

New Regulations for Foods Offered to School Children in Chile: Barriers to Implementation

Katherine Prochownik^{1*}, Mariana Vera Vergara¹, Lawrence J. Cheskin¹

The Johns Hopkins University Baltimore, Maryland

Abstract

Objective: To prevent childhood obesity, the Chilean government has recently implemented food regulation laws that apply to schools. This paper reviews the literature regarding the challenges in successfully integrating policies to regulate foods offered in schools. In addition, to understand some of the potential implementation barriers, a survey was conducted to evaluate how well food regulation laws were understood and implemented in Chilean schools.

Methodology: A narrative literature review was conducted regarding food regulation policies in Chilean schools and potential barriers to implementation. This informed a subsequent descriptive, qualitative survey which was conducted in the Valparaíso region of Chile to examine knowledge, practices, and potential barriers to implementation of the new regulations. Twelve randomly-selected school food kiosk owners completed a survey and structured interview. Visual observations were also performed at each food kiosk. Content analysis identified trends in food items sold and determined the depth of understanding kiosk owners have of a specific new food law, "La Composición Nutricional de los Alimentos y Su Publicidad (20.606)." **Key Results:** 7 articles in Spanish and 10 in English were reviewed. The literature review revealed that unhealthful food options are readily available to Chilean students in school kiosks. The results of the survey and interview indicated that the school kiosk owners surveyed have a general understanding of the food law. 10 out of 12, however, were unsure of the law's exact contents. Unhealthful food options, inconsistent with regulation 20.606 were observed in all 12 visited kiosks. **Conclusion:** Evidence from a literature review and the survey findings confirm that unhealthful foods persist in Chilean schools, despite government food regulations. Although the majority of the school kiosk owners acknowledge law 20.606, most lack an understanding of its exact contents and their role in promoting healthier foods in schools. Further education of vendors and school administrators is needed to enhance compliance with the new Chilean food regulations.

Corresponding Author:

Katherine Prochownik,
Department of Public Health Studies, Johns Hopkins University, kprocho1@jhu.edu

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Introduction

Health conditions in Chile have changed drastically over the last 50 years due to demographic, epidemiologic, and nutritional transitions. The proportion of undernourished children in Chile under the age of 6 decreased from 37% to 2.9% during the period from 1960-2000.¹ Today, excessive childhood weight gain is a grave concern in Chile. According to the World Health Organization (WHO), the prevalence of child obesity among primary school children in Chile increased from 6.5% in 1987 to 17% in 2000 for boys and from 7.8 to 18.6% for girls.² The increase in obesity is associated with the developing world. A sedentary lifestyle, changes in diet, and poor eating habits are the three largest causes of obesity in the country.³

According to the Encuesta Nacional de Salud (ENS), 39% of those older than 15 years are overweight and 300,000 people suffer from morbid obesity in Chile.³ The Organización para la Cooperación y Desarrollo Económico (OCDE) says that Chile "es el sexto país con más obesidad infantil,"³ or translated, the country with the 6th highest infant obesity rate in the world. 27.1% of girls and 28.6% of boys are above height and weight for their age. Overweight or obesity in children confers a greater risk of contracting such chronic diseases as hypertension and type 2 diabetes.⁴

During the second half of the 20th century, progressive industrialization and urbanization in Chile changed lifestyle and health habits.¹ This progression is apparent in increases in inappropriate dietary intake and sedentary lifestyle. In many developing countries, there has been a transition from fresh food to energy dense foods and caloric drinks. Between 1980 and 1998 in Chile, the daily consumption of fat increased from 21% to 28%.¹ The result of development and progression in Chile over the last few years has influenced the pattern of diet and sedentary lifestyle that contribute to the obesity problem in Chile.¹

For students, available food in kiosks in schools is one of the factors responsible for this problem. In an effort to improve foods available in schools, the Chilean government has implemented regulations to provide healthier food options for students in school settings and prevent childhood obesity. In 2012, the Chilean government approved the law, "La Composición Nutricional de los Alimentos y Su Publicidad (20.606) or

"The Nutritional Food Composition Law and Its Publicity," which requires kiosks in schools or near educational facilities to carry food that the Ministry of Health in Chile establishes as safe for consumption.⁵ Unhealthy items for consumption include packaged foods, such as chips and candy bars. Healthier foods are those lower in salt, sugar, and fat such as fruit, low fat yogurt, some cereal and granola bars, and low calorie drinks.⁶

To assess the impact of this new regulation and potential barriers to its implementation, we conducted a literature review of the challenges in successfully achieving integration of food regulation policies for childhood nutrition. Results of a survey, interview, and structured observations of school food kiosks were used to assess how well food regulation laws were understood and implemented by kiosk owners in schools in Chile.

