uniformly across world regions. In contrast to the United States and Latin America, research in Thailand (a country undergoing significant economic transition) has shown greater obesity among wealthier populations. Obesity is more frequently noted in children as opposed to adults (Sakamoto et al. 2001), with a higher prevalence of obesity in boys (Pawloski, Kitsantas, and Ruchiwit 2010). Additional research has shown that Thai boys tend to become more obese over time, whereas Thai girls tend to maintain a healthier weight over time (Pawloski, Ruchiwit, and

Pakapong 2008). This work suggested that body image and the social expectations of being thin for Thai women may play a role regarding this gender disparity in obesity, when compared with the trend seen in Latin America.

Within the United States and among other wealthier nations, as the economic cost of obesity increases, greater attention has been placed on policies attempting to reduce and prevent obesity. Many of the recent policies have been established at the local levels and have been aimed at preventing childhood obesity (Kettel-Khan et al. 2009). However, policies that have a focus on curbing obesity in transitional countries are limited, as most of these countries are still focused on fighting hunger, poverty, and infectious diseases. Many of these countries are unprepared to tackle the threat of obesity.

In addition to Thailand, many of the surrounding countries in Southeast Asia have also recently been recognized as undergoing a nutrition transition, although the components of that transition and the potential causal pathways are complex. Countries first to experience the nutrition transition in Asia included China, Korea, Japan, India, and Pakistan, which have been undergoing significant economic transitions for nearly 50 years. Some of the highest rates of obesity in the world are found in the island populations of Oceania, and include such islands as Samoa, Nauru, and the Cook Islands, where significant cultural value is associated with being overweight.

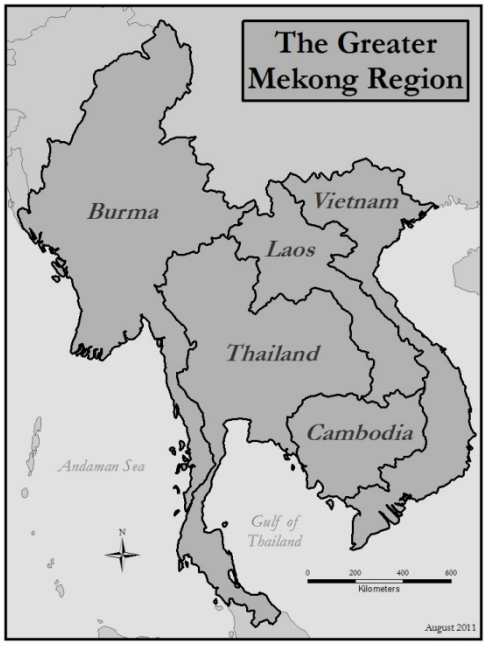

Figure 1: The Greater Mekong Region

However, the increase in obesity and cardiovascular disease in the countries within the Mekong Region of Southeast Asia (including Thailand, Laos, Cambodia, Vietnam, and Myanmar) is more surprising. This area has historically had extreme levels of undernutrition and micronutrient deficiencies, it has had no particular cultural draw to overweight, and the economic transition in the area is much more recent and not experienced evenly across the region (Tontisirina and Bhattacharjeea 2001).

The WHO has reported that over 80% of all cardiovascular diseases occur in low- to middle-income countries. The WHO estimates that nearly 23.6 million people around the world will die in the year 2030 as a result of cardiovascular diseases (WHO 2011b). Further, they predict that the largest impact will take place in Southeast Asia. In 2002, cardiovascular disease accounted for approximately 14%–19% of all deaths in Cambodia and Myanmar, respectively (WHO 2006). Thus, it is particularly important to focus on the growth of obesity and obesity-related diseases in the Mekong Region.

