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Original Paper

Analysis of Pinterest as a Tool for Dissemination of Nutrition Information for Parents of Teenagers

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Abstract

This study focused on exploring the type of nutrition information disseminated on the social media site, Pinterest. The information analyzed focused specifically on nutrition information for teenagers. Data were collected by purposive sampling based upon specific inclusion criteria. Five sets of search terms were used: teen breakfast healthy, teen lunch healthy, teen dinner healthy, teen nutrition and healthy snacks for teens. From these sets of search terms, 99 pins were collected for through mixed methods by two separate researchers. Data collected from the pins were compared to the MyPlate guidelines. At least one food group from MyPlate was featured in the information shared, with the majority of pins featuring two to five of the MyPlate guidelines. The results indicated that overall, the pins were not from nutrition-related credible sources; rather, the information came primarily from parents of teenagers sharing their personal experiences. In general, the nutrition information shared was mostly accurate, albeit vague. Due to the lack of nutrition-related credible sources, this study highlights a platform that registered dietitians and other health professionals could use to share relatable, evidence-based nutrition and wellness information to parents and adolescents.

Keywords

nutrition information, MyPlate, social media, Pinterest, teenagers, parents

1. Introduction

MyPlate is produced by the United States Department of Agriculture as a visual representation to help Americans form balanced meals and support healthy eating and drinking habits (MyPlate, 2017). The MyPlate model replaced the MyPyramid in 2011 (A brief history of the USDA food guides, 2017). According to the CDC (2017), children ages 2-18 years have increased their consumption of fruit but not vegetables. While fruit consumption is increasing, it still falls short of the recommendations. On average, over 90 percent of children are not consuming the recommended servings of fruits and vegetables (Centers for Disease Control and Prevention, 2017).

Sixty-five percent of American adults use social media networks, according to Pew Research Center (2015). Social media has changed how Americans work, share political viewpoints, as well as search and retrieve health information—including nutrition information (Perrin, 2015). There has been an increase in Internet usage, and a large proportion utilize social media websites, such as Facebook, Pinterest, Twitter, Instagram, and LinkedIn via mobile devices or desktop (Duggan, 2015). According to the Pew Research Center, the use of Pinterest is steady, and users are predominately women younger than 50 years of age (Duggan, 2015).

The internet and social networks provide a low-cost platform for increased reach of information dissemination (Cugelman, Thelwall, & Dawes, 2011). Over the recent years, over one-third of US adults used the internet and social media to seek health-related information, which prompted some to pursue additional medical advice (Fox & Duggan, 2013). According to Pew Research Center, approximately 80% of mothers accessed social media to research feeding practices for their children (Duggan, Lenhart, Lampe, & Ellison, 2015). The US Centers for Disease Control (CDC) has released guidelines for developing a social media marketing strategy in order to promote the use of social media as a layperson-friendly platform for credible information (O'Flahavan & Goulet, 2012).

With ample access to nutrition information, research must also be conducted to determine how nutrition information is applied. Nutrition literacy is an emerging topic of interest in the realm of social media utilization. It consists of the use of literacy skills in order to analyze and apply nutrition-related information to one's own life (Begley, 2014). Research has shown that individuals with higher levels of nutrition literacy tend to have healthier lifestyles (Silk et al., 2008). It has been noted that nutrition literacy is essential for healthy weight maintenance and overall healthful lifestyle choices (Brewer, Church, & Brewer, 2016).

Research related to feeding practices and child nutrition have primarily focused on children under the age of five as well as breastfed babies (Doub, Small, & Birch, 2016b; McCann & McCulloch, 2012). Nutrition at these points in the lifespan is critical for growth and development, and research has shown that mothers seek information to best support healthy feeding practices (Doub, Small, & Birch, 2016b; McCann & McCulloch, 2012). However, there has been little research on information presented on

social media for adolescent or teenage nutrition in the US. Some research has focused on teens 13-17 years old across Australia, the United States, and the United Kingdom in regards to social media marketing for food and beverages, tobacco use, and alcohol use. It was found that increased exposure to potentially harmful products via social media marketing may impact the overall health of the teens (Dunlop, Freeman, & Jones, 2016). Because of this, more research is needed to determine how teenagers and their parents are retrieving nutrition information.

