

THE ROLE OF MESOINSTITUTIONS ON FRONTAL NUTRITIONAL LABELLING POLICY-MAKING PROCESS: AN EXPLORATORY STUDY IN BRAZIL, CHILE, AND MEXICO

Key Words: frontal nutritional labelling; policy-making process; Latin America

1. Introduction

Obesity is an issue of public health, since excess body fat is directly associated with health problems. According to the Regional Overview of Food Security and Nutrition in Latin America and the Caribbean 2020, obesity rates reach 24% of the population of the continent, almost double the global level, which is 13.2%. Inadequate diets are one of the main causes. Together to the increase of obesity rates, the production and consumption of industrialized food and drink products raised by 48% in volume in Latin America between 2000 and 2013. Brazil, Chile, and Mexico are examples of the fast growth of retail sales of those products (Moubarac et al., 2015).

Consumers' food choices are many and complex, and are determined by the interaction of biological, cultural, social and economic processes (Campos et al., 2011; Gedrich, 2003), as well as by the availability of clear and understandable information on the food quality and composition. This information is not symmetric among the supply chain agents. The information is costly and incomplete, and so consumers are not able to evaluate most of food attributes before its consumption, unless they are explicitly signaled on the label. In some cases, this evaluation is not possible even after consumption. This is the case of food products components such as the amount of sugar, fats and sodium. The consumers are incapable to measure these attributes and to link their consumption to obesity and the associated health problems in short term. When transactions are characterized by asymmetry of information, strategies such as signaling in labels are strongly recommended (Barzel, 1982; Foss, 1996; Raynaud, Sauvee e Valceschini, 2005; Vapnek & Spreij, 2005). The asymmetry of information gives raise to market failures, and when it is connected to an issue of health public, the State should take part through public policies (FARINA; AZEVEDO; SAES, 1997).

Effective food policy actions are those that lead to positive changes in the food system and in the behavioral and information environments (Hawkes, et al., 2015). One food policy stressed by the World Health Organization (WHO) is the frontal nutritional labelling (FNL) as a strategy to make nutrition labels more understandable and inclusive. It intends that people with less education can identify key nutritional information swiftly and easily (Lundeberg et al., 2018; Wartella et al., 2011) and realize the nutritional limits for sugar, sodium, and fat above which they are not recommended for a healthy and nutritious diet (Goyena & Fallis, 2019; Wartella et al., 2011). Consumers can make more conscious choices and, thus, reduce obesity and other health problems.

Several countries in Latin America have already implemented FNL regulations, such as Chile, Peru, Uruguay, and most recently, Mexico, and Brazil (Ares et al., 2020). In turn, countries like Colombia and Guatemala are in the process of legislative discussion (PAHO,

2020). The FNL requires the categorization of food according to its nutritional composition by using criteria defined by each country through its institutions.

Institutions are the rules of the game (North, 1990). They define the rights of economic agents to perform certain actions (Coase, 1959). They are enforced by law and, in some circumstances, by society's shared norms (Ménard and Shirley, 2014). Under positive transaction cost, such as the great measurement cost of food products attributes, they are quite important to define the rules to minimize the asymmetry of information among the agents and to reduce the search and measurement cost on nutritional information by consumers. Thus, in addition to individual experience, the institutions influence the people's choices and behavior. However, Ménard et al. (2018) argue the laws established at macro-level are not spontaneously implemented, managed, enforced and complied with by stakeholders at the micro-level.

Just as contracts are incomplete, requiring interpretations and adaptations to the changing environment, the rules that frame social interactions, including market transactions, are also incomplete, requiring translations of norms to specific contexts. The laws have to be interpreted by devices (entities) and operationalized by mechanisms (procedures) developed at the intermediate level. Based on Ostrom approach (2005), Ménard (2018) proposes a general institutional framework that comprises three layers of analysis: macro-institutions where the general rules are defined and the rights established; the meso-institutions where the specific rules (embedded in the general rules) are delineated, and; the micro-institutions, at which transactions actually take place (the organizational level), where the food consumers and industry play action. Meso-institutions work as bridge between general rules at macro-level and the agents operating within these rules at micro-level. In doing so, entities interact at intermediate level to translate, adapt, and allocate rights, as well as to enforce and monitor the rules at micro level. Gaps at this intermediate level hamper policy implementation and performance (Vinholis et al., 2021).

