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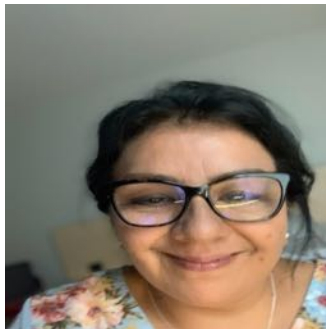
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QUALITY ASSESSMENT OF NUTRITION INFORMATION PUBLISHED WEEKLY IN THE SURROUNDING OF FOUR HOSPITALS IN LIMA, PERU

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ABSTRACT

There is a growing demand from the general public regarding nutrition topics that has prompted social media such as magazines, newspapers, television, radio and the internet to include more nutritional content. The purpose of this study was to assess the quality of nutrition information published by health weeklies in the surroundings of four hospitals in Lima, Peru. A cross-sectional study was conducted using a mixed methodological design involving both quantitative and qualitative analyses. Thirty-seven hard copies of 4 health weeklies were purchased over the 10-week study period. Bivariate Logistic Regression was performed to examine all available journal characteristics associated with the quality of provided information. Logistic Regression Models were estimated for the independent variables that showed statistical significance in the bivariate analysis. Weekly publications with the highest percentage of pages dedicated to nutrition were “*My Health*” (41.67%), “*Natural Health*” (48.6%) and those with the lowest percentage were “*Sun, medicine and beauty*” (19.37%) and “*Health, Money and Love*” (18.34%). Collected publications included 185 articles that were classified into two groups regarding the validity of the nutrition information presented: supported 50.3% (93/185) and unsupported 49.7% (92/185). Statistical analysis for quality estimated that the “name of weekly” had a p value=0.000, the “topic” had a p value=0.035, and the “objective, source description, quarter of publications” had a p value >0.05. Multivariate logistic regression reports that only the variable “name of the weekly” had statistical significance with p values less than 0.05. The percentage of nutrition information suggests that editors may not be applying journalistic principles and shows the importance of interdisciplinary work, between nutritionists and health journalists, to improve health status of the general population. In the case of weekly health publications, editors responsible for this type of written press could benefit from including nutritionists in charge of providing nutritional information.

Key words: health, journalists, nutrition, nutritional content, quality of information, weeklies

INTRODUCTION

Society in general wants to be well informed about nutrition and food related topics [1]. This demand has prompted social media (written press, television, radio and internet) to include more content about health and nutrition in their articles or programs. News media plays a valuable role in the delivery of nutrition information and are very influential in the community [2].

Health language in the media contains exaggerations, inaccuracies and errors [3]. According to the American Dietetic Association, incorrect nutrition information disseminated by the media can have a detrimental effect on the health and economy of buyers (patients) due to drug-nutrient interactions or toxic components in dietary supplements that they promote. In addition, the use of such products may incorrectly make seeking medical attention unnecessary and further interfere with proper nutrition knowledge. Long-term, the continuous purchase of dietary supplements can have a negative effect on the family financial status while not providing the desired health results [4].

Scientific progress does not eliminate misinformation regarding food and nutrition. Social media quickly capitalizes on preliminary study results to gain audience and readership ratings [5]. In China, an evaluation of the health editorial section of the People's Daily newspaper (one of the most authoritative newspapers in China) found that there was a wide range of quality among health stories and that there were some knowledge gaps among health reporters, doctors and the public [6]. Some publications in the United States have developed some content for Latin audiences and other languages, but the main content remained in English, and the content varied greatly in the degree of development in other languages [7]. Another study showed that newspapers that contain health news in Spanish have regional differences in content and accessibility [8]. In Peru, a study showed that 75.5% of well-known newspapers in Lima have inaccurate nutritional information, which generates confusion to the reader and probably deleterious effects on individual health [2].

The increase in content about nutrition in social media is evident; however, this does not mean the information is reliable [3]. The purpose of this study was to assess the nutritional content on weeklies related to nutritional health that are distributed in the surroundings of four hospitals in Lima, according to the orientation, intake recommendation and content validity.