Social media is generally defined as a networking platform with which users can share and retrieve information within a community setting, such as Facebook, Instagram, Pinterest, Twitter, and YouTube. The purpose of this current study was to use existing information shared on Pinterest to analyze the use of social media in the retrieval of nutrition information focused on teenagers 13-19 years old. The primary research questions that guided this research study were: 1) Do pins on Pinterest related to teenage health and nutrition align to the MyPlate guidelines? 2) What is the credibility of nutrition-related information shared on Pinterest?

2. Method

2.1 Sample

All data was collected based upon content analysis of public *pins* and *boards* on the social networking site, Pinterest. The sample of pins focused on teenage health, an age range of 13 to 19 years old. Using purposive sampling, search terms were applied and the first 25 pins that met inclusion criteria were pinned to a private board for data collection. The total sample size was 99 pins.

2.2 Procedures

The following methodology was adapted from research by Doub, Small, and Birch (2016a) and H. Brewer, Church, and S. Brewer (2016). Data was collected from the social networking site, Pinterest, using purposive sampling. Pinterest allows users to access a search bar in order to find specific types of information. Using this search bar, five sets of specific search terms were used in order to generate information on *healthy* items for teenagers. The sets of search terms included the following: *teen breakfast healthy*, *teen lunch healthy*, *healthy snacks for teens*, *teen nutrition*, and *teen dinner healthy*.

Each set of search terms was typed into the Pinterest search bar, and the first 25 pins that met inclusion criteria were considered part of the sample. Five sample sets, each based upon the sets of search terms, had separate, private boards as a means to collect pins. Specific inclusion and exclusion criteria was applied to the pins. Only the pins that met inclusion criteria were qualitatively analyzed. This procedure was repeated for all five sets of search terms. A total of 99 pins were collected for all sets of search terms (Figure 1).

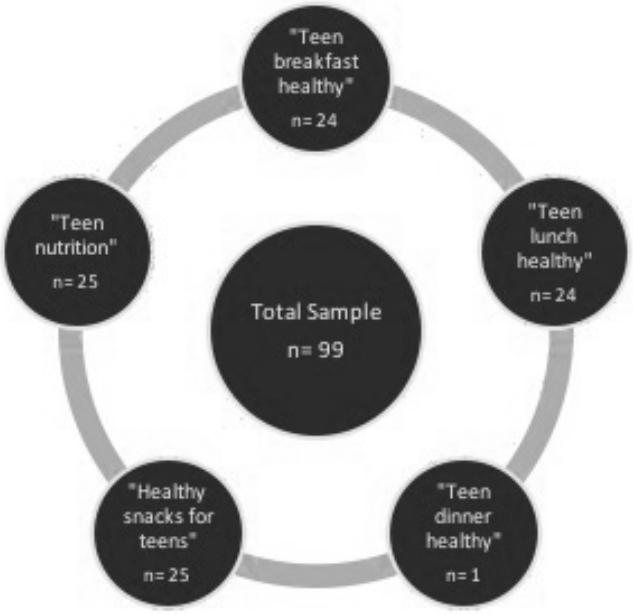

Figure 1. Purposive Sampling and Final Sample Size for Each Search Term

2.3 Inclusion and Exclusion Criteria

In order to collect data, pins were included if they were linked to content, such as a blog or recipe. Further, pins were included in data collection only if they were content-based with recipes and/or nutritional information. The pin also must have had information that focused specifically to teenagers' ages 13 to 19 years and healthy food choices. Pins that were advertisements were excluded from data collection. Additionally, any pins that did not contain a direct link to content were excluded. For example, if the pin linked to only a picture and not a website, it was excluded from the sample set. Pins were also excluded if they were not considered relevant to the search terms, such as a pin that may be considered *healthy* but not related to teenagers. If the pin was a duplicate of the same link to information within a specific search term, it was also excluded.