States are responsible for defining their own macro-institutions for the implementation of FNL. However, the effectiveness of these macro-institutions depend on the implementation of good meso-institutions (Menard et al., 2020). Defining the FNL specific rules is a long and complex process, which demands dialogue among several stakeholders, such as international organizations, the food industry, consumer associations (Wartella et al., 2011; Ares et al., 2020) and policymakers. The paper aims at evaluating the meso-institutions shaping arenas for policy-making on the FNL in three Latin America countries: Brazil, Chile and Mexico, through a comparative analysis considering the devices and mechanisms for the thresholds on food nutrients marketing restrictions and timeframe for completion. We paid special attention to the phase of definition of specific rules (or translating the general rule into specific regulations), since the institutional environment for FNL is recent and the implementation process is in course. The countries were chosen considering the timing of implementation of the frontal labelling regulation and its population size, which together represent around 60% of the Latin American population. The literature on institutions stressed the importance on macro-institutions (North, 1981, 1990, Acemoglu and Robinson, 2012, and Acemoglu et al., 2005) and micro-institutions, but the transmission mechanisms at intermediate level are still poorly understood. Studying the policy-making process at intermediate level on the FNL is important to highlight mesoinstitutions phenomenon, as well as to support the design and improvements on food policies.

2. Methodology

The literature research focused on public documents, such as decrees, policies, and official websites, as well as scientific literature. In addition, in-depth interviews (Kahle & Malhotra, 1994) guided by a questionnaire were conducted in the three countries (Brazil, Chile and Mexico), with experts and professionals involved in the frontal labelling implementation process and experts on the topic.

A total of 11 interviews were carried out, divided into three groups based on institutions segments: international organizations, industry, and consumer associations. They were selected considering their influence on the process of definition of FNL rules established by the federal governments of the three countries. (Table 1).

3. Results Analysis

Menard (2018) based his general institutional framework on Ostrom approach (2005), at which institutional changes are motivated by exogenous variables, such as social and economic demands. At the end of the twentieth century, food contamination events claimed for transparency and fostered the adoption of traceability, quality assurance programs, certification and food label on food supply chain (Gracia & de-Magistris, 2016).

Several countries created different food laws, considering their own needs, culture and institutional environment. As a result, food labelling becomes an official demand in most of the countries, initially informing the package size, the origin, and the nutritional facts (Campos et al., 2011). However, today there is a demand to address indirect issues on the label, such as food impacts on noncommunicable diseases (NCDs), known as chronic diseases, and other health issues. WHO pushed the debate and influenced the institutional changes on Frontal Nutritional Labelling in Latin America. Table 2 presents the institutional environment for FNL, including macro- and meso-institutions and expectations at micro-level in Brazil, Chile and Mexico.


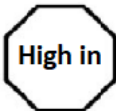
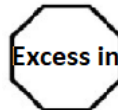
Table 1. List of interviewers.

Interview number	Sector	Institution	Position	Location	Interview length
1	International Organization	SID	Senior official representative	N/A	41min
2	Private Sector	UNICA	Senior official representative	Brazil	41min
3	International Organization	N/A	Independent Researcher on Food Labelling	N/A	62min
4	Consumers	IDEC	Official Representative	Brazil	33min
5	Consumers	CONADECUS	Official Representative	Chile	29min
6	Consumers	<i>El Poder del Consumidor</i>	Official Representative	Mexico	37min
7	International Organization	WHO	Senior official representative	N/A	24min
8	Consumers	<i>El Poder del Consumidor</i>	Official Representative	Mexico	33min
9	Private Sector	N/A	Food Labelling Consultant for the Industry Sector	Mexico	In writing
10	International Organization	N/A	Independent Researcher on Food Safety	N/A	30min
11	Private Sector	Dairy Industry Sector	Official Representative	Chile	In writing

Note: CONADECUS (The National Consumers and Users Corporation) is a civil association with a focus on consumer protection. El Poder del Consumidor also represents consumers in various civil society councils. It is a civil association formed by citizens concerned with defending their rights as consumers established in the laws of Mexico. SID (Society for International Development). UNICA (União da Indústria de Cana-de-Açúcar). IDEC: Instituto Brasileiro de Defesa do Consumidor. WHO (World Health Organization). N/A: Not applicable.

Table 2. Institutional environment for FNL in Brazil, Chile and Mexico.