MATERIALS AND METHODS

Population, sample and sampling

The sample population included four health-related weekly publications ("My Health", "Natural Health", "Sun, Medicine and Beauty" and "Health Money and Love") that had nutrition related information and were sold in areas surrounding 4 major hospitals in Lima. The study period included weekly publications from January 21 to February 17, May 27 to June 23 and from September 7 to 27, for a total of approximately 10 weeks.



Inclusion and exclusion criteria

Other daily publications and publications that did not have information related to nutrition, including newspapers, health magazines, sports, culture, art, decorations and politics-related weeklies were excluded.

Variables

Weeklies: refers to the written communication medium where health and nutrition information is published on a weekly basis. Validity of nutrition information: content with nutrition information was classified into two groups: supported (the main message is coherent and scientifically supported) and unsupported (the main message is not based on scientific studies, is imprecise and confusing). Information was initially verified by review of research articles in Pubmed, Medline, Cochrane and Scielo, books, the Peruvian Food Composition Table, among others. The review was conducted by students, accompanied by the research professor, who corroborated the information searches. Descriptive data such as title and source were obtained for each article. The weeklies title was extracted to ensure it had the type of nutritional text and specifically aimed at providing information about a disease, property of a food or a general recommendation. In addition, the description of the source was verified by ensuring that the weeklies were related to validated information found in the texts from various sources. The information was organized in Excel to detail in rows the obtained information from the weeklies, for example the benefits of food and if they offered portions or doses. The columns contained the quality of the information (supported and unsupported), if the topic was related to a disease, if the information related to a general recommendation, if listed properties of a specific food and, if the article had a source or author and date of publication.

Techniques and instruments for data collection

The technique used was *content analysis*, to obtain an objective description of the publications. The data obtained from the weeklies were entered into a Microsoft Excel spreadsheet.

Data processing and statistical analysis

The analysis was performed with Stata/SE 12.0 for Windows. Categorical variables were presented as frequencies. For bivariate analysis, categorical variable values were compared with Chi Square or Fisher's Exact Test accordingly. Bivariate Logistic Regression was used to examine all available journal characteristics associated with the quality of provided information. Logistic Regression Models were examined including the independent variables that showed statistical significance in the bivariate analysis. Odds ratios were estimated alongside 95% confidence intervals. P-value of less than 0.05 was considered as statistically significant.

Ethical considerations

This study does not involve human subjects, but rather a sample of printed publications that are widely available to the public.

RESULTS AND DISCUSSION

Seven weekly publications were discarded because they had no nutrition content. The four selected weeklies presented great information dedicated to nutrition, each one had 16 pages. A total of 37 weeklies were purchased during the three study periods in 2019. Table 1 summarizes the list of weeklies and the number of articles.

The quality of the information provided by the articles was corroborated by reviewing published scientific information (see Table 2). Of the 185 articles, 93 (50.3%) were considered scientifically supported and 92 (49.7%) were deemed not scientifically supported. A wide range of quality of information among weeklies can be reported. For example, it was determined that the weekly publication “*Sun, Medicine and Beauty*” had 84.4% (27/32) scientifically supported articles, while “*My Health*” had 62.5% (45/72). Difference between the quality of the information and the topic addressed by the weekly publication was reported. It was estimated that the articles that offered general recommendations had scientific support in 62.3% (33/53) cases while the articles that offered information on food properties were unsupported in 61.2% (41/67) cases. No statistical difference was found between the quality of the information and the objective, the description of the source consulted or the quarter period of the publications.

The articles on nutritional topics were better oriented to dealing with a specific disease (33%), followed by providing a general nutrition recommendation (27%) and describing the properties of a particular food (25%).

The results of the chi-square exploration identified two variables associated with the quality of information: type of weekly and topic, while according to bivariate, only the type of weekly presented statistical significance. In Table 3, the variables: topic of the weekly, objective of the article, description of the source and the quarter of publication did not have significant predictive capacity for the fact that the article had support and had quality information. In all cases, the 95% CIs contained the unity (value 1) and had p values greater than 0.05.