2.4 Data Collection

From each pin included in data collection, several pieces of information were collected for mixed methods analysis. Information collected included: name of the pin, author of the pin, website link, credentials/background of information source (if applicable), type of post, and target population (gender, athletics, etc.). If available, data were collected on the number of *re-pins* or how often the information was shared. Information collected from pins was compared to MyPlate guidelines. Each link was analyzed to determine the inclusion of the five food groups of MyPlate: fruits, vegetables, grains, protein, and dairy. If a component of the food group was included in the recipe, it was documented as part of the data collection. Credible sources of information were defined as those with a

bachelor's degree or higher in nutrition or credentials such as Registered Dietitian. Content was analyzed for trends in information collected from pins. After initial review of compiled data for themes in information, the data was reviewed by a separate researcher. The secondary researcher was trained to analyze pertinent nutrition information identified in the pins collected. In addition, the secondary researcher had previous knowledge on MyPlate guidelines prior to qualitative data analysis. Data were further analyzed with descriptive statistics.

3. Results

Pins were collected based upon inclusion criteria and data were analyzed qualitatively and quantitatively. Overall, the results from each search term met an average of three of the five MyPlate food groups which include fruits, vegetables, grains, protein, and dairy. Some of the pins provided more in-depth nutrient information, but the overall collection of blogs, articles, slideshows, etc. focused on basic nutrition information and recipes targeting teens or a specific subset of teenagers, such as athletes. Table 1 provides a summary of the descriptive statistics, and Table 2 provides overarching themes found for each search term.

Table 1. The Descriptive Analysis of Pins for Teenage Nutrition Collected on Pinterest

	Number of Pins Collected	Average Number of Re-pins	Target Populations	Number of Pins with Credible Nutrition Sources, n (%)	Pins that Met All MyPlate Guidelines, n (%)	Average Number of MyPlate Guidelines Met by Pins, n (%)
Teen breakfast healthy	24	221	Teen girls, tweens, teens, school-aged children, teen athletes	3 (12.5)	8 (33)	3.79 (75.8)
Teen lunch healthy	24	1741	Teen girls, teen boys, high school athletes, tweens, teens	1 (4.2)	15 (62.5)	4.5 (90)
Teen dinner healthy; Teen supper healthy	2	204	Teens	0 (0)	0 (0)	3 (60)
Teen nutrition	25	635	Teens, teen athletes, high schoolers, teen boys, teen girls	6 (24)	14 (56)	3.8 (76)
Healthy snacks for teens	25	233	Teens, teen athletes, tweens	3 (12)	10 (40)	3.96 (79.2)

Table 2. The Overarching Themes of Pins for Teenage Nutrition Collected on Pinterest

Search Term	Overarching Themes
Teen breakfast healthy	Primarily lacking in vegetables Main focus on grains and protein, usually in form of dairy Eggs and oatmeal were predominant foods observed Breakfast burritos, smoothies, and acai bowls were trendy options for teens Quick, easy to make by parents and/or teens
Teen lunch healthy	Large focus on back to school More vegetables included than breakfast Easy to grab-and-go, modifiable for picky eaters Specialty and themed lunch boxes were trendy Limited credible nutrition sources of information Some YouTube videos of teens sharing lunch ideas Different portion sizes based on gender for satiety concerns
Teen dinner healthy Teen supper healthy	Lack of information within these search terms "Teen-friendly" recipes featured Paleo cookbook written by a teen featured Parents likely more focused on healthy dinner ideas for whole family, not just teenagers
Teen nutrition	Vague information, fairly accurate Focus on adequate macronutrients, calcium Few sites contrasted with MyPlate recommendations (grains, dairy) Highlights gap in information for teen athletes
Healthy snacks for teens	No true "well-rounded" snack—complication of different MyPlate groups that can be mixed and matched Grab-and-go items featured Protein and carbohydrate or vegetable common pairings

3.1 Teen Breakfast Healthy

The first search term yielded 24 pins that linked to content related to breakfast items for teens. The breakfast ideas shared in this set of data were primarily focused on protein and grains. The main sources of protein came from dairy products as well as eggs. One of the predominant foods observed from multiple pins was oatmeal, either in its original form or baked. Another trend that was observed was breakfast burritos or a variation of eggs with tortilla shells. Smoothies and acai bowls were also observed, which contributed adequate fruit servings. These smoothie and acai bowls also contained granola or chia seeds. Overall, the pins analyzed seemed to have a common trend of quick to make, either by the parents or teens themselves, as well as some that were intended to be portable. There was a distinct lack of vegetables observed in the shared information and pins. Of these pins, only eight pins (33%) provided enough information to meet all five MyPlate guidelines. On average, the pins sampled met 3.79 MyPlate guidelines (75.8%). The target populations of these pins were teen girls, school-aged children, tweens, and teen athletes. The number of credible nutrition-related sources was 12.5% (n=3). The average number of *re-pins*, or how often information was shared on Pinterest, was 221 times.

