



Commentary

Food environment research is needed to improve nutrition and well-being in Asia and the Pacific

Penny Farrell¹, Cut Novianti Rachmi², Georgina Mulcahy¹, Matthias Helble³ and Anne Marie Thow^{1,*}

¹Menzies Centre for Health Policy and Economics, School of Public Health, University of Sydney, Sydney, NSW 2006, Australia; ²Reconstra Utama Integra, Kota Jakarta Selatan, Daerah Khusus Ibukota Jakarta, Indonesia; ³Regional Cooperation and Integration Division, Economic Research and Regional Cooperation Department, Asian Development Bank, Manila, Philippines

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Developing countries in Asia and the Pacific have experienced significant economic growth over the past five decades. In low- and middle-income countries in Asia for instance, per capita GDP increased nearly fivefold⁽¹⁾ which has led to a reduction in extreme poverty (living on < \$1.90 per day) from 54 % in 1990 to 7 % in 2015⁽²⁾. Yet, these economic gains have not translated into similar advances in nutrition and health outcomes for the diverse countries across the region. Countries in the region are now experiencing a triple burden of malnutrition, with co-existing undernutrition (stunting, underweight and wasting), diet-related chronic diseases (linked to overweight and obesity) and micronutrient deficiencies (especially iron-deficiency anaemia)⁽³⁾. Despite decline in the prevalence of undernutrition over recent decades, almost half a billion people in Asia and the Pacific remain undernourished, and stunting rates amongst children under five exceed 20 % in most countries⁽⁴⁾. Over the past 40 years, a complex interplay of drivers has led to a rapid rise in the rates of obesity and diet-related chronic diseases – notably in the Pacific region^(3,5). These multiple forms of malnutrition do not just exist at the national level, but have also been observed at the household level (e.g. an underweight child and an overweight mother within the same household) in Indonesia, Malaysia, the Philippines and Vietnam⁽⁶⁾.

This triple burden of malnutrition is undermining the gains from economic growth in the region – both in terms of the social and personal costs of malnutrition and the economic cost for the region. Overweight and obesity alone constitute an estimated 12 % of total health care expenditures in the region⁽⁷⁾. In addition, poor early childhood nutrition has significant productivity costs through its

impact on human capital (the aggregate levels of education, training, skills and health in a population)⁽⁸⁾.

Early estimates suggest that the economic and food system impacts of COVID-19 are likely to worsen these indicators across the region⁽⁹⁾. Thus, it is a critical time to consider the role of research in addressing malnutrition effectively across the region. In this commentary, we examine the limited literature that exists on food environments in Asia and the Pacific and reflect on the opportunities to strengthen research and policy to improve outcomes for nutrition.

Policy for the triple burden of malnutrition in the region

The causes of malnutrition are complex, but there is increasing recognition that the decisions people make about their food consumption are influenced by external factors in their food environments, such as physical availability of food, food prices, marketing and retail^(10,11). As dietary change escalates in Asia and the Pacific region, a comprehensive response will also need to include consideration of the food environment – not only as a driver of change but also as an important focus for solutions⁽⁴⁾. There is a significant opportunity for healthier food environments to support healthier diets and contribute to addressing all forms of malnutrition across the population.

There is a high level of political commitment to address the triple burden of malnutrition across Asia and the Pacific^(12,13). Countries in the region, particularly across Asia, have made notable progress in addressing the

*Corresponding author: Email annemarie.thow@sydney.edu.au

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historically high burden of undernutrition, mainly through nutrition-specific (individual, community focussed) interventions targeting the immediate determinants of nutrition^(14–16). However, with the changing burden of malnutrition threatening health and economic gains, there is a need to complement such approaches with food environment interventions to support availability, convenience, attractiveness and affordability of healthy foods⁽¹⁷⁾. The WHO and United Nations Food and Agriculture Organization recommend a comprehensive package of interventions to promote healthy diets and prevent non-communicable diseases, including school food policies, interpretive labelling, fiscal policy measures (including taxation) and restrictions on marketing of unhealthy foods and beverages to children^(17,18). Within the region, there are examples of comprehensive school food policies in Malaysia and South Korea, mandatory interpretive nutrition labelling in Thailand and Sri Lanka, taxes on sugar sweetened beverages in at least sixteen countries and territories and strong restrictions on marketing to children under 12 in Taiwan⁽⁴⁾.

Despite these efforts, malnutrition in Asia and the Pacific remains a significant challenge, and it is clear that success will require strengthening policies to promote healthy food environments. Developing effective policies, however, will require improved knowledge of the nature of food environments in the region. Such evidence will support governments in the region to tackle the problem of malnutrition and support civil society to convincingly advocate for policy change.

Changing food environments in Asia Pacific region

Food availability has changed markedly in the region, particularly as a result of urbanisation. Asia leads the world in its rapid urbanisation, with over a quarter of the world's estimated urban population growth by 2050 expected to occur in India and China⁽¹⁹⁾. In terms of nutrition, urban, as opposed to rural food environments, tend to offer greater food diversity. However, this has also been accompanied by rising availability of processed or pre-prepared foods high in fat, salt and sugar^(19–23). A critical upstream driver of availability is trade in food and beverages. Rising international food trade has increased the availability of diverse foods and contributed to improvements in dietary quality and reductions in undernutrition⁽²⁴⁾. However, this very much depends on the commodity being traded, and limited research indicates that imports of cheap, energy-dense foods and sugar-sweetened beverages are a concern across the region^(25,26). For instance, India and China are two of the top five markets worldwide for sales of sugary drinks⁽²⁷⁾.

