




The INFORMAS healthy food environment policy index (Food-EPI) in Mexico: An assessment of implementation gaps and priority recommendations

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Summary

Mexico is one of the countries with the highest prevalence of obesity and recently declared a national epidemic of diabetes. Healthy food environments have the potential to improve the diet of the population and decrease the burden of disease. The aim of the study was to assess the efforts of the Mexican Government towards creating healthier food environments using the Healthy Food Environment Policy Index (Food-EPI). The tool was developed by the International Network for Food and Obesity/Non-communicable Diseases Research, Monitoring and Action Support (INFORMAS). Then, it was adapted to the Latin-American context and assessed the components of policy and infrastructure support. Actors from academia, civil society, government, and food industry assessed the level of implementation of food policies compared with international best practices. Actors were classified as (1) independents from academia and civil society (n = 36), (2) government (n = 28), and (3) industry (n = 6). The indicators with the highest percentage of implementation were those related to monitoring and intelligence. Those related to food retail were rated lowest. When stratified by type of actor, the government officials rated several indicators at a higher percentage of implementation compared with independent actors. None of the indicators were rated at high implementation. Government officials and independent actors agreed upon nine priority actions to improve the food environment in Mexico. These actions have the potential to improve government commitment and advocacy efforts to create healthier food environments.

KEYWORDS

government officials, healthy food environments, independent actors, industry representatives, non-communicable diseases, policy implementation

1 | INTRODUCTION

Mexico is facing an epidemiological and nutrition transition that has led to a high prevalence of diet-related non-communicable diseases

(NCDs).¹ In 2016, the government announced an epidemic due to the high prevalence of obesity and the high diabetes mortality rates.^{2,3}

According to the latest Mexican National Health and Nutrition Survey (2016), adult overweight and obesity reached a prevalence of 72.5%. For children from 5 to 11 years old, the combined prevalence of overweight and obesity reached 33.2%.⁴ Mexico's obesity and diabetes prevalence are among the world's highest.⁵ An estimated 75% of all

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deaths in Mexico are caused by NCDs. In terms of years of life lost, ischaemic heart disease, diabetes, and chronic kidney disease were the highest ranking causes⁵ in both 2010 and 2016. Overall, risk factors that contribute the most to the burden of disease in Mexico are high body mass index, high fasting plasma glucose, and dietary risks.⁶

In order to address these diet-related challenges, the Mexican government introduced some measures that are internationally recognized. For example, a 10% tax to sugar sweetened beverages (SSB) and a tax to energy-dense foods that exceed the cut-off points established by the government were introduced⁷ in 2014. This initiative made the country a global pioneer for implementing fiscal measures to address diet-related diseases.⁸⁻¹² After 2014, 20 countries and a range of cities from the United States implemented similar measures demonstrating a tipping point for the implementation of taxes on SSB to address overweight and obesity.¹³

Food environments are defined as the collective physical, economic, political, and sociocultural surroundings, opportunities, and conditions that influence people's food and beverage choices and nutritional status.^{14,15} Unhealthy food environments foster unhealthy diets¹⁶ through the widespread availability of cheap, highly palatable, heavily promoted, energy-dense, and nutrient-poor foods.¹⁷

Government actions are essential to increase the healthiness of food environments and to reduce obesity, NCDs, and their related health inequalities.¹⁸ In order to support governments in their decisions to adopt policies to improve the food environment, the International Network for Food and Obesity/Non-communicable Diseases Research, Monitoring and Action Support (INFORMAS)¹⁹ has developed a Healthy Food Environment Policy Index (Food-EPI).²⁰ This is an international standardized tool which comprises a policy component with seven domains on specific aspects of food environments and an infrastructure support component with six domains to strengthen infrastructure support systems to prevent obesity and NCDs.²⁰

As shown in Figure 1, the policy component of the Food-EPI tool includes seven domains related to food environment policies: (1) composition, (2) labelling, (3) promotion, (4) provision, (5) retail, (6) prices, and (7) trade and investment. And the infrastructure domain includes six domains related to infrastructure support: (1) leadership, (2) governance, (3) monitoring and intelligence, (4) funding and resources, (5) platforms for interaction, and (6) health-in-all policies. Such domains include a set of indicators to assess the level of implementation of the Mexican food environment.

In order to accelerate the implementation of policies that improve the healthiness of food environments, a broader set of indicators

adapted to the Mexican and Latin-American context, focusing on public and private sector policies, was needed.²¹ The aim of this paper was to evaluate the current efforts of the Mexican Government towards creating healthier food environments, using the Food-EPI tool and process. First, the level of implementation of food environment policies and infrastructure support with reference to international best practices was determined, and second, key actions to create healthier food environments were prioritized.²⁰ Compared with other countries where the Food-EPI has already been applied,^{22,23} Mexico did not only include independent actors in the process of applying the Food-EPI but also included government and industry stakeholders (although the latter group was not involved to determine the consensus recommendations). Government and industry were included because they are the ones who create and implement public policies and regulations, respectively.

2 | METHODS

The Food-EPI was conducted in Mexico in eight key steps (Figure 2) (11): (1) adaptation of the tool and process to the Mexican context, (2) comprehensive review of the implementation of food environment-related public policies in Mexico, (3) validation of this evidence by government officials, experts from academia, and civil society actors, (4) identification of the international best practice exemplars ("benchmarks") for evaluation, (5) development of a website and electronic questionnaire, (6) an online rating process to assess the level of implementation of government policies and actions compared with the benchmarks, (7) face-to-face identification and prioritization of actions in workshops with the different actors, and (8) consensus meeting with academia experts, civil society actors, and government officials.