Global Institution (World Health Organization)			
Frontal Nutritional Labelling (FNL)			
	BRAZIL	CHILE	MEXICO
Macro-Institutions (general rules)			
	National Food and Nutrition Policy	Food Law	General Health Law
Meso-institutions (specific rules)			
Public Devices	National Health Surveillance Agency (ANVISA)	Ministry of Health (MINSA)	Federal Committee for Protection against Sanitary Risks (COFEPRIS)
Description	Regulatory agency linked to the Ministry of Health. Its main function is to promote the health of the population, acting in the sanitary control of several products, such as medicines, food, and cosmetics.	Government institution that develops and controls health systems centered on people, strengthening the factors that can affect the health and management of the national health network	Government agency in charge of the national health policy and other aspects of health services, including regulating drugs and medical devices.
Functions	Establishment of thresholds and marketing restrictions; technical support, implementation and monitoring the process	Defining the limits of each critical nutrient from scientific research and disseminating the information.	To homologate criteria between the regulatory authority and the regulated parties, disclosing the standards developed and monitoring the correct implementation of this standard.
Form of interaction with stakeholders	Public consultation	Public consultation	Public consultation
Stakeholder - Consumer	IDEC	CONADECUS	<i>El Poder del Consumidor</i>
Description	Brazilian Institute of Consumer Protection is a non-governmental organization, without government or business ties, which aims to promote education, the defense of consumer rights, and ethics in consumer relations	The National Consumers and Users Corporation is a civil association with a focus on consumer protection.	It is a civil association formed by citizens concerned with defending their rights as consumers established in the laws of Mexico
Functions	Promote and protect consumer rights, denouncing practices that violate consumer rights. Dialogue to government; consumers knowledge and empowerment on the regulation and their rights; enforcement since it advises consumers on		

	juridical processes; get survey on the consumers' needs and feedback to policy-makers. Promote sustainable consumption habits.		
Stakeholder – Industry	<i>Rede Rotulagem</i>	ABChile	CONMEXICO
Description	It is a network created as an initiative of the food and beverage production sector to defend the new nutritional labelling more informative and efficient. The Network comprise 20 entities, which represents the industrial production of food and non-alcoholic beverages in Brazil	ABChile is a union entity that brings together producers and importers of food and non-alcoholic drinks in the Chilean market.	The Mexican Council of the Consumer Products Industry groups together the leading companies in the markets for food and alcoholic and non-alcoholic beverages
Functions	Dialogue to industry and government; Advocacy of informational labels rather than warning, models. Inform the industry on the regulation; implement the regulation and get feedback to policy makers.		
Regulation (mechanisms)			
<i>Timeframe:</i> Publication date	October 8th 2020	June 26th 2015	March 27th 2020
Entry into force (Months)	24	12	6
First Phase - Starting Date	October 8th 2022	June 27th 2016	October 1st 2020
Length (Months)	Definitive	24	36
Second Phase - Starting Date	Not applicable	June 27th 2018	October 1st 2023
Length (Months)	Not applicable	12	24
Third Phase - Starting Date	Not applicable	June 27th 2019	October 1st 2025
Length (Months)	Not applicable	Definitive	Definitive
Total Length (Months)	24	48	66
<i>Signs</i>			
<i>Thresholds:</i> Added Sugar - solid	Greater than or equal to 15g/100g	Greater than or equal to 10g/100g	≥ 10% of the total energy from free sugars.
Added Sugar - liquid	Greater than or equal to 7,5g/100mL	Greater than or equal to 5g/100mL	