While the main culprits of obesity include an excessive intake of calories without an adequate number of calories being burned, the determinants of this imbalance in energy expenditure appear to be influenced by a variety of issues that are often specific to each region and culture. For example, in Thailand, parents report that fewer children are walking to school because there are few sidewalks, unsafe roads, and considerable air pollution. Parents are making more money and therefore can afford to drive their children to school. Children have an endless supply of available food. Food venders set up shops across the street from the schools and sell high-calorie, fried and sweet snacks. With a 7-11 convenience store on every corner, selling cheap, low-nutrient-dense snacks, young students have a hard time avoiding these temptations. Further, most families have an air conditioner in every house, discouraging children to go outside and play in the hot and humid climate of Thailand (Pawloski, Kitsantis, and Ruchiwit 2010).

Most experts agree that preventing obesity is critical as the costs related to the complications of obesity are great. Weight loss itself is rarely achieved, and even when it is successful, the chances of weight maintenance are often considerably low (Sciamanna et al. 2011; Barte et al. 2010). Further, some researchers argue that greater initial weight loss is associated with greater challenges with weight maintenance (Barte et al. 2010). Thus, with such challenges regarding weight maintenance, obesity should be prevented early in the lifespan, and therefore the need for governments to develop obesity prevention policies is critical. Prevention of obesity during childhood is also important since these early eating habits set the stage for future eating behaviors.

While policies are limited, countries are now being forced to act, although there are several obstacles that may impede that process. Unfortunately, many

countries within the Mekong Region are still facing issues related to undernutrition and infectious disease. As a result, a dilemma is created, forcing countries to decide how to prioritize these important health issues. Further, there are challenges in determining an accurate prevalence of obesity and obesity-related diseases, as many countries within the Mekong Region do not have the proper resources to conduct relevant testing. Though information is limited, to more effectively explore the nutrition transition in this region, we describe and compare related obesity issues, existing policies, and policy implications pertinent to the Mekong Region. This review provides the first overview of this problem in this region from a policy perspective.

Materials and Methodology

For this article, comparative analyses of the literature, reviews of existing policies, and overviews of previous research were used to generate a synthesis of the existing knowledge of obesity-related issues in the countries within the Mekong Region. Given the outcomes in the literature, including surveys and models of successful health policies, we recognize that the need for obesity reduction policy in Southeast Asia is multidimensional and stretches across many disciplines including health, government, education, and economics. As a result, we have addressed such complexities by examining multiple aspects of the obesity problem.

Results

Overview of Obesity in the Mekong Region

According to Dans et al. (2011), throughout the world several interconnected risk factors contribute to many chronic diseases, including cardiovascular disease, cancers, and diabetes. Within the Mekong Region, globalization, urbanization, poverty, and stress have been shown to be correlated with tobacco use, unhealthy diets, and physical inactivity. This set of environmental and behavioral risk factors can lead to high blood glucose levels, high blood pressure, abnormal serum lipids, metabolic syndrome, and abnormal lung function, all of which foster heart disease, stroke, cancer, and chronic lung disease. These biological risk factors are intensifying quickly in Southeast Asia (Dans et al. 2011).

For example, in Laos, obesity has been noted to be rising and is a major factor leading to hypertension and high serum cholesterol. Recent studies in Laos have shown that there is a direct correlation between obesity in parents and in

their children. Other studies as far back as 1998 have found similar results. For example, Maffeis, Talamini, and Tatò (1998) found significant correlation between obesity in parents and obesity in their children in Italy irrespective of environmental influences such as television watching. Further, interventions such as increasing activity and decreasing caloric intake had little influence on the obesity rates of children of obese parents (Maffeis, Talamini, and Tatò 1998). In addition to the impact of genetic factors, lifestyle habits—including sedentism and greater use of vehicles—have been shown to contribute to the risk of obesity (Vientiane Times 2011). In Vietnam, although millions of families in the poverty-ridden areas are struggling to feed their children, more developed areas like Hanoi and Ho Chi Minh City are fighting a losing battle against obesity. According to the National Institute of Nutrition, obesity is recorded in 10% of children in Hanoi and 20% of those from Ho Chi Minh City (Vietnews 2010). In addition to the risk of chronic diseases, obesity is beginning to develop significant negative social stigma, such that many Vietnamese parents believe that obesity causes delayed cognitive development in children in addition to exposing them to many health complications, including diabetes, cancer, and heart diseases. However, while such a stigma exists, little research is available to support the impact of obesity on cognitive development and is an area greatly in need of further research. In Cambodia, another Mekong Region country, research has found that the prevalence of hypertension is 12% at Siemreap and 25% in Kampong Cham. Further, the Cambodian people are already at a greater risk of heart disease, as there are greater rates of central obesity compared to other countries within the Mekong Region, even though Cambodian society is relatively poor and the rates of obesity in general are the lowest in the region (King et al. 2005).