3 | ETHICAL CONSIDERATIONS

The present study was reviewed and approved by the Research, Ethics, and Biosafety committees of the Mexican National Institute of Public Health (INSP, Spanish acronym) approval number 1266. The participants signed an informed consent form before answering the questionnaire and/or participation in the workshop(s). Data confidentiality was ensured; only the researchers handled names and institutions of participants. Participants were asked to approve whether their name or institution could appear in the technical reports.

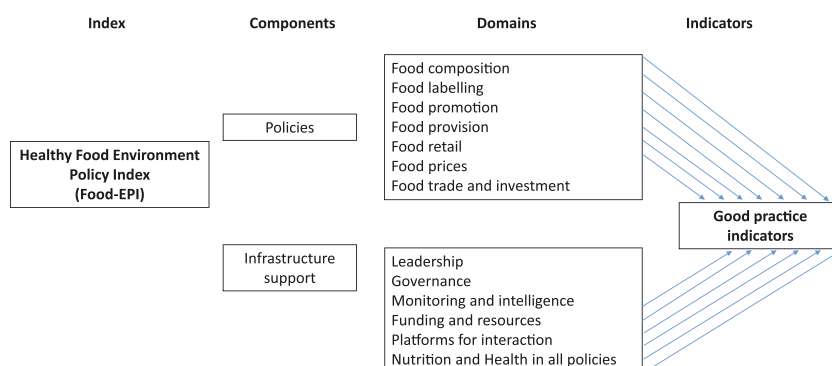


FIGURE 1 Components and domains of the healthy food environment policy index (adapted from Swinburn et al²⁰)

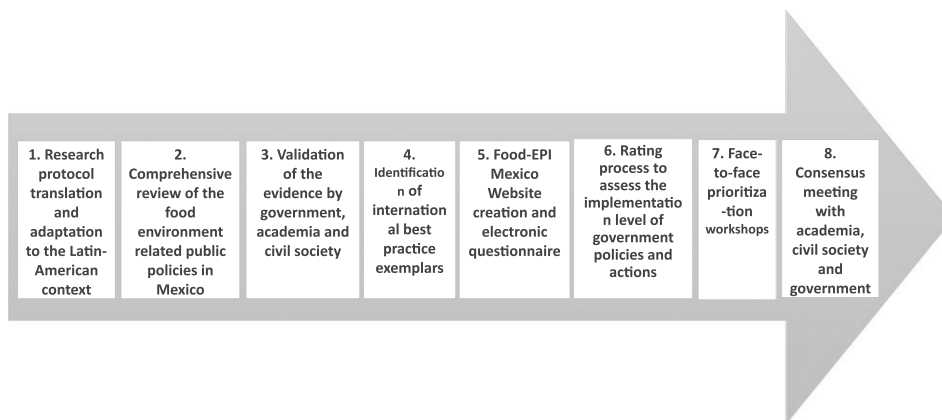


FIGURE 2 The process for assessing the implementation of food environment policies and infrastructure support in Mexico (adapted from Swinburn et al²⁰)

3.1 | Adaptation of the Food-EPI tool and process to the Latin-American context

The indicators and methodology of the INFORMAS Food-EPI tool²⁰ were translated from English to Spanish. The translations were made independently by one researcher of the Mexican National Institute of Public Health and by one professional translator. Both translations were checked for accuracy between them. The adaption of tool was undertaken in a consensus meeting with four international experts from the INFORMAS network. Since there were no indicators that capture specific items of the Mexican and Latin-American context, new indicators were developed (Appendix S1). For example, indicators about the current front of package labelling implemented in Mexico and indicators that explore if drinking water was available for free. The indicator about the drinking water availability was needed because unlike developed countries in which INFORMAS was created, Mexico's population does not have access to free drinking water. Indicators PROMO3.2, PROV5.2, and MONIT5.1 to MONIT5.6 were adapted (to capture if the action was undertaken outside a specific location), for example, outside public schools. In addition, questions were included to evaluate the experts' perceived effectiveness of these Food-EPI good practice policies (EFFECT1 to EFFECT8). As a result, the Latin-American tool shared several indicators; nevertheless, each country (Mexico, Chile, and Guatemala) decided which indicators will remain in each tool. The complete Mexican tool comprised 64 indicators and eight perceived effectiveness questions.

3.2 | Comprehensive review of the extent of implementation of food environment-related public policies in Mexico

For all 64 good practice indicators, evidence for the extent of implementation of policies, regulations, laws, and actions to improve food environments by the Mexican Government were collected for the period December of 2012 to December 2016 from government websites, NGOs websites, academic and nonacademic search engines, and online versions of Mexican newspapers. The inclusion criteria of the comprehensive review were the following: Papers or documents could be either

in Spanish or English; all documents should be implemented at that time in Mexico (locally or nationally). The databases used to conduct the review were PubMed and Ebsco. We also looked in the Federation's Official Diary. The search strategy was conducted with the same inclusion criteria. Two independent researchers looked for the evidence based on their area of expertise that could be Public Health Nutrition or Public Policy. Additionally, official information requests were submitted to maximize identification of all government actions. This evidence review was presented in Spanish (Appendix S2) on the Food-EPI Mexico website for the experts to review prior to the rating process. For each indicator, the following information were included: current regulation, evidence of implementation, and international best practices.