WHO Daily Intake Recommendation	< 10% of the total energy from free sugars		
Saturated Fats - solid	Greater than or equal to 6g/100g	Greater than or equal to 4g/100g	≥ 10% of the total energy from saturated fat
Saturated Fats - liquid	Greater than or equal to 3g/100mL	Greater than or equal to 3g/100mL	
Relation to WHO Daily Intake Recommendation	< 10% of the total energy from saturated fat		
Trans Fats - solid	Not applicable	Not applicable	≥ 1% of the total energy from trans-fat
Trans Fats - liquid	Not applicable	Not applicable	
Relation to WHO Daily Intake Recommendation	< 1% of the total energy from trans-fat		
Sodium - solid	Greater than or equal to 600mg/100g	Greater than or equal to 400mg/100g	≥ 1 mg/kcal or ≥ 300 mg
Sodium - liquid	Greater than or equal to 300mg/100mL	Greater than or equal to 100mg/100mL	No Caloric Beverages: ≥ 45 mg
Relation to WHO Daily Intake Recommendation	< 2000mg/day		
Calories - solid	Not applicable	Greater than or equal to 275 kcal/100g	≥ 275 kcal
Calories - liquid	Not applicable	Greater than or equal to 70 kcal/100ml	≥ 70 kcal or ≥ 8 kcal of free sugar
Relation to WHO Daily Intake Recommendation	Not applicable		
Marketing restrictions	Not applicable	Restriction of advertisement for children and sales in schools	Restriction of advertisement for children
Micro-institutions – Impact expectations			
Positive impact on the population diet, the reduction of public health and of asymmetry of information. But it requires complementary policies and actions to reach the potential benefits to whole society			
Difficulties in comparison between countries due to the lack of standardization on the presentation of limits			
Difficulties in monitoring due to use of percentage in presenting the limits			
Difficulty of access of marginalized population to food products with better nutritional conditions due to the lack of knowledge and financial constraints			

Regulatory complexity can also generate significant difficulties and costs for small producers

Difficulties to include the production of traditional and regional foods

Note: *High - if the stakeholder can change the agreements in the definition of specific rules during the policy making process; Moderate - if the stakeholder participates in the definition of the specific rules and the agreements are not changed during the policy making process; Low - if the stakeholder does not participate in the definition of specific rules during the policy making process.

3.1. Meso-institutions: shaping arenas for policy-making

In Brazil, the National Food and Nutrition Policy, instituted and revised by the Ministry of Health in 2013, established the FNL as an instrument to reduce obesity and chronic health problems. The National Health Surveillance Agency (ANVISA), within the scope of the National Health Surveillance Service, was responsible for regulating the FNL in Brazil. This public device has the function of establishing the specific rules for FNL, implementing and monitoring. After an extensive report on the subject, ANVISA presented a draft containing the proposal specific rules on FNL to the productive sector through the public consultation instrument. This instrument aims to receive contributions and interact with the various stakeholders at the micro level, before publication of the regulation. In Chile and Mexico, the regulation of the FNL was stimulated by political projects at the legislative level. In both countries the translation of FNL general rules into specific rules was coordinated and regulated by public devices (government entities) after the interaction with stakeholders, also under the instrument of public consultation.

In all countries, the effective participation of entities representing consumers and industry was verified in the definition of specific rules. Menard et al. (2018) highlighted that the policy-making process should be participative and inclusive. On building institutional devices, the interaction with stakeholders is essential to craft realistic and implementable policies (Menard et al., 2018), as well as to ensure legitimacy to the policy-making process (Ostrom, 2014). However, it should be paid attention to power imbalances between stakeholders (Carey et al., 2016; Wartella et al., 2011). Policymakers face challenges in choosing between conflicting policy objectives. In the case of food labelling, an example of conflict is between the need to protect health and the desire to develop the industry and the economy. For this reason, the food policy-making process must take into account all these interests and, where there are conflicts, determine preferences and assess the relationship between costs and benefits (Vapnek & Spreij, 2005).

In Brazil, the coalition “*Rede Rotulagem*” represents around 1,500 food and beverage companies and advocated the adoption of the semi-interpretative Nutritional Traffic Lights model to be the new frontal labelling. The network gained strength with the active participation of the food industry in the public consultation process established by ANVISA. The food industry supports the existence of frontal nutritional labelling and contributes for an efficient form of communication on the label. The Rede Rotulagem has a fundamental role in the generation of studies, opinion polls, and participation in the public consultations process established by ANVISA. It also has a role in influencing society and policymakers, including congress and the senate. The Rede Rotulagem has been working extensively on social media, to have a wide communication that defends the model that the industry prefers.

In Mexico, the industry played a huge influence in defining the regulation of frontal labelling. The most striking case was the official letter from a multinational company that owns 4% of the Mexican food market (Euromonitor International, 2020) to its suppliers, requiring assistance to curb the labelling proposal, which according to the company, would interfere with international trade treaties and obstacles to trade. The industry also formed coalitions with industrial chambers in Mexico, which represented not just one brand, but the entire industrial sector. The industry also acted in campaigns in communication networks, informing the population with arguments that distorted the reality of labelling, financing groups of experts to confuse the people.