In the case of the “type of weekly” variable, the *Sun, Medicine and Beauty* weekly publication was taken as reference. Different weekly publications maintained statistically significant predictive capacities in relation to the quality of the information adjusted for confounding variables evaluated. The articles in the *My Health* publication were 9.95 times more likely to be unsupported and to be poor quality information compared to the articles in *Sun Medicine and Beauty*. The articles in *Health, Money and Love* were 6.02 times more likely to be unsupported and be of poor quality information compared to the articles in *Sun, Medicine and Beauty*. Finally, the articles in *Natural Health* were 5.71 times more likely to be unsupported and be of poor quality in comparison to the articles in *Sun Medicine and Beauty*.

The result of the multivariate analysis included all the variables studied and explained 13.01% of the variability of the dependent variable.

The topic of the article, the objective of the article, the description of the source and the quarter of publication did not have a significant predictive capacity for the article being scientifically supported and having quality information.

It was reported that there was a difference in the quality of the content in terms of scientific support among the weeklies evaluated. The weekly publication *My Health* was more likely to present unsupported articles. Two other weeklies (*Natural Health* and *Health, Money and Love*), either one would have approximately 6 times more chances of having unsupported articles when compared to the *Sun, Medicine and Beauty* weekly.

The results of this study suggest that unsupported information and non-quality information can be expected from any of the publications included in this study.

Weekly publications included in this study were focused on health and included nutrition in their publications. The results of the study by Varela and collaborators [9], who evaluated information on nutrition and worked with 144 Spanish texts, analyzing the type of adjectives used in the articles, found that 66.4% were positive, while those defined as negative were 20.2%. The high percentage of use of positive adjectives was related to the number of categories directed to recommendations (19%) and advertising (18%), so it follows that the purpose of using positive adjectives in the texts is for readers to continue consuming the products they advertise, without taking into account that the information they provide may be either correct or incorrect. The study also found that 15% of articles dedicated to nutrition were responsible for advertising a product, and incorrect information was detected within this group.

Likewise, another study in the United Kingdom by the author Kininmonth *et al.* [10] evaluated newspaper articles about nutrition and found that 33% were of poor quality, the documents were published anonymously, the topics were related to obesity, processed foods and high fat content.

In the United States, Kava *et al.* [11] evaluated 204 articles regarding dietary supplements, where the largest group of readers were the elderly (40% of American adults consume dietary supplements). In the study, 32% of the articles had poor information rating and 52% had a good rating. In the current study, 49.7% of the information was unsupported and 50.3% was supported by scientific evidence.

In another review, Martínez *et al.* [12] reported that 33.07% of articles did not mention a bibliographic or scientific source after evaluating 130 journalistic units. The authors Hellyer and Haddock-Fraser worked with 382 newspapers in the UK and reported only 31% were scientifically supported [13]. In the current study, of the 185 articles, only 7% were supported by a bibliographic source, with the vast majority of articles in this study having no scientific support.

Calzate, in her study, analyzed more than 4900 pages on nutrition, only 18% showed nutritional health content [15]. In this study, the absence of recommendations in the publications regarding the intake of nutrients, corresponded to 49%. The high

percentage suggests that the health weeklies do not provide complete nutritional information, therefore, increasing the risks of nutrient overdose. The current data implies that editors may not be applying journalistic principles, which includes providing complete information to the population. Individual people can then better orient themselves appropriately regarding scientific knowledge that has been widely verified. Therefore, supported and unsupported nutritional content can negatively influence readers' diets and potentially harm their health.

Limitations

The current study has no information on the qualifications of the news editor or how they obtained their information or even why they chose to report on health and nutrition information in their weeklies. Health Money and Love is the only weekly that offers information about the editor.

Other limitations include the lack of a validated evaluation tool, the process of searching and reviewing information to establish whether or not there was a scientific basis was carried out independently. Therefore, these results cannot be generalized to other publications and only pertain to those included in this study.

