



Food Behaviors and Systemic Determinants: An International Comparative Analysis and Implications for Morocco and South Korea

Hajar OUEDERROU*¹  and Mounir JERRY¹ 

¹Laboratory of Economic Sciences and Public Policy, Ibn Tofail University. Kenitra, Morocco
hajar.ouederrou@uit.ac.ma / mounir.jerry@uit.ac.ma

Abstract. This chapter adopts a comparative conceptual approach to analyze how systemic determinants of food behaviors are governed at different stages of the nutrition transition, using Morocco and South Korea as illustrative cases. Through a qualitative documentary review, findings reveal two distinct trajectories. South Korea employs a proactive, data-driven model to regulate a saturated obesogenic environment. Conversely, Morocco relies on a strategic, multisectoral approach to navigate an accelerated double burden of malnutrition. Unlike standard institutional reports, this chapter highlights how governance capacity and data infrastructure shape policy effectiveness. Ultimately, it contributes to food systems research by demonstrating that early investment in continuous monitoring and strict regulatory instruments is critical to navigating the complexities of the Global Syndemic.

Keywords: Nutrition Governance; Systemic Determinants; Nutrition Transition.

1 INTRODUCTION

In a global context marked by the rapid transformation of food systems, eating behaviors are evolving and generating unprecedented public health challenges. We are witnessing the emergence of a "Global Syndemic," where the pandemics of obesity, undernutrition, and climate change interact, share common societal drivers, and mutually reinforce one another [1]. This dynamic, often described through the lens of the nutrition transition, results in the paradoxical coexistence of persistent forms of undernutrition and a worrying increase in diet-related non-communicable diseases [2]. In 2020, nearly one in three people worldwide could not access adequate food, and the cost of a healthy diet remained beyond the reach of approximately 3 billion people [3]. These findings underscore the urgent need to move beyond traditional approaches focused on individual choices and to adopt a systemic analysis.

More than mere personal decisions, eating behaviors are shaped by a complex set of "systemic determinants" [4]. These include food environments [5], defined as the physical, economic, political, and sociocultural context in which consumers engage with the food system. These environments are, in turn, influenced by globalized supply chains [6], public policies [7], and the strategies of the commercial determi-

nants of health, where actors in the agri-food industry play a major role in shaping supply and demand [8]. It is therefore crucial to broaden the analytical focus to understand how these macro- and meso-level structures shape choices and behaviors "upstream." To address this, this chapter adopts a comparative conceptual approach to analyze how systemic determinants of food behaviors are governed at different stages of the nutrition transition, using Morocco and South Korea as illustrative cases.

In light of this complexity, this chapter proposes a comparative documentary analysis of two national contexts with distinct trajectories. On the one hand, Morocco represents a middle-income country facing an accelerated nutrition transition, where the double burden of malnutrition is particularly evident, with a high prevalence of obesity, especially among women, coexisting with persistent micronutrient deficiencies [9,10]. On the other hand, South Korea exemplifies a high-income country with a completed nutrition transition that has developed a sophisticated system of data-driven governance, notably through its continuous National Health and Nutrition Examination Survey (KNHANES), which directly informs its strategic public health plans [11,12]. Comparing these two trajectories offers valuable insights into the policy levers and implementation challenges at different stages of development.

The objective of this chapter is twofold:

- 1) To map the systemic determinants of eating behaviors by mobilizing a multi-level analytical framework inspired by recent research on food environments [5,13];
- 2) To draw strategic lessons from the South Korean experience to inform public policy in Morocco, particularly within the framework of its new National Multi-sectoral Nutrition Strategy 2024–2030 [14].

Unlike existing global reports, this chapter provides a structured comparative reading of two national trajectories at different stages of the nutrition transition, highlighting how governance capacity and data infrastructure shape policy effectiveness.

2 METHODOLOGICAL APPROACH

This chapter employs a comparative and qualitative documentary review to analyze the systemic determinants of food behaviors in Morocco and South Korea. The approach is designed to identify the political structures, socio-economic contexts, and policy levers shaping dietary patterns to formulate tailored strategic recommendations.

2.1 Analytical Framework

The research relies on a thematic analysis of heterogeneous sources, structured by a multi-level conceptual framework inspired by socio-ecological and food system models [4, 5, 13]. To map systemic determinants, this framework is articulated around three interdependent dimensions:

- The food system and its governance environment: Examines structural factors determining food supply and accessibility, including public policies, regulatory frameworks, supply chain structures, and the role of institutional actors [4, 6].

