

Food Blogs to Family Meals

A Brief Evaluation of Blogs as Resources for Home Cooking During COVID-19

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This study examined the quality and healthfulness of articles and recipes on food blogs to inform nurses, other health professionals, and patients using these as resources. Recipes from 50 blogs on Feedspot.com were analyzed for nutrient content and congruency of nutrition information. Of the 178 recipes, 5.6% were low calorie, 7.3% were low in total fat, 15.2% were low sodium, and 89.3% had ≤ 100 kcal of total sugar. Snack recipes contained significantly less mean sodium ($P = .001$), and 21% of blogs provided nutrition tips with incongruent or mixed congruency recommendations. Nurses, other health professionals, and consumers should evaluate cooking blogs carefully when using them for nutrition and recipe advice.

KEY WORDS: Cooking blogs, Nutrition education, Public health

Cooking fatigue and interest in finding new and healthy recipes have been commonly cited by consumers cooking at home during the COVID-19 era.^{1,2} Consumers have also indicated that they anticipate cooking more at home even after the pandemic ends,¹ suggesting that healthy habits and strategies for healthy family meals learned during the pandemic have the potential to persist in the future. In response to these trends, multiple health organizations issued recommendations for eating at home,^{3,4} emphasizing consumption of fruits, vegetables, whole grains, and vitamin- and mineral-rich foods. However, research on the relationship between specific nutrients and COVID-19 is limited. For example, adequate consumption of micronutrients involved in inflammation and oxidative stress, such as vitamins C and D, selenium, and zinc, may be important in strengthening the immune system.^{5,6} Research has also suggested that vegetarian and pescatarian diets may lower the odds of developing moderate to severe COVID symptoms compared with a

low-carbohydrate or high-protein diet, perhaps due to the increased amounts of phytochemicals, micronutrients, and fiber typically associated with these dietary patterns.⁷ Nevertheless, a recent investigation of serum vitamin D levels did not find an independent association between vitamin D status and COVID-19 positivity,⁸ suggesting the need for further research in this area.

The Internet provides a readily available source of food and nutrition tips, and research suggests that consumers use the Internet as a major source of information surrounding nutrition. Indeed, nearly 43% of Internet users report searching for advice on diet, weight, and physical activity.⁹ Although this is not a new phenomenon—the use of Web-based recipes dates to the mid-1990s¹⁰—increased scrutiny of the growing number of health, lifestyle, and food blogs has suggested that the healthfulness of their recipes varies widely. For example, a survey of 96 recipes on popular blogs reported that mean sodium and saturated fat were greater than the United States Department of Agriculture's Dietary Guideline recommendations.¹¹ Further, a comparison of 86 recipes found on “clean” eating blogs with those on control blogs reported that significantly fewer clean eating recipes met recommendations for energy from carbohydrate and mono-unsaturated fat than control recipes, and many recipes from both groups provided moderate amounts of saturated fat, sugar, and sodium.¹²

In addition, the advice shared on health and nutrition Web sites may not always be congruent with current, evidence-based recommendations. An analysis of popular health and nutrition Web sites in Canada reported inappropriate messaging about fruits, vegetables, and fat.¹³ Further, a content analysis of 21 healthy living blogs found that messages indicative of dietary restraint, eating disorders, and distorted body images were common.¹⁴ Qualitative research with food bloggers has also identified a distinctive set of conventions surrounding what constitutes a “healthy” food and healthful eating (eg, shopping at particular grocery stores, emphasizing particular brands of foods, and posting photographs of items purchased while grocery shopping), even though many of these do not match current research and dietary guidance.¹⁵ Given the widespread use of the Internet and food blogs for cooking, and the growing interest in cooking at home, it is important to

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understand what resources patients use for finding healthy recipes and the types of messages and information consumers may encounter on these Web sites so that nurses and other health professionals can target guidance appropriately. It is also important to understand whether the recipes available align with current guidance for cooking at home during COVID-19 and general guidance for healthy eating and cooking. Thus, the purpose of this project was to compare the nutrient content and nutrition messages of popular recipes and articles listed on Feedspot's top cooking blogs with general and pandemic-specific dietary guidance and evaluate the blogs as possible resources for individuals who are seeking home-cooked meals during the COVID-19 pandemic and afterwards.