In Chile, the industry was also represented by associations, highlighting the performance of AB CHILE. One month before the entry into force of the frontal labelling, AB CHILE launched a campaign on social media with celebrities, singers, and athletes, promoting digital content against the new labelling and asking for the reformulation of the law. However, the campaign was withdrawn from social networks due to strong civil society movements, which also occurred on social networks. The pressure from consumers and civil society may change the direction of a policy on food-related issues (Vapnek & Spreij, 2005).

Some of these movements of civil society mechanisms are connected to the consumer associations, as it is the CONADECUS, which represents consumers and works close to several stakeholders and media. This civil organization, which has a high level of national representation in many regions of the country, took three particular actions that strengthened the discussion of the legislation before, during and after its passage through Congress. First, it had active participation in the legislative sessions of the Health Commissions of the Senate and the Chamber of Deputies, with more than 19 interventions recorded in the proceedings. Secondly, it was the only consumer association that participated in the public consultation carried out by the Chilean Ministry of Health to develop the law's regulations. Finally, it also promoted technical seminars and alliances with parliamentarians to make political advances to approve the new regulation. Already today, CONADECUS has become a vital ad honorem overseer of the law, publishing in 2017 a nutritional surveillance report on its effective compliance and carrying out permanent health complaints before the formal oversight bodies.

In Brazil, IDEC is an organization for consumer defense and has been active since the beginning of the discussions on frontal labelling in 2014. IDEC has made technical contributions, working with specialists from Brazilian universities and international institutes, supporting ANVISA in the decision-making process. In addition, IDEC articulated with other actors in society, such as the Alliance for Healthy Eating, an association that worked to make political progress regarding the frontal labelling regulation in Congress. "IDEC sought to articulate with ANVISA, promoting a debate on labelling inside and outside the institution, in order to have public participation and a sense of urgency to move forward in this process".

In Mexico, the organization El Poder del Consumidor has acted actively in the process of this public policy. The institution participated in discussions with the government, always bringing the consumer and public health viewpoints, with much support from universities and civil society. El Poder del Consumidor acted as a counterweight to the industry's position and also played a role in influencing decision-makers, such as congressmen and legislators, informing them about the technical issues of the new labelling. In addition, the institution, together with the Alianza por la Salud Alimentaria, formed a network of more than 35 organizations that joined this effort. This network organized campaigns showing the positive impacts of frontal nutritional labelling in digital media and on billboards and transportation in major cities in Mexico.

The participation of civil society in any country is essential to press for public policies in favor of healthy food. In the case of Chile, Mexico, and Brazil, it was done through consumer associations, which worked under the recommendations of international organizations, such as PAHO, WHO, FAO, and UNICEF. International organizations also play an important role in the food policy-making process. These organizations have the role of analyzing the evidence around policy measures and providing normative guidance to

countries governments, particularly around the establishment of certain policy measures, as well as the technical support for the implementation of them. For example, WHO is developing a guiding principle for frontal labelling to explain the different schemes that have been used around the world and is developing a nutrient profile system that classifies foods with specific nutritious characteristics in different regions in the world, linked to their food systems and food products.

Besides the participation of consumer associations in the translation of general rules into specific rules, should be noticed these entities play functions of monitoring and building capacities on the FNL regulation at micro level. These entities act in order to frame the agents' behavior through devices capable to monitor the agents' conduct, to inform and to empower consumers about irregularities and to make complaints to competent channels. These civil society organizations are complementary to the public enforcement mechanisms.

Interaction and balanced dialogue within all stakeholders are essential for reaching good mechanisms (Ménard et al., 2018), adapted to each country political, cultural, economic and social conditions. As stated by Ostrom (2014), it is expected that specific rules developed with effective contributions of users achieve a higher performance rate than specific rules entirely determined by external authorities. The intermediate level, or meso-institutions (Ménard, 2018), shapes the arenas "*where individuals interact to choose some of the rules that are in effect at operational levels*" (Ostrom, 2014).

3.2. Mechanisms: differences in the FNL regulation

The adaptation of FNL regulation to the context of each country is observed in the signs used in the labels. Both Chile and Mexico apply the model of front warning labeling in the form of black octagons, indicating "high in" or "excess in" sugar, saturated fat, sodium and calories, respectively. Brazil chose the black magnifying glass. The model was considered the most suitable for the Brazilian population since it has less potential to generate a sense of fear, allowing independent and conscious choices by consumers, and has a performance similar to models adopted by other countries in terms of understanding nutritional information (ANVISA, 2019).