- The sociocultural environment and behaviors: Analyzes the influence of social norms, urbanization, changing lifestyles, and social inequalities on dietary practices and preferences [1, 10].
- The informational and commercial environment: Focuses on private sector strategies, advertising, marketing, and nutrition awareness initiatives that shape consumer choices [8, 13].

2.2 Source Selection and Comparative Logic

Documents were collected through a systematic search of academic databases (PubMed, Scopus, Google Scholar) and targeted grey literature retrieval. Sources spanning primarily 2010–2024 were selected based on their relevance, credibility, and comparative value. The final documentary corpus includes:

- For South Korea: Publications related to the KNHANES survey [11], HP2030 national health plans [12], and specific policy case studies [15, 16].
- For Morocco: National nutrition strategies [14], STEPS survey data [9], and academic studies on local food behaviors [10, 17, 18].
- For the international context: Reference reports from recognized organizations (FAO, WHO, HLPE) [2, 3, 4] and conceptual frameworks from scientific literature [1, 5, 7, 8, 13].

Rather than detailing technical coding stages, the comparative logic of this chapter relies on synthesizing the extracted data into detailed national profiles. These profiles were then systematically compared using the three dimensions of the analytical framework as a common grid. This structured process allows for an interpretative analysis of the systemic logics underpinning each country's policies, identifying convergences, divergences, and cross-learning between a data-driven governance model and an accelerated transition model.

3 RESULTS

This section presents the findings of the comparative documentary analysis mapping the systemic determinants of food behaviors in Morocco and South Korea. To facilitate a structured reading of these distinct national trajectories, the primary results are synthesized in Table 1. This comparative matrix highlights the specific contexts, policy frameworks, and implementation challenges of each country across the three dimensions of the analytical framework.

Table 1: Comparative Analysis of the Systemic Determinants of Food Behaviors in Morocco and South Korea

Analytical Dimension	Sub-theme	South Korea: The Data-Driven Governance Model	Morocco: The Accelerated Nutrition Transition Model
Food System and Governance Envi-	Policy framework and governance	Proactive, data-driven governance: Led by the continuous national	Strategic and multisectoral governance: Structured by decade-long

<p>Environment</p>		<p>survey (KNHANES), which directly informs National Health Plans (e.g., HP2030). The approach is iterative, with precise targets and regular evaluations [11, 12].</p>	<p>national strategies (SNN 2011–2019 and 2024–2030). Emphasis is placed on interministerial coordination to simultaneously address multiple facets of malnutrition [14].</p>
	<p>Regulatory instruments</p>	<p>Advanced and targeted regulation: Implementation of specific policies such as strict standards for school meals, sodium reduction campaigns, and detailed nutrition labeling to address the challenges of a modernized diet [15, 16].</p>	<p>Regulation under development: SNN 2024–2030 outlines key measures such as sugar-sweetened beverage taxation and front-of-pack nutrition labeling. Current focus is on food safety (via ONSSA) and fortification actions [9, 14].</p>
	<p>Supply chain structure</p>	<p>Modernized and consolidated supply chain: Dominated by supermarkets, processing industries, and out-of-home dining. The system is highly integrated and globalized, ensuring wide availability of processed products [4, 6].</p>	<p>Transitional (dual) supply chain: Coexistence of a traditional sector (souks, wholesale markets) and a rapidly expanding modern sector (supermarkets, fast-food franchises), particularly in urban areas [17, 18].</p>
<p>Sociocultural Environment and Behaviors</p>	<p>Nutritional profile and key challenges</p>	<p>Burden of high-income country diseases: High prevalence of obesity and diet-related NCDs. Excessive sodium intake is a major public health problem. Undernutrition is residual [11, 15].</p>	<p>Double burden of malnutrition: Coexistence of high prevalence of overweight and obesity (especially among women) with persistent micronutrient deficiencies (iron, iodine, vitamin D) and pockets of undernutrition [9, 10].</p>
	<p>Dietary patterns and behaviors</p>	<p>Modernized diet with persistence of traditions: High consumption of ready-to-eat foods and out-of-home dining.</p>	<p>Rapid dietary transition: Accelerated shift from a traditional Mediterranean diet (rich in cereals, legumes, fruits, and</p>