METHODS

Feedspot (https://blog.feedspot.com/food_blogs/) was used to provide the list of top food blogs so that the articles and recipes provided could be assessed. Feedspot is a content reader that uses an algorithm to rank and categorize popular blogs by topic based upon factors including frequency of posts, number of followers, and amount of traffic. The site includes more than 100 000 bloggers (https://blog.feedspot.com/about_lists_and_ranking/) writing on a variety of topics. Food bloggers on Feedspot range from home cooks to writers employed by food magazines. Blog posts include recipes with pictures and instructions for preparing a specific dish and general articles about food, cooking, nutrition, and other topics. Some articles include a related recipe, whereas others do not. The blogs represent a variety of cooking styles and cuisines with authors living across the globe, and thus, Feedspot was chosen to represent the diversity of tastes among home cooks seeking recipes on the Internet.¹⁶ As in previous research,¹³ a total of 50 blogs from Feedspot were assessed for the current project. A power calculation using G*Power version 3.1.9.2¹⁷ (Heinrich Heine University, Dusseldorf, Germany) indicated this would provide 95% power to detect significant difference with a moderate effect size at a *P* of .05. The first 50 blogs were used, with five articles and four recipes (one each for breakfast, lunch, snack, and dinner) reviewed from each. The term “nutrition” was searched on each blog during the summer and fall of 2020, and the first five articles were analyzed for nutritional advice. Advice was compared with published research articles indexed on the National Institute of Health's search engine, PubMed (<https://pubmed.ncbi.nlm.nih.gov/>), to guidelines found on the United States Department of Agriculture's MyPlate and to nutrient content found on Food Data Central Web sites (<https://myplate.gov> and <https://fdc.nal.usda.gov/>) for levels of congruency. Articles that had some advice that was supported by research and other advice that was not were labeled “somewhat congruent,” articles with advice fully supported by

research were labeled “congruent,” and articles not supported by research were labeled “not congruent.” For example, an article discussing whole grains as a good source of complex carbohydrates would be labeled as congruent. An article advising readers to review food labels when shopping but avoid any items with ingredients they cannot pronounce would be flagged as somewhat congruent. Although MyPlate.gov encourages consumers to check food labels when shopping, advice to avoid all unfamiliar ingredients may be misleading in that it does not take into account a particular consumer's reading level, language skills, and experience with food. Student research assistants were trained by the principal investigator to use Food Data Central and to evaluate the articles for congruency. In addition, prior to starting the project, each research assistant completed a practice session using a blog that was not part of the project to ensure that they were able to accurately evaluate articles and analyze recipes. Throughout the project, the investigator also reviewed each of the entries with the research students to resolve questions and ensure agreement.

Additionally, the terms “breakfast,” “lunch,” “snack,” and “dinner” were searched on each blog, following methodology used in a similar, previous study,¹² and the first recipe under each term was recorded. Using the Food Data Central database, the nutrient content of each recipe was calculated per serving according to the serving size information specified by the recipe. When possible, the nutrient content of ingredients not found in Food Data Central was input using branded nutrient information for that item or, for produce, data from a producer's association or council specific to that ingredient. To assess food groups and nutrients that have been suggested as possibly beneficial during COVID-19,¹² the number of recipes providing approximately half a serving or more of fruits, vegetables, and whole grains was recorded, and mean vitamin C and D as well as zinc and selenium were estimated in a subsample of 41 recipes. Due to time and staffing constraints, a subsample of recipes was used for the micronutrient analysis. The recipes were entered into a spreadsheet and numbered as they were retrieved, and numbers at the beginning, middle, and end of this list were randomly pulled for micronutrient analysis.

Calories, total fat, total sugar, and sodium were also compared with the United States Department of Agriculture's Dietary Guidelines¹⁸ based on a 2000-calorie diet, and recipes were given a score of high (400+ calories, 20% or greater Daily Value for sodium and fat), moderate (100–399 calories, 5.001%–19.999% Daily Value for sodium and fat), or low (99 calories or less, 5% or under Daily Value for sodium and fat). Total sugar was analyzed with a 2000-kcal/d diet in mind based on United States Department of Agriculture recommendations to consume less sugar than 10% of calories. Recipes with 50 calories of total sugar or under per

servings were labeled “lowest,” recipes with 50.001–99.999 calories were labeled “higher,” and recipes with 100 calories or more were labeled “highest.” One-way analysis of variance was used to compare nutrient content with the Dietary Guidelines and mean level of congruence with nutrient content. When statistically significant differences were found in the overall analysis of variance, Tukey post-hoc tests were used to determine where differences among groups occurred. Data were processed using IBM SPSS Statistics version 22 (IBM Inc., Armonk, NY, USA), and values were considered significant at $P < .05$. All data are reported as means and SDs or percentages unless otherwise noted.