In all three countries, when packaged food have the original nutrients values changed by the addition of sugars, saturated fats, or sodium, it is mandatory to include a frontal warning on packaged foods that have quantities of added ingredients equal or higher than the limits defined by each country. There are different thresholds for the application of frontal labelling in each country. Mexico has the most restrictive thresholds for critical nutrients, especially regarding the sodium limit. Mexico is also the only country that requires the obligation to declare trans-fat on the frontal labelling and follows the maximum daily intake recommended by WHO. On the other hand, Brazil has less restrictive thresholds. They are greater than the ones from Chile and Mexico. The country requires the use of frontal labelling for only three parameters, while Chile requires for four and Mexico for five. Should be noticed that the choice of a certain maximum or minimum threshold must meet dietary guidelines and the recommendation on the constituents of healthy eating in the context of the country, considering the nutritional objectives for that population. Many countries have realized that there is a long way to reduce sodium, sugar, and fat. Therefore, some countries have decided to have a certain limit that is updated progressively, starting with a lower level

of ambition, but already planned to make it more rigid, getting close to the desired objective. Besides the adaptation to local context, Ostrom (2014) reminds the process of policy-making and choosing the best combination of specific rules always involves experimentation and it takes time.

The period for applying the regulation varies among the countries. Chile and Mexico defined a gradually implementation of the regulatory limits for including frontal labelling in three phases. These countries have a more extended period for implementation. The application of a staggered term is advisable to allow the food production sector to make the necessary adjustments to the formulation and labelling of its products, as well as to adapt consumer tastes to products with reduced palatability. Chile was the only country to present a gradual reduction for the four nutrients in all three phases. Mexico showed a gradual reduction only for sodium in the second phase. The third phase is limited to extending the limits to more categories of food. On the other hand, Brazil established only one phase for the implementation of FNL regulation. According to ANVISA, this avoids products with different content of critical nutrients simultaneously in the market and makes the implementation easier for the industry. Although Brazil has the shortest implementation time in months, the country has the longest period of adaptation for entry into force. Therefore, concerning the implementation deadlines, Brazil is the most flexible and Mexico the most restrictive. Differently, Mexico has the more extended period for full implementation, 66 months, while Chile has 48 months and Brazil 24 months.

Regarding the constrains on food advertisements and marketing, the Chilean regulation states that if the packaged food exceeds the limits of a critical nutrient and receives at least one black octagon, that food cannot be advertised to children or sold in schools. This measure aims to promote awareness about healthy eating for children, protecting them from excessive advertising that reinforces poor eating habits directed at them. In Mexico, the new regulation also prohibits the inclusion on the label of children's characters, animations, cartoons, celebrities, athletes, pets, interactive elements, such as visual-spatial games. As these items are aimed at children, they promote the consumption, purchase, or choice of products with an excess of critical nutrients. In addition, Mexican regulation brings two other warnings for sweeteners and caffeine. When appropriate, the producers should include the phrases “Contains caffeine avoid in children” or “Contains sweeteners – not recommended in children”. In Brazil, the FNL regulation does not include specific actions to constrain advertisements or marketing.

All three countries opened to private participation during the regulatory development process and listened to all parties involved, but each of countries gave different weight to the voices of entities and citizens during the process. Each regulation was developed in a particular context in each country, respecting their different diets, different habits, and different cultures. Despite departing from similar goals and tracing relatively similar paths in the policy-making process, the countries have reached different regulations and tends to present different long-term results preventing public health problems.

3.3. Micro-level: expectations on the FNL impact and respective policy implications

It is expected positive returns on population diet, reduction of health problems and reduction of asymmetry of information on supply chain from the application of FNL

regulation at long-term. However, there are some points of attention to reach its potential benefits to the whole society.

Some countries present the limits in the percentage of the total energy of the product, while others use g/100g. The lack of standardization challenges the comparison of food restrictiveness among countries on the same basis. In addition, the use of percentage thresholds brings challenge to implement frontal labelling, especially for small companies, which often do not have adequate regulatory support, and it can contribute to errors and makes inspection and monitoring function more difficult.

