

Addressing Health Communication in Nutrition

Meyhaa Buvanesh

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University of California, Davis

Abstract

From fitness bloggers to the thousands of articles written about what it means to be healthy, information is more accessible than ever. But with such widespread use of the internet comes the challenge of educating the general public regarding the reliability and factuality of information. Researchers have investigated health communication campaigns and their impact on nutritional behavior and concluded that nutrition campaigns are able to shape lifestyle interventions. So researchers and practitioners need to evolve their role in the lives of the general public and see themselves as health communicators to make additional efforts to connect with their audiences. My study explores perceptions of health and medical related forms of communications in nutrition. And by analyzing nutrition-literacy related communication, my paper examines how health and medical professionals can best bridge the gap of communication and overall nutrition health literacy for the average person.

Introduction

Health communication shapes how every single individual lives their life. Health literacy is the extent to which an individual has the capacity to understand health-related information in order to ultimately make an educated decision regarding their health. Health literacy rates go beyond the individual and depend on a multitude of systemic factors¹. Being health literate allows individuals to take an active role in their health and have more autonomy over their lives.

With such fast-paced and rapid developments in the medical and health industry, health communication is the main factor impacting not only health literacy but also the overall well-being of the general population. The goal of bettering health communication is about identifying and supporting the people in need to foster a lifestyle intervention. As highlighted by the World Health Organization, researchers and practitioners need to make additional efforts to connect with their audiences². Application of research is at the heart of public health and alleviating global health threats. Health professionals have the means to empower the public by applying the knowledge they gather while writing papers and conducting research.

In terms of nutrition, health communication is imperative because nutrition affects every single individual. Media campaigns have proven to have a significant impact on lifestyles. Multiple studies published in the *Journal of Nutrition Education and Behavior* convey that mobile technology and campaigns not only have the potential to affect health outcomes in nutrition³ but can also ultimately lead to lifestyle interventions⁴. Although there are numerous journals and publications regarding nutrition and health, this discussion is about the application of all that research and bridging the gap between the medical community and the average person.

One of the main factors fostering this gap is readability. Readability involves the multitude of factors that determines how intuitive and easily readable a piece of communication

is. Readability formulas use vocabulary difficulty, sentence structure, design, and various other factors to mathematically predict the difficulty of understanding a piece of communication ⁵. Readability is especially important in health communication because the readability of a pamphlet directly dictates a patient's level of health literacy.

Even while watching or reading the news, it's incredibly easy for the applications of a scientific study to be extrapolated beyond its actual reach, leaving the public with a different understanding regarding what the study was about. In a nutritional science paper, Navjoyt Ladher cleverly took the common phrase, "you are what you eat" to another level by publishing "You Are What You Read". Ladher advocates for researchers taking ownership of their research and not leaving it to the media to distort key messages that reach the public ⁶. In other words, a researcher's duty goes beyond merely publishing a paper and their conclusions. Researchers and health professionals need to take the next step to act on the implications of their findings and be involved in public and community health programs.

I want to facilitate a conversation regarding how researchers and medical professionals can maximize the impact of their work. The general population needs more nutritional guidance than ever before to truly understand what they are putting into their bodies. This paper is about how best to bridge that gap and bring the average person into the conversation regarding nutrition and overall health.

Methods

From searching low-carbohydrate diets to benefits of red wine, accessing information has never been easier. There is a plethora of resources at our fingertips, only a click away. But, this

leaves the average person confused about the actual science behind everything on the web. Is there any science behind the new weight loss diet? Is dark chocolate actually good for you? Is eating too much protein bad for you? And this list can go on. Everything ties back to Lader's phrase: you are what you read ⁶.

To understand the state of mind of the average individual, I started my research with the materials most accessible to the general public: social media posts. I posted a quick survey on my own social media platforms for my friends to send me pictures and links to health and nutrition related posts on their feed. I kept my searches and research independent of the results of my survey. This allowed me to compare the trends I noticed, while researching such forms of communication, with the actual examples from my peers. The survey served more as a check for myself to ensure my research was a reflection of the reality of nutrition related communication on social media platforms.

Then I moved onto finding magazines, articles, and blog posts. Again, my research was about identifying trends between these forms of communication to conclude how the general public perceives the information within these sources. Thus, accessibility was more of a factor than credibility.