3.2 Teen Lunch Healthy

The second search terms yielded 24 pins that linked to content related to lunch items for teens. In general, these pins focused on school lunch options, *grab-and-go* ideas, as well as modifications for picky eaters. Based upon analysis of pins collected, specialty and themed lunch box ideas were popular options for teenagers at school. In general, many of the lunch options focused on sandwiches or wraps as well as salads. One of the interesting aspects of this data set is that some of the pins included in search criteria were linked to YouTube videos of teens who were preparing healthy lunch options. These videos were geared towards other teenagers, which made the content relatable.

The lunch options analyzed had more vegetable options than the grain, protein, and fruit focus of breakfast items. Many of the authors of blogs shared a common theme of concern for healthy, well-balanced lunches to help teenagers focus and succeed in school. Some of the sources encouraged their teenagers to pack the lunch for themselves, while others focused on packing items they knew their children would consume. A few of the blogs focused on keeping teenagers full, specifically boys; these pins highlighted protein and whole grains as well as bigger servings for satiety. Of these pins, only one pin (4.2%) provided enough information to meet all five MyPlate guidelines. However, on average, the pins sampled met 4.5 MyPlate guidelines (90%). This search term had the largest average number of MyPlate guidelines featured in the content provided. The target populations of these pins were teen girls, teen boys, school-aged children, tweens, teens in general, and high school athletes. The number of credible nutrition-related sources was 62.5% (n=15), and the average number of *re-pins* was 1741 times.

3.3 Teen Dinner Healthy

The third search term only yielded one pin that met the inclusion criteria. A second search was performed under the search tern, *teen supper healthy*, and only one additional pin met inclusion criteria. Because of this, data analysis was only based upon two links. These pins highlighted ten dinner ideas that were termed *teen-friendly* as well as dinner recipes from a cookbook written by a teenager. Part of the commentary of the sources was geared towards recipes that pickier teens would approve of instead of wanting to eat fast food or at a restaurant.

Recipes suggested were oven-fried chicken, quesadillas, and pasta, as well as hotdogs. Two salad recipes were also suggested, but one did not have a protein source. As for the link featuring a teenage cookbook author, the cookbook included only paleo recipes, avoiding certain food groups and nutrients. Due to this, only vegetables and protein were highlighted in the recipes. These pins focused on teens in general, and there was an average of 204 *re-pins*. The first link was not written by a credible nutrition-related source, and neither pin met all the guidelines for MyPlate. On average, the pins sampled met three MyPlate guidelines (60%). The second link was written by a private chef and full-time nutrition student; however, the commentary of the article was from a high school student with no nutrition-related credibility.

3.4 Teen Nutrition

The fourth search term yielded 25 pins that linked to content related to some type of nutrition advice for teens. In general, these pins focused on fairly accurate information related to carbohydrates, protein, and fats as well as their respective sources. There was mention in some of the links the concern for adequate calcium intake for bone health. Overall, the information shared was somewhat vague. A few of the pins focused on *foods teens should be eating*, which highlighted foods such as salmon, lentils, walnuts, avocados, dairy (specifically yogurt), as well as whole grains such as brown rice or quinoa. An article written by a dietitian focused on good nutrition for tweens and teens, specifically highlighting adequate hydration and the MyPlate principles. Two of the articles, including the one previously mentioned, directly referenced MyPlate for proper teen health and nutrition. There was one pin that promoted the Paleo Diet for teenage athletes, with an emphasis on a high-fat, high-protein, low-carbohydrate diet. Of these pins, 14 pins (56%) provided enough information to meet all five MyPlate guidelines. On average, the pins sampled met 3.8 MyPlate guidelines (76%). The target populations of these pins were teen girls, teen boys, teens in general, high school students, and teen athletes. The number of credible nutrition-related sources was 24% (n=6). The average number of *re-pins* was 635 times.

