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## Consumption of Diet and Nutrition Information in Digital Magazines Marketing to Latinx Women

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**Title Page**

Consumption of Diet and Nutrition Information in Digital Magazines Marketing to Latinx Women

**Keywords**

Content Analysis, nutrition, Latinx, advertising, digital magazines

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**Title: Consumption of Diet and Nutrition Information in Digital Magazines Marketing to Latinx Women**

**Abstract**

**Objective:** To examine the types of nutrition and health-related articles published in digital magazines directed toward Latinx women; and to examine the extent to which advertisements about food, nutrition, and weight-loss are prevalent in these media.

**Design:** A descriptive content analysis was completed for five digital magazines marketing to Latinx women. A total of 1,234 articles and 3,001 advertisements were examined for nutrition and health-related content.

**Results:** Early editions of digital magazines directed towards Latinx women included more advertisements than articles on the topics of food and health. Among the articles, very few (0-30%) included health and nutrition information that came from a reliable, evidenced-based source.

**Conclusions and Implications:** Public health researchers should continue to examine mass media exposures of health and nutrition messages, especially media directed towards populations disproportionately affected by diet-related diseases. Overall, this study provides recommendations for health and nutrition professionals to contribute expert content to digital media targeting the Latinx community.

**Key words:** content analysis, Latinx, Hispanic, mass media, advertising, digital magazines

## Introduction

The rise of health information available digitally needs to be studied, particularly because nutrition and health information may have a farther and faster reach via digital platforms. The Latinx community is the second-largest growing ethnic group in the U.S. and is burdened with a high proportion of diet-related diseases, including hypertension, liver disease, and diabetes.<sup>1,2</sup> Therefore, examination of health and nutrition information focusing on this community may provide some insights for nutrition and health professionals. Communities at risk of poor health, such as the Latinx community, are more likely to seek out health information from mass media, including diet and nutrition-related information.<sup>3,4</sup> Additionally, marketing studies show that the Latinx community is rapidly moving towards smart-phone ownership, making mass media increasingly accessible through mobile devices.<sup>5</sup> Evolving technology necessitates the examination of health and nutrition messaging found in popular digital magazines which is becoming available to the Latinx community at the touch of a finger.

Women, especially Latinx women, are more likely to make familial decisions regarding what food to purchase and how to prepare it in comparison to men.<sup>6-8</sup> Accordingly, women spend more time cooking than men,<sup>8,9</sup> and they are also primarily in charge of preparing family meals.<sup>9</sup> Perhaps as a result of this, magazines targeting women publish more nutrition, food, and health-related content.<sup>10</sup> And, because studies show that dietary and physical activity habits are influenced by the type of environment established by mothers,<sup>11,12</sup> examining media focused on women is a public health interest.

Behaviors related to nutrition and health are complex and multidimensional. The Socioecological Model provides a framework to explain how different levels of behavioral influences play a role in disease susceptibility.<sup>13</sup> The four levels of the socioecological model are microsystem, mesosystem, exosystem, and macrosystem. In this study, we focus on one exosystem level influence: digital media. Seeking health information from readily available sources such as digital magazines, through smart phones, tablets, and other applications, may increase consumer efficacy in translating knowledge to behaviors. Specifically, recipes and cooking tips featured in digital media provide an additional behavioral component for readers. By providing food suggestions with preparation instructions, which directly alter dietary intake, magazines have the capacity to impact long-term consumer health outcomes.<sup>14</sup> Examining information and advertisements (ads) containing behavioral components in these digital magazines is especially important due to the increase in volume and speed of health and nutrition information available with evolving technologies.