Frontal labelling is an essential tool to reduce obesity and chronic diseases, but it does not do it alone. Especially when it comes to situations of poverty, when people do not have enough knowledge to evaluate a label and the financial freedom to choose their food. There is a possibility that consumers remain more inclined to buy a product that they like and is cheap, even if it has frontal labelling. As long as the products high in sugar, sodium, and fats are present in marginalized areas and the products with better nutritional features are not promoted and more expensive, the most vulnerable population will probably continue to buy them. Additional action or complementary regulation can minimize this situation. An alternative is the link between frontal labelling and conditional cash transfer programs, already applied in some countries studied. For example, creating an additional condition that the cash transfer is used for the purchase of in-natura or minimally processed food, and that could not be used to purchase packaged food with one or more “high in” stamps.

Regulatory complexity can also generate significant difficulties and costs for small producers to enter the market, with the possible effect of further reducing the production of small producers and concentrating production even more on large companies. Frontal labelling can still make consumers even more confident in processed foods, in which they have access to exact nutritional characteristics, possibly causing a distance from unlabeled foods, such as fresh foods.

Small producers of traditional foods from their region, such as jams and cheeses, which are usually high in sugar, fat, and sodium, can face difficulties to apply the front label on the packaging. There is a risk of losing traditional, nutritious, and historically consumed foods, representing a cultural loss. The possibility of cultural loss should be considered and additional terms to include these producers should be granted, as happened in Chile and Brazil.

Besides the aspects related to small-scale producers, other additional steps can be taken to make frontal labelling more effective. The links between labelling and marketing regulations, such as the advertisement restriction of products with "high in" stamps for children, are fundamental pieces for behavioral changes that influence the reduction of obesity.

Similarly, frontal labelling can also serve as a tool to guide public procurement to avoid the purchase of unhealthy food, especially concerning school feeding programs. Avoiding “high in” stamps in schools can also help to change the diets of future generations, as schools, from elementary to high school, are an excellent way to teach about healthy food and nutrition. Education is a fundamental pillar to make the labelling regulation even more effective and inclusive. Without adequate education, no regulation will be sufficient to tackle a problem of multifactorial origin, such as obesity and NCDs.

4. Conclusion

The global institution WHO warns about the necessity of clear rules for FNL in order to improve human health and well-being. This global institution warning guides states macro-institutions for FNL, which requires efficient meso-institutions to put in practice the macro rules in the micro level. The regulation of specific rules at intermediate level should be participative to reach its objective. The research described the devices and mechanisms for FNL regulation in Brazil, Chile and Mexico. The results highlighted the huge interaction of industry and consumers 'representatives with policymakers for the translation of general rules on specific rules (thresholds on critical food nutrients, marketing constrains and timeframe to entry in force). Besides the participation in the rule translation, Consumers 'organizations act by monitoring and empowering the agents, as a complement to the public enforcement mechanisms.

The results suggest that:

- Meso-institutions that shape the legislature as well as regulatory agencies activities can encourage or restrict stakeholder participation in policy making. In the cases visited, the participation of organizations from the food industry and consumers was allowed by the regulations of the legislative and regulatory bodies. Stakeholder participation increases the likelihood that the determinations imposed by the regulatory body are feasible and meaningful to end users. Technocratic decision processes would likely result in high adaptation costs for providers and, for most consumers, difficulties to understand mandatory standards. On one hand, the effectiveness of signaling systems depends on the consumer being able to interpret the signs and extract the consequences of the information content, as well as on monitoring and enforcement mechanisms. On the other hand, signaling should not impose very high adaptation costs on the production chain.
- The discussion of mandatory labelling can be interpreted as a struggle to define property rights for the food industry and the consumer. It is a mistake to understand the food industry as a monolithic entity, just like the consumer, which exhibits different lifestyles and perceptions. In order for information gaps to be mitigated, however, it is necessary to arbitrate the interests of different groups and subgroups. This function can be performed more or less efficiently, depending on the institutions that regulate the functioning of the legislative power and regulatory agencies.
- The political arena is not the only one in which stakeholders dialogue. The specific rules result from the interaction of different interests in different arenas, such as the legislature, regulatory agencies, the scientific community, as well as the media and public opinion. Achieving a prominent position in one or more arenas can influence regulation enacted by government agencies. In democracies such as those visited in the case studies, the state tends to bow to hegemonic positions in civil society.
- Institutions that encourage stakeholder participation increase the probability of obtaining specific rules accepted by consensus, which would reduce monitoring and enforcement costs. Consensus here does not mean that all stakeholders fully support regulation, but that regulation is minimally acceptable to all parties. Parties must understand the new regulation as an advance or improvement over the status quo.

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