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Research Article

The Cardinal Nutrition Education Project: A Pilot Project Evaluating the Use of Social Media to Disseminate Nutrition Information

Travis Muller[1]* and Amber Haroldson[1]

[1]*Department of Nutrition and Health Sciences, Ball State University, United States*

***Corresponding Author:** Travis Muller, Ball State University, 2000 W University Ave, Muncie, IN, United States.

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Abstract

The Cardinal Nutrition Education Program provides formatting for a social media and public health nutrition blog spot disseminate user data. Prior research informed methods of data tracking user interaction, but none using Google Analytics. This document explores Analytics, formatting and analysis of metrics such as demographics, user flow, and affinity categories, as well as reference to written material that initially attracted users.

Keywords: Nutrition; Health; Blogger; Analytics; Facebook

Abbreviations

URL; WIC; GMO; ID; IDFA

Introduction

Ahlqvist., *et al*. defined social media as "a means of interactions among people in which they create, share, and exchange information and ideas in virtual communities and networks' [1]. The utilization of social media outlets, such as Facebook, has the potential to provide a large number of individuals with nutrition information. The nation's staggering usage of the internet and social media supports this theory. As of 2012, 66% of adult internet users have and use a social media site, like Facebook, and 48% use it in their daily lives, making social media the third most common online activity [2]. It is also reported to be used by 86% of people from the ages of 18-29 [2]. Furthermore, social media giants are free. For this, and arguably, many other reasons, shrinking gaps of usage based on demographics (age, education, and household income) are now apparent. Additionally, it has been reported that 55% to 67% of adults in the U. S. use the internet to search for health and wellness information. Half of these searches are made in consideration of someone else [3-5].

Previous literature illustrates that credible sources in the field of nutrition education have only recently taken interest in studying the opportunities presented by social media. A study by Lohse examined the effectiveness of Facebook to recruit low-income women within a specific age and geographic location to participate in an online nutrition education program [6]. She acknowledged the use of social media as a way to implement interactive health education via "likes," beyond typical class structures, as millions of Americans have Facebook [6]. Despite that the internet is considered the most convenient method to access health information, [7] Lohse notes that "as online nutrition education opportunities emerge, recruitment strategies using social networks may facilitate the outcome and impact evaluations necessary to establish an evidence base for these programs'. [6] Lohse demonstrated that Facebook is an effective strategy to recruit low-income participants to nutrition education impact assessment projects. Therefore it is an important research tool for examining food security, eating competence demographic characteristics (including education level and BMI status) [8,9], associations between eating competence and food security [10,11] and cost effectiveness [12]. People who have dietary restrictions sought out the information, as well.

The importance of this assertion comes to life as nutrition education via the internet shows promise. Researchers found that participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) saw more benefit in online education compared to traditional programs [13].

Healthcare professionals have taken notice, using social media sites for a host of services. These include improving delivery and availability of health care, communicating with peers, facilitating social support groups, and delivering educational programs. Inter-professional services include recruiting for services, training students, communication between other healthcare professionals (through workplaces, coalitions and organizations) [14-18]. The public health professional community uses social media for comparable appropriations. These include electronic-based education, communication to the public, recruitment to programming, training students, tracking and analyzing data on the group or population of interest.

Lohse's study pointed out the need for future research to understand learner interaction with the social network site on a

more intimate level. These aspects include navigation, program participation, and retention levels. This is all needed to maximize the effectiveness of using the social networking application in regards to nutrition education and research.

The Food Hero social media marketing campaign established what the authors deemed as "Best Practice Guidelines" to initiate and run a social networking site for nutrition education [19]. The authors note that amongst the horde of nutrition, fitness, and health pages floating around sites like Facebook, it is necessary to distinguish the "how" of the successful pages. The Food Hero study found a select list of Best Practice Guidelines to be most efficient in their study. An effective program might initiate a needs assessment, select social media sites, create a plan, integrate a social media team, and regularly track and use social media measurement data (i.e. Facebook Insights, Google Analytics). The authors of the Food Hero Study recommend that any social media approach to nutrition education should maintain a format that is relevant to the target audience. Tracking user interaction with measurement data may help define what is relevant to the target audience.

The EFNEP Study conducted by Leak, *et al*. [12] implemented focus groups to assess the needs of Expanded Food and Nutrition Education Program (EFNEP) graduates for a social media platform to continue nutrition education. They found four main areas of interest. The first was page content. Focus groups reported that the page would be more attractive if recipes were included. Tips on how to shop and budget were of importance as well. Parents wanted advice on how to get their children involved in the selection and preparation of food.