I used an online readability formula calculator which uses eight different mathematical formulas to generate an overall readability score for each piece of communication. The eight formulas include the Flesch Reading Ease, Gunning Fog, Flesch-Kincaid Grade Level, Coleman-Liau Index, SMOG Index, Automated Readability Index, and the Linsear Write Formula ⁷. I chose three articles from the trending sections of the Cosmopolitan, Eating Well, BuzzFeed, and Blogilates websites. For the sampling of writing from each website, I used a random number generator to choose the specific paragraphs to enter into the readability calculator. The

readability calculator provided an individual score for each of the eight readability formulas and an overall average readability assessment.

To gain an even more holistic understanding of the scope of information out there for the public to research and find, I used the BMJ journal as a case study. Similar to the magazine articles and blog posts, I used the random number generator to chose paragraphs to enter into the same readability calculator.

Results

The results of my research generated a checklist of characteristics for effective social media posts. There are three main types of nutrition advocacy: celebrity sponsorships, fitness bloggers, and sponsored products. Each advertisement and post were versions of the same design but with different text. The captions of the posts mainly include question-answer style or experience-based writing. The writing, itself, mainly utilizes one or two syllable words. But the overall message of the post is delivered through the photo attached.

For the magazine and online articles, the results are organized in table format below. The three articles from Cosmopolitan have readability index averages of 11, 9, and 10, respectively ^{8,9,10}. Articles from Eating Well have scores of 10, 8, and 11, respectively ^{11,12,13}. The BuzzFeed articles received scores of 5, 10, 14, respectively ^{14, 15, 16}. For the BMJ articles, the readability scores are 18, 7, and 14 ^{17,18,19}. And Blogilates has the greatest readability with scores of 5, 6, and 6, respectively ^{20, 21, 22}. Overall, Cosmopolitan has an average readability index of 10.00, Eating Well and BuzzFeed both have an average index of 9.67, and the BMJ journal has an average of 13.00. So, Blogilates has the lowest average of 5.67 ⁷.

Table 1: Averages of Readability Indexes from 4 Websites

	Grade Level	Reading Level	Grade Level	Reading Level
	Cosmopolitan		BuzzFeed	
Article 1	11	Fairly Difficult to Read	5	Easy to Read
Article 2	9	Standard/Average	10	Standard/Average
Article 3	10	Fairly Difficult to Read	14	Difficult to Read
Overall	10.00	Fairly Difficult to Read	9.67	Fairly Difficult to Read
	Eating Well		Blogilates	
Article 1	10	Standard Average	5	Easy to Read
Article 2	8	Easy to Read	6	Fairly Easy to Read
Article 3	11	Standard/Average	6	Easy to Read
Overall	9.67	Standard/Average	5.67	Easy to Read
	BMJ			
Article 1	18	Very Difficult to Read		
Article 2	7	Standard/Average		
Article 3	14	Very Difficult to Read		
Overall	13	Very Difficult to Read		

Table 2 ABC: 7 Mathematical
Readability Formulas for 3 Cosmopolitan

8 Foods that'll Stop you Feeling Tired all the Time		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	55.5	Fairly Difficult
Gunning Fog	15	Hard to Read
Flesch-Kincaid Grade Level	10.6	11th Grade
Coleman-Liau Index	10	10th Grade
SMOG Index	10.8	11th Grade
Automated Readability Index	10.9	15-17 yrs (10 - 11 Grade)
Linsear Write Formula	13.8	College
Not a Dumb Question: What is a Calorie, Exactly?		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	62	Standard/Average
Gunning Fog	12.4	Hard to Read
Flesch-Kincaid Grade Level	9.4	9th Grade
Coleman-Liau Index	7	7th Grade
SMOG Index	9.2	9th Grade
Automated Readability Index	8.2	12 - 14 yrs (7-8 Grade)
Linsear Write Formula	12.1	12th Grade
Scientific Study says Reducing Portion Size and Calories has Nothing to do with Weight Loss		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	58.7	Fairly Difficult
Gunning Fog	11.1	Hard to Read
Flesch-Kincaid Grade Level	9.7	10th Grade
Coleman-Liau Index	11	11th Grade
SMOG Index	8.3	8th Grade
Automated Readability Index	10.6	15-17 yrs (10-11 Grade)
Linsear Write Formula	11.4	11th Grade