Nutrition-Related Policy

As previously noted, within the Mekong Region, risk factors for obesity include globalization, urbanization, poverty, and low income (Dans et al. 2011). Each risk factor is complex in its own right. For example, urbanization includes not only factors related to changes in transportation, but also relates to issues of community disintegration and the reduction of open space needed for physical activity. In the United States, for example, many built environment studies link obesity in poor areas to the high number of fast food restaurants and lack of full service grocery stores, leading to low consumption of fresh fruits and vegetables (Franco et al. 2008). Remedying these kinds of pervasive, large-scale factors is often too costly and too broad in scope for most local and regional public health interventions and policies. Many of the interventions and policies targeting poverty-related issues include international development programs from

governmental, multilateral, and nongovernmental organizations. Traditionally in the Mekong Region, such programs have aimed to improve levels of undernutrition and micronutrient deficiencies with large-scale interventions; only very few have had goals of reducing obesity and chronic disease. Large multilateral partners like the World Bank and the U.S. Agency for International Development focus mainly on programs surrounding drugs, sex trafficking, infectious disease, and food security. In general, health programs sponsored by multilateral partners overlook issues surrounding the nutrition transition in the Mekong Region. Therefore, here we examine policies specifically related to obesity at the local level and those that are more behavior-change driven.

The figure below, a derivative of the causation model cited in Dans et al. (2011), illustrates the underlying factors that lead to the nutrition transition, particularly in the Mekong Region.

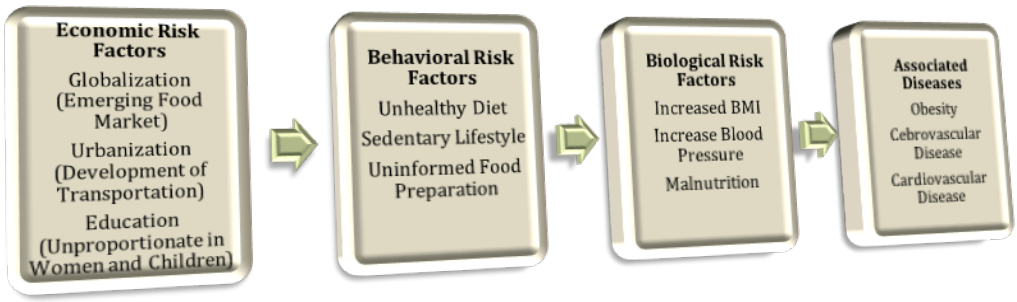

Figure 2: Causation Pathway for the Nutrition Transition in the Mekong Region

As noted in the figure, successful policy interventions must address each of the underlying risk factors in order to enable significant results. Partnering with international development organizations may be essential in mitigating problems of such complexity.

Our literature review revealed that the traditional diet in several countries directly influences the evolution of the nutrition transition (Pawloski, Kitsantis, and Ruchiwit 2010). In the Mekong Region, for example, the traditional diet consists of food cooked in local oils, rich in sodium and saturated fat. Also according to Dans et al. (2011), more than 80% of the population within Southeast Asia consumes fewer than five servings of fruits and vegetables per day. Obesity has been associated with a diet low in fruits and vegetables and interventions aimed at increasing fruit and vegetable consumption have shown significant reductions in obesity, particularly among children (Epstein et al. 2001). The movement in the Mekong Region toward a diet low in fruit and

vegetables is one that may be addressed with nutrition education aimed at increasing the use of such foods during food preparation. Such nutrition education programs can support alternative, yet culturally sensitive and more traditional methods of cooking. Culturally appropriate dietary recommendations should be considered when addressing the nutritional education needs in this region. For example, in Thailand, traditional diets include a significant amount of green leafy vegetables. Today, more adults are consuming these micronutrient enriched foods than children and adolescents. Adults will purchase and consume green leafy vegetables and allow children to consume more high-starch and high-fat foods, as these foods appear to be growing in status among children and teens. Since it has been shown that traditional diets can lead to better nutrition (Shintani et al. 1991), nutrition education programs could focus on teaching children about foods that are traditionally Thai, since such a focus may increase the effectiveness of the program due to the potential to foster cultural and nationalistic pride.