Narrative Literature Review

Two sequential literature reviews were conducted, one in Spanish and one in English, using Proquest, EbscoHost, Chile's Health Ministry website and PubMed. Search criteria included key words of "Chile," "La Composición Nutricional de los Alimentos y Su Publicidad," "food regulation," "children," "obesity," and "nutrition." These words were used for articles published in English and in Spanish. A total of 3,789 were identified, but only 13 were included as part of this review. These papers represented: 13 studies, 3 policy papers, and a copy of law 20.606 was also retrieved. Criteria for selection included: 17 articles published after the date of 1988, and articles relevant to the topic of student nutrition. For the purpose of the paper, "students" refers to both school-age children and adolescents (including university students).

Seven articles in Spanish and 10 articles in English were identified for the narrative review. The overarching theme of these articles showed that modernization in Chile has resulted in more unhealthy food options being integrated into children's diet. Results from the literature review shows that unhealthy food options are readily available to children in school kiosks.^{6,10} The study concluded that the food products that the students bought with their money were generally packaged products with much sugar, fat, and salt; these foods have a high energetic density and are

often more appealing when they are available to students in schools.^{10,11} For example, 99% of the children studied said they had money to buy food products at their school, and 90% of them chose to buy unhealthful items (68.1% bought sweet or salty foods, 17.2% sugary soda drinks, and 3.7% fast food).¹¹ These food options can result in health problems. Rates of children being obese or overweight have increased dramatically over the years.^{2,8} Some articles have discussed the importance of the regulation of food marketing to children and how to monitor the enforcement of these foods.^{8,9} The study by Bustos advocated for incorporating strategies to promote healthful food options inside educational facilities. One study found an increase in 6 year-old children's rates of overweight and obesity between 1986 and 2000. Boys rates increased by 12% (to 26%) and girls, by 14% (to 27%).^{2,8} This article discusses the importance of the regulation of food marketing to children, what and how to regulate food, and how to monitor the enforcement of these food laws.^{8,9}

Chilean health food law 20.606 addresses regulating certain unhealthy food items, advertising ingredients properly on nutrition labels, bans certain foods high in salt, sugar or fat from being sold in the store, and prohibits food items to be sold with toys, or incentives to purchase these items.⁸ Despite this law, previous studies such as these demonstrated that unhealthful food options continue to be readily available for students to purchase in schools. The challenges in successfully integrating food regulation policy are due to a number of factors in Chile.⁸ Chile, which is considered a developing country, currently has limited resources to successfully track the law's implementation. Food restrictions in one country could potentially direct advertisers to relocate their marketing elsewhere.^{8, 12} Previous studies conclude that citizens, particularly the parents of the students, should have a larger role in enforcing healthier foods in schools. One concludes that monitoring of food regulation should be a responsibility of both the government and the people.¹³

Experimental Procedure

A narrative literature review of the food regulation policies for childhood nutrition in Chilean schools and barriers to their implementation was

conducted, using Pub Med, EbscoHost, and Proquest. A mix-method descriptive, qualitative study was conducted in the Valparaíso Region of Chile to examine knowledge of new school food regulations and barriers to its implementation. Qualitative content analysis techniques were conducted and combined with descriptive analysis. Visual observations of the food kiosks were also made.

Materials and Methods

Survey of Schools

A sample of twelve randomly-selected school food kiosk owners in the Valparaíso region with a population of approximately 300,000 were administered a survey and also participated in an interview consisting of 4 open-ended questions. This investigation was carried out by the lead investigator in 12 schools: 4 private schools, 3 municipal schools, 1 state university, 2 private universities, and 2 professional private institutes, all located in the Valparaíso region of Chile. Before administering the survey and interview, the investigator obtained written which described the objective of the study to the participants. It was explained to all of the participants that their participation was voluntary and anonymous. All participants were over the age of 18 years and signed the consent forms, except for 2 who gave their consent orally. The study was approved by the SIT Institutional Review Board (IRB) as well as the Electronic Homewood Insitutional Review Board (eHIRB).