3.5 Healthy Snacks for Teens

The final search term yielded 25 pins that linked to content related to snacks for teens. The focus of the different snacks shared seemed to be on *grab-and-go* for teens after school. One of the recurring themes was that the snacks needed to be easy and appealing to teens so that they choose them without prompting. Some of the trends in snacks included vegetables with low-fat dips or hummus, fruit and yogurt, popcorn, as well as peanut butter and trail mixes. Cheese sticks and sandwiches were also featured snacks. Sweet vegan snacks like muffins, granola bars, and homemade fruit roll-ups were the feature of one vegan-focused blog. Of these pins, 10 pins (40%) provided enough information to meet all five MyPlate guidelines. On average, the pins sampled met 3.8 MyPlate guidelines (79.2%). The target populations of these pins were teens in general, tweens and teen athletes. The number of credible nutrition-related sources was 12% (n=3). The average number of *re-pins* was 233 times.

4. Discussion

4. 1 Types of Nutrition Information Provided

The research conducted in this study was primarily exploratory; however, certain themes arose through the course of data collection. Many of the pins found through the respective search terms were from parents pinning general *healthy* pins for their children. These types of pins did seem to adhere to most of the MyPlate guidelines based upon content analysis; however, they were not included in this study as they did not specifically focus on teenagers specifically. Overall, the majority of pins included in this study could be modified to include at least one more area of MyPlate. While a snack may not necessarily meet all five of the MyPlate guidelines, encouraging teenagers and their parents to strive to include as many as possible may help to increase fruit and vegetable consumption. This idea of incorporating more of MyPlate guidelines emphasizes a need for nutrition education. Many of the pins analyzed contained between two to five of the guidelines. On average, three of the five MyPlate guidelines were met within each search term. Basic nutrition education could promote the idea of adding one more element to make a meal well-rounded. For instance, an evening meal could contain whole grains, lean protein, dairy, and vegetables. This model is lacking a fruit component. Nutrition professionals could easily alleviate this by suggesting the addition of a fruit for dessert. As previously mentioned, the search term *teen healthy dinner* (*teen healthy supper*) only produced two results, which made it difficult to analyze. Due to the limited nature of these search terms, it is possible that parents may be more focused on healthy dinner recipes for the whole family.

In addition to general, healthful information, some of the nutrition-related information shared via Pinterest centered on more specific areas of nutrition. Some of the information shared under the *teen nutrition* search term was geared towards weight loss, which could be an area of focus for teenagers or their parents. Adolescents tend to have a shift in self-esteem and body image due to the changes faced

during puberty (Markey, 2010). Previous research has shown that body image during this time of life is crucial to overall health and well-being, and higher levels of body dissatisfaction may result in low self-esteem and eating disorders (Markey, 2010). De Vries, Peter and de Graaf (2016) found that both adolescent boys and girls had higher levels of body dissatisfaction. They also had greater peer influence with increased time spent on social media, which adds to the growing body of research that has found correlation between body image and social media use. The researchers suggest that parents should be aware of this correlation and take preventative action (de Vries, Peter, & de Graaf, 2016). The information provided in pins was generally vague, focusing on a healthier diet, avoidance of *junk* foods and sugar-sweetened beverages, as well as recommendations for moderate exercise. Only a few of these sources mentioned calorie levels, but they mentioned it as a topic to discuss with a physician.

Another specific area of focus from the pins included in the study were vegan and vegetarian considerations. Some of the pins were geared towards families that were vegetarian based upon ethical, ecological, or religious considerations. However, one source addressed how parents could help to transition mealtimes when their teenagers have made the decision to become vegetarian. Adolescents and teenagers are at a transitional period in which they are discovering their personal identities as well as developing their beliefs and morals (Cobb, 1992). This same period may result in newfound autonomy in food choices. One study analyzed the growing trends of adolescents becoming conscientious about where and how their food is grown (Bissonnette & Contento, 2001). With increasing awareness of sustainability practices and locally-grown agriculture, the environmental impacts of food production could influence teenagers to choose plant-based diets.