There have been several studies and corresponding initiatives that solidify the importance of culturally relevant and/or region-specific healthcare practices. In the United States, studies have shown that storytelling represents an appropriate and effective way to improve blood pressure in African-Americans, as a result of its cultural significance within the population. The results of the study show that blood pressure among the sample population was lowered by 11 mm Hg systolic and 6 mm Hg diastolic (Houston et al. 2011). As noted previously, Asia-specific culturally relevant programs are limited; however, there are some culturally specific programs that focus on the South Asian population living outside of their native region. In 2000, a study was done that focused on the effects of culturally sensitive healthcare in South Asian women. The randomized controlled trial study used a culturally relevant, pictorial methodology for groups of women who had diabetes mellitus. The study showed an increase in the health status of the women as a result of this highly structured, culturally specific health education (Hawthorne 2000). Region-specific or culturally relevant recommendations are better received by the targeted population, increasing the ability to communicate those health concerns and recommendations more effectively. Programs which use culturally sensitive approaches or are more regionally based may assist in eradicating health disparities among several populations around the world (Story et al. 1999). Such examples concerning health interventions suggest the need for programs and policies to not overlook regionally and culturally relevant approaches concerning obesity in the Mekong Region.

Emerging Food Markets in this Region

As urbanization continues around the world, and proceeds more rapidly in developing nations, the global food market is beginning to evolve. Fast food and processed foods are becoming more available in developing countries, and particularly in the Southeast Asia region. Governmental regulation has been implemented concerning food safety in Thailand, but very little has addressed the growing numbers of more Western fast food establishments throughout the Mekong Region. The influx of these establishments is largely viewed as positive and a sign of a growing economy.

Food companies are also becoming quite savvy regarding taste preferences and food purchasing behaviors among Asian populations, particularly recognizing the popularity of Western fast foods among children and teens throughout the Mekong Region. It is important to consider the fast food demands and their implications for obesity in the Mekong Region when establishing effective obesity policy in the region.

The proliferation of fast food outlets has led to many new (or proposed) "fat tax" laws and policies in wealthier countries, providing models which transitional countries may follow. In Mytton et al. (2007), three kinds of "fat tax" models were posited and it was determined that such a tax could lead to 3,200 fewer cardiovascular deaths each year. Also, in 2007, the Danish Academy of Technical Sciences found that reducing taxes on healthy foods and increasing taxes on unhealthy foods would allow for the Danish population to adhere to their current dietary guidelines (McColl 2009). To follow-up with their findings, the Danish government recently introduced the first tax on food that is high in saturated fat. "High" in this context is food that exceeded 2.3% of saturated fat in its content. The new food taxes included many sweet foods, oils, cheeses, and meats, and it represents a 25% increase in price (Wideback 2011).

Established Policies

The Thai government has recently developed programs to prevent chronic illnesses in Thailand. Initiatives include the development of health promotion centers where local communities can benefit from gyms and even karaoke rooms.

Thailand has also created the Thai Food-Based Dietary Guidelines (FBDG). The Thai FBDG makes nine recommendations for regulating adequate food intake. In addition the Thai Nutrition Flag, similar to the United States Food Pyramid, encourages eating a variety of nutrient-dense foods. In 2004, the Thai government also outlawed sugar additions to formula milk. Though these recommendations and policies address the growing obesity problem in this particular country, they have no measureable outcomes. Furthermore, smaller-

scale programs have been implemented to reduce the risk of obesity and other chronic illnesses. There have been a host of such programs in Thailand including the Sweet Enough Campaign Program, which focuses on reduction of sugar consumption in Thai children.