Table 3 ABC: 7 Mathematical
Readability Formulas for 3 Eating Well

The Anti-Inflammatory Diet: Is It Right for You?		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	66.4	Standard/Average
Gunning Fog	11.6	Hard to Read
Flesch-Kincaid Grade Level	8.8	9th Grade
Coleman-Liau Index	9	9th Grade
SMOG Index	8	8th Grade
Automated Readability Index	9.7	14-15 yrs (9-10 Grade)
Linsear Write Formula	11.5	12th Grade
How to Meal-Prep a Week of Healthy Family Dinners on Sunday		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	69.6	Fairly Easy to Read
Gunning Fog	8.9	Fairly Easy to Read
Flesch-Kincaid Grade Level	7.2	7th Grade
Coleman-Liau Index	10	10th Grade
SMOG Index	7.2	7th Grade
Automated Readability Index	8	12-14yrs (7-8 Grade)
Linsear Write Formula	8	8th Grade
8 Best Foods to Eat for Weight Loss		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	60.8	Standard/Average
Gunning Fog	12.8	Hard to Read
Flesch-Kincaid Grade Level	10.2	10th Grade
Coleman-Liau Index	10	10th Grade
SMOG Index	8.8	9th Grade
Automated Readability Index	11.4	15-17 yrs (10-11 Grade)
Linsear Write Formula	13.1	College

Table 4 ABC: 7 Mathematical
Readability Formulas for 3 BuzzFeed

How To Cook Healthier Even If You're Super Lazy		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	86.6	Easy to Read
Gunning Fog	6.9	Fairly Easy to Read
Flesch-Kincaid Grade Level	4.8	5th Grade
Coleman-Liau Index	5	5th Grade
SMOG Index	4.1	4th Grade
Automated Readability Index	4.2	8-9yrs (4-5 Grade)
Linsear Write Formula	6.7	7th Grade
Here's Why I'll Never Go Low Carb, And I'm A Personal Trainer		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	63.4	Standard/Average
Gunning Fog	11.2	Hard to Read
Flesch-Kincaid Grade Level	8.7	9th Grade
Coleman-Liau Index	10	10th Grade
SMOG Index	8.3	8th Grade
Automated Readability Index	9.7	14-15 yrs (9-10 Grade)
Linsear Write Formula	10.6	11th Grade
13 Experts Explain Why Diets Don't Work And What To Do Instead		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	48.4	Difficulty to Read
Gunning Fog	17.1	Difficulty to Read
Flesch-Kincaid Grade Level	13.7	College
Coleman-Liau Index	10	10th Grade
SMOG Index	11.9	12th Grade
Automated Readability Index	15.2	College Graduate
Linsear Write Formula	18.6	College Graduate or Above

Table 5 ABC: 7 Mathematical
Readability Formulas for 3 Blogilates

The Fine Line Between Body Positivity and Body Shaming		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	76.8	Fairly Easy to Read
Gunning Fog	7.6	Fairly Easy to Read
Flesch-Kincaid Grade Level	5.8	6th Grade
Coleman-Liau Index	6	6th Grade
SMOG Index	5.4	5th Grade
Automated Readability Index	4.3	8-9 yrs (4-5th Grade)
Linsear Write Formula	6.4	6th Grade
An Honest Conversation About my Struggle with Food Guilt + Ice Cream Giveaway		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	78	Fairly Easy to Read
Gunning Fog	7.5	Fairly Easy to Read
Flesch-Kincaid Grade Level	5.8	6th Grade
Coleman-Liau Index	7	7th Grade
SMOG Index	6.3	6th Grade
Automated Readability Index	5	8-9 yrs (4-5th Grade)
Linsear Write Formula	6.9	7th Grade
The Best Workout for Pisces!		
Readability Formula	Score	Difficulty
Flesch Reading Ease Score	81.7	Easy to Read
Gunning Fog	7.7	Fairly Easy to Read
Flesch-Kincaid Grade Level	5.1	5th Grade
Coleman-Liau Index	8	8th Grade
SMOG Index	5.4	5th Grade
Automated Readability Index	5.4	8-9 yrs (4-5th Grade)
Linsear Write Formula	6.3	6th Grade