According to the Academy of Nutrition and Dietetics (2016), vegetarian diets are rich in fiber and antioxidants while being low in saturated fat. Research has shown that there is a correlation between vegetarianism and lower risks of heart disease, diabetes, hypertension, some cancers, and obesity. Teenagers can safely follow a vegetarian diet with the proper planning of complementary protein sources and well-balanced meals, although Vitamin B12 supplementation may be necessary if not consuming fortified food products (Melina, Craig, & Levin, 2016). The information shared in the pins sampled for the current study only provided recipes and alternative protein sources, such as soy, to meet protein requirements. This could be an area for Registered Dietitians to provide nutrition education to help teenagers and their parents safely form balanced, vegetarian meals.

4.2 Credibility of the Nutrition-Related Information

With the variety of information analyzed during this study, there were many different sources of information, some of which came from individuals with nutrition-related backgrounds. However, the majority of pins were written by the layperson; specifically, most of the information was written by mothers based upon personal experience as part of their *journey through parenthood*. While this information can be helpful to other parents with similar concerns, it does not make them credible

sources of nutrition-related information for teenagers. The online community of parent bloggers has come together to provide information via experience rather than credentials. Nutrition and health of children seem to be a unifying factor in the desire to write blogs and articles regarding the health of teenagers, especially if they are athletes with busy schedules or *picky eaters*. Previous research has found that parents will consistently seek out nutrition information in order to best support their child's growth and development (McCann & McCulloch, 2012; Doub, Small, & Birch, 2016a). While this has not been studied in teenagers, it has been studied in both young children and babies being breastfed (McCann & McCulloch, 2012; Doub, Small, & Birch, 2016a). One study found that mothers who followed food and recipe blogs, especially those geared towards younger children, were more likely to let the food served as well as portion sizes be influenced by the information shared (Schneider, McGovern, Lynch, & Brown, 2013).

One trend noted in content analysis was that of parents who use endorsements of perceived healthy food items in order to generate revenue. The Federal Trade Commission (FTC) regulates blog endorsements. While it is legal to make money from product endorsements as a blogger, the FTC is specific on how endorsements must be stated clearly on the blog in order to not mislead readers (The FTC's endorsement guide, 2015). Per the federal regulations, all blogs analyzed that sponsored products had a disclaimer. While these endorsements were clear, it poses the question of perceived healthfulness based upon certain ingredients or an organic label. While these products may be useful for parents, the main goal of endorsed posts is not to provide nutrition information. This concept was not the focus of the current study, but it is an area that requires ongoing research.

In addition to the general layperson sharing nutrition information based upon experience, there were some questionable sources of information. These sources of information labelled themselves as *holistic* or *health and beauty experts* without mention of credentials supporting their expertise. Other sources of information came from various nutrition novels referenced loosely, in which individuals interpreted the information and applied it in their blogs. The recommendations from these sources included Paleo diet recommendations for teenage athletes and fear of food colorings in processed foods and beverages.

Other advice that deviated away from MyPlate guidelines was the avoidance of added sugars as well as dairy products. MyPlate does briefly mention limiting added sugars as well as sodium; however, it is not yet part of the visual component of MyPlate. Information on added sugars includes new research suggesting that consumers, including teens, should limit their daily intake. The most recent Dietary Guidelines for Americans 2015-2020 included recommendations on the maximum amount of added sugars allowable in the diet without incurring the correlated health consequences. The Dietary Guidelines recommends less than 10 percent of calories daily from added sugars (U.S. Department of Health and Human Services & U.S. Department of Agriculture, 2015). In contrast, dairy products have more speculation circulating in popular media sources regarding the health benefits. In general, the

argument against dairy is human consumption of dairy is not *natural*, which critics claim is the reason behind high rates of lactose intolerance (Gunnars, n.d.). However, a meta-analysis reviewed existing research and found that dairy consumption has many positive health benefits—such as lower rates of obesity and comorbidities including cardiovascular disease and diabetes—and no known adverse effects (Thorning et al., 2016). This meta-analysis was unable to compare plant-based dairy alternative to cow's milk products due to a lack of research (Thorning et al., 2016).