In Myanmar, the Ministry of Health created a number of government policies and plans to address the health concerns of the country. The Myanmar Health Vision 2030 focused on regulating communicable diseases and traditional medicine, and strengthening healthcare capacity by the year 2030. Further, the Myanmar National Health Plan (2011–2016) focused on the relationship between health and longevity, which highlights disease and disability. These plans suggest that it is well accepted among the national governments in this region that more should be done concerning the growing problem of obesity and chronic disease.

While some of the interventions have been successful, there are difficulties with the scale of the operations. Those that have been small in scale are frequently sporadically dispersed throughout a country. Conversely, many of the plans that are intended as national interventions are quite broad in scope and have had few specific interventions applied or outcomes measured. To move forward on the development of successful interventions, it may be useful to examine other successful public health interventions, which have had significant regional or national impact.

One such example includes the success of smoking cessation programs and policies. While it is widely recognized that tobacco use and obesity are both complex and multidimensional problems with significant causal differences, there is a substantial literature examining the potential public health value in the lessons learned from successful smoking cessation programs and policies (Chopra and Darnton-Hill 2004; Garson and Engelhard 2007). In Thailand, tobacco consumption control policies have proven to be successful in combating noncommunicable chronic diseases in the region. In 1989, the Thai government established the National Plan and Policies for Tobacco Control. The plan regulated the youth consumption of tobacco, controlled advertising, increased nonsmoking areas, supported programs to help smokers quit smoking, supported tobacco tax and price policies, created a public relations alliance, and partnered with law enforcement. The program was chaired by several governmental and community officials including the Minister of Public Health, NGO representatives, and media managers. Levy et al. (2007) revealed that the Thai policies implemented between 1991 and 2006 had decreased smoking prevalence by 25%. The most effective policies included tax increases on cigarettes and advertising bans, followed by media anti-smoking campaigns, clean air laws, and health warnings. Thus, Thailand might use the tobacco control approach for obesity-related policy interventions since they are both complex and multidimensional public health threats. As mentioned earlier concerning “fat

taxes," Denmark has recently initiated a saturated fat tax; time will tell how successful such a program is. In the United States many might argue that such taxes inhibit individual freedom of choice of food, but as Thailand has shown with the tobacco tax such a food tax in a more collective culture may be more effective.

Conclusions and Policy Implications

The initiatives above suggest that programs and policies designed to reduce obesity-related chronic diseases are being started in the Mekong Region, yet they are in their infancy. Unfortunately, countries in this region can participate only when they have adequate resources to begin such programs. Poorer countries such as Laos may be left out as they continue to struggle with reducing morbidity and mortality caused by infectious diseases and HIV/AIDS. While it is encouraging to find obesity-related policy initiatives in transitional countries, many of these governments have looked to wealthier nations such as the United States as a model. Unfortunately, the United States has not been successful, nor have the majority of other wealthier countries been able to reduce the growing trend of obesity. Thus, there are no ideal models which these countries more recently touched by obesity can emulate.

It is evident that within the Mekong Region there is great potential for drawing up national-scale strategies to tackle the problems of obesity among children in all communities. Such national campaigns in this region have proven to be an effective means of health promotion. As an example, the national smoking prevention programs in Thailand have been effective in reducing and preventing smoking throughout the country. The Mekong Region governments might use similar strategies to employ mass media to educate mothers and caretakers about the correct food selection for children. Another national policy might include mandating physical education at all levels of child schooling. Such a policy should be coupled with policies aimed at schools providing well-balanced and highly nutritious school meals.

Further, while there is no perfect model that fits all, further investigation is needed within specific populations to develop more effective and culturally relative policies aimed at reducing and preventing obesity. Reducing the spread of obesity is critical in this region as the costs related to obesity create a tremendous burden on government and healthcare systems. Thus, the authors hope that the synthesis of research conducted here will be used as a call to research action to improve health and quality of life in the Greater Mekong Region.

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