Table 6 ABC: 7 Mathematical Readability Formulas for 3 BMJ Articles

Study Suggests Possible Link Between Highly Processed Foods and Cancer			Could Sugar be Responsible for the Obesity and Diabetes Epidemics		
Readability Formula	Score	Difficulty	Readability Formula	Score	Difficulty
Flesch Reading Ease Score	25.6	Very Difficult to Read	Flesch Reading Ease Score	25.5	Very Difficult to Read
Gunning Fog	20.1	Difficulty to Read	Gunning Fog	17	Difficulty to Read
Flesch-Kincaid Grade Level	17.3	College Graduate or Above	Flesch-Kincaid Grade Level	14.1	College
Coleman-Liau Index	14	College	Coleman-Liau Index	15	College
SMOG Index	15.2	College	SMOG Index	13.2	College
Automated Readability Index	19.7	College Graduate	Automated Readability Index	13.8	21-22 yrs (College)
Linsear Write Formula	22.4	College Graduate or Above	Linsear Write Formula	14	College
Slow Eating Speed May be Linked to Weight Loss.					
Readability Formula	Score	Difficulty			
Flesch Reading Ease Score	68	Standard/Average			
Gunning Fog	9.9	Fairly Easy to Read			
Flesch-Kincaid Grade Level	7.3	7th Grade			
Coleman-Liau Index	8	8th Grade			
SMOG Index	7.2	7th Grade			
Automated Readability Index	6.6	11-13yrs (6-7 Grade)			
Linsear Write Formula	7.5	8th Grade			

Discussion

Before analyzing the results from my research, I will be first addressing an alternate view to the low nutrition health literacy levels. There may be a multitude of socio-economic factors that can also contribute to the low nutrition health literacy levels. And more than the lack of nutrition education, the lack of access to fresh produce and healthy options may be the main contributor to the lack of health literacy. Admittedly with any kind of disparity, there is a spectrum of vulnerability. But even for individuals with access to fresh ingredients, a 2012 report by the Physicians Committee for Responsible Medicine reported that a majority of individuals in the United States have a low level nutrition-based health literacy. In regard to the understanding of various nutrition-related topics such as calories or calcium²³. This indicates how the issue of insufficient nutrition-related health communication goes deeper than socio-economic differences. According to a 2017 health literacy study, only 12% of adults in the United States are considered health literate²⁴. Every individual falls on a spectrum of vulnerability when it comes to the insufficient communication. Although accessibility is one of the main contributing factors to the insufficient health literacy, the source of the disparity is an overall systematic lack of nutrition education.

In terms of the readability indexes, the recommended reading level is around sixth or seventh grade based on the literacy rate of the United States²⁴. The calculated readability indexes indicate the content from Blogilates has the greatest consistent readability, with an average readability score of 5.67. All three sampled posts from Blogilates met the desired threshold of readability, around the sixth to seventh grade. Eating Well and BuzzFeed both had an average readability of 9.67, which is slightly higher than the desired threshold. However, both platforms had one article with an index meeting the sixth to seventh grade readability level. This

demonstrates that the content written on these websites are aimed to appeal to a wide range of audiences, more than meeting the average readability threshold. Eating Well and BuzzFeed had a variety of formats for their content. Some articles were solely pictures, some had short paragraph captions with each visual image, and other articles were more focused on the written content. Cosmopolitan had a fairly difficult to read index, which shows how there is a readability of content disparity in all forms of communication. BMJ had the highest index, which indicates that their content is very difficult to read. But the type of content produced from BMJ is what is needed to bridge the communication gap between average individuals and professionals.

One of the main takeaways from my research is the importance of readability in any form of communication. More than the information present, it is how the information is displayed and formatted that allows for the general public to understand the information. A 2012 peer-reviewed article published in the *Journal of the Academy of Nutrition and Dietetics* conducted a systematic review to summarize the scientific literature on nutrition-based health literacy. The researchers found that of the 142 dietitians surveyed, 92% did not use readability formulas when creating nutrition education materials²⁵. In comparison to social media posts which are designed to first be readable and second convey information, health professionals need to better connect with their audience and bring each individual into the conversation regarding their own health.

In my research of social media posts, celebrities have sponsorships with companies to promote products such as detox teas, vitamin gummy bears, and fitness challenges. Fitness bloggers, many of them being professional trainers, dedicate their entire social media to nutrition and health. Such individuals advocate for overall health, with daily posts of encouragement, hearty meals, and workout plans. And social media platforms, themselves, have individually

sponsored advertisements for products such as meal boxes, healthy cookbooks, and protein powder.