This study will enhance knowledge of health and nutrition related messages targeting Latinx women. Using the Socioecological Model framework, magazine content and resulting influence on health and nutrition behaviors of Latinx women are explored by analyzing two aspects of digital magazines: ads and articles. Specifically, we categorize and describe the characteristics of food and health-related content published in the ads and articles. We also evaluate the proportion of nutrition, food, and health-related articles published in the sample of digital magazines. Articles considered in our evaluation include written pieces by journalists, dedicated staff writers, invited writers, or interviews with experts. Evidence-based health practitioners such as doctors, dietitians/nutritionists, nurses, or other health care professionals are all considered to be expert sources. Evaluation of ad/article characteristics, proportions per magazine, and authorship allow for enhanced understanding of messages marketed to the female Latinx population.

## **Methods**

### **Study Design**

Content analysis was used to analyze the types of ads and articles published in digital magazines marketing to Latinx women in 2013.<sup>15</sup> Content analysis is a systematic approach used to examine the use of symbols in communication, such as words. This method is commonly used to examine a variety of nutrition and health ads and marketing promotions<sup>16</sup> as well as educational materials.<sup>17</sup> The current study specifically analyzes magazine content created to influence reader's nutrition and health-related behaviors.

### **Sample**

The 11 highest circulating magazines marketing to Latinx women were identified due to their high potential for health and nutrition-related content exposure. Magazines that had a digital version available in 2013 were included in the study. Therefore, five digital magazines marketing to Latinx women were selected for content analysis: *Mujer*, *Cosmopolitan en Español*, *People en Español*, *Vanidades*, and *T.V. y Novelas*. All digital issues available from these five magazines were included for content analysis, yielding a total of 45 issues. Within these issues, a total of 3,001 ads and 1,234 articles were coded.

### **Procedure**

A coding procedure was developed using previously established methods.<sup>18</sup> A coding guide was developed by the primary author. This guide included instructions and definitions for each of the coders to use independently. The secondary coder was trained using the guide. Both coders, who were bilingual and bicultural, completed one coding session together to familiarize themselves with the terminology. The definitions were revised through consensus in three subsequent meetings.

Each magazine page was examined and categorized as either ad, article, recipe, or other. Next, each ad, article, or recipe was classified into a subcategory. Ads were classified into one of the following: food-related ad (where a food product was promoted for purchase); weight-loss ad (a product promoted to reduce weight); medicine (any pharmaceutical ad promoting prescription medications); and other (any ad that did not fall in any of the three categories was included here, such as jewelry, perfume, clothing, shoes, etc.). Coders also examined whether the source of information was explicitly stated in the articles. Informational sources were identified as celebrities, nutrition experts, health professionals, or other types of experts.<sup>18</sup> The "Other" category included non-traditional experts because in alternative media, especially written in the Spanish language, unconventional experts are accepted by certain Latinx cultures.<sup>19-21</sup> If the source of information was unclear, the source was categorized as the magazine writer/author.

Articles were categorized by type of messaging: Nutrition-Diet-Weight Messages, Health messages (Non-Nutrition-Diet-Weight Message), Mixed (both Nutrition & Health), Recipes, or "Other" Non-Health, Nutrition, or Food messages. The nutrition and health-related articles included health claims about particular foods or supplements, diet, physical activity, weight loss, weight management, and other health topics such as cancer and diabetes. Recipes excluded nutrition and health-related messages but presented other aspects of foods such as cooking techniques or recipe guidelines.

Inter-rater reliability was examined for seven variables between two independent coders. The Krippendorff's Alpha was 0.94, indicating high reliability in coding for the number of ads.<sup>22</sup> The Cohen's Kappa for inter-rater reliability of the nominal level variables was 0.76 or higher, indicating high coding reliability. Each variable had a 97% agreement or above, indicating high reliability using the coding guide.

## Data Analysis

Descriptive statistics were used to describe the categories of ads and articles published in the magazines using SPSS (version 19.0, Inc, Tokyo, Japan, 2010). Inter-rater reliability tests were also completed using SPSS. For the ratio level variable of the number of ads, a Krippendorff's Alpha and the nominal level variable were tested for agreement using Cohen's Kappa using STATA (version Stata/IC 12.1, StataCorp L.P., College Station, TX, 2011).<sup>23</sup> Ratios of ads to articles of the health and nutrition related content were also calculated.