		However, traditional elements (rice, kimchi) remain central, though their preparation and composition are evolving [15].	vegetables) to a “Westernized” diet, with increasing consumption of sugar, fat, and processed foods [17, 18].
	Sociodemographic factors	Near-complete urbanization and aging: A highly urbanized and educated society. Nutrition challenges are increasingly homogeneous nationwide, though social inequalities persist [11].	Rapid urbanization and marked inequalities: Fast urbanization is deepening inequalities. Nutrition behaviors and challenges differ sharply between urban and rural areas and across socioeconomic strata [10, 17].
Informational and Commercial Environment	Role of the food industry	Powerful yet highly regulated industry: Large agri-food conglomerates (chaebols) are dominant players but operate within a strict regulatory framework, particularly regarding child-targeted advertising and labeling [8, 16].	Rapidly expanding industry with growing influence: Fast penetration of multinationals and development of a domestic processed food industry. The regulatory environment is less restrictive, leaving greater room for marketing [6, 14].
	Nutrition information and education	Data-driven campaigns and high health literacy: Public health campaigns are directly informed by KNHANES data. The population’s high education level facilitates the dissemination of complex nutrition messages and the use of labeling [12].	Focus on awareness and basic education: National strategies emphasize nutrition education through schools and health centers. Campaigns aim to raise awareness of the basics of healthy eating in the face of the rapid emergence of new products [9, 14].

3.1 Food System and Governance Environment: Data-Driven vs. Multisectoral Models

The comparative analysis reveals two fundamentally different trajectories of nutrition governance, inherently shaped by institutional capacity and food system maturity. South Korea relies on a proactive, data-driven model where a sophisticated conti-

nuous monitoring infrastructure (KNHANES) fuels a virtuous policy cycle. Evidence-based data allow for the precise identification of micro-level problems (e.g., sodium intake), guide targeted interventions, and enable the iterative adjustment of national strategies like HP2030 [11, 12].

By contrast, Morocco embodies a strategic, multisectoral model designed to navigate an accelerated nutrition transition. Rather than relying on real-time data feedback loops, Moroccan governance—structured around the SNN 2024–2030 vision—focuses on building foundational, cross-sectoral coordination (health, agriculture, education) to manage a transitional food system where traditional and modern supply chains unevenly coexist [14, 17].

3.2 Sociocultural Environment and Nutritional Profiles: Navigating the Transition

These divergent governance capacities mirror the epidemiological realities of each nation. In South Korea, a highly urbanized and educated population faces the classic burden of a completed transition: high prevalence of obesity and diet-related non-communicable diseases (NCDs) driven by modernized diets [11, 15]. Interventions here aim to refine individual choices within an already saturated processed food market.

Conversely, Morocco faces the structural complexity of a double burden of malnutrition. The rapid shift from a traditional Mediterranean diet to a "Westernized" dietary pattern generates a high prevalence of overweight and obesity, which paradoxically coexists with persistent micronutrient deficiencies [9, 10, 18]. Furthermore, rapid urbanization deepens sociodemographic inequalities, requiring policies that manage fundamentally different realities between rural and urban strata [10, 17].

3.3 Informational and Commercial Environment: Regulating Obesogenic Pressures

Overall, South Korea regulates an already obesogenic food environment, whereas Morocco is still attempting to prevent its full consolidation. The growing influence of commercial determinants is a common denominator, but state capacity to negotiate with the private sector differs sharply.

South Korea has successfully implemented regulatory safeguards against powerful agri-food conglomerates (chaebols), utilizing strict frameworks for child-targeted advertising and mandatory nutritional standards in public institutions [8, 15, 16]. Morocco, however, is currently experiencing a rapid penetration of multinationals and expanding marketing practices within a less restrictive regulatory environment [6, 14]. For Morocco, the challenge is therefore twofold: planning effective regulatory instruments (like sugar taxes and front-of-pack labeling) while actively preserving the protective aspects of its traditional diet against the rapid expansion of commercial obesogenic pressures [9, 14].