3.3 | Validation of evidence by government officials, academia experts, and civil society actors

There was regular communication with the General Direction of Health Promotion of the Ministry of Health and the General Direction of International Commerce Rules of the Ministry of Economy at their respective premises. Furthermore, the General Direction of the Project of Integration and Development of the Mexican Agency for International Development Cooperation, the Health and Nutrition Research Center of the INSP, a consumer's civil society organization, and a renowned expert in public policy design and implementation from academia were consulted. Specialized personnel belonging to each of these government agencies, institutions, and NGOs reviewed the evidence drafts, without necessarily representing an institutional view. The collection, writing, review, and validation process took place from May to November 2016. Specialists from other government agencies were contacted but declined to participate. The following agencies were unable to participate: the General Direction of International Affairs of the Federal Commission for the Protection against Sanitary Risks (COFEPRIS, Spanish acronym) and two areas from the National Service of Agri-food Health, Safety and Quality (SENASICA, Spanish acronym). Once the evidence document was distributed to government officials from specialized areas, academia experts and civil society actors were also consulted on completeness and accuracy of

the evidence document. Such actors checked the evidence document and complement with other regulations that they were aware of and were not included in the document. The process consisted of face-to-face meetings with actors who validated the information. Three researchers visited the actors and were in charge of including the evidence provided. Actors were consulted because of their expertise and their job positions; therefore, they were expected to have information about certain indicators and be influenced by their institutional views.

3.4 | Identification of international best practice exemplars (“benchmarks”)

Examples of best practices (ie, exemplar policies implemented in other countries) to be used as benchmarks in the present study were identified for each Food-EPI good practice indicator within each domain.²⁴ These benchmarks were compiled by the INFORMAS Secretariat using the international food policy actions database, NOURISHING, developed by the World Cancer Research Fund.²⁵ International experts on food, public health, and nutrition, which included examples from Latin America. Finally, the obtained exemplars were revised through a weeklong consultation process with international experts from New Zealand, Guatemala, Chile, and Mexico.

3.5 | Development of a website and electronic questionnaire

In Mexico, a website was created by the INSP information technology team to conduct the Food-EPI ratings. The website included five sections: “About the study,” “Methodology,” “Instructions” (registration, informed consent, and questionnaire), “Evidence,” and “Contact.” The “About the study” section included a short video introducing the participants to the exercise. The “Methodology” section mentioned the Food-EPI domains and explained how to perform the evaluation. The “Instructions” section included the online registration and an explanation of the process of the exercise. The “Evidence” section provided evidence and benchmarks. The “Contact” section contained names, phone numbers, and emails in case the participants needed further information.

3.5.1 | Security and functionality

The online registration was only made available to institutional emails. After registration, a personal password was sent to ensure that only the selected expert answered the questionnaire.

3.5.2 | Pilot test

The adapted online questionnaire and evidence document were pilot tested with five junior researchers from INSP. The participants provided feedback on the comprehensiveness of the questionnaire instructions and made comments about the evidence document. All their comments and feedback were assessed and integrated to the Food-EPI final tool.

3.5.3 | Participants' selection

Before answering the questionnaire, participants self-reported their institution and job position. Participants were contacted only through their institution email and through their job's phone number. The inclusion criteria to select participants were being older than 18 years, accept to answer the questionnaire, attend to at least one meeting, and being working in the declared job position. Participants who were academics and play a role in the food industry were excluded.

Actors from academia were selected and invited to participate based on their certifications, experience, and contributions to the field of food, nutrition policy, and public health in Mexico. They were identified using the network of expertise of the National Institute of Public Health and the list of Certified Nutrition Schools of Mexico. Actors from civil society were contacted using the *Alianza por la Salud Alimentaria* network. Both actors were classified as independents according to their job position and institution. They are known to be independent because their funding comes from universities and other philanthropic organizations interested in population health.

Legislators deeply involved in food policy initiatives and decisions were invited. To integrate the industry sector, member actors of the Mexican Observatory of Non-Communicable Diseases (OMENT, Spanish acronym) Advisory Council were invited. The OMENT was created in the past administration (2012-2018) and included a number of participants representing the food and beverage industry. OMENT includes the three biggest food and beverages councils, such as CONMEXICO, CONCAMIN, and CANACINTRA. They are representative of the largest food manufacturers in Mexico.²⁶ Results were stratified by groups of actors because their job affiliations might have played a role when answering the questionnaire.

3.6 | Online rating process to assess level of implementation of government policies and actions compared with best practices

The rating was electronically performed by selected actors for all Food-EPI indicators and perceived effectiveness questions. The online questionnaire was open from November to December of 2016 for raters to evaluate. The questionnaire had the option of responding each section (ie, Food-EPI domain) separately. Sections could be saved before submitting the completed questionnaire. In the online system, the evidence of implementation for each indicator and the relevant benchmarks were available at all times in pop-up windows for participants to use while rating. The raters evaluated the current level of policy implementation for all of the indicators in Mexico against international best practices or benchmarks using a Likert scale (0 = not implemented, 1 = less than 20% implemented compared with best practice, 2 = 20%-40% implemented, 3 = 40%-60% implemented, 4 = 60%-80% implemented, and 5 = 80%-100% implemented compared with best practice).