The focus groups described that they would like a page that is visually appealing. It should be vibrant, have pictures, with concise, well-written messages. Maintenance should be carried out by a select group of professionals, preferably an MD or RD. The rationale for this is that it creates trust for those using the page.

The MD or RD should make daily updates that are realistic but enthusiastic. It was also determined that networking opportunities should be given within the page, as well. If there is an "ask the expert" section, the responses must be given in a timely manner. Conversation on the page should be encouraged, especially for those wanting to show positivity and successes. Overall, trust was one of the most important concepts discussed in the focus groups. There was an obvious desire for trustworthy and accurate information from credible sources. For this reason, it is important that each person who writes this information to have a bio section, describing themselves on a more personal basis.

The reviewed literature discussed thus far provides a solid platform for the beginnings of a successful nutrition education program utilizing social media. There is a large enough segment of the general public using social media for it to be a viable option for nutrition education. Furthermore, the Food Hero Study provided useful guidelines for successful implementation of nutrition education programming. Lastly, the EFNEP study provided useful ideas on how to appeal to the users of the page. The Food Hero study did provide mention of tracking tools like Facebook Insights, Google Analytics, and P interest Insights. However, as it was not the main focus of that study, these tools were not extensively explained. The ability to track user involvement needs to be explored for the benefit of this field of study. The objective in this exploratory project was evaluate the utilization of Facebook and a blog to disseminate credible nutrition information and to gather enough data from user interactions to explore aspects of Facebook Insights and Google Analytics that have not previously been reported in this area of work.

Materials and Methods

Using best practices recommended by previous research, a Facebook and blog (using Blogger) were created, named the Cardinal Nutrition Education Program. Both the Facebook and blog pages contained background and educational information about the writers/managers of the posts. The blog posts were written by a senior undergraduate dietetics student at a Midwestern university. They were well-researched using peer-reviewed journal articles, cited, and assessed for validity and trustworthiness by a professor of an accredited dietetics program, who was also a registered dietitian. The posts were intended to contain relevant, applicable health information, put into a relatable writing style. The intended audience was simply anyone using the internet to find nutrition information, so a variety of overall nutrition-related health promotion topics were chosen. The Facebook page circulation was started simply by the writers (student and faculty member) sharing the page from their personal Facebook accounts. Because this project was an evaluation of a nutrition education program, it was deemed "Not Human Subject Research" by the university Institutional Review Board.

Each day in the month of March (National Nutrition Month), one post was put into the blog and hyperlinked into the Facebook

page. The hyperlinked posts were given corresponding, yet brief descriptions. A picture that was deemed appropriate by the student and faculty member was added to enhance the visual appeal and credibility.

Essentially, the Cardinal Nutrition Education Facebook Page was used to highlight the Blogger page. It is important to note that the Blogger page was also accessible from the general web. However, researchers were able to differentiate between the percentages of users that found the blog via Facebook or the web. Facebook user interaction with the blog was assessed using Facebook Insights, Blogger, and Google Analytics.

The researchers noticed the breadth of possibilities within Google Analytics is driven by the settings and formatting. There are many options and individuals will have to decide which are fitting for their goals and programs. The format of this project, while inclusive of its goals, had a relatively simple setup compared to the range of options that Google Analytics provides.

The first step of setup involved creating a blogger account and Google account. Google accounts come free with Analytics. Inside the Analytics Admin, a new account was made. This project's account was named Honors Thesis after the greater project and class goal. At this point, a Property was created as a subfolder titled Cardinal Nutrition Education Project. A subfolder from this was automatically created called All Website Data.

The amount of notable settings changes within these three areas was not excessive, but was important.

Within the Account Honors Thesis, under User Management, access to the Analytics Account was given to the writers by entering their respective Google email addresses. Two filters were also set: Exclude Myself and Force Lowercase URLs. These were added to not add unnecessary data to Google Analytics by administrative management within the Blogger site and to assure that upper case URL entry was established in the Google Analytics data set.

Settings within Property Admin held the most significant changes. Within Property Settings, the URL "cardinalnutrition.blogspot.com" was added to the prefix http://. The Industry Category was defined as People and Society. The Enable Demographics and Interest Reports were switched to on. In User Management, the same emails entered in the previous User Management Access were again added. In this instance, however, their property permissions were set to Manage Users, Edit, Collaborate, Read and Analyze.