## Results

Among the sample of digital magazines marketing to Latinx women in 2013, a total of 1,234 articles and 3,001 ads were reviewed. Of the five magazines analyzed, four were printed entirely in Spanish. Only one was written in English with Spanish words embedded throughout articles, and this magazine had the lowest circulation.

**Table 1** displays the types of ads per issue listed in order of highest to the lowest ranking magazine. 362 of the 3,001 ads were categorized as health and nutrition-related and were further analyzed for this study. On average, 28.57% of ads in the highest-ranking magazine were food ads. However, food ads in the lowest-ranking were only 10.13% of total ads, thus the frequency of food ads was higher among magazines with higher circulation. Regarding weight loss ads, a lower magazine rank correlated to a higher percentage of weight loss ads per issue (32.28%). In comparison, the highest ranking magazine only had 3.36% of weight loss ads per issue. Frequency of medicine ads per issue showed no clear trend based on magazine rank.

The ratios of ads to health articles per issue showed that food ads occurred at almost three times the frequency of nutrition and health articles (2.95:1). The ratio of weight loss ads to nutrition and health articles was approximately half that (1.47:1). The ratio of medicine ads to health articles per issue was the lowest (0.34:1).

<b>Magazine Rank (Circulation numbers, language)</b>	<b>Average Number of Food Ads per issue n (% of total ads)</b>	<b>Average Number Weight Loss Ads per issue n (% of total ads)</b>	<b>Average Number of Medicine Ads per Issue n (% of total ads)</b>
1 (559,756, Spanish)	6.80 (28.57)	0.80 (3.36)	0.60 (2.52)
2 (558,823, Spanish)	8.08 (23.66)	0.33 (0.98)	1.00 (2.93)
3 (512,294, Spanish)	4.00 (15.89)	0.42 (1.66)	0.42 (1.66)
4 (365,240, Spanish)	2.42 (11.84)	4.00 (19.59)	0.50 (4.45)
5 (222,109, English)	4.00 (10.13)	12.75 (32.28)	0 (0)

We found one nutrition and health-related article per issue in the highest circulated magazine, **Table 2**. The lowest circulation magazine had at least two nutrition and health-related

articles per issue. The highest percentage of articles that used a nutrition or health care profession expert for information was the fourth-ranked magazine in which 30% of the articles on nutrition and health quoted or referred to an expert in nutrition or health. Another finding (data not displayed) was the number of celebrity sources for health and nutrition information. For the second-ranked magazine, eight out of 15 health and nutrition articles used a celebrity source for the information. Each of the other magazines used a celebrity source two times or less.

**Table 2. Types of articles per issue in magazines ranked by publication circulation.**

<b>Magazine Rank (Circulation)</b>	<b>Mean Nutrition &amp; Health Articles per issue n (% of total articles)</b>	<b>Recipes per issue n (% of total articles)</b>	<b>Articles Referencing Nutrition or Health Profession Expert<sup>a</sup> n (% of total Nutrition and Health articles)</b>
1 (559,756)	1.00 (4.20)	1.70 (5.04)	0.00 (0)
2 (558,823)	2.08 (3.75)	1.33 (2.40)	4 (16.00)
3 (512,294)	2.17 (8.61)	2.25 (8.94)	4 (15.38)
4 (365,240)	0.83 (4.00)	1.25 (6.12)	3 (30.00)
5 (222,109)	2.50 (6.33)	3.25 (6.33)	2 (20.00)

<sup>a</sup>All other sources were either the writer, a celebrity, an alternative health expert, or an expert in non-health or nutrition discipline.

## Discussion

Our findings indicate that health and nutrition information in digital magazines directed toward Latinx women is more common in the form of advertisements than in the form of articles. When magazines did print health and nutrition related articles, less than 30% of them were written by an evidence-based practitioner. Additionally, food, weight loss, and health-related ads directed toward Latinx women were more common among lower circulating magazines.