3.6.1 | Data coding

All answers from participants were hosted in the webpage developed for the Food-EPI Mexico. Answers were checked against the original

individual questionnaire. The database was downloaded into an excel spreadsheet and then imported to STATA to run the analysis.

3.7 | Face-to-face prioritization workshops with participants of the assessment

The prioritization of indicators consisted of three separate workshops per group of raters: (1) independent, (2) government, and (3) industry. In these workshops, results on the rating exercise were presented, and implementation gaps for policies were identified. Each group of experts was shown the indicators with the highest and lowest scores. Legislators could not participate during the independent's workshop due to their job's agenda in the senator's chamber. After discussion groups, experts were given five stickers. Each expert was allowed to vote for his or her five most important indicators. Votes were cast by placing a sticker on the indicator's poster. The indicators with the highest number of votes were identified as priorities. After the indicators were defined as priorities, actions were proposed for each indicator.

3.8 | Consensus meetings with academia experts, civil society, and government officials

The consensus meeting consisted of presenting the prioritization workshop results. Only independents and government were invited to participate to maintain consistence with the international protocol which does not include industry. Responses from industry representatives were analyzed separately. External facilitators conducted the consensus meeting.

All the participants were divided into four teams, ensuring that each team included at least one member from academia, one from civil society, and one from government. Teams held discussion rounds on the priority actions based on the initial presentation of results. The objective of the discussion was to select five priority indicators per team. A representative of each team presented on the relevance of the selected indicators. After all the presentations, common priority indicators among groups were identified, and a total of 10 indicators were selected and written on individual posters. Those selected indicators were recorded.

4 | DATA ANALYSIS

The mean scores of the extent of implementation for each of the indicators were categorized in four implementation categories: high (>75% implemented compared with best practice), medium (51%-75% implemented), low (26%-50% implemented), and very little if any (<25% implemented compared with best practice). These were calculated overall and for each stakeholder group separately. The interrater reliability (ie, level of agreement) for each of the stakeholder groups (independent experts, government, and industry) was calculated using Gwet AC2 statistic using the Agreestat software (Agreestat 2013.1, Advanced Analytics, Gaithersburg, United States of America). Test of proportions was used to test the difference in proportions for the indicator front of package easy to comprehend using Stata version 14.1 (College Station, Texas).

5 | RESULTS

The electronic invitation was sent to 223 experts of food, public health, and nutrition around the country. Of those experts, 87 registered, and 70 completed the electronic questionnaire. Participants were classified according to their institution: (1) independents ($n = 36$), (2) government ($n = 28$), and (3) industry ($n = 6$). From the independent respondents, 20 participants were researchers at universities or research centres, 13 represented the major health, nutrition, agriculture, and transparency non-governmental organizations, 3 were senators, 28 were government officials from the Ministry of Health and the Government Program of Food and Physical Activity, and 6 were from food and industry chambers front groups and enterprises such as Nestlé and Danone. Raters of all sectors ($n = 64$), except industry, were grouped together to calculate the overall interrater reliability, which was 0.32 (95% CI, 0.23-0.40; percentage agreement 83%). Interrater reliabilities were also calculated separately for all groups: (1) independent raters 0.62 (95% CI, 0.55-0.68; percentage agreement 89%), (2) government raters 0.31 (95% CI, 0.24-0.37; percentage agreement 84%), and (3) industry raters 0.29 (95% CI, 0.14-0.43; percentage agreement 80%).

5.1 | Level of implementation of food environment policies in Mexico

The level of implementation of the good practice indicators compared with international best practice, as assessed by independent and government expert groups, excluding industry, ($n = 64$) is presented in Figure 3. The level of implementation was medium for several domains; nevertheless, none of them scored a high level of implementation. The domains mostly rated at medium level of implementation were governance and monitoring and intelligence (51%-75% implementation level). The indicators with the highest percentage of implementation were monitoring of overweight and obesity in children and adults (74.8%), monitoring of risk factors and measures of frequency of obesity and NCDs (71.4%), and monitoring of the nutritional status of children and adults (68%). The level of implementation was lowest for evaluation and monitoring of the food retail policies (10%), restricting the density of fast food restaurants and convenience stores (9.2%), and incentives to increase the availability of healthy foods in stores (7.2%).

Figure 4 compares the level of implementation among groups of raters, independent ($n = 36$), government ($n = 28$), and industry ($n = 6$) actors. In general, ratings by the independent and the industry representative groups were lower compared with those from the government sector. All groups gave higher scores to the infrastructure support domains than to the policy domains.

Independent experts rated the implementation of 27 out of 64 indicators as very low if any. Government officials rated implementation of 8 indicators as very low if any, and 24 indicators were rated as very low by industry representatives. Independent actors and industry representatives rated none of the 64 indicators at high implementation, while government officials rated 12 indicators at high implementation compared with best practice.