An essential component of the project lies directly within the Tracking Info tab, under Tracking ID in Analytics. This ID was used to link the Blogger and Google Analytics. This code was placed within the other tab within Blogger Settings. The spot to enter the ID is named Analytics Web Property ID.

The Data Collection tab in Tracking Info within Analytics was the next area of interest. Enabling the Advertising Reporting Features allowed data to be displayed about Audience Demographics and Interests. Within the scope of the project being discussed, this feature proved to be beneficial. It allowed an analysis of how differences in sex and ages viewed the project.

Below are some of the topics covered in the blogs.

- Potassium
- Magnesium
- Preventing Kidney Stones
- Supplementation: Creatinine, Arginine, Citrulline
- Diverticulitis
- Inflammation and Diet
- Soy Isoflavones
- Advertising and Obesity
- Carbohydrates during Exercise
- Fiber
- GMO's and Allergic Sensitization
- Diet and Epidemiology

Results and Discussion

The overall number of blog site users who came from Facebook from March 1st to March 31st was 106. The most popular blog written was Potassium: Beyond the Banana on with 63 sessions on March 2nd. The least popular was GMO's and Allergic Sensitization posted on March 30th with 1 session that day. The average session duration on the blog site was 2:58 seconds. There were 488 unique blog page views. "Unique views can be understood as user sessions per page, with each session potentially representing multiple views of the page but a minimum of one view per session" [20]. At the end of March, 194 people had liked the Cardinal Nutrition Education Program on Facebook. There was a negligible amount of sharing of the page and the posts. This was also true for likes of each post. Despite the lack of interaction on the Facebook page, it is clear that users were accessing the blog through Facebook from Google Analytics information.

Google Analytics was able to record 85.1% of blog site sessions relating to demographic categories (age and gender). This is done to protect user anonymity. To quote from Analytics Help, "Thresholds are applied to prevent anyone viewing a report from inferring the demographics or interests of individual users. When a report contains Age, Gender, or Interest Category (as a primary or secondary dimension, or as part of an applied segment), a threshold may be applied and some data may be withheld from the report. For example, if there are fewer than N instances of Gender = male in a report, then data for the male dimension may be withheld"[21]. Gender breakdown of sessions on the blog can be seen in Figure 1.

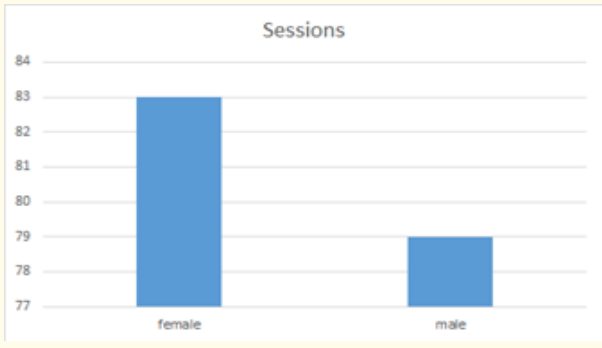

Figure 1: The Number of Sessions between Females and Males who interacted with the Cardinal Nutrition Education Program Blog.

In total, the 18-24 age group category composed 71.8% of the sessions from our user base. This age group totaled 36 users. The 25-34 age group category consisted of 22 users and 28.2% of the sessions from our user base (Figure 2). It is important to note that Google Analytics can only discern the user trend. It tracks how the user's ID, or IDFA in the case of iOS users, has interacted with previous sites, i.e. a cookie trail [22]. This data implicates that users beyond 34 years old may have cookie trails that resemble what younger demographics are viewing in their time on Facebook and other sites.

A useful tool provided by Google Analytics is the Interests Overview. This allows the program user to gain insight into the

interests of the viewers. While this is not a direct cookie trail that Google Analytics gathers, it comes "from the third-party Double Click cookie (for web traffic) and from anonymous identifiers for mobile apps (i.e., Advertising ID for Android and IDFA for iOS)" [22]. Figure 3 depicts popular affinity categories of blog users who came from the Facebook page.

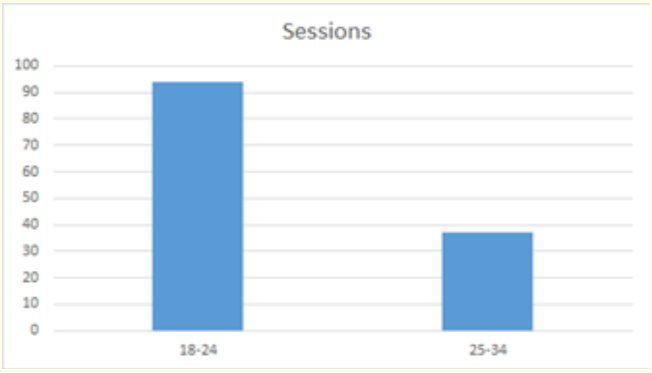

Figure 2: The Number of Sessions between Age Groups Interacting with the Cardinal Nutrition Education Program Blog.