CONCLUSION

Thirty-seven weekly newspapers were collected and 185 articles were selected from them. Half of the articles were supported (quality of information). The main topics were disease, general recommendations and food properties. This information may be useful for policy makers to consider a call for attention to those who manage health periodicals and to those who work with this information. Cooperation from researchers and people from academia is needed to present scientific results according to the context in which they will be read. Cooperation with other health professionals is also essential to avoid misinformation and erroneous beliefs that can eventually lead to misguided health habits.

CONTRIBUTIONS

Thirza Del Carpio, Melissa Torres and Michelle Lozada made substantial contributions to the conception or design of the work and worked on the acquisition of data. Michelle Lozada, Oriana Rivera, Mary Dextre and Yda Rodríguez worked on the analysis, and interpretation of data for the work. All contributed to drafting of the work or revising it critically for important intellectual content. All authors agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy.

Table 1: Results of the weeklies and articles found in this study

Name of the weeklies	Number of weeklies collected	Number of articles found
<i>Sun, Medicine and Beauty</i>	10	32
<i>Natural Health</i>	10	72
<i>Health, Money and Love</i>	7	9
<i>My Health</i>	10	72
Total	37	185

Table 2: Exploration of the articles according to the quality of the information

Variables	Supported (n=93) 50.27%	Unsupported (n=92) 49.73%	P value
Name of weekly			
<i>Sun, Medicine and Beauty</i>	27 (29.03)	5 (5.43)	0.000*
<i>Natural Health</i>	35 (37.63)	37 (40.22)	0.000**
<i>Health, Money and Love</i>	4 (4.30)	5 (5.43)	
<i>My Health</i>	27 (29.03)	45 (48.91)	
Topic			
Directed to a disease	34 (36.56)	31 (33.70)	0.035*
General recommendation	33 (35.48)	20 (21.74)	
Properties of a food	26 (27.96)	41 (44.57)	
Objective			
Information about a topic	75 (80.65)	83 (90.22)	0.065*
Advertise a product	18 (19.35)	9 (9.78)	
Source description			
Yes	7 (7.53)	6 (6.52)	0.789*
No	86 (92.47)	86 (93.48)	
Quarter of publication			
First (Jan-Mar)	38 (40.86)	40 (43.48)	0.744*
Second (Apr-June)	26 (27.96)	28 (30.43)	
Third (July-Sept)	29 (31.18)	24 (26.09)	

* Chi squared, **Fisher's exact test

Table 3: Bivariate and multivariate logistic regression of the variables

Variables	Bivariate		Multivariate	
	OR (IC 95%)	p value	OR (IC 95%)	P value
Name of the weekly				
<i>Sun, Medicine and Beauty</i>	Ref		Ref	
<i>Natural Health</i>	5.71 (1.98 – 16.48)	0.001	6.99 (2.11 – 23.21)	0.001
<i>Health, Money and Love</i>	6.75 (1.33 – 34.27)	0.021	6.02 (1.08 – 33.56)	0.041
<i>My Health</i>	9 (3.10 – 26.16)	0.000	9.95 (2.98 – 33.25)	0.000
Topic				
Directed to a disease	Ref		Ref	
General recommendation	0.67 (0.32 – 1.39)	0.278	0.56 (0.26 – 1.32)	0.193
Properties of a food	1.73 (0.87 – 3.45)	0.121	2.13 (0.96 – 4.73)	0.063
Objective				
Information about a topic	Ref		Ref	
Advertise a product	0.45 (0.19 – 1.07)	0.07	0.49 (0.18 – 1.39)	0.182
Source description				
Yes	Ref		Ref	
No	0.86 (0.28 – 2.66)	0.789	1.84 (0.44 – 7.70)	0.406
Quarter of publication				
First (Jan-Mar)	Ref		Ref	
Second (Apr-June)	1.02 (0.51 – 2.05)	0.949	1.04 (0.48 – 2.27)	0.914
Third (July-Sept)	0.79 (0.39 – 1.58)	0.5	0.82 (0.38 – 1.78)	0.612

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