Level of implementation of indicators against best international practices (n=64).		VERY LOW (<25%)	LOW (26-50%)	MEDIUM (51-75%)	HIGH (>75%)
Food composition	COMP1: Standards for regulating the content of nutrients of concern in processed foods COMP2: Standards for regulating the content of nutrients of concern in restaurants MONIT5.1: Evaluation and monitoring of food composition regulations				
Food labelling	LABEL1: List of ingredients/nutrient declarations LABEL2: Regulatory systems to ensure that the front of package is truthful LABEL3: Front of package easy to comprehend LABEL4: Food labelling in the menus and boards of fast food restaurants LABEL5: Mexican logo "sello nutrimental" in line with other policies MONIT5.2: Evaluation and monitoring of the food labelling regulations				
Food promotion	PROMO1: Restriction of advertising to children in TV, radio and cinema PROMO2: Restriction of advertising to children in digital media and food packaging PROMO3.1: Restriction of unhealthy food promotion inside schools PROMO3.2: Restriction of unhealthy food promotion in places where children gather PROMO4: Criteria for promotion and advertising harmonized with other policies in the country MONIT5.3: Evaluation and monitoring of the food promotion regulations				
Food price	PRICES1: Incentives to keep healthy food prices low PRICES2: Taxes in unhealthy food and beverages PRICES3: Subsidies that favour healthy foods PRICES4: Social programs that promote subsidies to healthy foods PRICES5: Criteria about healthy food is in line with other policies MONIT5.4: Evaluation and monitoring of the food price regulations				
Food provision	PROV1: Provision and promotion of healthy foods in schools and child care centres PROV2: Provision and promotion of healthy foods in public institutions PROV3: Government support and training systems for food suppliers in schools and public institutions PROV4: Promotion of the provision and promotion of healthy food at work PROV5.1: Free drinking water provision in schools PROV5.2: Free drinking water provision in public spaces PROV6: The criteria of provision is in line with other policies MONIT5.5: Evaluation and monitoring of the food provision policies				
Food retail	RETAIL1: Density of fast food restaurants and convenience stores RETAIL2: Incentives to increase points of sale of fresh foods (fruits and vegetables) RETAIL3: Incentives to increase the offer of healthy foods in stores RETAIL4: Incentives to restaurants to increase the offer of healthy foods MONIT5.6: Evaluation and monitoring of the food retail policies				
Food trade and investment	TRADE1: Risk assessment of commercial agreements TRADE2: Protection to the regulatory capacity in health and nutrition				
Leadership	LEAD1: Presidential support for the nutrition of the population LEAD2: Population intake targets established LEAD3: Implementation of dietary guidelines LEAD4: National strategy to improve food environments and reduce NCDs LEAD5: Reduction of nutrition-related inequalities LEAD6: Political support from deputies to improve food environments and reduce NCDs LEAD7: Political support from senators to improve food environments and reduce NCDs				
Governance	GOVER1: Guidelines for restricting commercial influence and preventing conflict of interest GOVER2: Evidence-based food and nutrition policies GOVER3: Guidelines to ensure transparency in food and nutrition policies GOVER4: Access to public information related to food and nutrition GOVER5: Existence of governance body, with the participation of civil society				
Monitoring and intelligence	MONIT1: Monitoring the aspects that integrate the food environment MONIT2: Regular monitoring of the nutritional status of children and adults MONIT3: Monitoring of overweight and obesity in children and adults MONIT4: Monitoring of risk factors and measures of frequency of obesity and NCDs MONIT6: Monitoring the reduction of health inequalities MONIT7: National surveys used in the design and modification of policies				
Funding and resources	FUND1: Enough budget to combat and reduce obesity and NCDs FUND2: Funds for research on food environments, obesity, NCDs and their inequalities FUND3: Existence of a public institution in charge of health promotion				
Platforms for interaction	PLATF1: Intergovernmental coordination systems for creating healthy food environments PLATF2: Collaboration platforms between government and the commercial food sector for the implementation of food policies PLATF3: Collaboration platforms between government, civil society and academia for the design and discussion of food policies PLATF4: Multisectoral collaboration to generate healthy food environments				
Nutrition and Health in all policies	HIAP1: Impacts on health and nutrition considered as priorities in food policies HIAP2: Consideration of the health impacts that other non-food policies may have HIAP3: Inclusion criteria of nutrition as the axis of all policies				

FIGURE 3 Level of implementation of indicators against the best international practices (n = 64)

The following indicators of the policy component were rated the highest among policy indicators: list of ingredients/nutrient declarations ([53%] and [76.4%] among independent experts and government officials, respectively) and restriction of advertising to children in TV, radio, and cinema ([73.2%] among the industry representatives).

In the infrastructure support component, the following indicators were rated the highest among infrastructure support indicators: monitoring of overweight and obesity in children and adults (71%) by independent experts, evidence-based food and nutrition policies (90%) by government officials, and existence of governance body, with the participation of civil society (63.2%) among industry representatives.

Figure 5 shows the opposite answers from different groups of actors. Government officials rated a higher implementation level of a front of package easy to comprehend compared with independent actors. It was possible to identify different tendencies in the response of each group of raters. For example, 37% of government officials perceived that an easy to understand front of package labelling is highly implemented (ie, the Guideline Daily Amounts is currently implemented as the only FOP label in Mexico), whereas 44% of the independent experts perceived the same policy is not implemented at all (Figure 5).

5.2 | Perceived effectiveness of food environment policies

Most of the perceived effectiveness questions (5/8) were rated as low, while the rest were rated as medium (3/8). Effectiveness of food composition policies (45.6%), effectiveness of food labelling policies (41.8%), effectiveness of food promotion and advertising policies (49.6%), effectiveness of food retail policies (40.8%), and effectiveness of the food trade and investment policies (39.2%) were rated low. The three indicators rated as medium were effectiveness of food price policies (56.2%), effectiveness of food provision policies (50.8%), and effectiveness of governance policies in food and nutrition (56.4%). Among groups of raters, there was no agreement on the highest or lowest for any of the eight effectiveness questions.