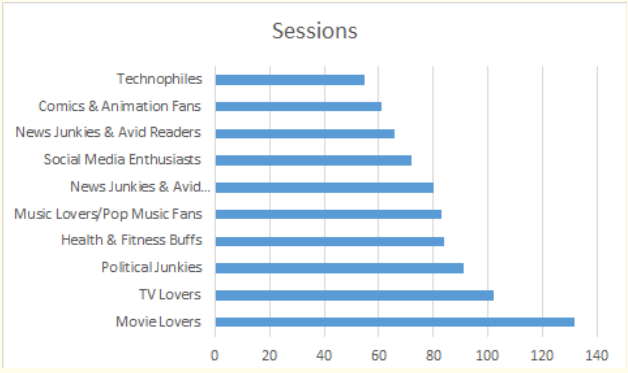

Figure 3: Sessions of Popular Affinity Categories of Blog Users from Facebook.

This exploratory program was started with the intent to simply track the number of users, "Likes," "Shares," and comments to a nutrition education program utilizing Facebook, but through the use of Google Analytics, researchers were able to analyze how reactive a moderate size of individuals were to researched and well-written nutrition information in the aforementioned format. It was found that Google Analytics, specifically Affinity Categories and Demographics had the potential to analyze the people traversing through the content of any online program. On top of this, Google Analytics allows more basic but just as effective information. This includes bounce rates, returning vs new user data, time of day usage, session duration, and pages per session. This information is important in gauging the overall effectiveness of the program. There are also various ways of segmenting and grouping this information.

Google Analytics allowed a general interest profile of those viewing the blog pages if a substantial user base was attained. There are multiple benefits of this. The user base can be segmented into multiple categories from the interest categories. Some notable examples include gender, mobile traffic, referral traffic, single session users, returning users. These segments allow an insight into what types of people are viewing the page. This could be used to orient advertising and content management.

Based on previous literature, the need for a more in depth discussion pertaining to the tracking of nutrition education programs over social media became apparent. The study by Lohse mentions the need for a tool like Google Analytics [6]. The Food Hero study briefly mentions Google Analytics as a tool but does not delve into the features that it provides [19]. This is the first study looking at how Google Analytics can be used for online nutrition education programs.

This program had a fairly substantial user base. Google Analytics was able to gather enough data that certain aspects of the users were identifiable. Certain statements about what the users were looking at, who they were, and what they look at elsewhere on the internet cannot be made, however, the information that was gathered points us to certain aspects of the program that should be changed to fit our user base.

In programs with a large sample size, the data obtained by Google Analytics would most likely "fill out" so to speak. If the program is successful, user trends may appear, as will strong demographic and affinity categories. In smaller, more concentrated and consistent user groups, like in an online education class over social media, where there is an expected amount of interaction, Google Analytics could hone in on the specifics of the group at hand. This study was caught between these two properties. Our sample was not large enough to fill out certain aspects of Google Analytics' data, but it was too broad to have a select group of users.

One fairly drastic downfall of the program was that the information was presented on a possibly unappealing Blogger account. The writers of the program did not have extensive design skills. Also, the information was not written with the intent of aiming

at a certain reading level. It is difficult to gauge how these aspects along with individual writing styles affected user interaction with the Facebook page and blog.

Conclusion

Facebook Insights and Google Analytics provide strong tools for the future use of online nutrition education. The data acquired allows a view of the demographics, user flow, affinity categories, and other undoubtedly useful tools. Public health organizations with a social media presence stand to greatly benefit from Google Analytics. Many businesses use the same format utilized through this project (an outside page being hyperlinked into a specific Facebook page's post). Google Analytics is used in various businesses to track sales, user flow, and to target marketing strategies. Our findings relate to the earlier studies, [6,12,19] which found a need to keep page relevance, track interactions to assess problems, and to know what users are looking at elsewhere to investigate consumer trends over social media. Google Analytics may perfectly bridge this gap. With further research and skill using Google Analytics, it may help the field of nutrition education find and fit into the schematic of Facebook demand. Further research regarding social media use for nutrition education should be conducted, especially as it relates to how Google Analytics and other tools can be helpful to target specific audiences.

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