One of the team members (DP) served as a local bilingual interpreter and helped with some of the translations of Spanish responses into English. Another team member (MV) helped explain the study to participants so they could better understand their role in the investigation. The investigator then distributed the survey, which was paper and pen, followed by the interview. Survey questions were related to types of food available in the kiosk, food preferences of the students, and their understanding of the new food law.

The investigator also made observations about the food options inside the kiosks . Specific permission to take photos of the kiosks was obtained from the participants.

The questions in the first part of the survey included 6 open-ended questions and 2 multiple-choice

structured questions. Based on the response to the question, "Have you heard of the Chilean law, the Nutritional Food Composition Law and Its Publicity, also called Law Super8? (Yes/No)," the participants continued to respond to a cluster of questions in relation to their given response. Some items were expanded upon in the interview.

Also included were the responses to the interview questions. Specifically, each participant responded to 4 open-ended questions pertaining to the food regulation law 20.606 and the food items sold in their kiosk.

Content analysis and descriptive methods from both the open-ended survey and the interview items were used to identify trends in food items sold, and to determine the depth of understanding kiosk owners have regarding the specific food law, "La Composición Nutricional de los Alimentos y Su Publicidad." Themes were determined by 2 trained reviewers until 100% agreement was reached. One reviewer (DP), a certified Spanish translator, also confirmed the Spanish translations of the survey and interview questions.

Responses to each of the following open-ended questions from the survey were transcribed verbatim, then collapsed and tallied: "What kinds of food do you sell in your store?," "What is the most popular food item in your store, and why do you think?," "What is your favorite thing to sell in the store? Why?," "What is the age of the majority of your customers, and what kinds of foods do they like to buy the most?," "How is your kiosk different from others?," "Do you like the location of your kiosk? Why or why not?," "Are you in agreement with this law? Why or why not?," "Do you think this law is a benefit to your business and/or customers? Why or why not?," "Why do you carry lactose and fruit? What is the benefit to having lactose and fruit in your store?," "Why do you not carry fruit and lactose?," and "Would you be interested in incorporating fruit and lactose in your store? Why or why not?"

The interviewer also translated the responses verbatim from the interview to each of the following questions..."Do you think this law is important and necessary? Why or why not? Do you think there has been a change in the food sold in educational facilities between the past and the present? What are these changes, if any? Please name the products in your kiosk

that students like to purchase the most." Pattern recognition was employed to detect common themes. Pattern recognition implies seeing something over and over again in one case or across a selection of cases.⁷ Results were crosschecked for inter-rater reliability. Themes were developed for the open-ended questions from the survey and for the 4 interview questions. All completed surveys and interviews were kept in a secured, locked cabinet.

Visual observations were also made of food items sold at each participating school's food kiosk to confirm the owners' self-reported information. Photos were also taken at that time (see Figure 1 for examples).

Results

Study

Results from the close-ended, multiple-choice items of the survey revealed trends among kiosk owners regarding food regulation for students inside of schools. 10 out of 12 participants (83%) had heard of the Chilean law, La Composición Nutricional de los Alimentos y Su Publicidad (20.606). When asked, "What does the law consist of?," 60% of the participants selected, "to promote healthier food options for students," and "regulates the advertisement of unhealthy food in school kiosks." Their responses to, "To what populations is this law targeting?" included "students" and "the general public."

The kiosk owners were then asked, "Are you in agreement with this law?" Half (5 out of the 10 owners who have heard of the law responded that they are in agreement with the law, 2 (20%) answered that they do not agree with the law, and 3 (30%) said that they don't know how they feel about the law. In a different question, "Do you think this law is a benefit to your business and customers?," only the 9 out of the 10 owners who had heard of the law responded to this question (one chose not to respond). 45% percent said, "I don't know," 33% said "It's a benefit," and 22% said "It's not a benefit."