Analyzing the content of blogs and other information shared by parents of teenagers can determine the credibility of the information. However, the concept of sharing information via the Internet and technology is evolving. The Internet has become a wealth of information for many individuals, including the layperson. While the Internet enhances the ease of sharing and retrieving information, not all of the information comes from credible sources, as this current research has observed. This highlights the significance of Registered Dietitians and the increasing use of social media and the Internet as a means of disseminating evidence-based, credible nutrition information. One study analyzed the use of Twitter by dietitians in order to see what type of information is available for patients with heart failure (Hand, Kenne, Wolfram, Abram, & Fleming, 2016). They found that health professionals tend to be more inclined to use the Internet and social media for their own research, but they tend to doubt the credibility of information shared. This study also highlighted a gap in nutrition information and the potential for dietitians to remedy this in the future (Hand, Kenne, Wolfram, Abram, & Fleming, 2016). Other health care professionals are acknowledging the potential for outreach to the layperson in order to disseminate pertinent educational materials. One study focused on redesigning their website as well as increasing their presence on Twitter and Facebook in order to better engage their audience (Goldstein et al., 2013). This is a growing area of interest and further investigation is needed.

4.3 Limitations of this Study

As this study was exploratory, there are several limitations to be noted. One of the biggest issues with using Pinterest as a tool to research the search habits of parents of teenagers is that the algorithm used to populate pins is somewhat randomized based upon popularity of the pin and popularity of the person pinning the information, as well as the relevancy of the pin itself to the search criteria. Additionally, there were many pins of different pictures that all linked back to the same website. The Pinterest search engine does not eliminate duplicates of the same source of information. This made data collection difficult and limited the data available for analysis. The captions on pins also were factored into the search algorithm of Pinterest. Some of the captions of pins generated by the search terms used in this study were relevant to the inclusion criteria, but upon further inspection, the pin was completely irrelevant to actual content of linked website. This made pins appear misleading, as individuals who pin links can add any caption they desire, even if it does not directly relate to the content of the pin.

Another limitation of the search algorithm of Pinterest is the vague concept of *teens*. Using this search term generated a plethora of information, none of which had a specific age range of interest. Based upon observation, the pins included information on "tweens" (10-12 years old), 13- and 14-year-olds, as well as general high school students. Based upon the definition of the individual sharing the information, any of these age ranges could be perceived as *teenagers*.

Additionally, the lack of pins specifically related to teenagers was a limitation. As previously mentioned, most pins contained general, healthful information and were not specific to teen dietary needs or considerations. For example, the search term *teen dinner healthy* generated 50 to 100 pins, but only one pin was specific to teenagers. Based upon the data analyzed in this study, there seems to be a lack of information geared towards teenagers. As demonstrated in previous research, the focus seems to be on children in elementary school or younger. Additionally, the information seems to shift to college students as well in preparation for newfound independence and necessity to learn to cook.

The information analyzed in this study did not equally focus on specific populations. There seemed to be a distinct gender difference in the type of information shared. For example, information pertaining to weight loss was generally geared towards teenage girls. In contrast, information specific to teenage boys seemed to be geared more towards athletics and physical activity. While this study did not specifically focus on weight loss or sports nutrition, further research is needed to understand the gap in nutrition information in relation to gender.

5. Conclusion

The primary research question that this study set out to answer was "Do pins on Pinterest related to teenage health and nutrition align to the MyPlate guidelines"? Based upon the data collected, pins related to teen health generally correlate with MyPlate guidelines. Most of the pins analyzed contained at least one of the food groups from MyPlate. Overall, the information was somewhat vague, but the authors of the information tended to focus on adequate protein, inclusion of dairy, as well as the ease and convenience of food choices for busy, active teenagers. There is still concern regarding adequate fruit and vegetable intake, which highlights the need for nutrition education. The credibility of information seems to be concerning, as most of the sources of information were mothers of children and teenagers. However, there were a few articles written by nutrition experts such as Registered Dietitians. Teenagers could be a focus age range for Registered Dietitians to provide evidence-based nutrition education that is relatable and easy to implement by parents of teenagers. As this study was focused on exploratory research, more studies need to be conducted on the type of information disseminated on social media sites such as Pinterest, as well as how Registered Dietitians can use this platform to share relatable, evidence-based nutrition information.

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