Ads can influence behaviors not only through the promotion of products but also by advertising in a medium that a specific audience can identify with from a cultural perspective.<sup>24</sup> In this study, four of the magazines were published in Spanish. Not only is this culturally appropriate, but it also increases the consumer trust when information can be understood in their native language.<sup>25</sup> Considering that the Latinx community is the fastest growing in the US,<sup>12</sup> it is likely that an increase in advertising may also increase marketing health and nutrition information to this population. Additionally, Spanish-language television networks also had a higher number of nutrition and weight loss related ads when compared to non-Spanish-language networks.<sup>26,27</sup> This is consistent with our findings in digital magazines directed toward Latinx women. Latinxs also spend more money on food compared to all Americans.<sup>28</sup> Therefore, we expect to see that food and weight loss companies are more likely to create ads directed towards this community as seen in television media.<sup>27,29-31</sup>

Consumers in the U.S. are increasingly seeking out health and nutrition information of all kinds, including the Latinx community.<sup>32</sup> However, the rapid media cycle that perpetuates misinformation and confusion associated with nutrition and health information is an important



public health consideration.<sup>33</sup> Magazines in particular can be used as an engaging tool to disseminate information to a wide audience. At the time of the current study, less than 50% of the print magazines marketing to Latinx women had a digital version, and the majority of these were Spanish-language publications. Our findings provide insights on early editions of digital magazines and are more relevant today as the COVID-19 pandemic has increased reliance on technology for obtaining, communicating, and sharing information. New technologies have also made it easy to access food and nutrition apps, which were not as popular at the time of this study.<sup>34</sup> Although the current study only assessed digital magazines, technology overall has the opportunity to improve the public health experts' reach to the Latinx community. Specifically, more families with children attending non-traditional instruction (NTI) or participating in online health/telehealth appointments have had to learn to navigate new applications.

This study considered nutrition or health professionals to be experts or reliable sources because their training involves evidence-based decision making when providing health care. We categorized other sources such as celebrities and influencers as unreliable. We found that very few (0% to 30%) magazine articles use health and nutrition experts as sources of information, increasing the likelihood of misinformation. Therefore, the threat of misinformation in digital magazines marketing to Latinx women is high. Some of the referenced sources in the articles we examined included celebrities, alternative health experts, or experts in a non-health or nutrition-related discipline. This is an important consideration as prior research suggests that celebrity endorsement can lead to intent to purchase and participation in a promoted behavior.<sup>35</sup> This highlights the opportunity for registered dietitians and health professionals to mitigate misinformation and poor health outcomes of the Latinx community by contributing health-promoting information behaviors on various media platforms.

The strengths of this study is that it describes what health and nutrition information was presented in early digital magazines directed towards Latinx women. Our study identified that in addition to weight loss and food ads, recipes were also provided in association with advertisements or as content. We had two bilingual and bicultural coders, one being a registered dietitian and the other a public health expert, analyze the data written primarily in Spanish. We note some limitations of this study, including not examining the print magazines for comparison with the digital issues, thus we were unable to determine whether magazines adapt their print and digital publications. We also did not examine messages regarding physical activity, but these should be considered in future studies. Lastly, we acknowledge that the health and nutrition messages in the media reviewed should be further classified by health claims to identify misinformation.

## **Conclusion**

Magazines provide a unique platform to disseminate information to broad audiences. In particular, digital magazines are even more accessible with current technologies. This study explored characteristics of early editions of digital magazines marketing to Latinx women and found that health and nutrition information is more commonly seen in advertisements than articles on such topics. Additionally, very few articles included reliable information on health and nutrition from certified health professionals. Data from this study identified opportunities for public health researchers to investigate exposure of a community, disproportionately affected by diet-related diseases, to health and nutrition messages in mass media. More importantly, health care professionals who receive training in their discipline should ensure that evidence-based information is represented in mass media.

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