The answers to the open-ended questions were ordered into tables to examine the perceptions and understanding of the participants about the food in their kiosks. Selected responses were used to illustrate

thematic elements. Answers to: "What kinds of food do you sell in your store," are shown in Table 1. Trends here are that 7 of the 12 kiosk owners sell a type of sweet item in their kiosk. Specific items listed in their responses included "pie," "cookies," "chocolate," "jello," and "sweets" (candies, gummies, etc.). Only 2 of the owners responded "fruit," and only 2 mentioned lactose products, including yogurt.

Results collected from the interviews were organized into common themes (Table 2). Interview responses showed several patterns related to food items in schools. One trend discovered among participants was the belief that poor eating habits were formed at home. 6 of the 12 participants (50%) directly referred to this in their interviews. Another trend that emerged from the interview responses was that kiosk owners generally believe that food regulation law 20.606 is important and necessary for students. Nine of the 12 participants mentioned that the law has been good for students in terms of developing healthier eating habits. Another trend found from the interviews was that despite the law, students continue to purchase junk food from kiosks. 5 of the 12 participants discussed this trend in their interviews. Some kiosk owners who seemed to have had some understanding regarding the law responded, "I think that they have to have all of the products labeled on the nutritional part outside, like how much fat, salt, how many things it has in it," and "they do not permit junk food here".

The results of the survey and interview demonstrate that school kiosk owners have a general understanding of the food law. When asked to explain why they agreed or disagreed with the law, many owners responded that they "did not know" or "did not have a reason." Examples of the visual observations made of the food items sold at the school kiosks can be seen in photographs 1 and 2. Many items would be categorized as "unhealthy foods." Overall, the photos confirmed the kiosk owners' responses.

Discussion

The evidence from the literature review and the study findings illustrate the need to improve outcomes by promoting an understanding of the health food laws and regulation inside of schools, as well as through modifying school children's behavior and eating habits.

Our findings suggest that educational campaigns must target kiosk owners as well as the students, their families and school administrators.

Law 20.606, which was approved by the Ministry of Health in 2012 and took effect in July of 2013, continues to be in process of implementation inside of educational facilities.¹⁴ As a result, a lack of knowledge about the food law still exists. Yet in response to our question, "Have you heard of the Chilean law, Nutritional Composition of Food and its Advertisement, also known as Super8," 10 of the 12 participants indicated they did. The owners who reported knowing of the law were also familiar with what the law mandated, namely, to regulate the advertising of 'junk' food in school food kiosks, and to promote healthier foods for students in schools.⁵

Despite the majority of the kiosk owners demonstrating a general understanding about the law,

Figure 1



many continued to sell unhealthful foods. In the interviews, the participants said that the food products "are not healthy because of the high sugar and salt, and they don't help anybody", and that "it is understood that this law is to regulate the products that they sell in the kiosks so that they are healthy for the students". The results of the study showed that a lack of information does exist in Chile about what the law mandates.

Although the kiosk owners knew about the law, it can be deduced that there is a lack of understanding of whom the law targets. This law is directed specifically at students to promote a healthier life. Half of the interviewed storeowners did not select that option. For the question, "Are you in agreement with this law? Why or why not," 50% of the sample population said that "I agree", but 30% responded, "I don't know." The later answer demonstrates a lack of full information about the law on part of a substantial fraction of the owners (or denial of knowledge, though there was no specific evidence of this).

Two of the trends identified in the interviews were barriers to promoting consumption of healthful foods among students in the schools studied. Poor eating habits at home has been shown to be linked to childhood weight gain and obesity. Specifically in Chile, one study found a relationship between the food products for 1701 children in 9 schools in Chile and their rates of obesity.¹⁵ The prevalence of obesity in children in Chile has increased during the last decades.¹⁵ In another study by Olivares food preferences were analyzed among children, and found that chips, sweet and salty snacks, and fountain drinks are the food items most frequently selected and preferred by

students.¹⁵ In comparison to the Olivares's study, the results in this study inside of the school kiosks in the Valparaíso region of Chile suggest a link between junk food and childhood obesity in Chile.