5.3 | Prioritized actions to improve the healthiness of food environments

From the independent actors, eight academic experts and eight actors from civil society attended the prioritization meetings. The Food-EPI indicators prioritized by the independent expert group during their workshop were the following: front of package easy to comprehend,

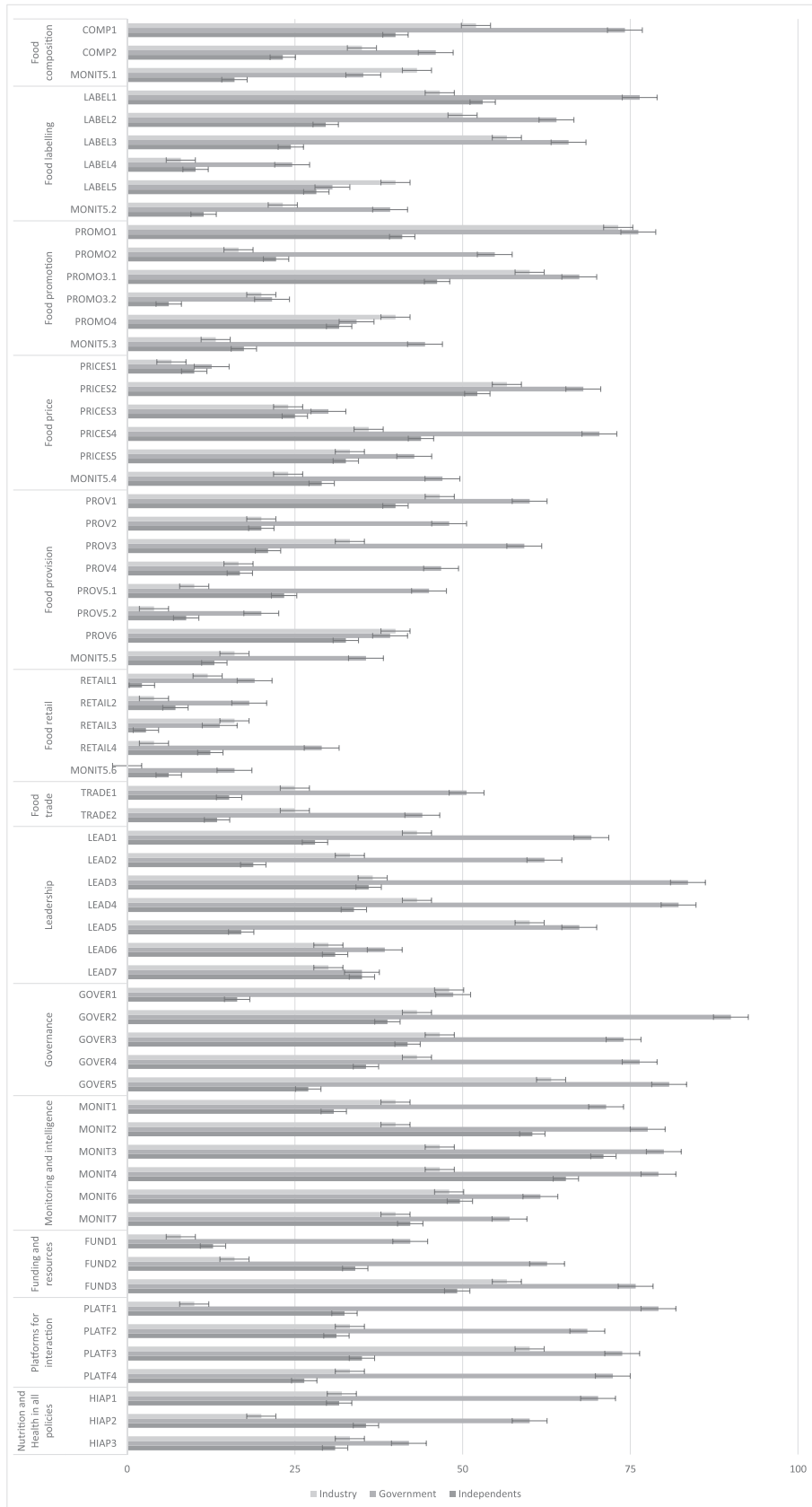


FIGURE 4 Level of implementation against international best practice by independents, government, and industry

guidelines for restricting commercial influence and preventing conflict of interest, restriction of advertising to children in digital media and food packaging, provision and promotion of healthy foods in schools and child care centres, and sufficient budget to combat and reduce

obesity and NCDs. From the government sector, 11 actors attended the prioritization meetings. The Food-EPI indicators prioritized by the government officials during their workshop group were evaluation and monitoring of the food promotion regulations, sufficient budget to