RESULTS

Most blog authors provided no information about credentials. Among those who did, two reported having at least some formal training as a chef, one had a bachelor's degree in nutrition, two were registered dietitians/nutritionists, and one had a bachelor's degree in exercise science.

Of the 50 blogs reviewed, searches on two did not yield any articles. Of the 240 articles accessed on the remaining blogs, 128 provided no nutrition advice; six provided advice incongruent with current research and the Dietary Guidelines; eight focused on selling a particular dietary supplement, a product (such as an iron-fortified juice, a multivitamin, or protein powders), or a weight loss or healthy eating plan; 45 provided somewhat congruent advice (some aspects were incongruent, and others were congruent); and 51 provided purely congruent advice. Topics discussed that were incongruent with current research and dietary guidance included restricting gluten intake in the absence of gluten sensitivity or intolerance, avoiding use of MyPyramid or the Nutrition Facts panel on food labels, generalizing personal experiences (eg, iodine deficiency during pregnancy or fluid needs) to blog readers without acknowledging that intake recommendations may vary across populations, and describing products as “better” or “healthy” without supporting nutrition information. Examples of congruent advice included correctly identifying produce and whole grains as rich sources of nutrients; suggesting beans, quinoa, and other vegetarian sources of protein as meat substitutes; describing possible antioxidant benefits of herbs and spices; recommending food label use, mindful eating, and awareness of portion size as strategies for healthy eating; and consuming nutritional yeast as a vegetarian source of nutrients and flavor.

Of the 50 blogs searched for breakfast, lunch, snack, and dinner recipes, 22 recipes were missing due to links that did not work or because no results were returned in a particular category for that blog. Of the 178 recipes analyzed, 5.6% were low calorie, 7.3% were low in total fat, 15.2% were low sodium, and 89.3% had 100 kcal or less of total sugar. There was a significant difference in mean sodium ($P = .001$), with

snack recipes having significantly less (344.3 ± 426 mg) than breakfast ($P = .014$), lunch ($P = .005$), and dinner ($P = .003$) recipes per serving. There were no significant differences by eating occasion for calories, total fat, and total sugar. Mean values for fiber suggested that many of the meals and snacks contained low to moderate amounts of fiber and may not enable families to achieve the recommendation of 14 g per 1000 calories suggested by the Dietary Guidelines.¹⁸ Given the Dietary Guidelines' recommendation to consume 0.8-g protein per kilogram of body weight per day, on average, dinners provided nearly half of the day's recommended protein intake (25.0 ± 23.8 g) for a typical adult. On average, breakfasts contained the highest mean levels of cholesterol (179.1 ± 143.5 mg), and dinners contained the next highest mean levels (116.3 ± 145.0 mg). Full-fat cheese, sour cream, eggs, heavy cream, bacon, and sausage were common ingredients in recipes for both meal categories.

Given that guidance for cooking at home during the COVID-19 pandemic has emphasized consuming fruits, vegetables, and whole grains as part of a diet rich in micronutrients, in addition to following the general Dietary Guidelines for Americans,^{3,4} the blogs were further analyzed to determine how many recipes could help meet recommendations for these food groups. Among recipes providing at least half a serving from these groups, 22 included fruits, 76 recipes included vegetables, and 26 included whole grains. In addition, a subsample of 41 randomly selected recipes from the list of 178 was analyzed for vitamins C and D and for zinc and selenium. On average, recipes contained 2.06 ± 5.01 mg of zinc, 14.4 ± 22.2 mcg of selenium, 25.0 ± 44.0 mg of vitamin C, and 0.99 ± 2.06 mg of vitamin D.

DISCUSSION

Cooking blogs provide a unique opportunity for consumers to learn about new foods and recipes and interact with cooks from across the globe, even when ability to travel and eat away from home is limited due to pandemic-related closures and stay-at-home orders. Given the popularity of these blogs and the mixed congruency of the information on them, clients may benefit from tips and resources to identify healthy options when using blogs to find recipes. Since the majority of recipes observed were high in fat and sodium, nurses can advise clients to read carefully when selecting recipes to try. Snack recipes had the lowest mean sodium, perhaps because many of these recipes were developed as alternatives for prepared products (eg, crackers, snack bars, chips, etc) that the bloggers deemed unhealthy. Thus, nurses and other health professionals can provide clients with tips for evaluating snack recipes and finding options for homemade snacks with ingredients that can be adjusted for sodium. Providing a list of common substitutions may also help home cooks learn to successfully adapt recipes to align

more closely with current guidance on intake of total fat, sodium, and sugar as well as COVID-19-specific guidance on consuming more fruits, vegetables, whole grains, and micronutrient-rich foods.