In addition, another thematic trend in the interviews showed that kiosk owners do believe in the importance of the health food law 20.606. Despite this, kiosk owners continue to offer unhealthful food choices, and thus students are able to continue to purchase these unhealthful foods in their schools.

An implication of our findings for future intervention studies is that applying a community-based conceptual framework could help guide the study design, selection of key variables, and interpretation of results. A particularly relevant framework is the Ecological Model of Health Behavior.¹⁶ Ecological models consider the connection between the individual (e.g., students) and their environment (e.g., schools).¹⁶ These models propose that behaviors (e.g., eating habits and food selection) are influenced by the intrapersonal, sociocultural, policy, and physical-environmental factors.¹⁶ Regulatory and policy-making actions have the potential to affect health behaviors; policies are socio-

Table 1: Interviewed storeowners' responses to the question, "What kinds of

Nº	Answer:
1	Light fountain drinks, cereal, soda crackers, sweet crackers, light juice (no chocolate), breath mints, tea, coffee, gum
2	The products are food like snacks, sweet and savory.
3	Sandwiches, fruit, juice, yogurt, flan, salads, jello
4	Snacks, drinks, alfajores, coffee, crackers, sandwich (ham, cheese, lettuce, tomato, avocado)
5	Crackers, chocolate, breath mints, different kinds of sweets, sandwiches quaker, ramitas
6	The majority of products have healthy characteristics; like cereal, zero calorie sodas, etc.
7	Fruit, desserts, dairy, juice, drinks and sweets, cereal bars
8	Different kinds of cereal
9	Only packaged foods
10	We have tea, coffee, sandwiches (cheese/ham), lemon pie, drinks, cereal bars, juice
11	Crackers, cereal bars, sweets, chocolate
12	We have all kinds of products, but everything is packaged. Sweets, chocolates, crackers, drinks, coffee, tea, empanadas, etc.

Table 2: Thematic Trends Identified in Participants' Interview Responses

Themes	Responses	Number of Owners (n=12)
Bad eating habits are formed at home	<p>"If I sell products that are healthy, the kids still bring junk food from their house."</p> <p>"It's not because of the law that we should consume fruits and vegetables, it's by the culture of the house"</p> <p>" There are kids who arrive at school, who bring boxes of sweets and sell them to their own friends. So this damages the concessions and damages all of the work that they are doing, unless there is education in the house."</p>	6
According to kiosk owners, law 20.606 is important for students	<p>"To avoid obesity. For children to develop good healthy habits."</p> <p>"I think that it's good it passed for the kiosks of the schools</p> <p>"...very necessary, it lays the foundation for attempting to form a culture of healthy eating from a small age."</p>	9
Unhealthy food selection by students	<p>"Hot dogs, bread."</p> <p>"Juices, junk food, but those don't go as much as the sandwiches do."</p> <p>"...they always ask for chips, ramitas, because that is what they have become accustomed to."</p>	5

cultural influences that can alter physical environments (e.g., schools and kiosks).¹⁶ These concepts and principles can guide future research and have implications for practice.

Conclusion

Regulatory and policy-making actions have the potential to affect health behaviors. Previous studies have shown that childhood obesity can be altered with a community-based approach. The data collected from our survey and interviews show that, although the majority of the school kiosk owners in this region of Chile have a

general recognition of food regulation laws, particularly "La Composición Nutricional de los Alimentos y Su Publicidad" (20.606), most school kiosk owners lack an understanding of its exact content, and most importantly, the role they play in promoting healthier food options in the schools. Results from the narrative literature view show that regulation of food marketing to students should put an end to certain advertising methods. We believe the available evidence suggests that awareness campaigns and educational programs should target students, families, school administration and kiosk owners alike. In addition, food regulation laws, to have the intended effect, must be consistently implemented, which would require continual and thorough follow-up of the degree of implementation.

Effective implementation of this food regulation would be likely to encourage healthier lifestyle choices, particularly pertaining to food products lower in salt, sugar, and fat.⁹

Unfortunately, the results of this study demonstrate that unhealthful food choices continue to be readily accessible to students, despite the presence of school kiosks that should be operating in a manner consistent with the requirements of the new Chilean laws. All available evidence suggests that students prefer unhealthful food options, and will continue to purchase them if they are available.

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Conflict of Interest

None

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