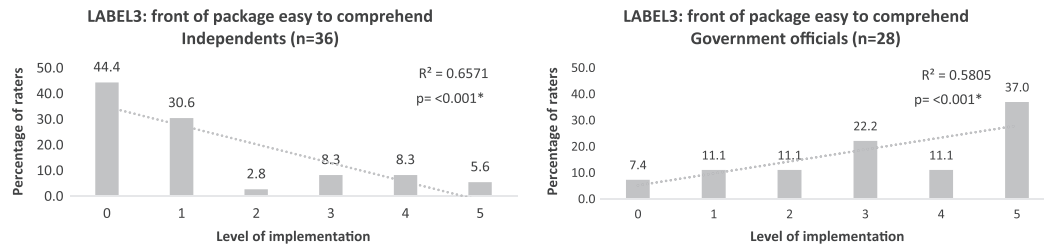


FIGURE 5 Frequency graph of independent and government raters of front of package easy to comprehend. *The highest proportions were tested against the lowest proportions ($P < 0.001$); x-axis: 0 = not implemented, 1 = less than 20% implemented compared with best practice, 2 = 20% to 40% implemented, 3 = 40% to 60% implemented, 4 = 60% to 80% implemented, and 5 = 80% to 100% implemented compared with best practice

combat and reduce obesity and NCDs, food labelling in menus and boards of fast food restaurants, protection to the regulatory capacity in health and nutrition, and incentives to increase the availability of healthy foods in stores.

Finally, from the food industry representatives, five attended the prioritization meetings. The Food-EPI indicators prioritized by the industry representatives were all the indicators of the evaluation and monitoring of food composition regulations, use of evidence in the development of food and nutrition policies, implementation of dietary guidelines, free drinking water provision in public spaces, and guidelines to ensure transparency in food and nutrition policies.

5.4 | Consensus results: Identifying concrete actions for the Mexican government

In the consensus meeting, 32 actors participated: 18 government officials, 9 academic experts, and 5 actors from civil society. Nine priority actions were agreed upon between academia experts, civil society actors, and government officials. These are concrete actions that according to the consensus, the Mexican government should implement to create a healthy food environment (Table 1).

6 | DISCUSSION

Coincidentally, this study was performed at a time when the Ministry of Health announced an epidemic of obesity and diabetes in Mexico. However, until now, a concrete response to those alerts has not been presented, which makes it urgent for the government to use evidence-based health policies. The present study found several variations in the assessment of the level of implementation of policies for creating healthy food environments by different groups of stakeholders. Variations were likely due to inherent differences between groups of raters, such as their role,^{27,28} influence,²⁹ and the conflict of interest associated to their position.^{30,31} Moreover, the self-assessment performed by the government officials might have created a bias in the results of that group of raters. For example, government officials rated the level of implementation higher compared with independents for all the indicators. The study performed in Thailand found a similar result.²³ Globally, none of the indicators scored a high level of implementation, which means there is still work to do to strengthen public policies related to the creation of healthy food environments. This information is also consistent with several studies³²⁻³⁴ that measured

TABLE 1 Agreed actions during the consensus meeting to improve healthy food environments

Indicator	Consensus Actions
Front of package easy to comprehend	<ol style="list-style-type: none"> Propose modifications to the current front of package labelling responding to the characteristics of the Mexican population. Implement promotion and education campaigns of the new front of package labelling
Incentives to increase the offer of healthy food in stores	<ol style="list-style-type: none"> Strengthen of the production chains that eliminate or reduce intermediation Design a fiscal incentive mechanism and subsidies to third actors so they can offer healthy food
Guidelines for restricting commercial influence and preventing conflict of interest	<ol style="list-style-type: none"> Make mandatory the declaration of interest for the participants involved in the design of nutrition and food environment policies Create a governance committee to ensure the genuine interest on health and nutrition of every participant involved in the design of nutrition and food environment policies
Enough budget to combat and reduce obesity and NCDs	<ol style="list-style-type: none"> Allocate the collected resources from junk food and soda taxes for the promotion of the population's nutrition and the creation of healthy food environments Formulate an integral budget based on evidence generated from multidisciplinary groups
Provision and promotion of healthy foods in schools and child care centres	<ol style="list-style-type: none"> Create a legislative document that regulates and specifies the offer and availability of healthy foods and limits high-calorie foods through monitoring and sanctions

different aspects of the food environment. Specifically, the Mexican tax implemented on SSB was not rated high because most of the independent actors believe that the tax should be at least 20% instead of 10%, as the international evidence dictates. The government from 2012 to 2018 administration promised that the revenues from SSB taxes would be invested in water fountains in schools. Nevertheless, the revenue of the tax is not ring fenced and citizens cannot track the investment into water fountains in schools. The promised goal of

installing water fountains in public elementary schools was not accomplished during the administration of 2012 to 2018.³⁵

It is worth mentioning that the sensitive political context of food environment policies might have played a relevant role in the way each group of participants rated the indicators. It has been documented interference in the public policies and conflict of interest from some parties related.³⁶⁻³⁸ In Mexico, there has been a long frontal battle between civil society, government, and food industry in the implementation of policies to prevent and combat NCDs. For example, the food industry pushbacks against policies such as the SSB, and junk food tax and the School Food Guidelines implemented in 2014 have been documented.^{5,39} This particular context might have been reflected in the critical ratings of the civil society participants. Furthermore, the lack of harmonization between interests of different groups and public health objectives has been documented.⁵

Academia, civil society, legislators, government, and industry actors have an important role in the creation of healthy food environments.⁴⁰ Nevertheless, the food industry might have conflicts of interest that should limit their participation in decision making.^{36,37} A continuous dialogue among all actors that include industry representatives is desirable.