The common overarching theme connecting nutrition-related forms of communication on social media platforms is how engrained pictures and visuals are for their overall message. My research was validated by not only the results of my survey, but also a published study analyzing 107 food and nutrition related posts on Facebook that found nearly 60% of the posts were mainly photos²⁶. These have evolved the concept of click-bait from links to pictures. Having a photo or infographic, instead of text, increases the target audience of each post because the readability of the posts increases. With a visual image as the focal point to communicate their message, platforms can appeal to a wider target audience and communicate effectively.

Even in popular magazines and blogs such as Cosmopolitan, BuzzFeed, Eating Well, or Blogilates, nutrition communication goes beyond just text. Each platform has dedicated photos, infographics, and videos part of their campaign. A common template used by such sites is to have a certain number of foods, diagrams, and examples regarding a nutrition topic. For example, Cosmopolitan discusses “8 Foods That'll Stop You Feeling Tired all the Time” whereas BuzzFeed has “13 Experts Explain Why Diets Don't Work And What To Do Instead”. Both articles heavily rely on diagrams and pictures with a small paragraph of text under each of the eight pictures. Some of the other BuzzFeed articles, such as “24 Diagrams To Help You Eat Healthier”, solely relying on the graphics of their article²⁷. Eating Well has both a written publication and online website. On both platforms, vivid pictures of food, exercising, and recipes shape all the information communicated. Blogilates has a combination of the strengths from the other platforms and also includes videos to create strong website appealing to a very wide audience with its high readability.

However, the amount of information conveyed only with pictures is not enough to educate the public on nutrition-related topics. Additionally, the individuals making the Instagram, BuzzFeed, and Youtube posts are often being paid for their content. Celebrities and fitness bloggers are paid for their promotions and posts and sites like BuzzFeed receive a percent of the proceeds from products they recommend on their posts. With a monetary motivation, the ultimate goal of nutrition education is not addressed.

The BMJ started out as a medical journal and has evolved in its 170 years to support patient day-to-day healthcare decisions. In addition to publishing papers, like a traditional journal, BMJ also has education campaigns targeted at the general public. BMJ aims to put patients first and have jargon free evidence based resources for the general public to ultimately increase patient health literacy and outcomes. Every article written is based off a BMJ journal publication and references the published paper at the end of each news article ²⁸. BMJ has taken steps in the direction of bridging the gap between health professionals and patients. However according to the National Adult Literacy Surveys, nearly half of the United States adult population is marginally illiterate. With one in five adults reading at or below a fifth grade level ²⁹, BMJ needs to use more effective visuals to increase readability and appeal to a larger target audience.

The variety of articles I encountered in my research proves the extent of nutrition-related information in the internet. My paper is not about the lack of information, but is rather about narrowing down the sheer amount of articles and posts to the most reliable pieces of information. The American Dietetic Association concluded that nutrition misinformation harmfully effects patient health. There are three main types of misinformation in nutrition-related writing: food fads, health fraud, and misdirected claims ³⁰. These categories of misinformation perpetuate

unrealistic expectations in the general public and advertise simple low-cost solutions instead of promoting long-term lifestyle interventions. And many of these advertisements and social media posts use unproven scientific claims and testimonials to increase their credibility. However, this results in the spreading of even more false information; this time, the misinformation fosters feelings of suspicion and mistrust of actual health professionals in the general public.

I encountered all three categories of misinformation in my research. Food fads include diets, alleged super foods, and trends which all claim to be the newest and most promising tool for especially weight loss and other health effects. Food fads also heavily rely on celebrity endorsement to increase the popularity of their product. Numerous celebrities promote food fads involving herbal cleanse teas on Instagram or quick weight-loss hidden tips and tricks. But this only further expands the gap between the medical community and the average person.

Conclusion

Overall, my research reaffirms the importance of health communication in nutrition. From fitness bloggers to the thousands of articles written about what it means to be healthy, information is more accessible than ever. But with so many different sources to choose from, health professionals need to follow in the lead of the mainstream media and create content for nutrition education. Currently, the mainstream media uses a variety of methods to increase readability and have templates of articles written to maximize the reach of their work. More health professionals and journals need to follow in the steps of the BMJ journal to increase the applicability of their work. Health professionals need to take charge of the messages being conveyed in the media to ultimately shape the lives of their patients.

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