Blogs can also introduce readers to less-familiar ingredients as they explore sites written by authors from across the globe, and this may help them discover additional ideas for common mealtime or cooking challenges they may encounter (eg, preparing breakfast foods with less added sugar; finding ways to incorporate whole grains and legumes that provide fiber, protein, and micronutrients; or making recipes with new spices to add flavor in place of salt) (Table 1). Nurses can encourage clients to seek recipes that feature whole grains, produce, lean protein, and other micronutrient-rich ingredients; give options for choosing ingredients that are lower in fat, sodium, and sugar (eg, reduced sodium soy sauce or broth, plain yogurt, or reduced fat dairy products); and, when possible, provide nutrient information (Table 1). There are several excellent resources to assist nurses in this. The United States Department of Agriculture's MyPlate Kitchen offers hundreds of free recipes that meet recommendations for healthy eating and may help ease boredom from eating at home (<https://www.myplate.gov/myplate-kitchen/recipes>). Likewise, the Academy of Nutrition and Dietetics provides

evidence-based nutrition articles and recipes that align with current dietary guidance (<https://www.eatright.org/food/planning-and-prep/recipes>). They also maintain Stone Soup, a guest blog written by credentialed members of the Academy of Nutrition and Dietetics (<https://foodandnutrition.org/stone-soup/>). Both sites include resources for health professionals and clients, making them ideal for nurses seeking additional nutrition resources for their patients and for themselves. In addition, nurses involved in education interventions with schools and families may benefit from the United States Department of Agriculture's "Team Nutrition Cooks!" materials that bring healthy recipes and cooking skills into afterschool settings (<https://www.fns.usda.gov/tn/cooks>). Many of these recipes feature foods recommended during the COVID-19 pandemic, including fruits, vegetables, and whole grains, as well as nutrients of importance for general health.

Given that over 50% of the blogs sharing nutrition tips provided advice that was either partially congruent or incongruent with scientific research, it is important to remind consumers to read carefully when evaluating the healthfulness of recipes and tips found online through food blogs. Health professionals should continue to stress the importance of consuming fruits, vegetables, whole grains, and vitamin- and mineral-rich foods for a healthy diet. In addition, food blogs that are backed by

Table 1. Common Recipe Topics and Examples in Agreement With Dietary Guidelines (N = 178 Recipes Analyzed) and Tips for Health Professionals Recommending Cooking Blogs

Common Recipe Topics	Common Examples	Tips for Health Professionals Aligned With Recommendations From the Dietary Guidelines (DG) ¹⁸
Low-sodium snacks (n = 14)	Homemade snack bars, muffins, and energy bites Sliced vegetables Popcorn and snack mixes using herb and spice blends in place of salt Homemade cracker and veggie chip recipes where salt was "to taste" or was reduced	DG recommendation: Choose nutrient-dense snacks that meet food group needs, stay within limits, and are enjoyable. Tips: Encourage clients to try recipes for homemade snacks that substitute salt for other flavors.
Low-sugar breakfasts (n = 12)	Fruit and yogurt combinations specifying plain yogurt or that left the choice to the reader Breakfast wraps and sandwiches with options for turkey bacon, egg whites, and lower sodium bread Hot cereals Baked goods that substituted fruits and vegetables for some of the sugar	DG recommendation: Replace sweetened breakfast cereals that provide a minimal contribution to nutrient needs. Tips: Encourage clients interested in cooking blogs to explore recipes that introduce whole grains and methods for preparing them. Encourage clients to add a serving of fruit for sweetness.
Low-moderate total fat dinner items (n = 19)	Dinner rolls Vegetable side dishes Vegetarian and seafood-based fajitas and wraps	DG recommendation: Replace processed or high-fat meat with seafood. Limit sodium, butter, and added sugars, and encourage eating nutrient-dense, whole grains. Tips: Dinner rolls frequently appeared as popular searches. Encourage clients to look for whole-grain variations. Encourage vegetarian or seafood-based variations of popular sandwiches.
High-fiber meal items (n = 8)	Chickpeas Avocado Raw vegetables Tomatoes and potatoes Greens	DG recommendations: Increase the fruit and vegetable content of mixed dishes, or include more as side dishes and snacks. Replace processed or high-fat meats with beans, peas, and lentils. Tips: Encourage clients to consider recipes that incorporate produce and lean protein sources as substitutes for meat.