Food price also has a significant influence on food consumption habits in Asia and the Pacific^(19,28,29). A major

challenge is that the cost of nutritious food, such as fruit and vegetables, is often higher than less healthy foods high in sugar, salt and fat^(30,31). Our recent analysis of food trade data across the region indicates that the price of less healthy food (including fatty meat and snack foods) has risen at a slower rate than for healthier foods (including fresh fruit and vegetables, root crops and whole grain cereal)⁽⁴⁾. As a result, the price gap between less healthy foods and healthier foods has widened across the region from 2003 to 2018, with less healthy foods becoming relatively cheaper. Limited availability of affordable nutritious foods is a particular barrier to healthy diets among the urban poor; 69% of the world's total urban poor live in Asia⁽³²⁾. Extremely poor urban households can spend more than half of their household budgets on food and often have low diet quality^(22,33). These trends are concerning from a health equity perspective, particularly for poor urban populations who are often more dependent than rural populations on purchased foods⁽¹⁹⁾. History has shown that recent economic crises, notably the 2007–2008 global financial crisis and the 1997–1998 Asian financial crisis, have had significant impacts on food and nutrition security as incomes, food prices and poverty reduction and nutrition programmes were impacted^(3,34). There is little doubt that the economic downturn associated with the COVID-19 pandemic will influence food and nutrition security⁽³⁵⁾.

The nature and prevalence of food marketing in the region is relatively poorly documented, despite the fact that it can have a major influence on consumption patterns⁽³⁶⁾. Two recent studies suggest that food advertising is dominated by foods associated with the nutrition transition, such as snack foods and sugary beverages^(37,38). In addition, marketing targeting children is an evident concern in the region. Studies in Thailand, China, Indonesia, Malaysia and South Korea have found that the most frequently advertised (food) product was sugar-sweetened drinks, and that rates of non-core (less healthy) food advertising were highest during viewing times most popular with children^(39,40). It is also clear that increasingly intentional strategies are being used to market unhealthy foods and beverages to children, including promotional characters, free gifts, health claims and sponsorship of school sport^(37,40–45).

Access to healthy food is also heavily influenced by the nature of food retail, which has changed markedly across the region and remains extremely diverse – including supermarkets, open market vendors, informal street vendors and restaurants^(19,22,23). Wet markets selling fresh food remain a vital component of food retail and can be associated with increased vegetable consumption^(20,46). However, the urban poor often need to travel long distances, incurring additional expenses, to overcrowded retail markets or street stalls where hygiene, drainage, clean water and waste disposal are often insufficient⁽⁴⁷⁾. In contrast, consumers with middle or high incomes often shop at



modern supermarkets, which tend to be conveniently located and offer a diverse range of foods at lower prices⁽⁴⁷⁾. The growth of the grocery retail sector, or 'supermarketization', is a key driver of ongoing food system change in low- and middle-income countries in the region⁽⁴⁸⁾. They have both positive and negative implications for access to healthy food: on the one hand, they offer a diverse range of nutritious foods with (often) high food safety standards; on the other, they can increase access to highly processed, less healthy foods^(49,50). There is also evidence to suggest that the retail food environment surrounding schools in the region preference less healthy options, such as soft drinks and fast food outlets^(42,51).

With rising use of the internet and mobile technologies in the past ten years, food delivery services using an online application have grown rapidly in Asia, further accelerating during the COVID-19 pandemic⁽⁵²⁾. Food delivery services have been one of the solutions to obtain food during the COVID-19 pandemic; however, the nutritional value of these takeaway foods is often low; they are often high in salt and fat and energy dense⁽⁵³⁾.

Opportunities for future research

Although countries in the Asia Pacific region have a high level of political will to address the significant burden of malnutrition in all its forms, the implementation of context-specific food environment policies is hampered by limited data on food prices, availability, marketing and retail. Improved research into food environments in the region would support policy makers to better target these policies and also support monitoring of policy implementation and impacts. While there are clear indications that food environment change is contributing to the dietary transition in the region, research to date has been patchy.

Informing strong policies to improve food environments will require further in-depth research at the regional, national and local levels with a particular focus on sub-national trends and contextual differences, as well as on vulnerable populations. Priorities for research include improving understanding of relative food availability – for example by mapping of food retail outlets, particularly in low-income neighbourhoods and surrounding schools, systematic analysis of pricing trends at national and cross-national levels, and monitoring of marketing practices. It will also be beneficial to examine food environments in light of the traditional healthy food cultures in the region. In South Korea and French Polynesia, integrated food policy that intentionally fosters traditional food cultures has supported positive dietary change^(54,55).

In conclusion, more granular and context-specific data regarding the food environments in which people make decisions regarding their food purchasing and consumption will be invaluable in informing targeted and well-designed policy interventions in Asia and the Pacific

region. It will also be essential for monitoring the effectiveness of policy interventions to improve diets and health.

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