Our analysis showed that government officials consider the current food labelling (GDA-FOPL) easy to comprehend; nevertheless, evidence shows that the population does not use labelling in their purchasing decision.^{41,42} For example, in the Mexican National Health and Nutrition Survey Survey of 2016, only 41% declared they use the labelling.⁴² Also, there is evidence that other types of labels could be more effective.^{43,44}

7 | LIMITATIONS OF THE STUDY

Participants around the nation were identified using a network of expertise; thus, the sample was not representative. Although, experts from different geographical locations in the country were invited. Some of them were unable to participate. During the online assessment, the number of registered participants were 87. Of these, 70 participants fully responded the questionnaire. The 17 participants who did not answer the questionnaire were from the three sectors and were equally representative of the regions of the country. The lack of time was a constraint for participants to be able to respond and to attend the consequent meetings (prioritization and consensus). Some of the participants complained about the length of the questionnaire; this issue might have affected the responses due to fatigue or reduced time to answer. Moreover, the study took place during an intensive legislative term that made legislators quit their participation. Additionally, other comments from participants were that some of the indicators tried to address several variables; such indicators were reported to be hard to assess. It is also important to consider possible information bias due to inherent conflict of interests from the industry representatives. Civil society is known for advocating for the creation and modification of policies according to their civic interest,⁴⁵ and government officials were rating their own performance. The interrater reliability among government officials and industry representatives was low; this might have been caused by diverse opinions

between them, their different job positions, and its inherent perspectives. The only group that scored a high IRR was the independent group, who have demonstrated in the past a common background in making evidence-based recommendations.

The present study only validated evidence with federal representatives of the government; therefore, some of the policies implemented in state and local areas might have been excluded from the study. The researchers assumed that all the participants read the materials prior to rating online. However, as they answered remotely, it was impossible to control the quality with which the materials were reviewed. Participants might have been influenced by other factors, such as availability and assumption of deep knowledge on the topics evaluated. All these factors might have influenced the variability of the ratings. Additionally, it might be effective to identify the interests and needs of each group of actors prior to the exercise. To do this, a stakeholder analysis that permits a better policy formulation and legitimization phase of the policy process should be developed for future exercises.⁴⁶

8 | STRENGTHS OF THE STUDY

The use of the INFORMAS Food-EPI tool might help gain attention to the obesity problematic in the country. The adaptation of this tool permits to assess the level of implementation of the food environment; therefore, the results could have a positive impact among different stakeholders. The adaptation of the tool to the Mexican context included new indicators. Moreover, the Food-EPI process included several innovations, like (1) the inclusion of government and industry actors, (2) the creation of an online system that included all the steps of the study, (3) a modified Likert scale that included the option of "x = not implemented," (4) the creation of a consensus workshop as the last step of the study, and (5) the inclusion of the food industry. Some indicators were designed to measure the perceived effectiveness of current policies, and some indicators measured unexplored themes in the original protocol, like drinking water availability, which continues to be an issue in Mexico, unlike developed countries that do not face this problem.

The Mexican Food-EPI included new relevant actors, such as government officials, legislators, and representatives from the food industry. For example, the legislators that participated were members of the Commission on Health, Social Development, and Finance that gained notoriety since the implementation of the taxes on SSB and energy-dense nonessential foods approved in January of 2014. Additionally, high profile food industry representatives accepted to participate. They were interested in giving their opinions of the public health problem they have been criticized for, especially for interfere in the policy making. Surprisingly, the industry results showed that their ratings of the level of implementation of healthy food environment policies were mostly critical and often differed from the government's self-assessment. Although, they have consistently opposed all policy attempts and have interfered in policy making.³⁸ The inclusion of these two groups of raters was an experimental attempt to reflect on both the importance and the risk of having multistakeholder platforms for decision making.

Consensus meetings created a neutral space for traditionally opposing actors to have a dialogue and seek common interest. Other strengths of the present study were the innovations mentioned in the above sections. This is the first time that this study was undertaken in the country. Several ways to improve the exercise in future assessments have been identified. One way could be to utilize a voting software to perform the prioritization and consensus of indicators. Also, it would have been ideal to perform the Food-EPI in different regions of the country or may be to fly in more actors from other regions. This assessment provides new information to evaluate the food policy environment in Mexico and could enable national and international benchmarking and comparisons of public sector policies. It is expected that this will be an instrument to complement and facilitate future government decisions and policies to create a healthy food environment that will help to reduce obesity, diabetes, NCDs, and their related inequalities.

None of the indicators were rated at a high implementation level, and most were rated low. Government officials rated implementation at a higher level compared with independent actors. In the prioritization, we observed similar results between different groups of actors, who decided upon the same actions to create healthier food environments in Mexico. Moreover, during the consensus meeting, actors easily agreed on actions focused on transversal engagements that promoted health in all policies.

9 | CONCLUSION

Since the tool was adapted, other Latin-American countries have the possibility of assess the level of implementation of their own food environment. In the Mexican Food-EPI, the level of implementation of the food environment was rated medium, low, or very low; but none of the indicators were rated high by any group of actors. After the consensus meeting, government officials and independent actors agreed upon nine priority actions to improve the food environment in Mexico. These actions have the potential to improve government commitment and advocacy efforts to create healthier food environments for Mexico.

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CONFLICT OF INTEREST

The authors have no conflict of interests to report.

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SUPPORTING INFORMATION

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