Table 2. Nutrient Composition of Cooking Blog Recipes by Type of Eating Occasion

Nutrient per Serving	Breakfast (n = 45), Mean (SD)	Lunch (n = 46), Mean (SD)	Snack (n = 45), Mean (SD)	Dinner (n = 44), Mean (SD)
Energy, kcal	453.0 (378.2)	413.1 (235.4)	423.0 (552.0)	467.4 (380.2)
Carbohydrate	35.1 (25.69)	38.6 (32.15)	36.2 (28.19)	36.1 (26.0)
Protein, g	17.4 (12.0)	19.1 (14.5)	7.7 (7.8)	25.0 (23.8)
Total fat, g	27.4 (36.2)	21.2 (16.5)	48.5 (360.0)	27.0 (32.4)
Saturated fat, g	9.4 (6.8)	6.2 (6.3)	6.4 (8.3)	8.8 (9.2)
Cholesterol, mg	179.1 (143.5)	82.0 (115.1)	18.5 (26.0)	116.3 (145.0)
Sugar, g	10.0 (13.7)	9.2 (10.3)	14.6 (14.2)	8.9 (7.9)
Fiber, g	3.4 (3.7)	5.4 (3.9)	3.9 (4.7)	2.1 (5.0)
Sodium, mg	683.9 (655.2)	672.8 (479.3)	344.3 (426.0)	969.0 (923.5)

Dietary Guidelines for Americans' nutrient recommendations for an adult following a 2000-kcal/d diet: carbohydrate, 45%–65% of kcal; protein, 10%–35% of kcal; total fat, 20%–35% of kcal; saturated fat, <10% of kcal; added sugars, <10% of kcal; fiber, 28 g; sodium, 2300 mg. For reference, 1 g of fat provides 9 kcal, and 1 g of carbohydrate or protein provides 4 kcal.

scientific research should be recommended so that people seeking dietary advice related to COVID-19 and other topics avoid information that is not trustworthy.

One limitation of the present study is the potential for variation in snack sizes and the definition of a snack. For example, a review of global snacking recommendations found that guidance on what constitutes a snack ranged from less than 150 kcal to 300 kcal per serving or from 5% to 15% of total daily calories per snacking occasion.¹⁹ Indeed, in the current analysis, mean energy per serving for recipes categorized as snack items was similar to that of meals (Table 2). Market research indicates that interest in snack foods has been growing, particularly as consumers have stayed indoors and worked or studied from home due to pandemic-related restrictions.²⁰ Growing interest in “healthy” convenience snacks has also led manufacturers to rethink their products and incorporate fiber, protein, and micronutrients into foods that are easily consumed on-the-go.^{20,21} Nurses can help clients review snack recipes they find, evaluate serving sizes on recipes, and learn to choose snacks with calories appropriate for their energy needs and wellness goals.

A second limitation is that the data were collected only from top blogs indexed by Feedspot based on their popularity. However, Feedspot blogs included authors from several countries preparing various types of cuisine and represent a wide variety of foods that might be chosen and prepared by home cooks. Finally, there are many other factors that potentially impact COVID-19 progression aside from foods consumed while cooking at home.²² Although the effectiveness of specific nutrients on COVID-19 remains unclear,^{5–7} recommendations to consume fruits, vegetables, whole grains, and other micronutrient-rich foods and seek recipes that feature these align with general guidance for an overall healthy diet and will be useful long after the pandemic ends.¹⁸

Based on the current findings, cooking blogs can provide readers with creative ways to enjoy new flavors, lower sodium

homemade snacks, and ingredients that may be less familiar, such as legumes. Nurses and other health professionals can build upon the popularity of these blogs by providing tips to help consumers better identify healthy recipes and trustworthy information or by suggesting simple strategies for adapting recipes to better align with current Dietary Guidelines. Given the popularity of cooking blogs and their ability to spark conversations about food, health professionals can use them as a starting point for further dialog and instruction about nutrition and healthy food preparation with the hope that home cooks will continue to apply these skills learned after the pandemic ends.

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