4 DISCUSSION

This comparative analysis of food dynamics in Morocco and South Korea highlights the profound implications of systemic determinants on public health. The findings reveal that, although both countries face universal nutritional challenges linked to globalization, they follow distinct trajectories shaped by governance, socioeconomic development, and the maturity of their food systems. This section interprets these divergences and convergences to draw analytical lessons and conceptual implications, while also underscoring the broader dynamics of global nutrition governance.

4.1 Nutrition Governance: From Strategic Response to Data-Driven Action

The main divergence between Morocco and South Korea lies in their approach to governance. The South Korean model, structured around the KNHANES survey, illustrates the power of proactive governance, where policies are not only evidence-based but also continuously adjusted through a systematic feedback loop [11, 12]. This data infrastructure enables the shift from broad objectives to targeted, measurable interventions, such as sodium reduction, while strengthening public accountability. In contrast, Morocco, through its Multisectoral National Nutrition Strategy 2024–2030 [14], adopts a strategic and structural approach, essential for a country addressing the multiple facets of the “double burden.” This multisectoral approach is fundamental to tackling the underlying determinants of malnutrition [2], but its effectiveness depends heavily on its ability to translate into concrete and measurable actions—a major analytical challenge in the absence of an integrated monitoring system.

4.2 Analytical Lessons and Conceptual Implications

Analyzing the South Korean trajectory provides critical conceptual implications for countries navigating an accelerated nutrition transition.

First, the Korean case suggests that early investment in data systems may condition the effectiveness of multisectoral strategies. While periodic surveys such as STEPS [9] provide essential snapshots, continuous monitoring appears central to guiding adaptive policy. Conceptually, institutionalizing data collection on food behaviors, environments, and anthropometric indicators provides the necessary empirical foundation to target interventions, assess their impact, and legitimize public investments in the face of growing overweight and obesity challenges [10].

Second, the comparative analysis highlights the critical role of regulatory instruments acting directly on the food environment. While transitional multisectoral strategies often foresee fiscal and labeling measures [14], the Korean model demonstrates that enforcing strict nutritional standards in public institutions (schools, workplaces) acts as a powerful lever for shaping preferences on a large scale [16]. For transitioning countries where an increasing share of consumption takes place outside the home, regulating these “captive” environments emerges as a high-impact conceptual intervention to slow the shift toward unhealthy diets.

Finally, the findings resumed in figure 1, indicate that reconciling modernity and tradition is a matter of active policy design rather than passive evolution. Despite a globalized supply chain, Korean policies demonstrate the capacity to preserve key pillars of traditional diets while addressing specific excesses. For contexts where the

traditional diet is a recognized public health asset, such as the Mediterranean diet [17], this implies a dual conceptual approach: (i) actively protecting the healthy elements of traditional foodways against the influx of ultra-processed products, and (ii) proactively regulating the commercial environment to limit exposure to the most harmful systemic determinants of the nutrition transition [6, 8].

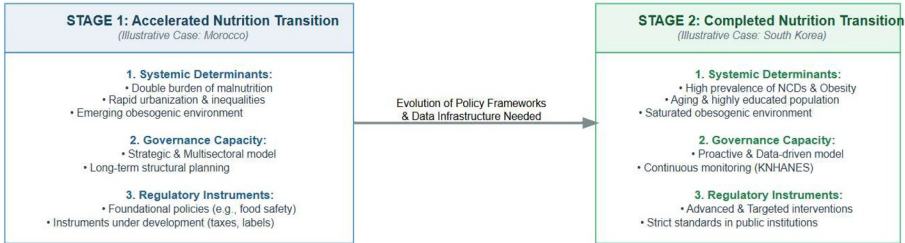


Figure 1: Conceptual framework linking nutrition transition stages to systemic determinants, governance models, and regulatory instruments (Morocco vs. South Korea)

4.3 Chapter Limitations

This chapter, by its nature as a documentary review, presents certain limitations. First, it relies on the availability and quality of public and academic documents. Grey literature, though essential, can be difficult to collect comprehensively. Second, the direct comparability of quantitative data is limited by differences in methodologies and periodicity of national surveys. Finally, this analysis focuses on formulated policies; an in-depth evaluation of their implementation on the ground and their real impact would require more detailed qualitative and quantitative case studies.

5 CONCLUSION AND PERSPECTIVES

By comparing the trajectories of Morocco and South Korea, this chapter highlights a central challenge for nutrition governance in the 21st century: the need to build policy systems capable of navigating the complexity of the “Global Syndemic” [1]. South Korea offers a model of data-driven governance, suited to a high-income country managing the consequences of a completed nutritional transition. Morocco, on the other hand, illustrates the challenges of a nation in the midst of transition, where the development of multisectoral strategies is a crucial first step. This chapter contributes to food systems research by linking nutrition transition stages to governance capacity and regulatory instruments.

For transitioning contexts like Morocco, ambitious roadmaps such as the SNN 2024–2030 [14] align with international best practices [2, 4]. However, translating these frameworks into tangible outcomes depends on three structural factors identified in this comparative reading: building robust information systems for monitoring and evaluation; deploying regulatory measures capable of directly shaping food environments [5, 7]; and mobilizing diverse sectors to preserve culinary heritage while mitigating the commercial excesses of modernity. This systemic approach will be essential to meeting the increasingly complex nutritional challenges of the coming decades.

References

1. Swinburn BA, Kraak VI, Allender S, et al. The Global Syndemic of Obesity, Undernutrition, and Climate Change: The Lancet Commission report. *The Lancet*. 2019;393(10173):791-846.
2. HLPE. Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. Rome; 2017.
3. FAO, IFAD, UNICEF, WFP and WHO. The State of Food Security and Nutrition in the World 2021. Transforming food systems for food security, improved nutrition and affordable healthy diets for all. Rome: FAO; 2021.
4. Reardon T, Echeverria R, Berdegue J, et al. Rapid transformation of Food Systems in Developing Regions: highlighting the role of agricultural research & innovations. *Agricultural Systems*. 2019;172:47-59.
5. Glanz K, Sallis JF, Saelens BE, Frank LD. Healthy Nutrition Environments: Concepts and Measures. *Am J Health Promot*. 2005;19(5):330-333.
6. Chavez-Ugalde Y, Jago R, Toumpakari Z, et al. Conceptualizing the commercial determinants of dietary behaviors associated with obesity: A systematic review using principles from critical interpretative synthesis. *ObesSciPract*. 2021;7:473-486.
7. Hawkes C, Smith TG, Jewell J, et al. Smart food policies for obesity prevention. *The Lancet*. 2015;385(9985):2410-2421.
8. Swinburn B, Sacks G, Vandevijvere S, et al. INFORMAS (International Network for Food and Obesity/non-communicable diseases Research, Monitoring and Action Support): overview and key principles. *Obes Rev*. 2013;14(Suppl. 1):1-12.
9. WHO. Morocco STEPS Survey 2017 Fact Sheet. Geneva: World Health Organization; 2017.
10. El Rhazi K, Nejari C, Zidouh A, Bakkali R, Berraho M, Barberger Gateau P. Prevalence of obesity and associated sociodemographic and lifestyle factors in Morocco. *Public Health Nutr*. 2011;14(1):160-167.
11. Oh K, Kim Y, Kweon S, et al. Korea National Health and Nutrition Examination Survey, 20th anniversary: accomplishments and future directions. *Epidemiol Health*. 2021;43:e2021025.
12. Oh Y. The National Health Plan 2030: Its Purpose and Directions of Development. *J Prev Med Public Health*. 2021;54(3):173-181.
13. Turner C, Aggarwal A, Walls H, et al. Concepts and critical perspectives for food environment research: A global framework with implications for action in low- and middle-income countries. *Global Food Security*. 2018;18:93-101.
14. Kingdom of Morocco, Ministry of Health and Social Protection. Stratégie Nationale Multi-sectorielle de Nutrition 2024-2030. Rabat; 2024.
15. Nam Y, Yoon J, Kim M. Application of draft nutritional standards for school lunches in the Republic of Korea: a feasibility study from the supplier perspective. *Nutr Res Pract*. 2023;17(1):149-163.
16. Park HK, Lee Y, Kang BW, et al. Progress on sodium reduction in South Korea. *BMJ Glob Health*. 2020;5(5):e002028.
17. Hindi Z, Belfakira C, Lafram A, et al. Exploring food consumption patterns in the province of Kenitra, Northwest of Morocco. *BMC Public Health*. 2024;24:1899.
18. Mendez M, Popkin B. Globalization, urbanization and nutritional change in the developing world. In: FAO, ed. *Globalization of food systems in developing countries: impact on food security and nutrition*. Rome: FAO; 2004:55-89.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

